

# **The Effects of Financial Education on Short-term and Long-term Financial Behaviors**

Jamie Wagner, University of Nebraska at Omaha<sup>1</sup>

William B. Walstad, University of Nebraska–Lincoln<sup>2</sup>

## Abstract:

This study estimates how financial education in high school, college, or through an employer affects a person's short- and long-term financial behaviors using data from the 2012 National Financial Capability Study (NFCS). Financial education has mixed effects on short-term behaviors which have almost immediate feedback such as added interest charges from not paying off a credit card in full that month. Financial education has positive effects on long-term behaviors which do not have immediate feedback. Retiring happens many years in the future and if a person incorrectly estimates how much they need or does not save at all, there is no way to fix this mistake. Implications from this research will aid financial education programs. The findings suggest there are benefits to financial education but the extent may depend on the time horizon for changing financial behaviors.

JEL Codes: D12, D14, I21

Key Words: Financial Education, Financial Literacy, Financial Behaviors, Time

---

<sup>1</sup> Assistant Professor of Economics, and Director, Center for Economic Education, Department of Economics, University of Nebraska at Omaha; 6708 Pine St. Omaha, NE 68182; (P) 402-554-2357; (F) 402-554-2853; [jfwagner@unomaha.edu](mailto:jfwagner@unomaha.edu)

<sup>2</sup> Professor of Economics, Department of Economics University of Nebraska–Lincoln; P.O. Box 880489 Lincoln, Nebraska 68588-0489; (P) 402 472-2333; (F) 402-472-9700; [wwalstad1@unl.edu](mailto:wwalstad1@unl.edu)

## **The Effects of Financial Education on Short-term and Long-term Financial Behaviors**

Financial education has the potential to help people make more informed financial decisions and change financial behaviors that can have positive effects on the financial well-being of households. Whether financial education is effective, however, in achieving these desirable goals may depend on the time dimension. Financial education appears relatively ineffective or shows mixed results in changing the *short-term* financial behaviors of people. By contrast, financial education seems to have an important and positive influence in changing the *long-term* financial behavior of people. This study focuses on the puzzling dichotomy in the effectiveness of financial education on financial behaviors based on time.

Financial behavior is defined as short-term if it essentially involves a personal money management task that give continual feedback, in which people get timely reminders to correct those actions that lead to costly financial mistakes. Credit card holders, for example, learn from using a credit card that failure to pay off a monthly balance can lead to high interest costs, and as a result they can change their payment behavior to reduce these interest cost. This learning by doing or through experience is likely to be more influential in changing this short-term behavior than is a financial education program that teaches people about the importance of regularly paying off credit card balances to reduce high interest costs. The four short-term financial behaviors investigated in this study include paying bills each month, having a checking account, paying off credit card balances in full each month, and making monthly mortgage payments. Little or no difference would be expected in these four short-term financial behaviors based on whether a person has received financial education.

With long-term financial behaviors the feedback from learning by doing is irregular or infrequent, which means that the adverse consequences of costly financial behaviors are not

experienced until it is too late to make a change. The mistake of not paying off a credit card bill can easily be corrected in the next month's credit card payment, but the mistake of not saving enough for retirement is irreversible or cannot be quickly and easily changed when a person retires. The six long-term behaviors investigated in this study are: (1) having an emergency fund to pay for unexpected future expenses; (2) opening a savings account to save for a future purchase; (3) owning financial investments to build wealth; (4) figuring out how much is needed for retirement; (5) saving for retirement through personal accounts; and, (6) obtaining a credit report to monitor financial reputation. Each of these long-term financial behaviors suggest that a person is taking actions without receiving regular reminders to protect or enhance his or her financial future. In these circumstances, financial education may be effective in helping people plan for the more distant future, thus significantly changing their long-term financial behaviors in a positive way.

This study addresses this issue of effectiveness of financial education based on the time horizon of financial behaviors by analyzing financial information and data collected from 25,509 adults from the 2012 National Financial Capability Study (NCFS). This data set provides estimates from a representative national sample of adults in the United States on seven major sources for financial education: high school only; college only; employer only; high school and college; high school and employer; college and employer; and, high school, college, and employer. These different sources of financial education are then studied to assess how they affect the short-term and long-term financial behaviors reported by the adults.

The results suggest that financial education has an asymmetric effect on a financial behavior based on the time dimension considered. Financial education from different sources throughout life appears to have significant positive effects on long-term financial behaviors, indicating that financial education can be a valuable contributor in shaping thinking that affect

what people do to create a better financial future for themselves. The evidence, however, for the positive influence of financial education on short-term financial behaviors is quite limited and mixed, which calls into question the contribution financial education can make to improving financial behaviors that can be learned experientially through regular feedback from transactions by consumers.

### **Review of the Literature**

The time factor in financial behaviors is discussed in several general reviews of financial literacy and financial education, but sometimes in indirect ways. Hilgert, Hogarth, and Beverly (2003) classified the financial practices of households into four categories: cash-flow management, credit management, saving, and investing. Among the households showing a high level of financial practices they found the largest percentage in cash-flow management (66 percent), followed by credit management (45 percent), saving (33 percent) and investing (19 percent). They suggest that financial behaviors may be “hierarchical” in the sense that participation in one is necessary before participation in another. From a financial education perspective, their results indicate that there may be more opportunities for it to be effective with more complex, long-term financial behaviors, such as saving and investing, where financial practices are low, than with basic, short-term financial behaviors, such as cash-flow management, where financial practices are already high for most households.

The concept of financial literacy is often tied to financial education because one important goal of most financial education programs is increasing financial literacy, which in turn is thought to improve financial decisions. Remund (2010) reviewed the research on different definitions of financial literacy and sorted the work into five categories: knowledge of financial concepts, ability to communicate about financial concepts, aptitude in managing personal finances, skill in financial

decision-making, and confidence to plan for a financial future. He then synthesized the different categories into a recommended conceptual definition that incorporates a time factor. In his view, financial literacy measures the degree of understanding of key financial concepts and also the “the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, when mindful of life events and changing economic conditions” (p. 284). Based on this definition, financial education is more likely to be effective in helping people plan for a financial future because there is more time for it to work than is possible with helping people making short-term decisions, which typically involve money or credit management.

In an extensive review, Lusardi and Mitchell (2014) discuss the economic theory and empirical evidence related to financial literacy. Their definition of financial literacy focuses more on long-term decisions that involve “people’s ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions” (p. 6) than on short-term concerns such as cash-flow, bill paying, or day-to-day financial matters. One likely reason for this emphasis is that they see financial literacy as a form of human capital investment that occurs over a lifetime. In this case financial education has the potential to improve that human capital, but its effectiveness in changing people’s financial behavior will depend on people’s willingness to invest and on their preferences and economic circumstances (p. 30). This investment in specific human capital can take time to produce positive returns, which suggests the payoff will be better if it is devoted to the irrevocable and consequential choices that are often long-term issues, such as retirement and wealth accumulation as noted above.

What has been less studied in prior research, however, and is the purpose of this study, is the differential effect of financial education on short-term and long-term financial behaviors based

on different forms of financial education—in high school, in college, and through employer—or their possible combinations. The discussion of the research literature that follows, therefore, review a few studies at the high school, college, and adult (employer) level that report findings on the relationship between financial education and financial behaviors, short-term or long-term.

Financial education in high school has increased over the years because more people understand that financial education is needed for all ages and they recognize that financial mistakes and poor financial habits that are developed at a young age could have lasting consequences (NASBE 2006). In 1998, only 21 states included personal finance in their education standards and only one state required a person finance course to be taken, but by 2016 45 states included personal finance in their state standards and 22 states required that a high school course be taken (Council for Economic Education 2016).

The primary goal of personal finance instruction in the school curriculum is to improve the financial literacy. There is growing evidence that this precollege instruction in personal finance, when provided by well-trained teachers using good curriculum materials and valid tests, can improve the financial knowledge and financial literacy of students at different ages (e.g., Harter and Harter, 2009; Walstad, Rebeck, and MacDonald 2010; Batty, Collins, and Odders-White 2015). Although there are some precollege studies that show changes in the financial attitudes of students, these studies are based on self-reported data collected within a short time period from when the instruction was provided (e.g., Carlin and Robinson 2012; Danes, Rodriguez, and Brewton 2013; Batty, Collins, and Odders-White 2015).

What is less known is how this precollege financial education affects the financial behaviors when these high school students become adults. When this question is addressed in the research it typically targets long-term financial behaviors such as saving or credit reputation rather

than short-term financial behaviors related to money management. A study by Bernheim, Garrett, and Maki (2001) is one of the first studies to estimate the long-term effects from mandates for financial education in high school. It found that the mandates increase exposure to financial education and had the long-term effect of increasing the rate of saving and the wealth accumulation of adults. Other studies have examined the link between mandated financial education in high school and the long-term financial behavior of protecting a credit reputation. A recent mandate study found that young adults in states where personal finance was part of with mandated financial education had higher credit card scores and lower loan delinquencies compared to young adults other states (Brown et al. 2014).

Undergraduates also have been the target for financial education either through formal credit courses or through non-credit programs. The general rationale for financial education at this level has to do with the increasing financial responsibilities and liabilities that college students assume as they transition from a precollege life of parental control and oversight to college life that gives them greater control and independent in the management of their financial affairs. Undergraduates can be particularly vulnerable at this time of life because they are now full adults in legal status, may have disposable income from a job, and are likely taking on debt with student loans. For these reasons and others, it is important to teach undergraduate students good financial practices before they engage in financial contracts or start to make financial decisions (Lusardi, Mitchell, and Curto 2010). Financial mistakes made in college can snowball into larger financial mistakes that can be costly and have significant adverse consequences for a financial future.

Research on the effects of college financial education on financial behaviors has been relatively limited and often conducted at one institution, in part because of the wide variation in such courses and programs across colleges and universities. A study of alumni at one university

found that personal finance education delivered a college course increased investment knowledge, but this increased knowledge did not affect saving behavior (Peng, et al. 2007). Another campus study found mixed effects of financial knowledge on the short-term behavior of credit card balances: more financial knowledge was unrelated to whether students had a credit card balance, but was negatively related to whether a student carried a higher credit card balance (Robb and Sharpe 2009). In one of the few comparative studies across campuses, Lyons (2008) used online survey data from ten universities and reported that taking a college personal finance course significantly reduced the likelihood of a student engaging in four risky financial behaviors with credit cards (having more than \$1000 in debt; being delinquent on payments; reaching a credit limit; and not paying balances in full). What has been less studied through research is the effects of financial education in college on the long-term financial behavior of adults.

A third major source for financial education is in the workplace. It has gain popularity in part because the switch from pensions to defined-benefit that give employees more responsibility for their retirement decisions. A major objective, therefore, for employer-provided financial education is to increase the financial literacy of workers so they are better prepared to handle the complex decisions involved in retirement planning. Research studies also show that low levels of financial literacy have adverse effects on retirement planning, income security in retirement, and wealth accumulation (Lusardi and Mitchell 2007; Clark, Morrill, and Allen 2012).

Some studies have investigated the effects of workplace financial education but again, the primary focus has been on long-term financial behaviors such as savings or retirement planning rather than short-term financial behaviors. Bernheim and Garrett (2003) evaluated the efficacy of employer-provided financial education and found that it increased saving for retirement and also increased the rate of participation in retirement plans for employees and their spouses. In a

complementary study, Bayer, Bernheim, and Scholz (2009) reported that when employers offer retirement seminars they are associated with higher rates of participation in and contribution to voluntary savings plans.

### **Data Set and Descriptive Statistics**

The survey data used for this study came from the 2012 National Financial Capability Study (NFCS) which is a nationally representative survey of people's financial knowledge, attitudes and behaviors that was commissioned by the Investor Education Foundation of the Financial Industry Regulatory Agency (FINRA).<sup>3</sup> The 2012 NFCS survey was conducted with help from the U.S. Department of the Treasury, other government agencies, and President Obama's Advisory Council on Financial Capability. It was administered online to 25,509 adult respondents in the United States between July and October 2012. There were approximately 500 respondents per state plus the District of Columbia. The data set includes three sampling weights, one for each level of analysis: national, regional, or state. For this study the national-level weight was used to create a representative sample of the U.S. population in terms of age, gender, ethnicity, education, state, and census region.

The 2012 survey contains about 140 questions and was largely developed from the previous NFCS survey that was administered in 2009. The survey begins by asking about the person's demographic characteristics including gender, age, marital status, ethnicity, living situation, income, employment, education, and number of children. After the demographic questions there are sections that ask about the following: (1) financial attitudes and behaviors; (2) financial advisors; (3) money management; (4) retirement accounts; (5) sources of income; (6) home and

---

<sup>3</sup> Publicly available data, tables, survey questions, methodology, and preliminary reports (for both the 2009 and 2012 surveys) can be found at <http://www.usfinancialcapability.org>

mortgages; (7) credit cards; (8) other deb; (9) insurance; and (10) financial self-assessment and financial literacy including questions about financial education.

Table 1 reports the descriptive statistics for the weighted 2012 NFCS data set. Almost half (49%) of the sample is male. There is about 12 to 20 percent of the sample that fall into each of the age categories. Almost 9 percent of the sample has less than a high school education, 29 percent has a high school degree, 36 percent has some college education, 16 percent has a college degree, and almost 10 percent has post graduate education. Fifty-four percent of the population is married, 29 percent are single, 13 percent are divorced or separated, and 4 percent are widowed. About 39 percent have at least 1 child. About 27 percent of the sample makes less than \$25,000 a year, 26 percent make \$50,000 to \$75,000, 22 percent make \$75,000 to \$150,000, and 6 percent make more than \$150,000 a year. Eight percent of the sample reported being self-employed, 45 percent are employed, 21 percent are not in the labor force, 9 percent are unemployed, and 18 percent are retired. More than half of the sample, 66 percent, reported being white with all other races being combined and making up the remaining 34 percent.

[Table 1: 2012 NFCS Descriptive Statistics]

New to the 2012 survey are questions that ask people about the financial education courses they may have taken, either in high school, college, through an employer, or through the military. These questions are used to create the financial education variables for the analysis. People responded to a question about whether or not they took a financial education course. If the person said that they had taken a financial education course, the next question asks if the person took the course in high school, college, through an employer, or through the military<sup>4</sup>. For this analysis

---

<sup>4</sup>Respondents could only respond to taking a personal finance course in college, through an employer, or through the military if they had previously responded that they had taken or were currently in college, currently employed, or part of the military respectively.

employer and military financial education courses are combined because the military is another form of employment. There is also a small number of respondents who took a military financial education course. The person could respond that they took more than one financial education course, therefore there are multiple categories for coding an individual. The seven categories of financial education courses are: (1) high school course only; (2) college course only; (3) employer course only; (4) high school and college courses; (5) high school and employer courses; (6) college and employer courses; and (7) high school, college, and employer courses. The omitted category is that the person did not take a financial education course.

The proportion of people that took each financial education course combination is also reported in Table 1. The course combinations are distinct. People cannot fall into more than one of the course combinations and therefore the course combinations sum to 100 percent. About four percent of the sample took a high school course only. Similarly, about four percent of the sample took a college course only and about three percent took an employer course only. There was about one to two percent of the sample that took two of the financial education courses. As expected there is a relatively small percent of the sample that has taken a financial education course and that percent gets smaller as the categories include more courses. Only three percent of the sample has taken all three financial education courses. Almost 80 percent of the sample took no financial education course.

The data set also provides a unique look at financial literacy by asking five financial literacy questions in the survey. The questions test a respondent's knowledge of interest accrual, inflation, the relationship between bond prices and interest rates, mortgage pricing, and the difference between stocks and mutual funds. All five questions assess general financial knowledge with the bond question being the most difficult. These five questions have been used widely in

the literature to provide a general understanding of a person's financial literacy (Lusardi and Mitchell 2014; Hastings, Madrian, and Skimmyhorn 2013; Allgood and Walstad 2016). The questions are multiple-choice or true-false style with the respondent being able to choose the correct answer rather than coming up with the correct answer on their own. The financial literacy questions are simply a proxy for people's financial literacy, but there are many topics that are not tested through the survey that may be covered in a financial education course.<sup>5</sup>

Each question is coded as a 1 if the respondent correctly answered the question. If the respondent gave an incorrect response or did not know the answer the variable is coded as a zero. If the respondent did not respond or said they did not know the answer then it is assumed that they cannot answer the question correctly. The financial literacy measure for this paper is the sum of the number of correct responses with possible scores ranging from 0 to 5. Higher scores indicate that the respondent is more financially literate than those who have lower scores. The average financial literacy score is 2.88.

### **Short-term and Long-term Financial Behaviors**

For this study, four short-term financial behaviors were identified in the data set for use in the analysis that are similar to the basic money and credit management skills discussed by Hilgert, Hogarth, and Beverly (2013): (1) does not having difficulty covering their bills each month (pays bills); (2) having a checking account; (3) paying a credit card bill in full each month; and, (4) not having late mortgage payments (makes monthly mortgage payment). For each financial responsibility there is timely feedback, generally on a monthly basis, indicating whether the task was completed or well-managed or whether there are problems. This feedback about problems is

---

<sup>5</sup> Financial education and financial literacy score are not highly correlated. There were no correlation values above .08 for any course. There was a negative correlation of -.16 between financial literacy score and no course. The variables have independent effects of the short-term financial behaviors as shown by separate regressions estimating financial education then adding the financial literacy score and vice versa.

especially important to people for managing their money and credit. If a person is not able to pay their bills on time, he or she gets a reminder in the form of a past due notices or perhaps has to pay a penalty for being late. The mismanagement of a checking account can lead to overdrafts and extra fees for which there is almost immediate feedback from a bank. A credit card statement is issued every month that gives the consumer a record showing what the consumer purchased during the month period and a calculation of what he or she owes to pay off their credit card bill in full or accept the consequences of paying interest on the outstanding balance. Similarly, not making a mortgage payment can lead to extra financing costs and if nonpayment is done over time it can lead to foreclosure. The timely feedback for these responsibilities means that there may be little need for formal financial education about what to do to avoid financial problems in these cases.

All four short-term variables are coded as a dummy variable equal to 1 if the person responded that they positively engage in a short-term behavior so they do not encounter problems from poor cash-flow or credit management. Panel A of Table 2 shows the proportion of people who reported positively engaging in each behavior for the full sample: 41 percent reported not having troubles paying their bills, 90 percent managed a checking account, 50 percent paid their credit card in full each month, and 79 percent had not been late on their mortgage payment in the last two years

[Table 2: Short-term and Long-term Behaviors]

The long-term behaviors studied are: (1) having an emergency fund; (2) having a savings account; (3) having investments outside of retirement funds; (4) having non-employer retirement accounts; (5) figuring out how much they need for retirement; and (6) obtaining a credit report. The general rationale for why these behaviors should be considered long-term is affected by the timing for engaging in the behavior and the immediacy of the feedback. With long-term financial

behaviors there is no regular time period (e.g., month) to participate in a financial activity and there is no immediate or consistent feedback given at a regular time period if there are problems. The opposite is the case for the short-term behaviors previously described. Hilgert, Hogarth, and Beverly (2003) also suggest long-term behaviors, such as saving and investing, are more complex than short-term behaviors, such as money or credit management, and therefore are less likely to be learned through monthly experiences or regular feedback because the payoffs or the consequences in most cases are only realized long in the future. Financial education also may be more effective in changing these long-term financial behaviors because there is less opportunity for learning by doing or experience to substitute for financial education as is the case with short-term behaviors.

Some further discussion of each of the six long-term behaviors may help in understanding the application of the general rationale and the difference between long- and short-term financial behaviors. Saving money in an emergency fund is a form of insurance to cope with an unexpected financial expense in the future, which means that there is no regular feedback given about it that reminds people to create it or add to it. A savings account is established to accumulate money for a positive financial goal that may only be realized over time, although it also can serve a dual purpose as an emergency fund for an unexpected negative event. Having a savings account provides little or no regular incentive to the account holder if saving is inadequate for meeting the goal as would be the case with a short-term financial behavior such as paying bills on time. Making an investment in a financial asset outside of a retirement account is part of a long-term strategy to build wealth, but whether there are positive payoffs typically occurs only after the funds have been invested for a year or more. Retirement decisions too are future-oriented and it is only known at a much later time as to whether the decisions were good ones. Figuring out how much money is needed for retirement is a complex decision and the feedback about whether the right calculation

often comes only after it is too late to make a major change or correction. Similarly, setting up a retirement account outside of an employer can provide extra protection against having insufficient funds in retirement, but when to establish such an account is uncertain and whether there is a problem in not having such an account is not known or experienced until the person retires. Finally, managing and using credit over the long-term requires getting information about credit status through an occasional credit report and improving credit status can be a long-term process.

These long-term variables are coded as a dummy variable equal to 1 if the person responded that they positively engage in the behavior. Panel B of Table 2 shows the descriptive statistics for each of the long-term behaviors. The table includes the proportion of the full sample that report engaging in the various behaviors. Descriptive statistics for the full sample show that about 42 percent have an emergency fund, 74 percent have some sort of saving account, and 36 percent have a non-employer investments. Twenty-nine percent have a non-employer retirement account, 40 percent have tried to figure out how much they need for retirement, and 40 percent have obtained a credit report.

## **Model and Results**

A probit model was specified for the regression analysis:

$$P(Y = 1) = \Phi(\beta'x)$$

The  $Y$  variable is a financial behavior to be studied,  $\Phi$  is the standard normal distribution,  $x$  is a vector of explanatory variables, and  $\beta$  is vector of coefficients to be estimated. Each financial behavior is coded as a 1 if the person engages in a positive financial behavior from a personal finance perspective and zero otherwise.

The dependent variables ( $Y$ ) for the four different probit estimations using the short-term financial behavior dummy variables are not having difficulty covering their bills each month;

having a checking account; paying a credit card bill in full each month; and, not having late mortgage payments. The dependent variables ( $Y$ ) for the six different long-term financial behavior dummy variables are having a three-month emergency fund; having a savings account; having a non-employer investment account; having a non-employer retirement account; figuring the amount needed for retirement amount; and, obtaining a credit report.

The variables in the  $x$  vector are the demographic characteristics (gender, ethnicity, marital status, employment, age, income, education, and if the respondent has at least one child) and financial variables, all of which are likely to affect a financial behavior. All of the demographic characteristics are dummy variables. Education is the highest level of schooling a person reported—less than a high school degree, a high school graduate, some college, having a college degree, and post-graduate education. Included in the group of  $x$  are dummy variables for the respondent's current state to control for state variation in responses.

The financial variables are of two types. The course variables is the financial education courses that apply to the specific person. The categories are all dummy variables equal to 1 if the respondent reported taking the course or group of courses. No financial education course is the omitted category. The other is a financial score variable, the number of correct answers to the five financial literacy questions. Controlling for the financial literacy score in the model shows how financial education affects these behaviors above and beyond a person's stock of financial knowledge.

Table 3 shows the results from the four probit model regressions for short-term behaviors using the full sample. The table presents the estimated average marginal effects. For the sake of parsimony, this section discusses the major findings, those related to general education, income, and financial literacy, before turning to the effects of financial education. Compared to people with

a college education, people with less than a high school degree, a high school degree, and some college education were between four to ten percentage points less likely to be able to cover their bills, nine to twelve percentage points less likely to pay their credit card in full, and one to nine percentage points less likely to not miss mortgage payments. People with post-graduate education were 8 percentage points more likely to pay their credit card in full. Education affects the short-term behaviors in the expected way—people with more education are more likely to have better money and credit management behaviors.

[Table 3: Short-Term Financial Behaviors]

Income is a significant factor relating to the short-term financial behaviors. Compared to people who make \$75,000 to \$150,000 those individuals who make less are 7 to 34 percentage points less likely to engage in any of the short-term financial behaviors. People who reported making \$150,000 or more are 6 to 14 percentage points more likely to engage in the three short-term financial behaviors—paying bills each month, paying their credit card in full each month, and not missing mortgage payments. These effects follow what is expected, because people who have more money should not have as many cash-flow problems that could hinder their money and credit management.

A person's stock of financial knowledge as measured by their financial literacy score has small but positive effects on the short-term financial behaviors. Answering an additional question correctly results in people being one percentage point more likely to cover their bill and two percentage points more likely to have a checking account and not miss mortgage payments.

As expected, financial education has a relatively minor influence on all short-term financial behaviors. An employer course increases the likelihood of a person covering their bills by six percentage points, but that it the only course effect for that behavior. For the behavior of not

making a late mortgage payment, there is no course effect. In the case of paying a credit card bills in full, the course effects also are minor, but mixed. On the positive side, having participated in three types of financial education courses—high school, college, and an employer—increases the likelihood of paying your credit card in full by eight percentage points. On the negative side, people who only took a college course are six percentage points less likely to pay off their credit card in full each month compared to the omitted course combination, no financial education course.<sup>6</sup>

Table 4 shows the estimated average marginal effects for the long-term financial behaviors. The following discussion focuses on the results from general education, income, and financial literacy before turning the effects of financial education. People with less than a college degree (people with less than high school, a high school degree, and some college education) are all significantly less likely to engage in any of the six long-term behaviors. People with less than a high school degree are 10 to 20 percentage points less likely to report engaging in the six long-term financial behaviors compared to people with a college degree. Having a high school degree decreases the likelihood by 7 to 11 percentage points of engaging in the long-term behaviors. Finally, having some college decreases the likelihood of engaging in the long-term financial behaviors (except obtaining a credit report) by 3 to 9 percentage points. These results suggest that education is an important indicator of engaging in various long-term financial behaviors.

[Table 4: Long-Term Financial Behaviors for the Full Sample]

---

<sup>6</sup> Other short-term variables were initially studied, but they were similar in concept to the variables which were included. For example, the result for the variable for “living within your means” were similar to pays bills, and there were no effects of financial education on that behavior. We also estimated other credit card behaviors that were similar to paying a credit card bill in full, such as carrying a balance and being charge interest or only making a minimum payment, but the results were not much different than paying a credit card bill in full.

A person's income is also a significant factor relating to the long-term financial behaviors. Compared to people who make \$75,000 to 150,000 those who make less than \$25,000 are 10 to 30 percentage points less likely to report engaging in any of the long-term financial behaviors. People are 3 to 20 percentage points less likely to engage in the six long-term behaviors if they make \$25,000 to 50,000 and are 2 to 10 percentage points less likely to engage in the long-term behaviors compared to people who make \$50,000 to 75,000. Lastly, people who make more than \$150,000 are 6 to 12 percentage points more likely to report engaging in long-term financial behaviors (except obtaining a credit report). The marginal effects of income are much stronger for the long-term behaviors than the short-term behaviors which may be because these long-term behaviors require higher incomes.

The financial literacy score is effective, but has a minor effect on the long-term financial behaviors. Answering an additional question correctly is related to a two to four percentage points increase in the likelihood of engaging in the long-term financial behaviors. A person's stock of knowledge, measured by the five financial literacy questions in the survey has positive but small effects on the five long-term financial behaviors.

As suggested by thinking about the time factor, the results show that financial education is more important and has larger effects on the likelihood of engaging in the long-term financial behaviors than short-term behaviors. The omitted category for the financial education combinations is no financial education course. Respondents who took only a high school financial education course are between 3, 10, and 4 percentage points more likely to have an emergency fund, try to figure out how much they need for retirement, and obtain a credit report. People who report taking only a college financial education course are 6 percentage points more likely to figure out how much they need for retirement and 4 percentage points more likely to obtain a credit

report. Those who took only an employer course are between 4 and 11 percentage points more likely to engage in all of the long-term financial behaviors except having an emergency fund.

People who took both a high school and college course are 6 percentage points more likely to have an emergency fund, 4 percentage points more likely to have investments outside of a retirement account, 4 percentage points more likely to have figured out how much they need for retirement, and almost 1 percentage point more likely to obtain a credit report. Those who took the high school and employer financial education course are 7 to 21 percentage points more likely to engage in all of the financial behaviors suggesting that the combination of the two is important for long-term behaviors. Similarly, people who took college and employer financial education course are 6 to 16 percentage points more likely to engage in all of the financial behaviors. And finally, people taking all three courses—high school, college, and employer—are 5 to 18 percentage points more likely to engage in all of the long term-financial behaviors.

Combinations including the employer course are the most significantly related to the long-term behaviors. The marginal effects of course combinations that include the employer financial education course are larger than other course combinations. Again, this result may be due to people taking the employer course when they are more mature and interested in the topics. The financial behaviors may be more relevant for someone who is at a working age compared to people who take a financial education course in high school. The employer course is also likely to be the latest class the person took and the information is still fresh in their mind. Another noteworthy result is that the marginal effects are larger for multiple courses compared to single courses—taking more than one course reinforces the complex long-term behaviors.

## **Conclusion**

The results from this study indicate that financial education had minimal effect on short-term behaviors. A likely reason for this outcome is that a large majority of people are about to engage in financial practices and avoid costly mistakes in a process of learning by doing or through life experiences. The effects of the financial education courses at different levels and in different combinations—high school, college, and employer—are great and more significant for long-term behaviors than short-term behaviors. Long-term behaviors require more planning and thought and are less likely to be learned by doing. In these circumstances financial education has more of an opportunity to influence people's actions. There also is more time to develop the human capital through education that can be used to help people understand the choice set and make a beneficial decision.

These findings may be useful for shaping the content of financial education programs. Education related to short-term financial behaviors can be included and it may be effective in some situations where immediate decisions have to be made. What may be a better use of limited instructional time in financial education program is to devote attention on the more complex decision that have to be made that influence long-term financial behaviors. They are less likely to be learned from experience and in many cases can have irrevocable and adverse consequences if there is insufficient planning or financial understanding.

## References

- Allgood, Sam, and William B. Walstad. 2016. The Effects of Perceived and Actual Financial Literacy on Financial Behaviors. *Economic Inquiry*. 54 (1): 675-697.
- Batty, Michael, J. Michael Collins, and Elizabeth Odders-White. 2010. Experimental Evidence on the Effects of Financial Education on Elementary Students' Knowledge, Behavior, and Attitudes. *Journal of Consumer Affairs* 49 (1): 69-96.
- Bayer, Patrick J., B. Douglas Bernheim, and John Karl Scholz. 2009. The effects of financial education in the workplace: Evidence from a survey of employers. *Economic Inquiry* 47 (4): 605-24.
- Bernheim, B. Douglas, Daniel M. Garrett, and Dean M. Maki. 2001. Education and saving: The long-term effects of high school financial curriculum mandates. *Journal of Public Economics* 80 (3): 435-65.
- Bernheim, B. Douglas., and Daniel M. Garrett. 2003. The effects of financial education in the workplace: Evidence from a survey of households. *Journal of Public Economics* 87 (7-8): 1487-519.
- Brown, Alexandra M., J. Michael Collins, Maximilian D. Schmeiser, and Carly Urban. 2014. State mandated financial education and the credit behavior of young adults. *Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, DC, Finance and Economics Discussion Series* (2014-68).
- Carlin, Bruce Ian, and David T. Robinson. 2012. What does financial literacy training teach us? *Journal of Economic Education* 43 (3): 235-47.
- Clark, Robert L., Melinda Sandler Morrill, and Steven G. Allen. 2012. The role of financial literacy in determining retirement plans. *Economic Inquiry* 50 (4): 851-866.
- Collins, J. Michael, and Collin O'Rourke. 2010. Financial education and counseling—still holding promise. *Journal of Consumer Affairs* 44 (3): 483-98.
- Council for Economic Education (CEE). 2016. *Survey of the states*. New York: Council for Economic Education.
- Danes, Sharon M., M.C. Rodriguez, and K. E. Brewton. 2013. Learning context when studying financial planning in high schools: Nesting of student teacher, and classroom characteristics. *Journal of Financial Counseling and Planning* 24(2): 20-36.
- Harter, Cynthia L. and John F.R. Harter. 2009. Assessing the effectiveness of Financial Fitness for Life in Eastern Kentucky. *Journal of Applied Economics and Policy* 28 (1): 20-33.

- Hastings, Justine S., Brigitte C. Madrian, and William L. Skimmyhorn. 2013. Financial literacy, financial education and economic outcomes. *Annual Review of Economics* 5 (1): 347-373
- Hilgert, Marianne A., Jeanne M. Hogarth, and Sondra G. Beverly. 2003. Household financial management: The connection between knowledge and behavior. *Fed.Res.Bull.* 89: 309-22.
- Lusardi, Annamaria, and Olivia S. Mitchell. 2007. Baby boomer retirement security: The Roles of planning, financial literacy, and housing Wealth. *Journal of Monetary Economics* 54 (1): 205-24.
- Lusardi, Annamaria, and Olivia S. Mitchell. 2014. The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature* 52 (1): 5-44.
- Lusardi, Annamaria, Olivia S. Mitchell, and Vilsa Curto. 2010. Financial literacy among the young. *Journal of Consumer Affairs* 44 (2) (Summer): 358-80.
- Lyons, Angela C. 2008. Risky credit card behavior of college students. In *Handbook of consumer finance research*, ed. J. J. Xiao, 185-207 Springer.
- National Association of State Boards of Education. 2006. *Who will own our children?* NASBE.
- Peng, Tzu-Chin Martina, Suzanne Bartholomae, Jonathan J. Fox, and Garret Cravener. 2007. The impact of personal finance education delivered in high school and college courses. *Journal of Family and Economic Issues* 28: 265-284
- Remund, David L. 2010. Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs* 44 (2): 276-95.
- Robb, Cliff A., and Deanna L. Sharpe. 2009. Effect of personal financial knowledge on college students' credit card behavior. *Journal of Financial Counseling and Planning* 20 (1): 25-43.
- Walstad, William B., Ken Rebeck, and Richard A. MacDonald. 2010. The effects of financial education on the financial knowledge of high school students. *Journal of Consumer Affairs* 44 (2): 336-57.

Table 1: 2012 NFCS Descriptive Statistics

2012 NFCS Descriptive Statistics			
	Count	Mean	Std. Dev.
Male	25509	0.4858	0.4998
Age 18-24	25509	0.1231	0.3285
Age 25-34	25509	0.1830	0.3867
Age 35-44	25509	0.1635	0.3698
Age 45-54	25509	0.1962	0.3971
Age 55-64	25509	0.1791	0.3835
Age 65+	25509	0.1551	0.3620
Less than High School	25509	0.0867	0.2813
High School	25509	0.2945	0.4558
Some College	25509	0.3591	0.4797
College	25509	0.1609	0.3675
Post Grad Education	25509	0.0988	0.2983
Married	25509	0.5403	0.4984
Single	25509	0.2928	0.4551
Divorced/Separated	25509	0.1283	0.3345
Widow/Widower	25509	0.0386	0.1926
At least 1 child	25509	0.3914	0.4881
Less than \$25k	25509	0.2650	0.4414
\$25-50k	25509	0.2625	0.4400
\$50-75k	25509	0.1882	0.3909
\$75-150k	25509	0.2229	0.4162
\$150k+	25509	0.0613	0.2399
Self Employed	25509	0.0758	0.2647
Employed	25509	0.4507	0.4976
Not in Labor Force	25509	0.2072	0.4053
Unemployed	25509	0.0911	0.2878
Retired	25509	0.1752	0.3801
White Alone	25509	0.6647	0.4721
Financial Literacy Score	25509	2.8781	1.4656
HS Course Only	22858	0.0415	0.1994
College Course Only	22858	0.0406	0.1973
Employer Course Only	22858	0.0272	0.1628
HS & College Course Only	22858	0.0270	0.1621
HS & Employer Course Only	22858	0.0179	0.1327
College & Employer Course Only	22858	0.0242	0.1536
HS, College, & Employer Course	22858	0.0291	0.1680
No Fin. Lit. Course	22858	0.7926	0.4055
Observations	25509		

Table 2: Short-term and Long-term Financial Behavior Descriptive Statistics

Panel A: Short-term		
	Count	Prop.
Not Difficult to Cover Bills	24995	0.4101
Has Checking Account	25099	0.9031
Pays Credit Card Bill in Full	18356	0.4999
No Late Mortgage Payment	9413	0.7923
Observations	25410	
Panel B: Long-term		
Emergency fund	24497	0.4164
Has Savings Account	25012	0.7403
Has Non-Retirement Investments	23030	0.3636
Has Non-Employer Retirement Account	24260	0.2907
Figured Retirement Amount	25509	0.3985
Obtained Credit Report	24948	0.4007
Observations	25509	

Table 3: Probit Results for Short-Term Financial Behaviors

	(1) Pays Bills	(2) Has Checking Account	(3) Pays CC in Full	(4) No Late Mortgage Payment
Male	0.0299*** (0.007)	-0.0158*** (0.005)	0.0513*** (0.009)	0.0030 (0.011)
White Alone	0.0018 (0.009)	0.0131** (0.005)	0.0224** (0.011)	0.0539*** (0.013)
Single	0.0034 (0.011)	-0.0466*** (0.007)	0.0078 (0.014)	-0.0023 (0.016)
Divorced/Separated	-0.0300*** (0.011)	-0.0464*** (0.008)	-0.0424*** (0.015)	-0.0290* (0.017)
Widowed/Widower	-0.0196 (0.018)	-0.0293* (0.015)	-0.0109 (0.022)	-0.0741** (0.035)
Self Employed	-0.0298** (0.014)	-0.0195** (0.009)	0.0747*** (0.016)	-0.0361* (0.020)
Not in Labor Force	0.0029 (0.010)	-0.0271*** (0.006)	0.0457*** (0.014)	0.0117 (0.015)
Unemployed	-0.0944*** (0.015)	-0.0767*** (0.010)	-0.0215 (0.022)	-0.0748*** (0.028)
Retired	0.0649*** (0.013)	-0.0129 (0.011)	0.1114*** (0.015)	0.0720*** (0.017)
Has Children	-0.1302*** (0.008)	-0.0178*** (0.005)	-0.0843*** (0.011)	-0.0828*** (0.011)
Age 18-24	-0.0525*** (0.019)	-0.1238*** (0.022)	0.0975*** (0.024)	-0.1786*** (0.046)
Age 25-34	-0.0832*** (0.016)	-0.1162*** (0.020)	-0.0511** (0.020)	-0.1214*** (0.030)
Age 35-44	-0.0890*** (0.015)	-0.1222*** (0.020)	-0.1402*** (0.019)	-0.1044*** (0.028)
Age 45-54	-0.1041*** (0.014)	-0.0864*** (0.017)	-0.1481*** (0.017)	-0.1003*** (0.025)
Age 55-64	-0.0739*** (0.012)	-0.0632*** (0.015)	-0.1328*** (0.014)	-0.0589** (0.023)
Less than \$25k	-0.3350*** (0.010)	-0.1346*** (0.013)	-0.1379*** (0.016)	-0.1860*** (0.028)
\$25-50k	-0.2294*** (0.009)	-0.0668*** (0.010)	-0.1329*** (0.013)	-0.1379*** (0.017)
\$50-75k	-0.1136*** (0.010)	-0.0292*** (0.011)	-0.0801*** (0.012)	-0.0695*** (0.015)
\$150k+	0.1374*** (0.017)	-0.0215 (0.018)	0.0820*** (0.017)	0.0622*** (0.017)
Less than high school	-0.1040*** (0.016)	-0.1342*** (0.015)	-0.1063*** (0.025)	-0.0865** (0.034)
High School	-0.0363*** (0.011)	-0.0536*** (0.009)	-0.0873*** (0.014)	-0.0122 (0.016)
Some College	-0.0484*** (0.010)	-0.0202*** (0.008)	-0.1183*** (0.012)	-0.0297** (0.014)
Post Grad Education	-0.0041 (0.012)	0.0079 (0.011)	0.0794*** (0.014)	0.0179 (0.016)

HS Course Only	0.0260 (0.018)	0.0081 (0.009)	0.0129 (0.024)	0.0238 (0.026)
College Course Only	0.0091 (0.017)	0.0063 (0.012)	-0.0529** (0.021)	-0.0082 (0.026)
Employer Course Only	0.0579*** (0.022)	0.0232 (0.016)	-0.0246 (0.025)	-0.0497 (0.030)
HS & College Course Only	0.0004 (0.021)	-0.0446** (0.019)	0.0111 (0.025)	0.0144 (0.028)
HS & Employer Course Only	0.0324 (0.027)	0.0101 (0.016)	0.0369 (0.031)	0.0050 (0.036)
College & Employer Course Only	0.0282 (0.021)	-0.0233 (0.019)	-0.0098 (0.025)	0.0134 (0.027)
HS, College, & Employer Course	0.0257 (0.020)	0.0006 (0.015)	0.0808*** (0.023)	-0.0441 (0.027)
Financial Literacy Score	0.0133*** (0.003)	0.0157*** (0.002)	0.0059 (0.004)	0.0224*** (0.004)
State Fixed Effects	Yes	Yes	Yes	Yes
Pseudo $R^2$	.1536	.2512	.0877	.1128
Observations	22545	22634	16748	8589

Standard errors in parentheses

\*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

Table 4: Probit Results for Long-term Financial Behaviors

	(1) Emergency Fund	(2) Savings Account	(3) Investments	(4) Figured Retire	(5) Non- Employer Retirement	(6) Obtained Credit Report
Male	0.0141* (0.007)	-0.0225*** (0.007)	0.0067 (0.007)	-0.0005 (0.007)	-0.0091 (0.006)	-0.0026 (0.008)
White Alone	-0.0034 (0.009)	-0.0007 (0.008)	0.0404*** (0.009)	-0.0039 (0.009)	0.0429*** (0.008)	-0.0153 (0.010)
Single	-0.0038 (0.011)	-0.0329*** (0.009)	0.0139 (0.010)	-0.0321*** (0.011)	-0.0056 (0.010)	-0.0410*** (0.011)
Divorced/Separated	-0.0746*** (0.011)	-0.0572*** (0.010)	-0.0437*** (0.011)	-0.0274** (0.011)	-0.0531*** (0.009)	0.0066 (0.012)
Widowed/Widower	-0.0435** (0.018)	-0.0070 (0.016)	-0.0084 (0.018)	0.0088 (0.019)	0.0014 (0.016)	0.0327 (0.021)
Self Employed	0.0455*** (0.014)	-0.0229* (0.013)	0.0573*** (0.014)	0.0053 (0.014)	0.0749** (0.013)	0.0173 (0.015)
Not in Labor Force	-0.0237** (0.011)	-0.0701*** (0.009)	-0.0747*** (0.010)	-0.0808*** (0.010)	-0.0551*** (0.010)	-0.0477*** (0.011)
Unemployed	-0.0647*** (0.015)	-0.1193*** (0.013)	-0.0699*** (0.015)	-0.0637*** (0.014)	-0.0324** (0.014)	-0.0903*** (0.015)
Retired	0.0787*** (0.013)	-0.0221* (0.012)	0.0253** (0.012)	0.0071 (0.012)	0.0375*** (0.011)	-0.0139 (0.013)
Number of Children	-0.0564*** (0.009)	-0.0188** (0.007)	0.0070 (0.008)	0.0256*** (0.009)	-0.0046 (0.008)	0.0584*** (0.009)
Age 18-24	-0.0834*** (0.019)	-0.0186 (0.017)	-0.1224*** (0.017)	-0.1598*** (0.018)	-0.1346*** (0.015)	-0.0017 (0.021)
Age 25-34	-0.1487*** (0.015)	-0.0749*** (0.016)	-0.1394*** (0.014)	-0.1083*** (0.015)	-0.1370*** (0.012)	0.0955*** (0.018)
Age 35-44	-0.1896*** (0.014)	-0.0781*** (0.016)	-0.1531*** (0.013)	-0.1261*** (0.014)	-0.1437*** (0.011)	0.0188 (0.017)
Age 45-54	-0.1673*** (0.013)	-0.0821*** (0.015)	-0.1259*** (0.012)	-0.1106*** (0.013)	-0.1059*** (0.011)	-0.0320** (0.016)
Age 55-64	-0.1064*** (0.012)	-0.0365*** (0.013)	-0.0668*** (0.011)	-0.0324*** (0.012)	-0.0476*** (0.010)	0.0141 (0.014)
Less than \$25k	-0.3067*** (0.011)	-0.2873*** (0.014)	-0.2834*** (0.010)	-0.2045*** (0.012)	-0.2385*** (0.009)	-0.0999*** (0.013)
\$25-50k	-0.2044*** (0.009)	-0.1584*** (0.011)	-0.2044*** (0.009)	-0.1322*** (0.010)	-0.1679*** (0.008)	-0.0292*** (0.011)
\$50-75k	-0.1023*** (0.010)	-0.0583*** (0.011)	-0.0931*** (0.009)	-0.0669*** (0.010)	-0.0842*** (0.008)	-0.0194* (0.012)
\$150k+	0.1210*** (0.017)	0.0625*** (0.017)	0.1200*** (0.016)	0.0794*** (0.016)	0.0855*** (0.014)	0.0083 (0.016)
Less than high school	-0.1658*** (0.016)	-0.2031*** (0.017)	-0.1590*** (0.016)	-0.1253*** (0.017)	-0.1678*** (0.013)	-0.0987*** (0.017)
High School	-0.0988*** (0.011)	-0.0864*** (0.011)	-0.1020*** (0.011)	-0.0814*** (0.011)	-0.1086*** (0.009)	-0.0663*** (0.012)
Some College	-0.0905*** (0.010)	-0.0342*** (0.010)	-0.0791*** (0.009)	-0.0320*** (0.010)	-0.0928*** (0.008)	0.0057 (0.011)
Post Grad Education	-0.0073 (0.012)	-0.0029 (0.014)	0.0165 (0.012)	0.0127 (0.013)	0.0149 (0.011)	-0.0103 (0.013)
HS Course Only	0.0307* (0.018)	0.0222 (0.014)	0.0103 (0.019)	0.0958*** (0.019)	0.0170 (0.019)	0.0361* (0.020)
College Course Only	0.0122 (0.018)	0.0011 (0.016)	0.0166 (0.016)	0.0544*** (0.018)	0.0067 (0.015)	0.0433** (0.019)
Employer Course Only	0.0215 (0.021)	0.0476** (0.021)	0.0423** (0.021)	0.1145*** (0.023)	0.0430** (0.020)	0.0543** (0.023)
HS & College Course Only	0.0571*** (0.022)	0.0226 (0.020)	0.0384* (0.020)	0.0409* (0.021)	0.0183 (0.018)	0.0538** (0.023)
HS & Employer Course Only	0.1060*** (0.027)	0.0738*** (0.022)	0.1048*** (0.028)	0.2103*** (0.027)	0.1198*** (0.028)	0.1444*** (0.029)
College & Empl. Course Only	0.0560** (0.011)	0.1080*** (0.011)	0.0738*** (0.011)	0.1625*** (0.011)	0.0863*** (0.011)	0.1108*** (0.011)

HS, College, & Empl. Course	(0.022) 0.1221***	(0.020) 0.0459**	(0.021) 0.1332***	(0.024) 0.1837***	(0.020) 0.1079***	(0.024) 0.1198***
Financial Literacy Score	(0.020) 0.0153***	(0.019) 0.0239***	(0.020) 0.0358**	(0.021) 0.0386**	(0.019) 0.0322***	(0.022) 0.0176***
State Fixed Effects	(0.003) Yes	(0.002) Yes	(0.003) Yes	(0.003) Yes	(0.003) Yes	(0.003) Yes
Pseudo $R^2$	.1703	.2016	.2088	.1460	.2330	.0480
Observations	22178	22572	20865	22858	22027	22517

Standard errors in parentheses

\*  $p < .1$ , \*\*  $p < .05$ , \*\*\*  $p < .01$