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Financial capability: Literacy, behavior, and distress

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Abstract

We inspect the influence of individual financial knowledge and financial behavior on the probability of experiencing financial distress. Using the 2015 National Financial Capability Study, we examine three measures of financial distress related to bill payment, retirement saving, and being late with a mortgage payment. Financial literacy and financial behavior indices are constructed using questions from the survey that pertain to financial knowledge (ranging in complexity) and financial decision-making. In addition to the influence of socioeconomic factors, the conclusion suggests that financial literacy and positive behavior reduces financial distress stemming from simple financial matters. However, the opposite is observed for more complex financial decisions. © 2018 Academy of Financial Services. All rights reserved.

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1. Introduction

The recognition of financial literacy has been increasing remarkably as a crucial skill for individuals in the modern world. Moreover, financial literacy has gained the notice of many stakeholders, including academic scholars and legislators. Given the uncertainty of welfare systems in many developed countries, financial risks and responsibilities are being deflected to government institutions, such as in the form of health insurance and retirement saving

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programs or initiatives. Meanwhile, the increasing complexity of financial products serves as a barrier for many individuals to effectively evaluate and compare financial products as they try to engage with financial markets. A detrimental factor associated with hindering financial capability is the enlargement of credit and mortgage segments, where it is apparent that access and subsequent informed behavior does not go hand in hand. For example, many find it challenging to afford daily expenses because of risky financial decisions such as taking on "too much house" in the form of unaffordable mortgages, signing contracts with terms and conditions not fully understood, and spending far more than earning, impeding "rainy day" savings.

Many researchers suggest the application of financial knowledge can be seen in consistent saving, retirement planning, and building investments. While studies have examined the correlation of financial literacy and financial behavior (Fernandes, Lynch, and Netemeyer 2014), little is known on how financial literacy and financial knowledge impact financial distress. This paper aims to widen this area of research by introducing analysis on a (United States) national scale. Specifically, we analyze whether financial literacy affects making sound financial decisions; thus, reducing financial distress. However, to effectively manage personal finances, there should be a certain level of rationality with similar behavior. Therefore, financial behavior is a determinant that will be considered to assess the financial performance of an individual in different financial circumstances.

The 2015 National Financial Capability Study is useful for examining causes of financial distress; looking at the capability of individuals to meet basic and more complex financial needs, as well as the skills and knowledge necessary to make wise financial decisions. We use a set of questions from the survey to construct a financial literacy index, a financial behavior index, and to assess three aspects of financial distress. This includes difficulty in paying bills, worrying about retirement saving and being late with a mortgage payment. We find that financial literacy positively contributes to the prevention of financial distress. Nonetheless, financial behavior emerges as having more of an impact on experiencing financial distress, more so than financial literacy. The results are statistically significant for all three measures.

This study is structured as follows: in the following section, we review the existing literature on financial literacy, financial behavior, and financial distress. The third section of the paper describes the data used and the socioeconomic characteristics of the sample. The model and methodology are presented in the fourth section, where the construction of the measures for financial literacy, financial behavior, and over-indebtedness are explained in more detail. Section 5 presents the data analysis, and Section 6 summarizes and concludes.

2. Literature review

2.1. Financial literacy: Concept and measurement

In general, literacy refers to an individual's capability of reading and writing (Zarcadoolas, Pleasant, and Greer 2006). The standard definition of literacy consists of understanding (i.e., recognition of vocabulary and arithmetic operations) and using forms of documents.

Huston (2009) has also conceptualized financial literacy as including two dimensions—understanding (knowledge of personal finance) and use (application of personal finance). Remund (2010) defines financial literacy as a measure of the degree to which an individual understands personal finance—familiarity with economic concepts and having the ability/skills and confidence to manage personal finances. This should lead to both proper short-term decision-making and long-range financial planning, considering life cycle events and uncertain economic circumstances.

Based on the definition approved by The President's Advisory Council on Financial Literacy (PACFL, 2009), Hung et al. (2009, p. 12) explains financial literacy as: "Knowledge of basic economic and financial concepts, as well as the ability to use that knowledge and other financial skills to manage financial resources effectively for a lifetime of financial well-being."

It is evident that financial literacy extends beyond mere financial knowledge. Atkinson and Messy (2011, p. 4) looks at financial literacy via the field of financial education as "a combination of awareness, knowledge, skills, attitude, and behaviors necessary to make sound financial decisions and ultimately achieve individual financial well-being." Allgood and Walstad (2016) also summarize the effects of financial literacy on financial behaviors of credit cards, investments, loans, insurance, and financial advice.

Financial capability is a complicated and broader concept not merely about understanding, but also behaviors and actions. Hence, the term "financial capability" was adopted by several countries such as the United Kingdom, Canada, and the United States, which include three main components: (1) knowledge, (2) skills, and (3) confidence and attitudes (Kempson, Collard, and Moore, 2005). Both terms—financial literacy and financial capability—cover decision-making, practical skills, and behavior as well as knowledge and understanding (O'Connell, 2007). It should be noted, that financial capability also considers the relevance of outside institutions and regulation. It calls for individuals to not only develop financial knowledge and skills, but also gain access to financial instruments and institutions (Johnson and Sherraden, 2007).

In attempts to measure financial literacy, Huston (2010) converts theoretical concepts into measurable criteria by employing both performance tests and self-reported tests. Moreover, Van Rooij, Lusardi, and Alessie (2007) construct a financial literacy index (using five questions) and a progressive financial literacy index (using 11 items) based on a factor analysis. Moore (2003) adopted an approach using 12 financial-management questions, covering budget management, credit, savings, investment, mortgages, and a broad category of other financial topics. In 2007, Lusardi and Mitchell introduced a measurement method using three "simple" questions related to the compounding of interest rates, inflation, and risk diversification. In an earlier piece of research, Hilgert, Hogarth, and Beverly (2003) introduced a 28-questionnaire about credit, saving, budget management, investment, and mortgages along with an 18-question quiz to test individuals' financial behavior.

It should be noted that several countries have collected financial data using academic approaches to date (Table 1). Unfortunately, divergence in content and methodologies discourages international comparison which could be useful, despite the availability of data. Therefore, the OECD and its International Network for Financial Education (INFE) call for developing and applying a financial literacy questionnaire by Atkinson and Messy (2011,

Table 1

Panel A: National financial capability survey across countries

Countries	Financial capability survey
The United Kingdom	Levels of Financial Capability in the United Kingdom: Results of a baseline survey (FSA, 2006)
The United States	National Financial Capability Study (FINRA, 2009, 2015)
New Zealand	Financial Knowledge Survey (ANZ-Retirement Commission, 2009)
Ireland	Financial capability: New evidence for Ireland (Keeney and O'Donnell, 2009)
Canada	Understanding Financial Capability in Canada: Analysis of the Canadian Financial Capability Survey (McKay, 2011)
The Netherlands	Financial literacy and retirement planning in the Netherlands (Van Rooij et al., 2009)
Portugal	Survey on the Financial Literacy of the Portuguese Population (2010) (Banco de Portugal, 2011)

Panel B: List of dependent variables

Variables	Description
Male	1 if male, 0 if female
Age 25–54	1 if in group age 25–44 and 45–54, 0 if otherwise
Age 55+	1 if in group age 55–64 and 65+, 0 if otherwise
SWD	1 if single, widowed, or divorced, 0 if otherwise
College	1 if the individual has a college education (college graduate or post-graduate education) and 0 otherwise (did not complete high school, high school graduate or has some college)
Unemployed	1 if the individual is unemployed and 0 otherwise
Inactive	1 if the individual is inactive (full-time student, homemaker, permanently sick, disabled, or unable to work) and 0 if otherwise
Mortgage	1 if have any mortgage, 0 if otherwise
White	1 if White, 0 if non-White
South	1 if South, 0 if otherwise
Drop in income	1 if experience a large drop in income in the past 12 months, 0 if otherwise
Married	1 if married, 0 if otherwise
Children	1 if at least 1 dependent child, 0 if no dependent child
INC1	1 if the annual household income is at least $25,000 but less than $50,000 and 0 otherwise
INC2	1 if the annual household income is at least $50,000 but less than $100,000 and 0 otherwise
INC3	1 if the annual household income is above $100,000 and 0 otherwise
Self-employed	1 if the individual is self-employed and 0 otherwise
Retired	1 if the individual is retired and 0 otherwise
FLI	Financial Knowledge Index
FBI	Financial Behavior Index

2012) in 14 countries. The three component-questionnaire includes knowledge, behavior, and attitude. There is an overall financial literacy score, which is comprised of the sum of the scores for knowledge, behavior, and attitude. Questions about interest, risk, and return, and inflation are used to assess respondents' financial awareness. Financial behavior is observed through issues related to saving, budget management, borrowing, and choosing financial products. Attitude towards money and future planning are also used to determine financial position.

Most financial literacy research generally focuses on four main points: (1) measuring the level of financial literacy, (2) valuing the effects of financial literacy on financial behavior

and attitude, (3) assessing unique characteristics that widely influence financial literacy levels, and (4) evaluating financial literacy programs (Altintas, 2011). However, there is a noticeable difference in measuring financial literacy through objective tests and examining respondents' self-assessment and their perception of financial issues. Indeed, past research demonstrates a discrepancy between what individuals believe they know and what they do know, with the self-assessment often more positive than actual understanding (Asaad, 2015).

2.2. Financial distress: Concept and causes

Financial distress in the context of corporate finance shows that in some circumstances, a company can avoid moving from financial distress to bankruptcy. However, it requires a lot of effort and financial support. Often, financial distress can come with costs, such as fees paid to lawyers or the charges of additional interest for late payments. If financial distress cannot be fully improved or at least minimized, bankruptcy becomes unavoidable. When it comes to individual financial distress, it can be viewed as not saving enough for retirement, accruing excessive liabilities, and not making use of financial innovation (Campbell, 2006; Lusardi and Mitchell, 2007). Ware (2015) cites personal financial distress as a danger to households.

Prawitz, Kim, and Garman (2006) describe financial distress as a response, such as a mental or physical discomfort pertaining to general financial well-being. This definition includes perceptions about one's capacity to manage wealth, for example, paying bills, repaying debts, and maintaining the basic needs and wants of life. Similarly, Garman et al. (2004) introduce financial distress as intense physical or mental tension that includes concerns and worries about financial situations. Financial distress can endure for a short period, or it can become a constant state. Stressful events that can lead to financial distress include receiving overdue notifications from creditors and collection agencies, issuing checks without having sufficient funds, being late with bill payments, and feeling depressed about being unprepared for major life events such as retirement. Worrying about financial problems affects many other aspects of a person's life, such as health, productivity, and relationships.

Despite the severe adverse spill-over effects of financial distress, measuring the constructs of perceived financial distress and financial well-being can be viewed as a worthwhile goal of many researchers. With adequate education and consulting interventions, it may be possible to measure whether financial lives are positively changed (Garman et al., 2004). With that endeavor in mind, a team of researchers developed the InCharge Financial Distress/Financial Well-being (IFDFW) scale, an eight-item self-reported subjective measure of financial distress/financial well-being (Garman et al., 2005; Prawitz et al., 2006). The IFDFW scale measure respondents' feelings about their financial situation on a continuum, from overwhelming financial distress, the lowest level of financial well-being, to no financial distress or the highest level of financial well-being.

Saving goals are useful clues when it comes to assessing financial behavior. Browning and Lusardi (1996) suggest eight saving goals, namely: precautionary needs, foresight, calculation, improvement, independence, enterprise, pride, and avarice. More recently, Lee and Hanna (2015) examine associations between saving goals and saving behavior from a perspective of Maslow's Hierarchy. Using the 1998–2007 Surveys of Consumer Finance datasets, they find that the retirement/security goal was the most frequently mentioned, and

the self-actualization goal was the least cited as the reason for saving behavior. In other words, besides providing for the necessities of life and paying off debt, not saving enough for retirement is a key contributing factor to financial distress.

Demographic factors also play a role in explaining the cause of financial distress. From previous studies, it has been noted that having dependent children, being separated or divorced, earning a low income, and/or having no job, increases the likelihood of financial distress. Financial distress has also been linked to gender, with men being less likely to have debt—and to age, with younger people being more at risk (ORC, 2015) because they are less reluctant to use credit to finance expenses (Disney et al., 2008). Moreover, living in a region dominated by poverty such as in the Southern states of the United States, is also a factor contributing to financial difficulties (Fram, Miller-Cribbs, and Van Horn, 2007).

After examining and comparing the National Financial Capability Study, The InCharge Financial Distress/Financial Well-being (IFDFW), and Maslow's hierarchy as it relates to personal finance, three measures of financial distress are assessed in this piece of research: (1) difficulty in paying bills, (2) worrying about retirement saving, and (3) being late with a mortgage payment. Given the lack of a single widely accepted measurement of financial distress, the three measurement approaches are vital in developing our study.

2.3. Financial literacy and individual financial decisions

In addition to investigating the relation between financial literacy and financial behavior, researchers have also looked at evidence of correlation and causality between knowledge and practice in personal finance. Chen and Volpe (2002) showed that the enthusiasm for a personal finance course varied by gender. Women were more enthusiastic about English and humanities and men favored mathematics and science. Moore (2003) concludes that individuals with a lower level of financial literacy are expected to make poor financial decisions, such as taking on costly mortgages, because of inadequate understanding of basic financial concepts (like that of compound interest rates). The gap in financial knowledge between lenders and borrowers also lends credence to borrowers' mortgage experiences, that is, taking out loans with more uncertain or less beneficial contractual terms (Campbell, 2006).

Using data from the UK Financial Capability Survey, McCarthy (2011) examines the relation between financial distress and financial literacy. Alongside personal traits, McCarthy (2011) finds that people with higher levels of financial literacy are less likely to experience financial distress.

In summary, while several papers examine different aspects of financial distress and the impact on behavior, in addition to financial literacy on financial outcomes, prior research has not studied the effect of financial literacy and behavior while focusing specifically on financial distress—be it mild or extreme. Therefore, this piece of research, which uses a nationally representative dataset from FINRA (2015), aims to provide insight into the fundamental causes of financial distress.

3. Data

We use the 2015 National Financial Capability Study (NFCS), a state-by-state online survey of 27,564 (2015) respondents. Survey respondents are age 18 years or older, with approximately 500 interviewed in each of the 50 states plus the District of Columbia. The survey is dedicated to delving deeper into individual financial capability.

Most survey questions focus on eight financial themes. The first section includes habits and attitudes in managing the family budget as well as willingness to accept risk, household spending, saving for a "rainy day," amassing savings for retirement or college education, and whether a significant drop in income was experienced in the last year. The second section refers to the use of financial advice related to debt, saving, investing, insurance, and tax planning. The third part is devoted mainly to banks and financial issues. The fourth section focuses on retirement accounts and pensions. The fifth section primarily surveys homeownership, specifically monthly mortgage payments, and any experience with debt or foreclosure. The sixth section focuses on the use of credit cards, and the seventh addresses consumer loans. The eighth section covers insurance. In this paper, several sections of the survey are used to investigate our research question. The survey also includes a group of questions designed to probe respondents' financial knowledge. The study includes a set of socioeconomic questions about gender, age, race, living region, education, marital status, living arrangements, income, employment status, the number of dependent children, and the most knowledgeable household member when it comes to financial concepts.

The purpose of this paper is to identify the main factors that might drive an individual into financial distress. Financial literacy is an input that contributes to better financial behavior and this should reduce the probability of falling into a circumstance of financial distress. Our empirical specification, detailed in the next section of the paper, has both financial literacy and financial behavior as two different explanatory variables. We consider three measures of financial distress in this research: having trouble in servicing lifestyle needs, worrying about retirement, and being late with mortgage payments. The perception of financial knowledge and behavior in this paper is consistent with the definition of financial literacy proposed by Hung et al. (2009).

3.1. Financial distress measure

Consistent with the definitions of financial distress reviewed, we examine difficulty in paying bills, worrying about retirement saving and being late with a mortgage payment. Experiencing financial distress is based on the responses to the following questions:

1. In a typical month, how difficult is it for you to cover your expenses and pay all your bills? (a) Very difficult*; (b) Somewhat difficult*; (c) Not at all difficult; (d) Don't know; (e) Prefer not to say.
2. How strongly do you agree or disagree with the following statements—I worry about running out of money in retirement? (a) Disagree 1–3; (b) Neutral 4; (c) Agree 5–7; (d) Don't know; (e) Prefer not to say.

Table 2

Panel A: Financial literacy questions

Variable name	Correct		Incorrect		Don't know	
	n	Prob	*n*	Prob	*n*	Prob
Interest rate	21,234	77.04	3,492	12.67	2,838	10.30
Inflation	17,101	62.04	5,311	19.27	5,152	18.69
Bond	8,199	29.75	9,154	33.21	10,211	37.04
Mortgage	2,1399	77.63	2,132	7.73	4,033	14.63
Risk	13,412	48.66	2,714	9.85	11,438	41.50

Panel B: Financial distress questions

Variable name	Answers	*n*	Prob
Bill paying	Don't know	380	1.38
	Not at all difficult	13,622	49.42
	Prefer not to say	188	0.68
	Somewhat difficult	10,485	38.04
	Very difficult	2,889	10.48
Retirement concern	Strongly disagree-1	2,404	8.72
	2	1,944	7.05
	3	2,079	7.54
	Neutral	4,991	18.11
	5	4,160	15.09
	6	4,208	15.27
	Strong agree-7	7,079	25.68
	Don't know	560	2.03
	Prefer not to say	139	0.50
Mortgage late payment	Don't know	131	0.48
	More than once	780	2.83
	Never	8,430	30.58
	Once	652	2.37
	Prefer not to say	41	0.15
	Missing	17,530	63.60

(continued on next page)

3. How many times have you been late with your mortgage payments in the last 2 years? (a) Never; (b) Once*; (c) More than once*; (d) Don't know; (e) Prefer not to say.

Table 2 shows the descriptive statistics for the financial literacy questions and financial distress questions. As shown in Panel B, close to 50% of the sample indicated having either a difficult or somewhat difficult time paying their bills on time. When respondents were asked to state their concern about running of money in retirement on a seven-point Likert scale, ranging from one, strongly disagree to seven, strongly agree, over 25% selected strongly agree. Overall close to 56% of respondents indicated that they are concerned about retirement funding. When asked about making mortgage payments on time, 31% responded that they had not been late on a mortgage payment in the last two years. However, this question does have a very high missing rate (63.6%). Among those who answered the questions, 84% of them did not miss any mortgage payment. There are, however, around 14% of those reported that they either missed one or more mortgage payments.

Table 2 (Continued)

Panel C: Financial behavior questions			
Spending control	Don'tknow	797	2.89
	Prefer not to say	146	0.53
	Spending equal to income	10,427	37.83
	Spending Less than income	11,358	41.21
	Spending more than income	4,836	17.54
Overdraw checking	Don't know	172	0.62
	No	20,585	74.68
	Prefer not to say	92	0.33
	Yes	4,554	16.52
	Missing	2,161	7.84
Calculate retirement	Don't know	750	2.72
	No	11,843	42.97
	Prefer not to say	199	0.72
	Yes	8,977	32.57
	Missing	5,795	21.02
Emergency fund	Don't know	789	2.86
	No	13,316	48.31
	Prefer not to say	341	1.24
	Yes	13,118	47.59
Pay card in full	Don't know	189	0.69
	No	9,826	35.65
	Prefer not to say	113	0.41
	Yes	1,1647	42.25
	Missing	5,789	21
Payday loan	1 time	925	3.36
	2 times	710	2.58
	3 times	565	2.05
	4 or more times	852	3.09
	Don't know	203	0.74
	Never	24,193	87.77
	Prefer not to say	116	0.42
Health insurance cover	Don't know	260	0.94
	No	2,726	9.89
	Prefer not to say	130	0.47
	Yes	24,448	88.7

3.2. Financial literacy measure

We use a set of five financial literacy questions from the NFCS to evaluate financial knowledge and to construct a financial literacy measure (FINRA, 2015). Atkinson and Messy (2012) used this approach with the inclusion of questions such as:

1. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: (a) More than $102*; (b) Exactly $102; (c) Less than $102; (d) Don't know; (e) Prefer not to say.
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money

in the account? (a) More than today; (b) Exactly the same; (c) Less than today*; (d) Don't know; (e) Prefer not to say.
3. If interest rates rise, what will typically happen to bond prices? (a) They will rise; (b) They will fall*; (c) They will remain the same; (d) There is no relationship between bond prices and the interest rate; (e) Don't know; (f) Prefer not to say.
4. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. (a) True*; (b) False; (c) Don't know; (d) Prefer not to say.
5. Buying a single company's stock usually provides a safer return than a stock mutual fund. (a) True; (b) False*; (c) Don't know; (d) Prefer not to say.

Table 2, Panel A shows that most respondents provided the correct answer to the interest rate question (77%), inflation question (62%), and mortgage question (77%). However, the percentage of correct answers decreased when respondents were tested on their knowledge regarding the impact of inflation on purchasing power. The worst performance is found in responses to the bond price question, where 29.75% of respondents failed to select the correct choice, and 37% admitted not having any clue about the answer; regarding the risk question, 41.5% of respondents admit to not knowing the correct answer.

From the financial literacy quiz, a Financial Literacy Index is formed (FLI) that reflects the percentage of questions answered correctly. The "don't know" and "prefer not to say" choices were categorized as wrong answers. The FLI is assigned to distinct values of 0, 0.2, 0.4, 0.6, 0.8, and 1.

3.1. Financial behavior measure

Previous studies addressed mainly the effect of financial literacy on financial behavior. The goal of this study is to examine the effect of financial literacy on financial wellbeing/distress. Thus, it is necessary to control for financial behavior in this study to isolate its effect on financial wellbeing/distress. This study follows Atkinson and Messy (2011) to create a financial behavior index.

To measure financial behavior, we focus on seven questions from the survey that touch on budget management, savings, credit, insurance, and financial advice. This approach resembles one adopted by Atkinson and Messy (2011), as shown below:

1. Over the past year, would you say your household's spending was less than, more than, or about equal to your household's income? (…) (a) Spending less than income*; (b) Spending more than income; (c) Spending about equal to income*; (d) Don't know; (e) Prefer not to say.
2. Do you or your spouse/partner overdraw your checking account occasionally? (a) Yes; (b) No*; (d) Don't know; (e) Prefer not to say.
3. Have you ever tried to figure out how much you need to save for retirement? (non-retired respondent) or before you retired, did you try to figure out how much you need to save for retirement? (retired respondent). (a) Yes*; (b) No; (d) Don't know; (e) Prefer not to say.

4. Have you set aside emergency or rainy-day funds that would cover your expenses for three months, in the case of sickness, job loss, economic downturn, or other emergencies: (a) Yes*; b) No; (d) Don't know; (e) Prefer not to say.
5. In the past 12 months, which of the following describes your experience with credit cards? I always paid my credit cards in full: (a) Yes*; (b) No; (d) Don't know; (e) Prefer not to say.
6. Please indicate if in the past five years you have taken out a short-term "payday" loan? (a) Yes; (b) No*; (d) Don't know; (e) Prefer not to say.
7. Are you covered by health insurance? (a) Yes*; (b) No; (d) Don't know; (e) Prefer not to say.

In Table 2, Panel C, reports the descriptive statistics for the financial behavior questions. Eighteen percent of respondents indicated that spending in the past year exceeded income (Question 1), 17% reported overdrawing their checking account occasionally (Question 2). Planning is critical for retirement preparedness or making provisions to buffer against adverse shocks. Close to half of respondents (43%) who answered the third question have not tried to determine how much they should put into a retirement saving account. Additionally, 49% of respondents have not set aside an emergency or a rainy day fund (Question 4). Concerning credit behavior, 36% of our survey respondents do not pay their credit card balance fully, which translates into increased interest costs over time (Question 5). Alongside that result, when it comes to alternative forms of borrowing, such as taking on a payday loan, 11% of respondents use this type of high-cost lending method (Question 6). Finally, regarding insurance coverage, 10% of respondents report not being covered by a health insurance plan (Question 7).

Based on the questions above, the FBI (Financial Behavior Index) is constructed by scoring the respondents' answers. In Question (1), the response for "spending less than income" is equal to ('2'), for "spending about equal to income," ('1'), and for "spending more than income," ('0'). For Questions (3) to (7), except Question (6), a "yes" is scored as ('1'), and a "no" is scored as ('0'). For Questions (2) and (6) a "no" takes on a value of ('1'), and a "yes" on a value of ('0'). All the valid scores from the FBI are summed and then divided by 7.

For those that are missing, the authors equated that to not practicing positive financial behavior. The authors separately analyzed the findings by dropping those with missing financial behavior questions; the results are very similar.

Table 3 provides a list of each dependent and independent variable that is used in this study. The whole sample is comprised of 27,564 respondents. We also present a cross tabulation of our independent variables using our financial distress measurements. We find that 45% of the respondents are male, 55+ years old (36%), White (excluding Hispanics; 72%), living in the southern region of the United States (33%). Most respondents are married (54%) without dependent children (63%). Almost half of those surveyed (49%) work for an employer, and more than 34% have an annual income that ranges between $50,000 and $100,000, and 21% stated that they recently experienced a decline in income. As expected, those who had lower income or recently experienced a decrease in income made up a greater portion of respondents who indicated that they recently had difficulty paying bills. Those

Table 3 Descriptive statistics (control variables)

Name	Value	*N*	Prob	Mean of financial distress dummy		
				Bill pay	Retirement	Mortgage
Male		12,293	44.60	0.424	0.344	0.053
Age 35–54		9,613	34.88	0.521	0.310	0.072
Age 55		9,888	35.87	0.381	0.321	0.023
White		19,836	71.96	0.462	0.331	0.048
South		9,027	32.75	0.51	0.334	0.058
Dependent children		10,066	36.52	0.561	0.313	0.098
Married		15,007	54.44	0.42	0.329	0.065
SDW		4,449	16.14	0.554	0.312	0.036
Income 50–100k		9,395	34.08	0.40	0.335	0.070
Income > 100k		4,981	18.07	0.227	0.322	0.049
Unemployed		1,556	5.65	0.701	0.308	0.040
Self employed		1,985	7.20	0.506	0.323	0.065
Inactive		5,068	18.39	0.605	0.341	0.044
Drop in income		5,870	21.30	0.778	0.240	0.123
FLI	0	1,886	6.84	0.575	0.367	0.048
FLI	0.2	3,163	11.48	0.604	0.329	0.079
FLI	0.4	5,048	18.31	0.595	0.326	0.078
FLI	0.6	6,286	22.81	0.516	0.329	0.049
FLI	0.8	6,677	24.22	0.419	0.338	0.039
FLI	1	4,504	16.34	0.296	0.321	0.029
FBI	0	32	0.12	0.938	0.344	0.156
FBI	0.14	399	1.45	0.875	0.268	0.155
FBI	0.29	1,287	4.67	0.830	0.293	0.124
FBI	0.43	2,781	10.09	0.724	0.306	0.099
FBI	0.57	3,406	12.36	0.583	0.320	0.097
FBI	0.71	3,155	11.45	0.426	0.352	0.061
FBI	0.86	2,996	10.87	0.209	0.381	0.017
FBI	1	2,027	7.35	0.096	0.344	0.008
FBI	NA	11,481	41.65	0.502	0.328	0.029

Note: FLI = Financial Knowledge Index; FBI = Financial Behavior Index; SDW = single, divorced, or widowed.

who demonstrated a lower level of financial literacy and scored lower on the financial behavior index scale, also had a difficult time paying bills.

4. Model and methodology

4.1. Multivariate analysis

To investigate the relation between financial literacy, financial behavior, and financial distress, we use a multinomial logistic regression model. Our model takes into consideration respondents' socioeconomic characteristics, in addition to experiencing an unexpectedly large drop in income.

The dependent variable is the likelihood of a respondent being financially distressed, taking on a value of ('1') ($Y_i = 1$) if the respondent: (1) has difficulty paying bills; (2) is

uncertain about retirement saving, or (3) has been late with a mortgage payment in last two years, and ('0') otherwise.

The variables considered (described in Table 2) include gender, age, race, region, having children, marital status, education, income level, and employment status. The incidence of a significant drop in income is also considered. We expect that the probability of financial distress increases if respondents are: female, younger, have children, are divorced or separated, within the lower income bracket, are unemployed, and have a mortgage. As for financial literacy and financial behavior, we expect both to have a decreasing effect on the probability of financial distress.

5. Data analysis

In Table 4, Panel A, we explore the relation between our FLI and the potential for financial distress because of the failure to pay bills on time. Our results show that a one unit increase in the FLI is associated with a statistically significant increase in the log odds of selecting the choices of "somewhat difficult" or "not at all difficult," relative to those who experienced a very difficult time paying their bills. In other words, those who demonstrated a higher level of financial knowledge, while controlling for financial behavior, experienced less financial distress. To our knowledge, this is the first study to highlight this relation. Previous studies primarily focused on the association between financial behavior and financial literacy. Using the planned behavior theory suggest that financial knowledge can help to enforce a sense of control and reduce financial distress. Similar results are found when we explore the connection between our FBI and paying bills on time. With regards to our control variables, younger respondents, age 35–54 are significantly more likely to fall into a state of financial distress. Similar results were found among those who had dependents, were unemployed, self-employed, and experienced a decline in income.

In Table 4, Panel B, we provide details on how our FLI and FBI measures relate to financial distress resulting from the inability to make mortgage payments on time. Compared with those who have never been late making a mortgage payment, a one-unit increase in the FLI and FBI was associated with a decrease in the log odds of being late one or more times on a mortgage payment.

In Table 4, Panel C, we shift our attention to focus on how financial literacy and financial behavior impact the concerns that people have about retirement. Here we find unexpected but interesting results. As financial knowledge increases, as indicated by our FLI, there is an increase in the log odds of being concerned about running out of money in retirement. Similar results are also found when looking at our FBI. To test the robustness of the results, an additional analysis was conducted by separating the groups into different ages. We expect respondents in different age groups to have varying levels of concerns about retirement. The results shown in Table 5 are consistent with Table 4 Panel C. When measured by something as simple as paying bills on time, more financial knowledge and positive financial behavior was associated with lower financial distress. The results do not persist for a more complex measure of financial distress (i.e., worrying about retirement). Retirement planning is complex, and it involves many assumptions. Therefore, regardless of the level of financial

Table 4

Panel A: Bill paying (ref: very difficult)

	Somewhat difficult	Not at all difficult	Don't know	Prefer not to say
(Intercept)	0.803***	−1.825***	−2.407***	−3.808***
	(0.128)	(0.143)	(0.38)	(0.624)
Male	−0.137**	0.087	0.042	−0.332
	(0.067)	(0.072)	(0.202)	(0.328)
Age 35–54	−0.192***	−0.186**	−0.203	0.527
	(0.074)	(0.081)	(0.231)	(0.400)
Age 55	−0.094	−0.066	0.075	0.648
	(0.105)	(0.112)	(0.304)	(0.490)
White	−0.037	−0.086	−0.07	−0.145
	(0.069)	(0.075)	(0.209)	(0.337)
South	−0.02	−0.076	−0.326	−0.496
	(0.067)	(0.073)	(0.214)	(0.353)
Dependent children	−0.216***	−0.631***	−0.759***	−1.022***
	(0.073)	(0.079)	(0.236)	(0.366)
Married	0.064	0.215**	−0.336	−0.202
	(0.083)	(0.091)	(0.255)	(0.409)
SDW	−0.043	0.089	−0.124	0.13
	(0.108)	(0.120)	(0.343)	(0.494)
Income 50–100k	0.379***	0.891***	0.860***	1.271***
	(0.076)	(0.082)	(0.230)	(0.372)
Income > 100k	0.428***	1.450***	1.459***	1.898***
	(0.122)	(0.125)	(0.312)	(0.475)
Unemployed	−0.904***	−1.188***	0.584**	0.746
	(0.116)	(0.140)	(0.296)	(0.465)
Self employed	−0.366***	−0.415***	−0.148	−0.095
	(0.105)	(0.114)	(0.374)	(0.555)
Inactive	−0.180**	−0.162*	0.469**	0.541
	(0.081)	(0.089)	(0.237)	(0.380)
Drop in income	−1.139***	−2.223***	−1.861***	−2.202***
	(0.064)	(0.074)	(0.247)	(0.447)
FLI	0.652***	0.308**	−2.100***	−0.583
	(0.121)	(0.131)	(0.361)	(0.558)
FBI	2.228***	6.699***	3.277***	1.991***
	(0.169)	(0.186)	(0.500)	(0.769)
N	16,083			

(continued on next page)

Table 4 (Continued)

Panel B: Retirement concern (Ref: Strongly disagree–1)

	2	3	4	5	6	Strong agree-7	Don't know	Prefer not to say
(Intercept)	−1.136***	−0.356*	2.016***	1.303***	1.772***	2.783***	1.824***	0.951
	(0.220)	(0.201)	(0.167)	(0.169)	(0.167)	(0.161)	(0.282)	(1.130)
Male	−0.065	−0.104	−0.135*	−0.209***	−0.290***	−0.455***	−0.468***	−0.500
	(0.094)	(0.088)	(0.077)	(0.077)	(0.077)	(0.074)	(0.155)	(0.632)
Age 35–54	−0.256**	−0.247**	−0.1	−0.069	0.215**	0.458***	−0.057	2.947***
	(0.118)	(0.109)	(0.095)	(0.094)	(0.094)	(0.092)	(0.174)	(0.894)
Age 55	−0.325**	−0.543***	−0.370***	−0.630***	−0.229**	0.004	−0.772***	1.509
	(0.135)	(0.129)	(0.113)	(0.113)	(0.114)	(0.110)	(0.249)	(1.123)
White	0.307***	0.196**	0.188**	0.337***	0.354***	0.244***	0.294*	−0.505
	(0.103)	(0.095)	(0.082)	(0.082)	(0.082)	(0.079)	(0.157)	(0.561)
South	−0.087	−0.015	−0.009	−0.098	−0.125	−0.087	−0.031	−0.858
	(0.097)	(0.091)	(0.079)	(0.079)	(0.079)	(0.076)	(0.153)	(0.625)
Dependent children	−0.225**	−0.163*	−0.277***	−0.162*	0.027	0.028	−0.457***	−1.163*
	(0.104)	(0.099)	(0.087)	(0.086)	(0.086)	(0.083)	(0.173)	(0.667)
Married	0.224*	0.359***	0.324***	0.296***	0.182*	0.296***	−0.172	0.023
	(0.124)	(0.117)	(0.101)	(0.100)	(0.100)	(0.097)	(0.191)	(0.677)
SDW	0.197	0.116	0.132	0.039	−0.240*	0.203	−0.152	−0.048
	(0.173)	(0.166)	(0.140)	(0.141)	(0.142)	(0.133)	(0.266)	(0.737)
Income 50–100k	0.206*	0.03	−0.071	0.131	0.122	−0.116	−0.303*	−5.392
	(0.123)	(0.113)	(0.096)	(0.097)	(0.096)	(0.093)	(0.179)	(5.868)
Income >100k	0.111	−0.225*	−0.476***	−0.327***	−0.404***	−0.758***	−0.881***	−0.851
	(0.136)	(0.127)	(0.111)	(0.110)	(0.111)	(0.108)	(0.265)	(1.182)
Unemployed	−1.197***	−0.462**	−0.333*	−0.634***	−0.592***	−0.363**	−0.084	−0.88
	(0.329)	(0.235)	(0.187)	(0.195)	(0.189)	(0.175)	(0.303)	(1.209)
Self employed	−0.416***	−0.496***	−0.422***	−0.484***	−0.538***	−0.462***	−0.469	−2.179
	(0.141)	(0.138)	(0.118)	(0.117)	(0.117)	(0.112)	(0.290)	(2.335)
Inactive	−0.250*	−0.270**	−0.097	−0.349***	−0.473***	−0.458***	0.107	0.529
	(0.132)	(0.122)	(0.103)	(0.104)	(0.105)	(0.100)	(0.176)	(0.589)
Drop in income	0.027	0.052	0.096	0.391***	0.777***	1.256***	0.307	0.894
	(0.146)	(0.134)	(0.113)	(0.111)	(0.108)	(0.104)	(0.190)	(0.595)
FLI	0.837***	0.925***	0.031	0.624***	0.431***	0.146	−1.353***	−3.679***
	(0.185)	(0.173)	(0.146)	(0.146)	(0.145)	(0.140)	(0.276)	(1.183)
FBI	0.656***	0.129	−1.331***	−0.905***	−1.699***	−2.669***	−3.025***	−8.756***
	(0.240)	(0.222)	(0.190)	(0.189)	(0.188)	(0.183)	(0.361)	(1.756)
N	16,083							

(continued on next page)

Table 4 (Continued)

Panel C: Mortgage late payment (Ref: Never)

	Once	More than Once	Don't know	Prefer not to say
(Intercept)	0.398*	1.268***	−0.28	−0.433
	(0.235)	(0.240)	(0.562)	(0.975)
Male	0.244**	0.364***	0.106	−0.434
	(0.102)	(0.104)	(0.271)	(0.547)
Age 35–54	−0.520***	−0.507***	0.061	0.008
	(0.111)	(0.113)	(0.298)	(0.565)
Age 55	−0.591***	−0.532***	−0.363	0.362
	(0.176)	(0.178)	(0.468)	(0.751)
White	−0.298***	−0.454***	−0.157	−1.384***
	(0.108)	(0.108)	(0.284)	(0.488)
South	0.106	0.173*	0.188	−0.262
	(0.104)	(0.104)	(0.266)	(0.509)
Dependent children	0.571***	0.634***	−0.36	−0.029
	(0.119)	(0.123)	(0.291)	(0.536)
Married	−0.433***	−0.149	−0.481	−0.53
	(0.139)	(0.148)	(0.343)	(0.617)
SDW	−0.567***	−0.184	−0.336	−0.228
	(0.217)	(0.214)	(0.495)	(0.805)
Income 50–100k	−0.013	0.132	0.017	−0.266
	(0.123)	(0.12)3	(0.302)	(0.535)
Income > 100k	−0.206	−0.047	−0.197	−0.792
	(0.155)	(0.158)	(0.424)	(0.855)
Unemployed	−0.131	0.104	−0.069	0.212
	(0.285)	(0.269)	(0.634)	(1.086)
Self employed	−0.245	0.029	−0.331	−0.257
	(0.186)	(0.175)	(0.535)	(1.061)
Inactive	−0.572***	−0.473***	−0.059	0.142
	(0.154)	(0.150)	(0.339)	(0.573)
Drop in income	1.345***	1.625***	1.154***	0.296
	(0.101)	(0.101)	(0.262)	(0.538)
FLI	−1.354***	−1.597***	−2.814***	−2.959***
	(0.190)	(0.192)	(0.494)	(0.913)
FBI	−3.003***	−5.373***	−4.016***	−3.647***
	(0.260)	(0.280)	(0.686)	(1.245)
N	7,365			

Note: ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$. Robust standard errors in parentheses. FLI = Financial Knowledge Index; FBI = Financial Behavior Index; SDW = single, divorced, or widowed.

Table 5

Panel A: Age less than 55 greater than 35

	2	3	4	5	6	7	Don't know	Prefer not to say
(Intercept)	−1.629***	−1.223***	1.696***	0.905***	1.607***	2.948***	1.417***	1.760*
	(0.370)	(0.339)	(0.279)	(0.277)	(0.272)	(0.261)	(0.501)	(1.024)
Male	0.169	0.068	0.127	−0.064	−0.171	−0.381***	−0.124	−0.32
	(0.152)	(0.142)	(0.124)	(0.121)	(0.120)	(0.116)	(0.253)	(0.597)
White	0.352**	0.315**	0.184	0.456***	0.398***	0.412***	0.661**	0.421
	(0.162)	(0.150)	(0.129)	(0.127)	(0.126)	(0.121)	(0.280)	(0.616)
South	−0.06	0.018	−0.114	−0.018	−0.023	−0.063	−0.066	−0.779
	(0.156)	(0.144)	(0.127)	(0.124)	(0.123)	(0.119)	(0.253)	(0.667)
Dependent children	−0.135	0.113	−0.259*	−0.07	0.038	−0.087	−0.316	−0.615
	(0.160)	(0.152)	(0.133)	(0.130)	(0.130)	(0.125)	(0.269)	(0.607)
Married	0.282	0.391**	0.379**	0.338**	0.332**	0.371**	−0.3	0.17
	(0.207)	(0.198)	(0.166)	(0.163)	(0.162)	(0.157)	(0.320)	(0.715)
SDW	0.362	0.171	−0.034	−0.158	−0.235	0.13	−0.274	0.004
	(0.259)	(0.251)	(0.213)	(0.211)	(0.209)	(0.196)	(0.377)	(0.771)
Income 50–100k	0.146	0.017	−0.016	0.167	0.122	−0.057	−0.05	−1.367*
	(0.216)	(0.196)	(0.165)	(0.164)	(0.161)	(0.154)	(0.303)	(0.831)
Income > 100k	0.021	−0.289	−0.534***	−0.380**	−0.538***	−0.786***	−0.341	−0.848
	(0.230)	(0.211)	(0.182)	(0.179)	(0.177)	(0.171)	(0.383)	(0.907)
Unemployed	−1.034**	−0.573	−0.378	−0.643**	−0.583*	−0.121	0.368	−0.499
	(0.521)	(0.406)	(0.315)	(0.320)	(0.306)	(0.279)	(0.463)	(1.111)
Self employed	0.006	−0.457*	−0.194	−0.187	−0.426**	−0.27	−1.019	−0.593
	(0.229)	(0.240)	(0.200)	(0.192)	(0.195)	(0.185)	(0.623)	(1.074)
Inactive	−0.499**	−0.098	0.077	−0.398**	−0.457***	−0.300*	0.407	−0.388
	(0.250)	(0.207)	(0.176)	(0.179)	(0.176)	(0.167)	(0.302)	(0.711)
Drop in income	−0.047	0.037	−0.089	0.143	0.459***	0.999***	0.035	0.556
	(0.232)	(0.208)	(0.179)	(0.173)	(0.167)	(0.160)	(0.327)	(0.624)
FLI	1.014***	1.126***	0.249	0.976***	0.819***	0.414*	−1.286***	−1.039
	(0.294)	(0.272)	(0.228)	(0.226)	(0.222)	(0.213)	(0.436)	(1.021)
FBI	0.534	0.293	−1.438***	−1.098***	−1.740***	−2.742***	−3.606***	−6.917***
	(0.374)	(0.345)	(0.297)	(0.291)	(0.288)	(0.280)	(0.600)	(1.543)
N	7,119							

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Table 5 (Continued)

Panel B: Greater than 55								
	2	3	4	5	6	7	Don't know	Prefer not to say
(Intercept)	−1.878***	0.087	2.833***	0.963**	2.529***	4.054***	2.037**	−2.44
	(0.546)	(0.504)	(0.412)	(0.437)	(0.421)	(0.402)	(0.885)	(5.381)
Male	−0.438**	−0.533***	−0.453***	−0.525***	−0.671***	−0.692***	−0.434	−0.16
	(0.175)	(0.175)	(0.154)	(0.156)	(0.156)	(0.152)	(0.420)	(1.249)
White	0.431**	0.374*	0.307*	0.685***	0.730***	0.442**	0.345	−0.662
	(0.214)	(0.210)	(0.176)	(0.191)	(0.189)	(0.174)	(0.470)	(1.113)
South	0.037	−0.172	0.055	−0.119	−0.235	−0.155	−0.105	−0.921
	(0.174)	(0.179)	(0.153)	(0.158)	(0.159)	(0.153)	(0.415)	(1.257)
Dependent children	−0.182	0.038	−0.039	−0.012	0.279	0.374**	−0.4	−4.408
	(0.211)	(0.207)	(0.183)	(0.187)	(0.183)	(0.176)	(0.567)	(7.639)
Married	0.495*	0.555**	0.252	0.363	0.066	0.321	0.537	3.897
	(0.279)	(0.273)	(0.225)	(0.231)	(0.223)	(0.221)	(0.584)	(5.071)
SDW	0.329	0.163	0.165	0.175	−0.389	0.151	0.323	3.277
	(0.309)	(0.304)	(0.245)	(0.254)	(0.249)	(0.239)	(0.594)	(5.131)
Income 50–100k	0.284	0.036	−0.084	−0.077	−0.04	−0.398**	−1.349**	−4.659
	(0.247)	(0.233)	(0.197)	(0.201)	(0.199)	(0.192)	(0.554)	(8.314)
Income < 100k	0.221	−0.222	−0.301	−0.567**	−0.614***	−0.784***	−1.488**	0.15
	(0.264)	(0.256)	(0.221)	(0.226)	(0.227)	(0.219)	(0.707)	(1.426)
Unemployed	−1.232*	−0.598	−0.258	−0.507	−0.529	−0.164	−0.949	−2.028
	(0.664)	(0.501)	(0.376)	(0.395)	(0.383)	(0.352)	(1.095)	(8.276)
Self employed	−0.399*	−0.354*	−0.386**	−0.468**	−0.432**	−0.416**	0.033	−2.628
	(0.213)	(0.211)	(0.189)	(0.191)	(0.190)	(0.186)	(0.546)	(7.917)
Inactive	−0.227	−0.878***	−0.349	−0.599***	−0.906***	−0.694***	−0.147	1.500
	(0.262)	(0.283)	(0.218)	(0.230)	(0.232)	(0.216)	(0.475)	(1.334)
Drop in income	−0.174	−0.334	−0.022	0.451*	0.732***	1.336***	0.045	0.914
	(0.305)	(0.305)	(0.242)	(0.237)	(0.230)	(0.218)	(0.581)	(1.279)
FLI	1.000***	1.074***	−0.241	0.720**	0.583*	0.33	−1.713**	−4.360**
	(0.369)	(0.366)	(0.298)	(0.314)	(0.311)	(0.296)	(0.724)	(2.213)
FBI	0.712	−1.213**	−2.521***	−1.376***	−2.901***	−4.531***	−4.118***	−3.597
	(0.519)	(0.481)	(0.413)	(0.427)	(0.418)	(0.405)	(0.988)	(2.789)
N	3,583							

Note: ***$p < 0.01$, **$p < 0.05$, *$p < 0.10$. FLI = Financial Knowledge Index; FBI = Financial Behavior Index; SDW = single, divorced, or widowed.

knowledge that someone might possess, they will experience some anxiety or distress associated with retirement planning. We find these results to be fascinating. It aligns with the perceived planned behavior theory that knowledge can help individuals perceive a higher level of control. However, retirement planning is very complicated and requires time, understanding of financial markets and products, time value of money, and some level of professional guidance. Retirement can be overwhelming to nonprofessionals even when they have some knowledge on the topic. Furthermore, many individuals, especially baby boomers, grew up seeing their parents or guardians pay bills. However, planning for retirement might not have been a topic discussed at home, as 30 years ago many families had pensions. We find our results noteworthy. Financial knowledge and behavior reduce financial distress when it comes to paying bills. However, regardless of financial knowledge, many individuals have concerns about retirement preparedness. This is understandable as we cannot predict the future; there is a natural sense of uncertainty.

6. Conclusion

This study contributes to the literature by exploring whether financial literacy has any association with financial distress, even after controlling for financial behavior. It is quite common to assume that good (bad) financial behavior will be associated with less (more) financial distress or concerns. The results are as expected. As mentioned in previous studies, financial literacy and financial knowledge can be distinct concepts, and higher financial literacy does not necessarily translate into better financial behavior; implementation in real life can be quite complex (e.g., retirement planning). However, when the decision is not very complicated, we see that the impact of financial literacy can be larger and easier to observe (e.g., understanding that late payments are not good for credit cards and mortgages).

More specifically, using data from the 2015 National Financial Capability Study, and the survey questionnaire designed by Atkinson and Messy (2011), we use three measures of financial distress to develop financial literacy and financial behavior indices. These measures include having difficulty paying bills, worrying about retirement funding, and being late with mortgage payments. From our results, individuals with dependent children have a higher probability of suffering financial distress. Respondents within the age 55+ range are less likely to suffer from financial difficulties. Married individuals are also less likely to become financially distressed. Practicing wise financial behaviors such as saving for emergency funds, having health insurance, and paying credit card balances in full, highly reduces the probability of experiencing financial distress. Individuals with higher levels of financial literacy, who engage in positive financial behavior such as paying bills on time, are less likely to suffer from financial distress. However, regardless of the level of financial knowledge and behavior, evidence of financial distress remains for retirement planning. Arguably, this can be attributed to the complexity and uncertainty associated with planning and being prepared for retirement.

Highlighting the limitations of our study is worthwhile. In some cases, financial decision-making or behavior is also affected by innate human capital characteristics, for example, IQ and time preference, alongside parental and peer influence. If the dataset allowed for the

inclusion of those variables, we might see different results. Also, while we include income and a reduction in income as control variables, we did not control for net worth as the NFCS does not allow for the operationalization of this variable. Therefore, future research would benefit from including the variables mentioned above when studying this topic.

Additionally, policy implications from our research are evident; particularly, strategies and programs aimed at promoting financial literacy (including behavior) and at reducing financial distress. Specifically, when designing these programs, it may be worthwhile to focus not only on shaping personal financial knowledge but also on the use of knowledge to manage financial resources and expectations effectively. For example, past financial behavior may dictate the level of education required (in moderation) as well as behavioral strategies that might be more impactful. Our study, therefore, further prompts investigation and continued development of "just-in-time" personal finance programs to help individuals who are more prone to fall into financial distress, especially during key wealth-building life stages such as retirement planning.

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