

PSYCHOSOCIAL FACTORS AND FINANCIAL LITERACY

by John L. Murphy*

This study uses data from the Health and Retirement Study (HRS) to analyze the psychological and social variables associated with financial literacy. The HRS is a nationally representative longitudinal survey of individuals older than age 50 and their spouses. An ordinary least squares linear regression analysis explores the relationship between financial literacy and several economic and psychosocial variables. After controlling for earnings, level of education, and other socioeconomic variables in this exploratory study, I find that financial satisfaction and religiosity are correlated with financial literacy.

Introduction

For much of the 20th century, most US pensions were defined benefit plans in which workers received retirement benefits based on a formula that included earnings, years of service, and final salary as inputs. However, over the last several decades, there has been a well-documented trend away from defined benefit plans toward defined contribution plans, in which an employee's retirement income depends on contributions to the plan along with the investment earnings on those contributions (Butrica and others 2009). Current workers increasingly must decide how much to contribute to retirement plans and how to invest plan contributions. Thus, today's workers require greater financial sophistication to manage their retirement savings. By understanding which personal characteristics are associated with financial literacy, policymakers may target limited education resources to individuals with psychosocial traits that indicate risk for low financial literacy and insufficient retirement planning.

Although financial literacy is vital to retirement preparation, a number of studies have shown that Americans generally lack adequate financial knowledge. The economic and demographic factors that influence financial well-being and sophistication have been relatively well studied (Ariel/Hewitt 2009; Lusardi 2008; Lusardi and Mitchell 2006, 2007a, 2007b, 2007c; Lusardi and Tufano 2009). However,

few studies have looked beyond these characteristics to examine the correlation between psychosocial variables and financial literacy.

This study uses ordinary least squares (OLS) linear regression analysis to assess the correlation between financial literacy, as measured in the 2006 Health and Retirement Study (HRS), and variables representing financial satisfaction, hopelessness, and religiosity, while controlling for other important characteristics. Research has discovered theoretical associations between those variables and financial literacy but they remain underexplored. This study's results indicate financial satisfaction and religiosity are both significant independent predictors of financial literacy. Using these findings to target financial education may improve its efficacy and in turn improve long-term retirement security.

Background

The relationship between psychosocial factors and financial literacy is a promising research area. A growing body of literature suggests that these factors may explain a great deal of variation in other components

Selected Abbreviations

HRS	Health and Retirement Study
OLS	ordinary least squares

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of financial well-being and behavior. For example, analyses have shown that variables such as future time perspective and retirement goal clarity may explain some of the variation in retirement preparation and security (Glass and Kilpatrick 1998; Groffen and others 2009; Hershey and others 2007; Hershey and Mowen 2000; Howlett, Kees, and Kemp 2008).

This article focuses on three psychosocial elements that can be examined in the HRS: financial satisfaction, hopelessness, and religiosity. Although research has seldom specifically addressed those variables in the context of financial literacy, previous work does illuminate several potential pathways through which those elements may interact. Although this article explores whether financial satisfaction, hopelessness, and religiosity are significantly related to financial literacy, causal directions are not examined.

Financial Satisfaction

Existing research generally hypothesizes that financial satisfaction is an outcome of financial literacy. In this construct, greater financial literacy improves financial satisfaction by helping individuals develop the skills necessary to meet large expenses, develop savings goals, save money, control finances, and estate-plan (Loibl and Hira 2005; Mezias 1994; Walker 1996).

However, some research suggests that financial dissatisfaction fosters greater financial literacy over time. Financial stressors can be psychologically deleterious and create financial dissatisfaction (Holmes and Rahe 1967; Krause, Jay, and Liang 1991; Price, Choi, and Vinokur 2002; Warr and Jackson 1985). The anxiety and trauma engendered by financial dissatisfaction takes a detrimental psychological toll and may, over time, encourage individuals to become more financially literate so that they can improve their financial and psychological situations (Folkman and others 1986; Liem and Liem 1988; Ullah 1990; Walker 1996).¹

Hopelessness

Research on hopelessness has underscored its negative effects on various components of financial behavior and well-being. For example, Brown (2011) finds that persons with depression and feelings of hopelessness held more debt and had less wealth at retirement. Brown advises providing such persons with financial education to protect against retirement insecurity. Other work indicates depression and hopelessness

diminish financial status (Montgomery and others 2007), retirement security (Lamberg and others 2010), and financial planning (Zivin and others 2009).

The Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR) defines several criteria for depression. They include depressed or hopeless mood, decreased interest in activities, and inability to concentrate or be decisive (APA 2000; Price, Choi, and Vinokur 2002). The inability to concentrate may impede financial literacy, which requires considerable thought and retention. In addition, those who feel that their retirement goals are beyond reach may have no incentive to work to become more financially knowledgeable.

The relationship between hopelessness and financial literacy may also run in the opposite direction, with poor financial literacy leading to an increased feeling of hopelessness. The theory of “learned helplessness” posits that inescapable events diminish people’s motivation to change their situation (Dweck 1975; Diener and Dweck 1980; Hiroto and Seligman 1975; Maier and Seligman 1976). Learned helplessness has been widely studied and accepted, and although it has not been applied to retirement security or financial decision-making, one can reasonably assume that less financially literate individuals may have more difficulty advancing financially and may thus lose hope that they can affect their financial position.

Religiosity

Religion is a powerful influence on human behavior and previous research has identified a variety of factors associated with religiosity that may ultimately affect financial literacy. For example, Avants and others (2003) indicate that those who are more religious may be more likely to take risks, as they have a greater faith that a higher being will provide for them. In addition, some individuals, for cultural or religious reasons, may expect family support at retirement and thus feel less need to prepare for retirement (Barnes and Taylor 2006). These characteristics appear to reduce the perceived need for financial literacy among religious individuals.

However, other factors suggest that religiosity could positively affect financial literacy. Renneboog and Spaenjers (2009) find a positive relationship between religion and savings among the Dutch, and suggest that religious teachings encouraging thrift could be an important factor. Additionally, a number of churches have begun to provide financial education. They play

an important role in augmenting their members' financial literacy and self-management (*USA Today* 2010) and provide an informal source of financial information in their communities (Olsen and Whitman 2007). Thus, religiosity may be correlated with increased access to financial education.

Past research illustrates the theoretical basis for correlating financial satisfaction, hopelessness, and religiosity with financial literacy through multiple mechanisms. This article explores the linkages between the psychosocial variables and financial literacy. However, determining whether those relationships are positive or negative will require further work.

Data

This study uses data from the HRS, a nationally representative survey of individuals older than age 50 and their spouses. The HRS is funded primarily by the National Institute on Aging and the Social Security Administration and is conducted by the University of Michigan. It is an ongoing biennial longitudinal study that began in 1992. This article focuses on the 2006 wave, which represents the most recent year for which data on all psychosocial variables of interest are available.

Beginning in 2004, the HRS included a module focusing on respondents' psychological well-being called the Psychosocial Leave-Behind Questionnaire. The module was randomly administered to approximately half of the participants who completed a face-to-face core survey in that wave. For the 2006 wave, 8,568 respondents were eligible for the questionnaire and 7,635 completed it. The module measures constructs such as social support, sense of control, religiosity, personality, chronic stressors, and financial satisfaction. The module was merged with the HRS core data to produce results for a total of 7,521 respondents. That sample was then merged with the HRS financial literacy module, which consists of 1,155 respondents. Thus, the final sample comprises 1,155 respondents after merging all three data files. Analyses performed on the psychosocial module sample (7,521 respondents) and the financial literacy sample (1,155 respondents) disclosed no significant demographic differences.

Table 1 describes the demographic characteristics of the sample. Women are a greater share of the sample than of the general population, likely because men older than 50 have higher mortality rates than women,

and the HRS restricts its sampling frame to Americans older than 50.

Dependent Variable

This study's variable of interest is financial literacy. Researchers have yet to agree on a conceptual or operational definition of financial literacy (Hung, Parker, and Yoong 2009), and many studies have no conceptual definition at all (Huston 2010). This study defines financial literacy as "the ability to use knowledge and skills to manage one's financial resources effectively for lifetime financial security" (JumpStart 2007) and uses the HRS first generation financial literacy measure, which is based on responses to three questions that assess the respondent's knowledge of compound interest, inflation, and stock risk:

1. Do you think that the following statement is true or false?: Buying a single company stock usually provides a safer return than a stock mutual fund.
2. 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: more than \$102, exactly \$102, less than \$102?
3. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?

Table 1.
Sample characteristics

Variable	Number	Percent
Race		
White	933	81
Black	158	14
Other	64	5
Sex		
Women	696	60
Men	459	40
Hispanic origin		
Yes	100	9
No	1055	91
Marital status		
Single	454	39
Married	701	61

SOURCE: 2006 HRS.

NOTE: Sample size = 1,155.

The HRS first generation financial literacy measure has been used often in the literature (Lusardi and Mitchell 2006) and has an acceptable Cronbach Alpha reliability coefficient.² The scale is an ordinal-level index where each correct answer is scored as a single point. A respondent may receive a maximum of one point for each correctly answered question; thus, with three questions, the index ranges from 0 to 3, with higher values indicating greater financial literacy.

Independent Variables

This study employs eight independent variables.

Religiosity. A four-item ordinal-level scale measures religious beliefs and values. Respondents are asked the extent to which they agree with the following statements:

1. I believe in a God who watches over me.
2. The events in my life unfold according to a divine or greater plan.
3. I try hard to carry my religious beliefs over into all my other dealings in life.
4. I find strength and comfort in my religion.

Possible responses for each item range from 1 (strongly disagree) to 6 (strongly agree). The religiosity index is created by averaging the scores across all four items, with higher scores representing greater religiosity.³

Financial satisfaction. A two-item ordinal-level questionnaire measures respondents' financial satisfaction:

1. How satisfied are you with (your/your family's) present financial situation?
2. How difficult is it for (you/your family) to meet monthly payments on (your/your family's) bills?

The responses range from 1 to 5 with higher values indicating more financial satisfaction (less strain). For question one, possible responses range from 1 (not at all satisfied) to 5 (completely satisfied). For question two, possible responses range from 1 (not at all difficult) to 5 (completely difficult). In the first question, higher values represent greater satisfaction; however, for the second question, higher scores represent less satisfaction. Consequently, the second question is reverse-coded so both indicators are parallel. The financial satisfaction index is created by averaging the results for the two questions.⁴

Hopelessness. Four statements provide the basis for an ordinal-level self-reported index:

1. I feel it is impossible for me to reach the goals that I would like to strive for.
2. The future seems hopeless to me and I can't believe that things are changing for the better.
3. I don't expect to get what I really want.
4. There's no use in really trying to get something I want because I probably won't get it.

Possible responses for each statement range from 1 (strongly disagree) to 6 (strongly agree). The hopelessness scale is created by averaging responses to the four statements; higher values represent stronger feelings of hopelessness.⁵

Earnings. This continuous variable reflects self-reported total earnings in 2006 for respondents in the 2006 wave of the HRS.⁶

Age. This continuous variable is based on respondent self-reports.

Education. This continuous variable reflects the respondent's self-reported highest level of education. For example, 12 years means the respondent completed high school, and 14 years indicates that the person completed 2 years of postsecondary study.

Marital Status. For this categorical variable, a respondent is either single (comprising divorced, widowed, separated, and never married) or married and living together in 2006.

Work Status. This categorical variable, indicating whether the respondent was currently working in 2006, was used in part to control for persons who have zero earnings because of retirement as opposed to other reasons (such as child rearing or midcareer retraining).

Statistical Methods

This exploratory study uses an OLS linear regression analysis to explore the relationship between financial literacy and several economic and psychosocial variables. OLS analysis focuses on the effect of three independent variables (financial satisfaction, hopelessness, and religiosity) on a single outcome variable (financial literacy). Common demographic and economic variables (age, earnings, ethnicity, sex, marital status, race, and education) are included as controls.

Results

Table 2 presents the mean scores of variables of interest by demographic characteristics. In general, whites, men, non-Hispanics, and married people tended to have better economic and psychosocial outcomes than blacks, women, Hispanics, and single people. Those data parallel findings from other literature (Danigelis and McIntosh 2001; Dietz, Carrozza, and Ritchey 2003; Glass and Kilpatrick 1998; Lusardi 2008; Lusardi and Mitchell 2006, 2007a, 2007b; Lusardi and Tufano 2009).

The relationship between the independent variables and the dependent variable was investigated using the accepted statistical standard for the type of data used in this study, the Pearson product-moment correlation coefficient. Preliminary analyses ensured no violation of the assumptions of normality and linearity. As Table 3 shows, education had the highest correlation with financial literacy ($r = 0.35$, $p < .0001$), followed by age, earnings, hopelessness, religiosity, and financial satisfaction. Hopelessness was negatively and significantly correlated with years of education.

In addition, older respondents felt more hopeless. Financial satisfaction was higher among persons with higher education and lower among those with less education. Financial satisfaction also correlated with age, as older respondents tended to have higher financial satisfaction than younger ones. Additionally, those with higher levels of education tended to be less religious, and education was negatively correlated with age.

The sample in the OLS regression model was initially restricted to persons with current work earnings; however, the limited number of respondents made the model too unstable. Because this sample is older and many respondents no longer have labor-market income, the work-status variable was added to determine if there are differences between respondents who work and those who do not.

Discussion

The regression results (Table 4) indicate that age, education, race, and sex were significant predictors of financial literacy. These results parallel the findings

Table 2.
Sample means and standard deviations

Characteristic	Age (years)	Education (years)	Earnings (\$)	Financial satisfaction ^a	Hopelessness ^b	Religiosity ^c	Financial literacy ^d
Men	68.20 (10.29)	13 (3)	17,996 (86,419)	3.64 (0.59)	2.40 (0.84)	4.84 (1.03)	2.17 (0.89)
Women	68.00 (11.55)	12 (3)	9,686 (23,113)	3.60 (0.64)	2.40 (0.87)	5.07 (0.82)	1.81 (0.99)
Black	67.00 (10.00)	11 (4)	12,162 (26,445)	3.50 (0.56)	2.45 (0.79)	5.08 (0.78)	1.71 (0.92)
White	68.60 (10.23)	13 (3)	18,744 (94,707)	3.66 (0.59)	2.38 (0.85)	4.80 (1.07)	2.25 (0.86)
Hispanic	65.94 (10.21)	9 (5)	13,205 (25,252)	3.52 (0.56)	2.61 (0.91)	5.09 (0.65)	1.72 (1.00)
Non-Hispanic	68.00 (10.27)	13 (3)	18,471 (90,237)	3.65 (0.59)	2.37 (0.83)	4.82 (1.06)	2.22 (0.86)
Married	67.00 (9.78)	13 (3)	20,267 (96,419)	3.65 (0.58)	2.37 (0.84)	4.84 (1.04)	2.22 (0.86)
Single	71.00 (11.47)	12 (4)	9,726 (27,025)	3.58 (0.59)	2.49 (0.84)	4.84 (1.04)	2.00 (0.86)

SOURCE: Author's calculations based on 2006 HRS.

NOTE: Sample size = 1,155. Standard deviations shown in parentheses.

- Index ranges from 1 to 5; higher scores indicate greater satisfaction (or less strain).
- Index ranges from 1 to 6; higher scores indicate stronger feelings of hopelessness.
- Index ranges from 1 to 6; higher scores indicate greater religiosity.
- Index ranges from 0 to 3; higher scores indicate greater literacy.

Table 3.
Summary of correlations of study variables

Variable	Age	Earnings	Hopeless-ness	Religiosity	Financial satisfaction	Financial literacy	Mean ^a	Standard deviation ^a
Education	-0.22***	-0.21***	0.28***	-0.09***	0.06*	0.35***	12.40	3.25
Age	...	-0.35***	0.08*	0.05	0.14***	-0.22***	68.03	11.05
Earnings	-0.12***	-0.07*	0.03	0.20***	13,095	58,266
Hopelessness	0.01	-0.26***	-0.17***	2.34	0.85
Religiosity	-0.05	-0.12***	4.97	0.93
Financial satisfaction	0.07*	3.61	0.61
Financial literacy	1.96	0.97

SOURCE: Author's calculations based on 2006 HRS.

NOTE: Sample size = 1,155.

... = not applicable.

* = statistically significant at the 5 percent level; ** = statistically significant at the 1 percent level; *** = statistically significant at the .01 percent level.

a. Education and age values shown in years; earnings values shown in dollars. Hopelessness and religiosity indexes range from 1 to 6; higher values indicate stronger feelings of hopelessness and greater religiosity, respectively. Financial satisfaction index ranges from 1 to 5; higher values indicate greater satisfaction (or less strain). Financial literacy index ranges from 0 to 3; higher values indicate greater literacy.

Table 4.
Ordinary least square regression with financial literacy as dependent variable

Variable	Coefficient	Standard error	Mean ^a	Standardized coefficient
Intercept	3.35*	0.53
Age	b	b	68.03	-0.23
Education	0.02***	0.01	12.40	0.22
Sex	-0.07*	0.03	...	-0.12
Race	-0.06*	0.03	...	-0.14
Financial satisfaction	0.08**	0.03	3.61	0.10
Hopelessness	-0.09	0.02	2.34	-0.12
Religiosity	-0.03*	0.02	4.97	-0.09
Hispanic origin	0.13*	0.05	...	-0.15
Work status	b	0.04	...	0.01
Marital status	0.04	0.03	...	-0.02
Earnings	0.00	0.00	13,095	0.00

SOURCE: Author's calculations based on 2006 HRS.

NOTES: Sample size = 1,148.

... = not applicable.

* = statistically significant at the 5 percent level; ** = statistically significant at the 1 percent level; *** = statistically significant at the .01 percent level.

a. Continuous variables only. Age and education values shown in years; earnings value shown in dollars.

b. Between -0.005 and 0.005.

of many other researchers. However, two previously unexamined psychosocial variables were also found to correlate with financial literacy. Specifically, financial satisfaction and religiosity were both significant independent predictors of financial literacy even after controlling for other variables.

Financial satisfaction was positively correlated with financial literacy. Each one-unit increase in financial satisfaction (range of 1 to 6) was associated with a 0.08 increase in financial literacy (range of 0 to 3). By contrast, the impact of religiosity on financial literacy was negative and less pronounced. Each one-unit increase in religiosity (range of 1 to 6) was associated with a 0.03 decrease in financial literacy. Hopelessness was not significantly correlated with financial literacy.⁷

These findings have broad implications. Although this study makes no proclamation of causality, it does suggest financial literacy has some association with religiosity and financial satisfaction. As a practical matter, the findings may affect strategies for improving financial literacy. It is important to target financial literacy campaigns to maximize the impact of limited education resources.

Although this study offers theoretical frameworks to explain how financial satisfaction, religiosity, and hopelessness may impact financial literacy, it does not test those theoretical pathways unless those variables are significant. Future research should perform path modeling to determine the specific mechanism of significance. This study should also be replicated to determine if these findings hold across broad swaths of Americans. The study used the HRS because it is the only nationally representative sample that includes all of the variables of interest; however, it only surveys Americans older than age 50.

In addition, there is a need to test the effects of those psychosocial variables on savings. Although financial literacy serves as an important potential indicator of retirement security, it does not actually measure retirement security. This study's variables should be regressed on retirement savings to ascertain which ones better determine retirement security and thus, more accurately predict the practical impact of psychosocial constructs.

Notes

¹ Price, Choi, and Vinokur (2002) suggest that this effect may be moderated by locus of control. That is, persons with an external locus of control will take the steps necessary to remedy the financial strain, which could involve increasing their financial literacy. Persons with an internal locus of control may decide not to do so.

² The Cronbach Alpha is a widely accepted minimal standard for new measures that indicates an instrument's psychometric strength (Cronbach 1951; Santos 1999). This study's financial literacy measure achieves an acceptable Alpha coefficient level of 0.70.

³ The Alpha coefficient calculated for religiosity in this study is 0.92.

⁴ The Alpha coefficient calculated for financial satisfaction is 0.80.

⁵ The Alpha coefficient calculated for hopelessness is 0.86.

⁶ I considered using matched IRS data to increase the earnings data reliability in this study. However, using matched data would have significantly increased the amount of missing data, severely shrinking the sample size and reducing the statistical power.

⁷ One of the included variables may act as a moderating or intervening variable, which could have implications for future research.

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