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Timing and frequency of financial education and positive financial behaviors

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Abstract

The association between timing and frequency of financial education and financial behaviors has not been studied in tandem. Various studies indicate the more financial education individuals have, the better their chances of making quality financial decisions. In addition to receiving financial education, the timing and frequency of that education may be relevant to overall decision quality. Early and frequent exposures are expected to have a compounding effect on positive financial behaviors. Using the 2015 wave of the National Financial Capability Study, we found that the timing and frequency of financial education are positively associated with positive financial behaviors. This is important because it indicates that the more individuals know about their finances the more likely they are to engage in actions that will have a positive association with their financial futures.

JEL classifications: G5

Keywords: Financial literacy; Financial education; Financial behaviors

1. Introduction

It is becoming more important for individuals to manage their own personal finances. Market changes, such as the move from Defined Benefit plans to Defined Contribution plans place more responsibility on individuals. Changes in technology are making banking products more interactive and allowing individuals to direct their own savings and investing goals. Individuals also face wide variation in the terms and conditions attached to credit cards, mortgages, and online accounts. This makes the selection of these products more

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difficult and likely increases the chances of making a financial mistake. Financial education and literacy can help individuals make better-informed decisions when selecting among alternatives.

Financial education lays the groundwork that can later be transformed into financial literacy skills. Individuals can attain financial literacy by first getting a financial education and then learning how to apply that knowledge to their financial situation. However, getting a financial education does not automatically lead to being financially literate. Financial education is simply getting exposure to financial concepts. In many cases, employers provide this information via seminars or handouts. It is up to the employees to learn the material and then apply it to their own financial situation.

At the college level financial education is in the form of coursework over a college term. This is a more intensive level of applying the knowledge to real life; however, in many cases, these courses are electives and go unnoticed by students. At the public school level, there may be some basic financial education lumped in with other general economics courses (Willis, 2009). Again, these are usually elective courses and do not reach the entire student body. Sadly, financial education is lacking in many high schools and even in some colleges. When financial education courses are available, there is a large variation in the quality of the course offerings.

Individuals with higher levels of financial literacy tend to make more positive financial decisions and reduce the number and severity of poor financial decisions. High financial literacy is associated with positive financial behaviors such as saving for retirement (Bayer, Bernheim, & Scholz, 2009; Sekita et al., 2011) and diversifying the portfolio (van Rooij, Lusardi, & Alessie, 2011; Vinet & Zhedanov, 2010). In addition, those with high financial literacy experience greater financial well-being (Taft, Hosein, Mehrizi, & Roshan, 2013). Low financial literacy is associated with negative financial behaviors such as having high credit card debt and using payday loans. The more financially literate an individual is, the better he/she can navigate complex financial products.

We know that exposure to concepts affects learning and can build skills over time (Heckman, 2006). We examine the role that timing and frequency of financial education play in individuals practicing positive three financial behaviors. These financial behaviors are (1) owning an IRA, (2) calculating retirement needs, and (3) contributing regularly to retirement. We found that not only is the timing important, but that frequency matters as well. The earlier individuals get exposure to financial literacy the more likely they are to make good financial decisions. Our results suggest that getting financial education at work is associated with all three financial behaviors. We also found evidence that getting financial education three times is positively associated with owning an IRA and calculating retirement needs.

2. Literature review

We turn to theory to examine the role that the timing and frequency of financial education plays in making positive financial behaviors. Human capital theory predicts that individuals

will invest time in acquiring knowledge when the expected return exceeds the expected time and transaction costs (Becker, 1994; Blundell, Dearden, Meghir, & Sianesi, 1999). If individuals can see the benefits from gaining financial education, they are more likely to access this education. The literature shows that those with higher levels of financial literacy tend to make better financial decisions (Carlin & Robinson, 2012; De Bassa Scheresberg, 2013; Disney & Gathergood, 2013). A rational individual would acquire this financial knowledge early in life to compound the effects of good financial decisions. When coupled with the Life Cycle Theory we note that acquiring financial education at an earlier age may increase the likelihood of an individual being able to maximize the utility from consumption over time. This is because they should be able to acquire and allocate resources more effectively and efficiently at an earlier point in time. We also note that the Life Cycle Theory explains the participation in the three financial behaviors. Individuals at the accumulation phase are more likely to calculate their retirement needs than those in the acquisition phase and we found support for this in our results. We also found that individuals in the distribution phase are still more likely to have calculated their retirement needs than those in the acquisition phase. Financial knowledge helps with decision making because financial products vary in complexity.

Financial products are becoming more complex and require higher levels of financial literacy. With the shift from defined benefit plans to defined contribution plans, individuals now have more responsibility over their retirement account decisions. Under the defined benefit plans, individuals are guaranteed to receive some dollar amount at retirement. The employer bore the investment risk and made the investment decisions. Under the defined contribution plans these guarantees disappear. Individuals now bear the full risk of the investment and must choose where to invest. There is no guaranteed dollar amount upon retirement, as the portfolio value depends on how the investments perform over time. Individuals must determine how much to contribute, where to invest it, and how to make the retirement income cover their needs through the end of life. Along with these decisions, they also must navigate the taxable effects of withdrawals during retirement.

The problem of managing financial decisions starts even before retirement. College students are plagued with increasingly higher levels of debt (Lusardi, Mitchell, & Curto, 2010) and show low levels of financial literacy (Chen & Volpe, 1998), despite increased exposure to personal finance concepts. This is even more disturbing when coupled with the fact that older generations show low literacy levels as well (Chen & Volpe, 1998). In 2006, the US Department of the Treasury launched the first national program aimed at increasing literacy levels nationwide (Remund, 2010). This spurred movements such as the Jump$tart Coalition for Financial Literacy. The coalition launched a survey among high school students. It measures what they know, as well as areas of concern relating to financial products. After the introduction of the coalition, financial education scores increased slightly over time. However, financial education and financial literacy are not the same.

2.1. Financial education versus financial literacy

Financial literacy is not to be confused with financial education. Financial education is simply gaining knowledge and understanding of financial products and processes (Schwab

et al., 2008). This can be done face to face or online and falls under many formats within those two platforms. The content of these courses is not well regulated and can vary widely in quality (Willis, 2008). Financial education courses provide the basic knowledge, but this still needs to be combined with human capital to make financial decisions. Some argue that financial education courses simply do not work (Willis, 2008) and early exposure to the topics is futile. Financial education courses may increase consumer confidence in their ability to correctly manage their finances (Bernheim et al., 2001; Guiso & Jappelli, 2006; Willis, 2008), while doing little to affect actual capability (Bernheim et al., 2001).

The term "financial literacy" refers to the ability to combine knowledge and skills to effectively manage finances (Huston, 2010; Remund, 2010). Those who are more financially literate make better financial decisions overall. They save more for retirement, have less debt, and diversify their investments (Guiso & Jappelli, 2006; van Rooij et al., 2011). Individuals who are less financially literate tend to have higher debt (Gathergood, 2012; Lusardi & Tufano, 2009), utilize predatory lending, and have less savings (Campbell, 2006; Lusardi & Tufano, 2009).

There is mixed evidence of the association between early financial literacy classes on financial decisions. Studies have shown that high school students are not financially literate (Chen & Volpe, 1998), and that they are unable to answer basic questions about money management and investing. Other studies show the lasting association between early financial education in High School (Bernheim et al., 2001; Lührmann, Serra-Garcia, & Winter, 2015) and even elementary school (Batty, Collins, & Odders-White, 2015). In these studies, even brief exposure to financial education had effects that lasted months afterward (Ning & Peter, 2015). The students who received financial education not only had more positive attitudes but were also more inclined to save. They also tended to have higher credit scores (Brown, Collins, Schmeiser, & Urban, 2014) and lower delinquency rates than those who did not get financial education in school. More states are including financial education for high schools, but it is not mandatory or tested in all states.

This paper examines the association between timing and frequency of exposure to financial education and positive financial behaviors. We found support for the hypotheses that timing and frequency (Kaiser & Menkhoff, 2017) are associated with quality financial decisions.

3. Data, hypotheses, and methods

3.1. Data and sample

This paper uses the 2015 data from the National Financial Capability Study (NFCS). This is a nationally representative study conducted on 27,564 American Adults. It is a state-by-state survey and samples about 500 individuals per state and includes the District of Columbia. The following states represent an oversampling of individuals: New York, Texas, Illinois, and California. The three dependent variables are explicitly captured in questions in the study. The study contains questions related to the point in time when respondents receive

financial education and how many times they received this education. These are the two primary independent variables and are explicitly recorded in the data. There are also a number of questions that capture the various independent variables of interest, such as the income level, employment status, and risk tolerance levels of respondents. We arrive at the final sample of 3,794 observations after censoring the data by removing any nonresponses to the variables of interest. The censoring process is described in more detail under the *Independent Variables* section below.

3.2. Dependent variable

Financial Behavior is based on questions that ask about specific behaviors, namely: Owning an IRA, Calculating retirement needs, and Regular contributions to retirement. We chose these variables as they represent positive financial behaviors. We code these three behaviors as dummy variables with 1 representing a true value of Owning an IRA, Calculating retirement needs, and Regular contributions to retirement, and 0 otherwise. Each of these three variables are run as a separate regression.

3.3. Independent variables

We initialize the sample by removing any nonresponses to the main independent variables. The main independent variables consist of the following two questions:

"*Was financial education offered by a school or college you attended, or a workplace where you were employed?*"

- *Yes, but I did not participate in the financial education offered*
- ***Yes, and I did participate in the financial education***
- *No*
- *Don't know*
- *Prefer not to say*

We use only those respondents who chose "yes and participated in the financial education offered."

The follow-up question was:

"*When did you receive that financial education?*"

- *In high school*
- *College*
- *At work*
- *Military*

Respondents could answer "Yes/No/Don't Know/Refuse to Say" to each of the four choices above. We remove all responses of "No/Don't Know/Refuse to Say" to capture only those who received the financial education at one of the four periods of time. We create dummy variables for each response to create the "timing" independent variable. We then combine the four responses to create values from 1 to 4, to create the "frequency"

independent variable. A respondent who scored one under frequency only received financial education at one point in time. A respondent who scored two would have received financial education at two points in time, and so on. We also removed any respondents who indicated that they had received some financial education but then answered "No" to all four options of when they received the financial education.

Other demographics include gender, age, race, income, education, marital status, employment status, number of children, and risk tolerance level. We code gender as binary with 1 being male. We code age into three ranges, based on the stage of life the respondent is in. Acquisition encompasses ages 18–44, Accumulation encompasses ages 45-64, and Distribution encompasses ages 65 and above. We code race as binary with 1 representing White and 0 all other. We code income as high, moderate, and low, based on the distribution of the data. We code education as binary with 1 representing a college degree and above, and 0 representing less than a college degree. We code marital status as binary with 1 representing married and 0 representing all else. We code employment as employed, not employed, and retired. We code number of children as 1 representing the presence of children and 0 representing no children. We code risk tolerance as ranging from low to medium and ending with high-risk tolerance based on the distribution of the sample. Respondents in the low-risk tolerance group are not willing to take financial risks. We create the Financial literacy variable by using three commonly used financial literacy questions. The scores are combined to give a rank ranging from 0 correct to 3 correct. We code respondents who got all three questions correct as having high literacy and everyone else as not, using dummy variables. We remove any nonresponses to the demographic variables and had a final sample of 3,794 respondents.

3.4. Model

We estimate the model to be:

$$Financial\,Behavior = f(financial\text{-}education\text{-}timing, financial\text{-}education\text{-}frequency, demographics)$$

We use the binary Probit model as follows:

$$y_i^* = (\beta_1 T_i + \beta_2 F_i + \beta_3 G_i + \beta_4 A_i + \beta_5 Ra_i + \beta_6 I_i + \beta_7 Ed_i + \beta_8 M_i + \beta_9 Em_i + \beta_{10} C_i + \beta_{11} Rt_i + \beta_{12} Fl_i + \varepsilon_i)$$

$$yi = \begin{cases} 1 \;\; if \;\; y_i^* > 0 \\ 0 \;\; if \;\; y_i^* \geq 0 \end{cases}$$

Here y_i^* represents the probability of expressing one of the three types of financial behaviors. T_i represents timing of financial education, F_i represents frequency of financial education, G_i represents gender, A_i represents age, Ra_i represents race, I_i represents income, Ed_i

represents education level, M_i represents marital status, Em_i represents employment, C_i represents number of children, Rt_i represents risk tolerance, Fl_i represents financial literacy, and ε_i represents the error term.

3.5. Hypotheses

We hypothesize that the timing of financial education courses will have a significant, positive association with the decision to own an IRA, calculate retirement needs, and save for retirement. We also hypothesize that more frequent exposure to financial education courses will have a significant, positive relation to the three behaviors mentioned above.

4. Methods

We use the Probit regression method to estimate the effects of the independent variables on the dependent variable. In this paper, we look at the outcomes of having early exposure to financial education classes on positive financial behaviors. We examine three main positive financial behaviors, namely Owning An IRA, Saving for Retirement, and Calculating Retirement Needs.

5. Results

5.1. Univariate analysis

Table 1 shows the descriptive statistics for the sample. There are 3,794 observations in the final sample. When examining the positive financial behaviors, we found that about 47% of respondents own an IRA and about 53% do not. About 49% calculate their retirement needs and about 49% continue to make regular contributions to retirement.

Timing of financial education measures when the respondents received financial education. There may be an overlap in each of the four categories since they simply answered whether they received financial education at the different points included in the survey question. We do not know the first point of exposure, simply whether respondents are exposed to financial education at one or more of the four options. About 53% received financial education in high school, increasing to about 67% during college. About 46% received financial education at work and about 9% received it in the military.

Frequency measures the number of times respondents received financial education. About 48% of respondents had been exposed to a financial education course twice, with only about 37% having taken more than two financial education courses. As frequency increased the proportion of respondents taking financial education courses drops, until only about 3% had taken four financial education courses.

About 60% of the sample is male. About 44% of the sample are in the age range 18-44. This drops to about 36% in the age range 45-64 and closes with about 21% being age 65 and

Table 1 Descriptive statistics for timing and frequency sample ($N = 3{,}794$)

Variable	Frequency
Financial behavior	
Own IRA	
No	46.92%
Yes	53.08%
Calculate retirement needs	
No	50.69%
Yes	49.31%
Regular contributions to retirement	
No	50.98%
Yes	49.02%
Timing of financial education	
High school	
No	47.47%
Yes	52.53%
College	
No	33.32%
Yes	66.68%
Work	
No	54.51%
Yes	45.49%
Military	
No	90.91%
Yes	9.09%
Frequency of financial education	
One time	47.52%
Two times	33.66%
Three times	16.32%
Four times	2.50%
Male	
No	40.77%
Yes	59.23%
Life cycle age range	
Acquisition (18–44)	
No	56.51%
Yes	43.49%
Accumulation (45–64)	
No	64.07%
Yes	35.93%
Distribution (65+)	
No	79.41%
Yes	20.59%
White	
No	27.78%
Yes	72.22%
Income	
Low	
No	78.81%
Yes	21.19%
Moderate	
No	50.74%
Yes	49.26%

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Table 1 (Continued)

Variable	Frequency
High	
No	70.45%
Yes	29.55%
College degree	
No	33.39%
Yes	66.61%
Married	
No	39.22%
Yes	60.78%
Employment status	
Working	
No	38.56%
Yes	61.44%
Not working	
No	83.74%
Yes	16.26%
Retired	
No	77.70%
Yes	22.30%
Children	
No	29.84%
Yes	70.16%
Risk tolerance	
Low	
No	73.09%
Yes	26.91%
Moderate	
No	42.62%
Yes	57.38%
High	
No	84.29%
Yes	15.71%
Financially literate	
No	29.63%
Yes	70.37%

above. About 72% of the sample reports being white. The mean income is between $50,000 and $75,000. About 9% of the sample reports having only a high school education and about 45% reports having a college education. About 61% of the sample is married and about 26% report being single. About 61% of the sample are working, about 16% are not working, and about 22% are retired. More than half of the sample had no children. About 27% report having low risk tolerance, about 57% have moderate risk tolerance, and about 16% have high-risk tolerance. About 70% of the sample provided correct responses to all questions used to measure financial literacy.

Table 2 shows the distribution of Positive financial behaviors. This table reports the three positive behaviors across each variable. The totals do not sum to 100% horizontally because the three behaviors are not mutually exclusive. For respondents who received financial education in high school we see that about 52% own an IRA. About 52% have calculated

Table 2 Distribution of positive financial behaviors (N = 3,794)

Variable	Own IRA	Calculate retirement needs	Contribute regularly to retirement
Timing			
High school			
Yes	51.33%	51.53%	49.32%
No	48.67%	48.47%	50.68%
College			
Yes	56.05%	51.23%	52.17%
No	43.95%	48.77%	47.83%
Work			
Yes	64.54%	53.77%	56.43%
No	35.46%	46.23%	43.57%
Military			
Yes	65.51%	58.55%	59.13%
No	34.49%	41.45%	40.87%
Frequency			
One time			
Yes	45.04%	43.21%	41.15%
No	54.96%	56.79%	58.85%
Two times			
Yes	55.60%	52.08%	53.56%
No	44.40%	47.92%	46.44%
Three times			
Yes	67.69%	58.80%	58.97%
No	32.31%	41.20%	41.03%
Four times			
Yes	76.84%	66.32%	72.63%
No	23.16%	33.68%	27.37%
Male			
Yes	56.34%	50.16%	52.02%
No	43.66%	49.84%	47.98%
Age			
Acquisition (18-44)			
Yes	43.03%	58.36%	56.06%
No	56.97%	41.64%	43.94%
Accumulation (45-64)			
Yes	56.49%	56.93%	57.30%
No	43.51%	43.07%	42.70%
Distribution (65+)			
Yes	68.37%	16.90%	19.72%
No	31.63%	83.10%	80.28%
White			
Yes	55.51%	48.07%	48.43%
No	44.49%	51.93%	51.57%
Income			
Low			
Yes	21.77%	32.46%	17.66%
No	78.23%	67.54%	82.34%
Moderate			
Yes	55.22%	48.42%	49.81%
No	44.78%	51.58%	50.19%
High			
Yes	71.99%	62.89%	70.21%
No	28.01%	37.11%	29.79%

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Table 2 (Continued)

Variable	Own IRA	Calculate retirement needs	Contribute regularly to retirement
Degree (no degree)			
Yes	59.87%	53.50%	55.76%
No	40.13%	46.50%	44.24%
Married (not married)			
Yes	61.84%	53.58%	57.63%
No	38.16%	46.42%	42.37%
Employment			
Working			
Yes	54.10%	68.94%	66.19%
No	45.90%	31.06%	33.81%
Not working			
Yes	31.77%	42.79%	29.34%
No	68.23%	57.21%	70.66%
Retired			
Yes	65.84%		16.08%
No	34.16%	100.00%	83.92%
Children (no children)			
Yes	58.11%	51.54%	52.74%
No	41.89%	48.46%	47.26%
Risk tolerance			
Low			
Yes	37.41%	31.83%	28.80%
No	62.59%	68.17%	71.20%
Moderate			
Yes	57.79%	53.28%	53.42%
No	42.21%	46.72%	46.58%
High			
Yes	62.75%	64.77%	67.62%
No	37.25%	35.23%	32.38%
Financially literate			
Yes	56.40%	47.38%	48.46%
No	43.60%	52.62%	51.54%

retirement needs and about 50% make regular contributions to retirement. Respondents who receive financial education in college show increased participation in positive financial behaviors. Of the respondents who receive financial education in college, about 56% own an IRA, about 51% have calculated retirement needs, and about 52% contribute regularly to retirement. Of the respondents who receive financial education at work, about 65% own an IRA, about 54% have calculated retirement needs, and about 53% contribute regularly to retirement. When we examine the frequency of financial education, we note an increasing trend as well. Among respondents who received financial education one time, about 45% own an IRA, about 43% have calculated retirement needs, and about 41% make regular contributions to retirement. Among respondents who receive financial education two times we note that about 56% own an IRA, about 52% have calculated retirement needs, and about 54% make regular contributions to retirement. Of the respondents who receive financial education three times about 68% own an IRA, about 54% have calculated retirement needs and about 59% contribute regularly to retirement. Of the respondents who receive financial

education four times, about 77% own an IRA, about 66% have calculated retirement needs, and about 73% contribute regularly to retirement.

About 56% of males own an IRA, about 50% have calculated retirement needs, and about 52% make regular contributions to retirement. During the acquisition stage about 43% of respondents own an IRA, about 58% have calculated retirement needs, and about 56% make regular contributions to retirement. During the asset accumulation stage, we see an increase in the proportions who own an IRA and make regular contributions to retirement, but note a decrease in the proportion who have calculated retirement needs. During the distribution phase about 68% own an IRA, about 17% have calculated retirement needs, and about 20% contribute regularly to retirement. The drop in retirement needs and contribution levels are consistent with Life Cycle Theory. At this life stage individuals would be focused on asset decumulation and not accumulation.

We note an increase in the proportions of respondents who report all three positive behaviors as income increases. About 22% of low-income individuals own an IRA, compared to about 55% with moderate income, and about 72% with high income. About 32% of individuals with low income have calculated retirement needs, compared to about 48% with moderate income, and about 63% with high income. About 18% of individuals with low income contribute regularly to retirement, compared to about 50% with moderate income and about 70% with high income. About 60% of individuals with a college degree own an IRA, about 54% have calculated retirement needs, and about 56% contribute regularly to retirement. We also note that larger proportions of working respondents engage in the three behaviors, compared to those who are not working or retired. About 54% of working individuals own an IRA, compared to about 32% who are not working, and about 66% of the retired population. About 69% of the working population has calculated retirement needs and about 43% of those who are not working have also calculated retirement needs. About 58% of individuals who have children own an IRA, about 52% have calculated retirement needs, and about 53% contribute regularly to retirement. About 37% of respondents with low risk tolerance own an IRA, compared to about 58% with moderate risk tolerance, and about 63% with high risk tolerance. About 56% of individuals with high financial literacy own an IRA, about 47% have calculated retirement needs, and about 49% regularly contribute to retirement.

5.2. Multivariate analysis

Table 3 shows the Marginal effects of the Probit regressions on the positive financial behavior variables. We run three separate regressions with three different dependent variables. The main variables of interest are timing and frequency of financial education. We found that timing and frequency are statistically significant for most instances of the three positive financial behaviors.

5.3. Owning an IRA

Getting financial education at work and in the military is positively and significantly associated with owning an IRA. Individuals who got financial education at work and in the

Table 3 Marginal effects of independent variables on positive financial behaviors

Variable	Own IRA			Calculate retirement needs			Contribute to retirement regularly		
	Marg. eff.	Standard error	Sig.	Marg. eff.	Standard error	Sig.	Marg. eff.	Standard error	Sig.
Timing (high school)									
College	−0.0017	(0.0214)		0.0074	(0.0233)		0.03295	(0.0193)	*
Work	0.0662	(0.0205)	***	0.09067	(0.0235)	***	0.08646	(0.0187)	***
Military	0.0601	(0.0325)	*	0.07115	(0.0379)	*	0.02635	(0.0292)	
Frequency (one time)									
Two times	0.0177	(0.0204)		0.03236	(0.0230)		0.02152	(0.0184)	
Three times	0.0754	(0.0315)	**	0.08698	(0.0361)	**	0.02767	(0.0286)	
Four times	0.0822	(0.0668)		0.06316	(0.0805)		0.07841	(0.0624)	
Male	−0.0194	(0.0154)		−0.0242	(0.0174)		−0.0075	(0.0140)	
Age (acquisition)									
Accumulation	0.0668	(0.0174)	***	0.05134	(0.0183)	***	0.00084	(0.0158)	
Distribution	0.1848	(0.0274)	***	0.07721	(0.0365)	**	−0.1682	(0.0243)	***
White	0.0453	(0.0166)	***	−0.0026	(0.0183)		0.00186	(0.0151)	
Income (low)									
Moderate	0.2201	(0.0206)	***	0.09912	(0.0226)	***	0.20898	(0.0190)	***
High	0.3253	(0.0238)	***	0.18771	(0.0271)	***	0.31929	(0.0215)	***
Degree (no degree)	0.0726	(0.0172)	***	0.05618	(0.0195)	***	0.05492	(0.0156)	***
Married (not married)	0.0401	(0.0175)	**	0.01634	(0.0199)		0.06494	(0.0158)	***
Employment (working)									
Not working	−0.0176	(0.0222)		−0.1021	(0.0212)	***	−0.1386	(0.0188)	***
Retired	0.0517	(0.0244)	**	omitted	omitted	omitted	−0.3261	(0.0200)	***
Children (no children)	0.0146	(0.0176)		0.07047	(0.0193)	***	0.04957	(0.0160)	***
Risk tolerance (low)									
Moderate	0.1630	(0.0172)	***	0.12634	(0.0198)	***	0.09937	(0.0158)	***
High	0.2628	(0.0239)	***	0.15987	(0.0268)	***	0.181	(0.0218)	***
Financially literate	0.0327	(0.0172)	*	0.00294	(0.0188)		0.00527	(0.0158)	

Notes. For own IRA and contribute regularly to retirement ($N = 3{,}794$), for calculate retirement needs ($N = 2{,}948$). Denotes significance at the following levels: *$p < .1$, **$p < .05$, *** $p < .01$.

Being retired is a perfect predictor for calculating retirement needs and was dropped from the regression by our software.

military were more likely to own an IRA than those who got financial education in college. Individuals with three exposures to financial education were more likely to own an IRA than those with one exposure. We found that as age increased, individuals were more likely to own an IRA. Consistent with theory, we found that at both the accumulation and distribution stages, individuals were more likely to own an IRA than at the acquisition stage. We found that Whites were more likely to own an IRA than nonwhites. We found that as income increases individuals are more likely to own an IRA. Individuals with a college education were more likely to own an IRA than those with no degree, and married respondents were more likely to own an IRA than those who were not married. Retired individuals were more likely to own an IRA than those still in the work force and as risk tolerance increases individuals were more likely to own an IRA than those with low risk tolerance. Finally, we found that financially literate individuals were more likely to own an IRA than those who were not.

5.4. Calculating retirement needs

The sample size for this regression is 2,948. We found that respondents who get financial education at work and in the military were more likely to calculate retirement needs compared to those who get it in high school. We found a high, statistically significant positive relationship between getting financial education three times and calculating retirement needs. We found that respondents in the accumulation and distribution phases were more likely to calculate retirement needs compared to those in the acquisition phase. We found that as income increases individuals were also more likely to have calculated retirement needs. We found that individuals who are not working were less likely to calculate retirement needs than those who are working. Having children increases the likelihood of calculating retirement needs. We found that both moderate and high risk tolerance levels increase the likelihood of calculating retirement needs, compared to those with low risk tolerance.

5.5. Contributing regularly to retirement

Individuals who get financial education in college are more likely to contribute regularly to retirement than those who get a financial education in high school. We found that getting a financial education at work increases the likelihood of contributing regularly towards retirement, compared to getting a financial education in high school. We found that at the distribution stage individuals were less likely to contribute regularly to retirement than those in the acquisition stage, consistent with the Life Cycle Theory. Individuals with moderate and high incomes were more likely to contribute regularly to retirement than those with low incomes. We found that having a college degree and being married increases the likelihood of contributing regularly to retirement, compared to not having a college degree and being unmarried. We found that individuals who are retired or not working were less likely to contribute regularly to retirement than those who are working. The presence of children increases the likelihood of contributing to retirement compared to those without children. Finally, as risk tolerance increases so does the likelihood of contributing to retirement.

6. Discussion

The study examines the association between the timing and frequency of financial education on financial behaviors. We found evidence that getting a financial education at work has the most significant association with positive financial behaviors. This indicates that getting financial education at work may highly influence the decision to own an IRA, calculate retirement needs, and regularly contribute to retirement. We also found that three exposures to financial education have the most significant association with the three positive financial behaviors. This indicates that frequency of financial education may be vital to individuals making financial decisions. These results are consistent with our hypotheses that both timing and frequency are positively associated with positive financial behaviors.

Theoretically, we expect to see a direct relationship between financial education and financial literacy. The more financial education one receives, the more financially literate we expect that individual to be. This increased financial literacy would then have a direct association with the financial decision quality that individuals make. Based on the results of the regression we fail to observe significant evidence that financial literacy has a strong association with the likelihood of engaging in the behaviors analyzed in the study. What we do note is that both timing and frequency of financial education are relevant in making quality financial decisions. These findings in combination may warrant the need for additional research on the relationship between financial education and financial literacy and how the two move in tandem to affect the decisions and outcomes experienced by individuals.

One limitation of this study is that we do not know the quality of the financial education course taken by the respondents. The nature of financial education courses is quite nebulous and can range from incredibly detailed to summary overviews of financial topics. Future research will examine which combinations of timing and frequency are associated with financial behaviors. Another avenue for future research would be to examine the relationship between timing and frequency of financial literacy and negative financial behaviors.

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