

Financial education and financial satisfaction

Financial literacy, behavior, and capability as mediators

Jing Jian Xiao and Nilton Porto

*Department of Human Development and Family Studies,
University of Rhode Island, Kingston, Rhode Island, USA*

Financial
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Abstract

Purpose – The purpose of this paper is to investigate roles of financial literacy, financial behavior, and financial capability as mediating factors between financial education and financial satisfaction.

Design/methodology/approach – Data are from the 2012 National Financial Capability Study, a large national data set with detailed information on financial satisfaction, education, literacy, behavior, capability, and related variables. Mediation analyses are used to answer research questions.

Findings – Financial education may affect financial satisfaction, a subjective measure of financial well-being, through financial literacy, financial behavior, and financial capability variables. Results show that subjective financial literacy, desirable financial behavior and a financial capability index (a sum of Z-scores of objective financial literacy, subjective financial literacy, desirable financial behavior, and perceived financial capability) are strong mediators between financial education and financial satisfaction.

Research limitations/implications – The study has used cross sectional data that can only document associations between financial education and satisfaction and the mediators between them. Future research could use relevant longitudinal data to verify multiple benefits of financial education.

Practical implications – The findings have implications for financial service professionals to take advantages of multiple benefits of financial education in content acquisition, confidence in knowledge and ability, and action taking when they communicate with their clients.

Social implications – Policy makers on consumer financial education may use the information to advocate and promote effective education programs to improve consumer financial well-being.

Originality/value – This study is the first of this kind to examine the association between financial education and financial satisfaction and several financial capability variables as mediating factors.

Keywords Behaviour, Personal finance

Paper type Research paper

Introduction

In recent decades, consumer financial education has drawn the attention of consumer financial policy makers, practitioners, and researchers (CFPB, 2015; FLEC, 2012; PACFC, 2013). Consumer financial education refers to any form of education on basic financial knowledge for consumers in high schools, colleges, and workplaces. Raising the level of financial literacy and encouraging desirable financial behaviors through financial education are assumed to enhance consumer financial capability and improve consumer welfare (Atkinson *et al.*, 2006; Huhmann and McQuitty, 2009; Mouna and Jarboui, 2015). Financial education is believed to improve financial literacy, motivate desirable financial behaviors, and enhance financial well-being among consumers (Lusardi and Mitchell, 2014).

A recent meta-analysis has examined many studies about financial education and literacy on financial behaviors and found mixed evidence (Fernandes *et al.*, 2014). However, new studies continue to show that financial education has positive effects on consumer financial behavior and welfare (Ambuehl *et al.*, 2014; Brown *et al.*, 2014; Wagner, 2015; Xiao and O'Neill, 2016). Much of the previous research in this area has focused on either associations between financial education and financial literacy or associations between financial literacy and financial behavior. To our knowledge, no previous research has looked



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at the association between financial education and financial satisfaction, a subjective measure of financial well-being. To fill this gap, this study investigates this association using the 2012 National Financial Capability Study (NFCS), a large national data set. The purpose of this study is to examine whether financial education contributes to financial satisfaction directly or indirectly through mediating factors such as financial literacy, behavior, and capability.

Conceptual framework, previous research, and hypotheses

Financial literacy has been defined as the level of financial knowledge and the ability to apply the knowledge to improve financial status (Lusardi and Mitchell, 2014; Huhmann, 2014). In the literature, financial literacy and financial capability are at times used interchangeably, both referring to the ability to apply certain levels of financial knowledge and perform desirable financial behaviors to achieve financial well-being (Atkinson *et al.*, 2006; Xiao, Chen and Chen, 2014).

Lusardi and Mitchell (2014) have developed a life cycle saving model that addresses the role of financial literacy. Under the traditional utility framework, they have incorporated several factors such as borrowing constraints, mortality risk, demographic factors, stock market returns, and earnings and health shocks in the theoretical model and made simulations using plausible parameters. This model predicts that financial literacy is endogenously determined over the life cycle. Consumers invest in financial knowledge to the point where their marginal time and the money costs of doing so are equal to their marginal benefits. These predictions suggest that consumers who receive financial education will increase their ability to manage their money and perform financially better than their counterparts who do not receive financial education.

Huhmann (2014) has developed a conceptual model to identify determinants of financial literacy and describe the mechanism for its development. In this model, financial literacy has three components: capacity – a person's basic cognitive ability, prior knowledge – existing financial knowledge, and proficiency – the skillful application of financial knowledge to achieve desirable financial outcomes. In this conceptual model, financial education is considered to be one of the determinants of financial literacy through consumer socialization. Consumer socialization, then in turn, enhances the three components of financial literacy. In addition, Huhmann identifies several psychological factors that influence the development of financial literacy. Based on this model, financial education contributes to financial literacy through enhancing consumers' ability to learn, obtain, and apply financial knowledge.

In empirical studies, financial capability is measured by researchers through various approaches such as by a set of financial behaviors (Atkinson *et al.*, 2006, 2007; Lusardi, 2011), a combination of financial behaviors and outcomes (Taylor, 2011), and a combination of financial literacy, behavior, and perceived capability (Xiao, Chen, and Chen, 2014; Xiao *et al.*, 2015).

Previous research shows that financial education increases financial literacy and encourages desirable financial behaviors among consumers (Bayer *et al.*, 2009; Bernheim *et al.*, 2001; Bernheim and Garrett, 2003; Danes *et al.*, 1999; Joo and Grable, 2005; Kim *et al.*, 2005; Lusardi and Mitchell, 2007a; Lyons, 2004; Tennyson and Nguyen, 2001). Research also shows that improved financial literacy and financial behaviors benefit both general and special populations (Chen and Volpe, 1998; Lazarus *et al.*, 2002; Lusardi and Mitchell, 2005, 2007b, 2008; Prowse, 1990; Van Rooij *et al.*, 2011). More recent studies provide supporting evidence of the benefits of financial education for consumers (Brown *et al.*, 2014; Robb and Woodyard, 2011; Wagner, 2015; Walstad *et al.*, 2010; Xiao *et al.*, 2012; Xiao, Ahn, Serido and Shim, 2014; Xiao and O'Neill, 2016; also see Lusardi and Mitchell, 2014 for a review of relevant empirical studies). Other research reviews conclude that financial education may have limited effects on financial literacy and financial behavior

(Gale and Levine, 2011; Collins and O'Rourke, 2010; Fernandes *et al.*, 2014; Hastings *et al.*, 2012). However, to our knowledge, no previous research has examined financial education and financial well-being directly or indirectly through financial literacy, behavior, and capability as mediating factors.

Financial well-being can be measured by both objective and subjective indicators. Objective financial well-being is often measured by income- and wealth-related factors and subjective financial well-being is measured by perceptions and evaluations of financial statuses (Xiao, 2015). Subjective measures of financial well-being refer to consumer self-perceived financial status. One subjective measure of financial well-being integrates financial distress and other financial indicators into one scale (Prawitz *et al.*, 2006). Another commonly used subjective measure of financial well-being is financial satisfaction, usually in the format of a Likert-type scale. Financial satisfaction can be measured in either a one-item indicator or multiple indicators (Joo and Grable, 2004). Previous research has explored factors associated with financial satisfaction such as potential effects of various income definitions (Hsieh, 2004), income expectation (Vera-Toscano *et al.*, 2006), perceived income adequacy (Grable *et al.*, 2013), assets and debts (Hansen *et al.*, 2008), industry sectors (Ferrer-i-Carbonell and Gërkhani, 2011), and household characteristics (Seghieri *et al.*, 2006). Previous research has also examined links between financial capability-related variables and financial satisfaction (Xiao *et al.*, 2009; Xiao, Chen, and Chen, 2014).

In this study, financial education is defined as any form of education provided in various settings such as high school, college, and workplace. Based on the theory of life cycle saving (Lusardi and Mitchell, 2014), consumers decide to pursue financial education based on their own cost-benefit analyses regarding how it will benefit their later life outcomes. According to the conceptual framework of Huhmann (2014), financial education contributes to financial literacy and behavior. In this study, we assume that exposure to financial education contributes to consumer financial capability (Xiao and O'Neill, 2016).

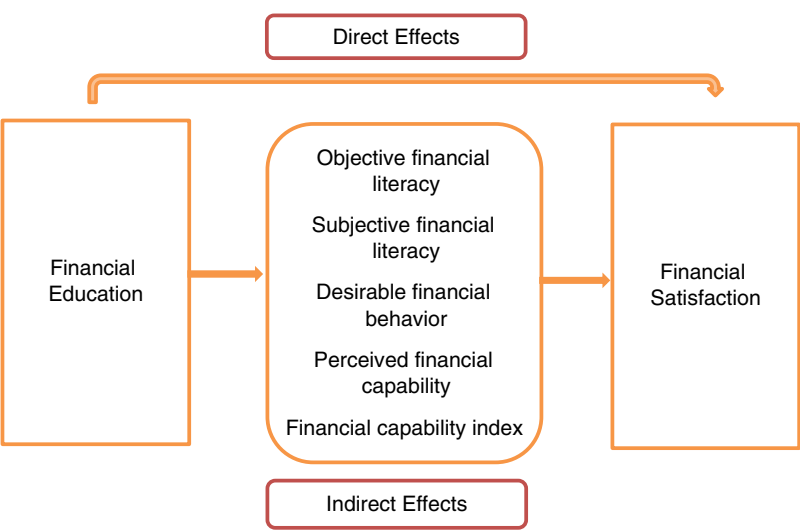
Financial capability is defined for this study as the ability to use basic financial knowledge and engage in desirable financial behaviors for achieving financial well-being. Our definition is in line with more current definitions of financial capability and also similar to more comprehensive definitions of financial literacy that include more than just financial knowledge.

Based on the definition of this study, financial capability has components of financial literacy and financial behavior. Following Xiao *et al.* (2015), indicators of financial capability include objective financial literacy, subjective financial literacy, desirable financial behavior, perceived financial capability, and a financial capability index (a sum of Z-scores of previously mentioned indicators).

The focus of this study is to examine if financial education contributes to these financial capability factors, which then contribute to financial satisfaction. This study is important since there are controversies about effects of financial education on financial literacy, behavior, and capability. This study aims to demonstrate that financial education may have both direct and indirect effects on financial well-being and provides multiple benefits for consumers who receive it. We recognize that studies on associations between financial literacy and behavior are important but they are beyond the scope of this study. Based on the literature discussed above and previous theoretical models of financial literacy (Huhmann, 2014; Huhmann and McQuitty, 2009), we propose the conceptual framework shown in Figure 1 and test this framework's relationships in the following hypotheses:

- H1. Financial education is associated with objective financial literacy and objective financial literacy in turn is associated with financial satisfaction.
- H2. Financial education is associated with subjective financial literacy and subjective financial literacy in turn is associated with financial satisfaction.

Figure 1.
Conceptual framework
between financial
education, financial
capability, and
financial satisfaction



- H3.* Financial education is associated with desirable financial behavior and desirable financial behavior in turn is associated with financial satisfaction.
- H4.* Financial education is associated with perceived financial capability and perceived financial capability in turn is associated with financial satisfaction.
- H5.* Financial education is associated with the financial capability index and the financial capability index in turn is associated with financial satisfaction.

This study contributes to the literature in two aspects. First, it enriches the literature of financial literacy by examining associations between financial education and financial satisfaction directly and indirectly through several financial capability variables as mediators. It also expands the literature of financial satisfaction by exploring financial education as one additional explaining factor.

Method

Data

Data used in this study is from the 2012 NFCS. In consultation with the US Department of the Treasury and the President’s Advisory Council on Financial Literacy, the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation commissioned the study that collected information from 25,509 American adults (roughly 500 per state, plus the District of Columbia) and 1,000 military service members through online surveys (FINRAIEF, 2013). The data set is available for public use from the website of the FINRA Investor Education Foundation. Descriptive statistics of the sample, including financial literacy, behavior, and capability variables, can be found in the Foundation report (FINRAIEF, 2013). The NFCS surveys have been widely used and validated as a representative sample of the American population by researchers in personal finance, consumer economics, and other social science fields.

Variables

Table I presents specifications of the variables used in this study including the original wordings of several variables. The dependent variable is financial satisfaction that is measured

Variable	Attribute
<i>Financial capability</i>	
Objective financial literacy	0-5, the quiz score of five financial literacy questions, in which 0 means no correct answer is obtained and 5 means all answers are correct. The five knowledge questions are about interest rates, inflation, bonds, mortgages, and stocks. The original financial literacy variables (m6-m10) were recoded to binary variables in which 1 = correct answer, 0 = otherwise, and then the new variables were summed to form the score
Subjective financial literacy	"On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?" 1-very low, 7-very high
Desirable financial behavior	The number of desirable financial behaviors, ranged from 0-4
Perceived financial capability	"I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses" 1-strongly disagree, 7-strongly agree
Financial capability index	A sum of Z-scores of objective financial literacy, subjective financial literacy, desirable financial behavior, and perceived financial capability variables
<i>Focal variable</i>	
Financial satisfaction	1-not at all satisfied, 10-extremely satisfied
Received financial education	1 = yes, 0 = no
<i>Control variables</i>	
Age group	6 age groups, age 18-24 is used as reference category in regressions
Being male (vs female)	1 = male, 0 = female
Education level	1-some college or higher, 0 = other
Being married	1 = married, 0 = not married
Having dependent children	1 = yes, 0 = no

Notes: The four desirable financial behaviors are spending within income constraints, saving for emergencies, checking credit reports, and calculating retirement needs. All of these variables are binary variables that are appropriately recoded from corresponding variables from the original data set

Table I.
Variable specifications

via a Likert scale ranging from 1-10, where 10 means very financially satisfied. Financial capability variables include four specific measures and one index. The four specific measures are objective financial literacy, subjective financial literacy, desirable financial behavior, and perceived financial capability. Objective financial literacy is the quiz score of five financial knowledge questions ranging from 0 to 5. Subjective financial literacy is a self-assessment of financial knowledge with a range of 1-7 (1 = very low, 7 = very high). Desirable financial behavior is the number of good financial behaviors performed and reported by the respondents with a range of 0-4 (0 = no behavior is performed, 4 = all four behaviors are performed). Perceived financial capability is a self-assessment of money management ability with a range of 1-7 (1 = very low, 7 = very high). The financial capability index is constructed by summing up Z-scores of the four specific literacy, behavior, and capability measures.

Financial education is a binary variable indicating if any financial education was acquired in high school, college, a place of employment, or the military. This definition of financial education has been used in previous research (Xiao and O'Neill, 2016). The study also includes several control variables: gender, age, marital status, education, and presence of dependent children, which have been used in previous research (Robb and Woodyard, 2011; Xiao and O'Neill, 2016).

For three of the variables, financial satisfaction, subjective financial literacy, and perceived financial capability, some respondents reported "Don't know" or "Prefer not to say." These observations were substituted by means of the variables. The numbers of cases treated this way for each variable are as follows: financial satisfaction (491), subjective financial literacy (675), and perceived financial capability (363). For robustness checks,

additional analyses were performed excluding respondents who answered “Don’t know” or “Prefer not to say” for these questions. The results showed minimal changes on the coefficient of variables of interest and no changes in sign or significance (Results are not reported here, but are available upon request).

Data analyses

Following an approach described by Baron and Kenny (1986) that has been used previously by other researchers (Perry and Morris, 2005; Xiao and Wu, 2008) mediation analyses were conducted. For example, to examine the mediating effect of objective financial literacy, three multiple linear regression models were used:

- (1) objective financial literacy = f (financial education, control variables);
- (2) financial satisfaction = f (financial education, control variables); and
- (3) financial satisfaction = f (financial education, control variables, objective financial literacy).

The procedure suggested by Baron and Kenny (1986) has three steps. First, if the objective financial literacy variable is the mediator, other independent variables should show associations with it (Model 1). Second, other independent variables without the objective financial literacy variable should show associations with the outcome variable (i.e. the financial satisfaction variable) (Model 2). Third, the objective financial literacy variable, entered as an additional independent variable, should have a larger effect than other independent variables on the outcome variable (Model 3). The same procedure is also used for other mediating variables such as subjective financial literacy, desirable financial behavior, perceived financial capability, and the financial capability index.

Results and discussions

Table II presents results of testing if objective financial literacy is a mediating factor between financial education and financial satisfaction. Model 1 shows that financial education is strongly associated with objective financial literacy. However, comparing Models 2 and 3, objective financial literacy has contributed to financial satisfaction

Table II.
OLS regressions:
objective financial
literacy as the
mediating factor

	Model 1 Objective financial literacy	Model 2 Financial satisfaction b/se	Model 3 Financial satisfaction
Financial Education	0.42 (0.02)***	0.44 (0.04)***	0.42 (0.04)***
Female (vs Male)	−0.51 (0.02)***	−0.37 (0.03)***	−0.34 (0.03)***
Married	0.30 (0.02)***	0.95 (0.04)***	0.93 (0.04)***
Some college or more	0.80 (0.02)***	0.58 (0.04)***	0.53 (0.04)***
Dependent child(ren)	−0.09 (0.02)***	−0.40 (0.04)***	−0.39 (0.04)***
<i>Age 18-24 (ref. cat.)</i>			
Age 25 to 34	0.29 (0.03)***	−0.19 (0.07)**	−0.21 (0.07)**
Age 35 to 44	0.61 (0.03)***	−0.46 (0.07)***	−0.50 (0.07)***
Age 45 to 54	0.81 (0.03)***	−0.59 (0.07)***	−0.65 (0.07)***
Age 55 to 64	0.95 (0.03)***	−0.21 (0.07)**	−0.27 (0.07)***
Age 65 or older	1.12 (0.03)***	0.72 (0.07)***	0.64 (0.07)***
Objective financial literacy			0.06 (0.01)***
Constant	1.83 (0.03)***	4.68 (0.06)***	4.56 (0.07)***
r^2	0.23	0.09	0.09
n	25,509	25,509	25,509

Notes: Ref. cat. Refers to reference category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

significantly, but the effect size is smaller than that of financial education. This suggests that objective financial literacy may not be a strong mediating factor between financial education and financial satisfaction. This finding supports previous research that shows the positive effect of financial education on financial literacy (e.g. Danes *et al.*, 1999; Lyons, 2004; Joo and Grable, 2005; Kim *et al.*, 2005; Robb and Woodyard, 2011; Walstad *et al.*, 2010; Xiao, Ahn, Serido, and Shim, 2014; Xiao, Chen, and Chen, 2014). However, the effect of objective literacy seems limited compared to the effect of financial education as it does not support *H1* and thus implies that financial education may have greater effects on other mediating factors for improving financial well-being.

The result of the subjective financial literacy variable as a potential mediating factor between financial education and financial satisfaction is presented in Table III. Model 1 indicates that financial education is strongly associated with subjective financial literacy. Comparing the results of Models 2 and 3, subjective financial literacy is substantially associated with financial satisfaction, indicated by the greater effect size of subjective financial literacy than that of financial education. The findings suggest that subjective financial literacy is a strong mediator between financial education and financial satisfaction, supporting *H2*. Previous research shows that objective and subjective financial literacy variables may have differential roles in contributing to financial behavior (Robb and Woodyard, 2011; Xiao *et al.*, 2011). Evidence from this study implies that financial education may enhance subjective financial literacy more effectively than objective financial literacy, which in turn contributes to financial well-being.

Desirable financial behavior seems a strong mediator between financial education and financial satisfaction as demonstrated in Table IV. In Model 1, financial education is strongly associated with desirable financial behavior. Comparing Models 2 and 3, the effect size of financial behavior is much greater than that of financial education. The findings suggest that financial education has both direct and indirect effects on financial satisfaction, supporting *H3*. The findings are consistent with previous research in which desirable financial behavior is positively associated with financial satisfaction (Xiao, Chen, and Chen, 2014).

Perceived financial capability seems a partial mediator between financial education and financial satisfaction as shown in Table V. The result of Model 1 indicates that financial

	Model 1 Subjective financial literacy	Model 2 Financial satisfaction b/se	Model 3 Financial satisfaction
Financial education	0.42 (0.02)***	0.44 (0.04)***	0.11 (0.04)**
Female (vs male)	-0.51 (0.02)***	-0.37 (0.03)***	-0.25 (0.03)***
Married	0.30 (0.02)***	0.95 (0.04)***	0.80 (0.04)***
Some college or more	0.80 (0.02)***	0.58 (0.04)***	0.42 (0.04)***
Dependent child(ren)	-0.09 (0.02)***	-0.40 (0.04)***	-0.42 (0.04)***
<i>Age 18-24 (ref. cat.)</i>			
Age 25 to 34	0.29 (0.03)***	-0.19 (0.07)**	-0.28 (0.07)***
Age 35 to 44	0.61 (0.03)***	-0.46 (0.07)***	-0.57 (0.07)***
Age 45 to 54	0.81 (0.03)***	-0.59 (0.07)***	-0.70 (0.06)***
Age 55 to 64	0.95 (0.03)***	-0.21 (0.07)**	-0.42 (0.07)***
Age 65 or older	1.12 (0.03)***	0.72 (0.07)***	0.32 (0.07)***
Subjective financial literacy			0.67 (0.01)***
Constant	1.83 (0.03)***	4.68 (0.06)***	1.57 (0.09)***
r^2	0.23	0.09	0.17
<i>n</i>	25,509	25,509	25,509

Notes: Ref. cat. Refers to reference category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table III.
OLS regressions:
subjective financial
literacy as the
mediating factor

Table IV.
OLS regressions:
desirable financial
behavior as the
meditating factor

	Model 1 Desirable financial behavior	Model 2 Financial satisfaction b/se	Model 3 Financial satisfaction
Financial education	0.40 (0.02)***	0.44 (0.04)***	0.08 (0.04)*
Female (vs male)	-0.11 (0.01)***	-0.37 (0.03)***	-0.28 (0.03)***
Married	0.35 (0.02)***	0.95 (0.04)***	0.63 (0.03)***
Some college or more	0.52 (0.01)***	0.58 (0.04)***	0.11 (0.04)**
Dependent child(ren)	-0.07 (0.02)***	-0.40 (0.04)***	-0.33 (0.04)***
<i>Age 18-24 (ref. cat.)</i>			
Age 25 to 34	0.20 (0.03)***	-0.19 (0.07)**	-0.37 (0.07)***
Age 35 to 44	0.18 (0.03)***	-0.46 (0.07)***	-0.63 (0.07)***
Age 45 to 54	0.24 (0.03)***	-0.59 (0.07)***	-0.81 (0.06)***
Age 55 to 64	0.46 (0.03)***	-0.21 (0.07)**	-0.62 (0.06)***
Age 65 or older	0.65 (0.03)***	0.72 (0.07)***	0.13 (0.07)*
Desirable financial behavior			0.90 (0.01)***
Constant	0.80 (0.02)***	4.68 (0.06)***	3.96 (0.06)***
r^2	0.14	0.09	0.22
n	25,509	25,509	25,509

Notes: Ref. cat. Refers to reference category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table V.
OLS regressions:
perceived financial
capability as the
meditating factor

	Model 1 Perceived financial capability	Model 2 Financial satisfaction b/se	Model 3 Financial satisfaction
Financial education	0.33 (0.02)***	0.44 (0.04)***	0.34 (0.04)***
Female (vs male)	0.00 (0.02)	-0.37 (0.03)***	-0.38 (0.03)***
Married	0.20 (0.02)***	0.95 (0.04)***	0.89 (0.04)***
Some college or more	0.38 (0.02)***	0.58 (0.04)***	0.46 (0.04)***
Dependent child(ren)	-0.10 (0.02)***	-0.40 (0.04)***	-0.37 (0.04)***
<i>Age 18-24 (ref. cat.)</i>			
Age 25 to 34	0.20 (0.04)***	-0.19 (0.07)**	-0.25 (0.07)***
Age 35 to 44	0.34 (0.04)***	-0.46 (0.07)***	-0.57 (0.07)***
Age 45 to 54	0.44 (0.04)***	-0.59 (0.07)***	-0.74 (0.07)***
Age 55 to 64	0.66 (0.04)***	-0.21 (0.07)**	-0.42 (0.07)***
Age 65 or older	0.83 (0.04)***	0.72 (0.07)***	0.45 (0.07)***
Perceived financial capability			0.32 (0.01)***
Constant	4.86 (0.04)***	4.68 (0.06)***	3.13 (0.08)***
r^2	0.06	0.09	0.12
n	25,509	25,509	25,509

Notes: Ref. cat. Refers to reference category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

education is significantly associated with perceived financial capability. Results of Models 2 and 3 suggest that the effect size of perceived financial capability is similar to that of financial education, suggesting that both financial education and perceived financial capability contribute to financial satisfaction, partially supporting *H4*. Perceived financial capability can be considered as financial self-efficacy. Self-efficacy is important to help people control their lives by taking desirable actions (Bandura, 1982). Self-efficacy may also be an important factor contributing to financial literacy (Huhmann, 2014). Financial self-efficacy has been shown to help consumers manage their money to achieve financial well-being (Lown, 2011). The findings here imply that financial education helps enhance financial self-efficacy that in turn improves financial well-being.

To examine the overall effect of financial literacy, behavior, and capability on financial satisfaction, an index of financial capability is constructed and tested as a mediator. The findings in Table VI suggest that the financial capability index is a strong mediator. First, financial education is strongly associated with the financial capability index in Model 1. Second, financial education is strongly associated with financial satisfaction when only control variables are included in Model 2. Third, when the financial capability index is entered into Model 3, it shows a strong effect on financial satisfaction while the effect of financial education has disappeared. As a result, the financial capability index acts as a full mediator between the two variables of interest, providing supporting evidence for *H5* by showing positive contributions of financial education to financial well-being. A possible interpretation of the full mediation finding is that consumers who display high levels of financial capability may not need to rely on financial education to achieve financial satisfaction while financial education may be particularly beneficial to consumers with low financial capability.

Conclusion and implications

This study attempts to examine whether financial education has either direct or indirect potential effect on financial satisfaction, a measure of subjective financial well-being. Objective financial literacy, subjective financial literacy, desirable financial behavior, perceived financial capability, and the financial capability index are used as potential mediating variables between financial education and financial satisfaction. Using a large nationally representative data set, the results show that subjective financial literacy, desirable financial behavior, and the financial capability index are strong mediators between financial education and financial satisfaction, while objective financial literacy and perceived financial capability are weaker mediators. The results suggest that financial education has multiple benefits for improving financial well-being such as facilitating knowledge acquisition, enhancing confidence in knowledge and ability, and encouraging action taking.

This study has two limitations. The first is that several variables of interest, such as financial education and financial satisfaction, are single-item measures. While the NFCS survey question regarding the acquisition of financial education is based on receiving financial education with a follow-up question regarding the source of the education,

	Model 1 Financial capability index	Model 2 Financial satisfaction b/se	Model 3 Financial satisfaction
Financial education	1.22 (0.04)***	0.44 (0.04)***	-0.04 (0.04)
Female (vs male)	-0.59 (0.03)***	-0.37 (0.03)***	-0.14 (0.03)***
Married	0.80 (0.03)***	0.95 (0.04)***	0.63 (0.03)***
Some college or more	1.42 (0.03)***	0.58 (0.04)***	0.02 (0.04)
Dependent child(ren)	-0.17 (0.04)***	-0.40 (0.04)***	-0.33 (0.04)***
<i>Age 18-24 (ref. cat.)</i>			
Age 25 to 34	0.60 (0.06)***	-0.19 (0.07)**	-0.42 (0.07)***
Age 35 to 44	0.91 (0.06)***	-0.46 (0.07)***	-0.82 (0.07)***
Age 45 to 54	1.15 (0.06)***	-0.59 (0.07)***	-1.05 (0.06)***
Age 55 to 64	1.72 (0.06)***	-0.21 (0.07)**	-0.88 (0.07)***
Age 65 or older	2.30 (0.06)***	0.72 (0.07)***	-0.19 (0.07)**
Financial capability index			0.39 (0.01)***
Constant	-2.46 (0.05)***	4.68 (0.06)***	5.64 (0.06)***
r^2	0.24	0.09	0.20
<i>n</i>	25,509	25,509	25,509

Notes: Ref. cat. Refers to reference category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table VI.
OLS regressions:
financial capability
index as the
mediating factor

respondents' understanding of financial education may vary considerably. For some respondents, financial education involved actual classroom training, while others might have relied on one-on-one meetings with an advisor when answering this question. More details on the source of formal financial education such as duration of training, type of curriculum, etc. would strengthen the validity of this measurement. The question on financial satisfaction may be affected by a number of other factors such as context, timing, emotions, and recent events. For instance, respondents might have rated themselves higher in financial satisfaction after getting a raise at work or lower after paying income taxes. In addition to the factors listed above, satisfaction also has a comparison component where individuals judge their well-being in relation to others. A measurement of financial satisfaction that includes multiple items being asked at different time points would further ensure the validity of this construct. The second limitation is that mediation analyses was the only data analysis used. More sophisticated approaches such as structural equation modeling could be used in future research when information on multiple-item measures of key variables is available.

Keeping these limitations in mind, there are implications for financial advisors and educators who work with consumers. Consumer financial educators provide financial education programs funded by governmental or nongovernmental organizations. Measuring the effectiveness of these types of programs solely based on financial knowledge acquisition might fail to reveal the full range of benefits provided by financial education and prevent further funding. Perhaps a more comprehensive evaluation of financial education should include both objective and subjective measures of financial literacy, behavior, capability, and satisfaction to better determine the true impact of these programs on their target audiences.

Many financial advisors already provide informal financial education for their clients when offering long-term financial planning, discussing investment or loan options, and/or counseling on debt issues. These findings have implications for these financial professionals to improve the effectiveness of their educational efforts during fact-finding meetings. By being aware of the multiple benefits of financial education, they can better design and implement targeted education activities for clients with various needs. The findings suggest that financial education is effective in raising consumer confidence in financial knowledge and encourages consumers to engage in desirable financial behaviors that may be used for advisors when they provide informal financial education for their clients.

Advisors and educators may take advantage of these findings by using financial education to promote the importance of financial literacy and encourage clients to take actions in desirable directions (Xiao *et al.*, 2004). The research results suggest that financial education efforts could be better designed to improve actual knowledge acquisition and raise levels of perceived financial capability. Advisors and educators may tailor education materials for their clients to coincide with client lifecycle stages, varying levels of knowledge, and information needs in order to better facilitate financial decision making leading to enhanced financial well-being. For example, recent college graduates reporting to their first professional job may receive information about retirement savings to help them make their first long-term saving decision for company-sponsored defined contribution retirement plans. Similar approaches can also be used to assist consumers in making better decisions when they first buy a house or review their banking or insurance needs.

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About the authors

Jing Jian Xiao, PhD, is a Professor of Consumer Finance in the Department of Human Development and Family Studies at the University of Rhode Island. He published many research papers in consumer finance journals and books including *Handbook of Consumer Finance Research* and *Consumer Economic Wellbeing*. He received his PhD in Consumer Economics from Oregon State University. Jing Jian Xiao is the corresponding author and can be contacted at: XIAO@URI.EDU

Nilton Porto, MBA, PhD, is an Assistant Professor of Consumer Finance in the Department of Human Development and Family Studies at the University of Rhode Island. He received his MBA from Case Western Reserve University and PhD in Consumer Science from the University of Wisconsin-Madison.

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