FINANCIAL SERVICES REVIEW

Financial Services Review 30 (2022) 205–222

Financial literacy and the level of financial planning individuals use

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Abstract

There is little evidence in the existing literature on the relationship between financial literacy and the level of financial planning that individuals use. Different financial decisions require varying levels of financial planning, ranging from simple planning to complex planning. These decisions involve tradeoffs between taxes, retirement planning, and consumption to name a few. Making these decisions can be difficult without the right knowledge, and financial literacy can ease the decision-making process. This article evaluates the relationship between financial literacy and the level of financial planning behavior that individuals display. We use the 2012 and 2014 waves of the National Longitudinal Survey of Youth (NLSY79) and found that higher levels of financial literacy are positively associated with more "comprehensive" levels of financial planning behaviors. The results of this article indicate that individuals at the highest level of financial literacy are more likely to choose "comprehensive" planning over doing nothing at all. In addition, those with higher levels of financial literacy are also more likely to display some level of financial planning behavior compared with doing nothing at all. The implications of this may support efforts related to providing broad based financial education, with a specific focus on the value of planning, in the hopes increasing the financial literacy and level of planning of the overall population.

JEL classifications: G40; G41; G50; G53

Keywords: Financial literacy; Financial planner; Financial advisor

1. Introduction

Although there is a lot of research on financial literacy and financial planning, there is not much in the way of how financial literacy is associated with the level of financial planning

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consumers use. We examine the role financial literacy plays in the levels of financial planning chosen by individuals. Financial decisions are complex, and some level of financial planning can help individuals navigate these complex options. As people become financially literate, they should become more aware of the complexity of their financial decisions, and as a result, consume more "comprehensive" levels of financial planning. Comprehensive financial planning covers a wider range of financial situations than simpler forms of planning. Financial planning can range from simple to complex, depending on the knowledge, cost, and time required. Creating a household budget may be classified as simple, while preparing intricate tax returns may be classified as complex. An individual with very little knowledge can set up cash inflows and outflows and mistakes would be minimal. It takes more knowledge and expertise to prepare items such as taxes, especially where there are multiple income sources or tax brackets. In this case, even what seems to be a minor error can result in large financial costs. The more complex the financial task and the higher the potential cost of mistakes, the more prudent it would be to engage in acquiring financial education.

The financial decisions made by individuals will affect their quality of life. Because many of these decisions are complex, making the right decisions can be a challenge for those with limited financial knowledge. Individuals selecting products and strategies must understand performance and pricing characteristics, ever-changing tax laws, the value of money over long periods of time, and the basics of financial theory. All of these factors can be very confusing to the average consumer, which would suggest that individuals would benefit from increased financial knowledge and planning (Bae & Sandager, 1997; Calcagno & Monticone, 2015).

A question that remains is, are people with higher levels of financial literacy more aware of the varying complexity of financial decisions and the value of financial planning? Financial literacy leads to awareness of the intricacies of financial assets and this awareness should encourage people to make better plans. Individuals with high financial literacy tend to make better decisions than those with low literacy. They also tend to engage in more complex forms of financial planning behavior, and better planning is associated with better outcomes (Hilgert, Hogarth, & Beverly, 2003).

In many cases, financial advice serves as a complement to financial literacy (Calcagno & Monticone, 2015; Collins, 2012), as the more literate tend to seek advice. Those with low levels of literacy, financial or otherwise, tend to be less inclined to engage in financial planning activities (Cole, Sampson, & Zia, 2010). They are more likely to do nothing at all when it comes to managing their finances. There is evidence that those with higher levels of financial literacy are more likely to seek professional advice (Calcagno & Monticone, 2015; Kramer, 2012), indicating financial literacy may be a complement to advice (Calcagno & Monticone, 2015). If financial literacy is a complement to financial planning, then financial literacy efforts may increase demand for professional financial planning services.

We analyze responses from the 2012 and 2014 waves of the National Longitudinal Survey of Youth (NLSY79) and evaluate the relationship between financial literacy and the use of financial planning at various levels and found support for our hypotheses. We found that as financial literacy levels increase, they are positively associated with demand for more comprehensive levels of financial planning. We also found that decreases in financial literacy are negatively associated with demand for more comprehensive levels of financial planning.

2. Literature review

Human capital theory states that individuals will invest in their human capital if the benefits outweigh the costs of doing so (Becker, 1994). When topics are complex, the acquisition costs of human capital are high and require large investments of time, energy, and effort. Many in the financial planning profession have invested years into the education and certifications requirements that qualify them as experts in the field. For the average consumer, investments of this size may not practical or efficient. However, individuals acquire some level of financial knowledge and literacy through education and experience. For those that acquire higher levels of literacy, evidence from the literature has shown improved decisions and outcomes related to a number of financial decisions, one of which, is a higher likelihood to plan for retirement (J. R. Agnew, Bateman, & Thorp, 2013; Vinet & Zhedanov, 2010). While this is positive, the average consumer likely lacks the financial sophistication to adequately address all the decisions that are required plan for this goal. To bridge the gap individuals would have to engage in higher levels of financial planning, which would require the acquisition of additional human capital or the renting the human capital from an expert. In either case, higher levels of literacy would be associate with a better understanding of the personal deficiencies related to the decisions at hand.

3. Financial literacy

Financial literacy can be defined as the measurement of how well individuals use information related to personal finance (Huston, 2010). Increased financial literacy improves financial decision making (Huston, 2010; Meier & Sprenger, 2013; Sekita et al., 2011) and financial outcomes including reduced debt and increased participation in retirement saving plans (Clark, Ambrosio, & Mcdermed, 2003; Delavande, Rohwedder, & Willis, 2008; Howlett, Kees, & Kemp, 2008; Vinet & Zhedanov, 2010; Willis, 2008). Human capital theory predicts that individuals will invest time in acquiring knowledge when the expected return exceeds the expected time and transaction costs (Blundell, Dearden, Meghir, & Sianesi, 1999). Individuals will invest in their own financial literacy if they believe the benefits from improved financial decisions exceed the costs of increased knowledge. This knowledge can be used to manage their own finances, but increased knowledge may also allow an individual to better recognize which decisions are too complex and are best delegated to a professional (Collins, 2012; Meier & Sprenger, 2013). However, not everyone has an adequate level of financial literacy or is willing to seek a professional who has that financial literacy.

Individuals with lower financial knowledge may not recognize the value received from increased planning. Those with lower levels of financial literacy are less likely to adequately plan for retirement and make poor decisions during their earning years (van Rooij, Lusardi, & Alessie, 2012). Poor and less educated households are more likely to be financially illiterate (Sekita et al., 2011) and tend to make investment mistakes more frequently than their counterparts (Campbell, 2006). Most individuals are still unable to understand simple

financial concepts like compound interest (Collins, 2012; Lusardi, 2008) and this affects tasks such as portfolio choice and retirement planning. Low levels of financial literacy may even lead to nonparticipation in the stock market (van Rooij, Lusardi, & Alessie, 2011).

In contrast, those with higher levels of financial literacy make better financial decisions. They are more likely to be diversified in their portfolios and have retirement savings (De Bassa Scheresberg, 2013; Vinet & Zhedanov, 2010). Financially literate individuals display better reasoning and numeracy skills and are also able to make more complex decisions. This may translate to demanding more complex levels of financial planning.

3.1. What drives demand for professional advice services?

Uncertainty about the results of financial outcomes may drive individuals to seek professional financial advice. Because people are generally risk averse, a recognition of the uncertainty related to financial outcomes would likely lead individuals to seek financial advice to hedge against variations in financial outcomes. In fact individuals who admit they lack knowledge about their finances were more likely to consult a professional (Bae & Sandager, 1997).

In the financial world, demand for professional services is driven by a variety of factors including but not limited to the complexity of financial decisions and the level of financial resources available (Hanna, 2011). People also may rely on advice from friends and relatives (Hanna, 2011; Kramer, 2012), especially spouses (Chen & Volpe, 1998; Hackethal, Haliassos, & Jappelli, 2012), and may use them as substitutes for professional advice. In this case, they may not see the need for professional financial advice due to their reliance on other resources. It is also possible that the direction of effect may flow from increased literacy to increased demand, or may arise if financial planners target higher wealth clients who happen to be more financially literate (Collins, 2012; Hackethal et al., 2012; Vinet & Zhedanov, 2010).

4. Varying levels of financial planning

In this study, we consider four different levels of financial planning. “No Plan” refers to respondents who have not calculated their retirement needs, nor consulted a financial planner. These are individuals who are not actively involved in managing their financial situation. “Retirement Only” refers to respondents who have only calculated their retirement needs but have not consulted a financial planner. These are individuals who decide to manage their finances without the use of outside help. “Plan Only” refers to respondents who have gotten advice from a financial planner, instead of relying solely on personal human capital. These are individuals who have taken the extra step of consulting a professional. In this case they may have realized that their financial situation is too complex to manage on their own. “Comprehensive” refers to respondents who have both calculated their retirement needs and have consulted a financial planner. These are the individuals

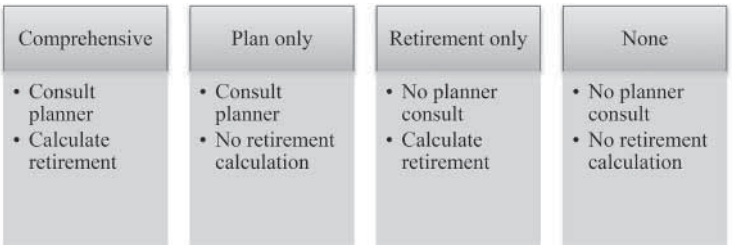

Fig. 1. Levels of financial planning.

who take an active role in managing their finances as well as consulting a professional for advice (Fig. 1).

Using almost any level of financial planning is associated with increased saving for retirement (van Rooij et al., 2012), greater savings in general (Jappelli & Padula, 2013), increased stock market participation (van Rooij et al., 2011), greater portfolio diversification, and improved investment performance (Hackethal et al., 2012).

Individuals may choose to not plan for their financial futures because they are overwhelmed with information (J. R. Agnew & Szykman, 2005; Schwab et al., 2008). This principle can be applied to individuals with formal, detailed plans, versus those who did nothing and or indulged in noncomprehensive planning. Doing nothing and having no plan are not the same. In situations with automatic enrollment into retirement plans, individuals "Do nothing" but still have some level of financial planning (Beshears, Choi, Laibson, & Madrian, 2009). In this case it is done for them instead of them being an active participant. Individuals who do nothing would not choose to enroll in retirement plans where it is not automatic. They would fare worse than those who auto enrolled as they would not even have retirement savings put in place. Individuals may choose to have no plan, either as a result of ignorance or from being overwhelmed by options (Sethi-Iyengar, Huberman, & Jiang, 2004).

There is a lot of information widely available to the public when it comes to financial planning. In addition to the lengthy prospectuses from investments, there is a barrage of advertising. Individuals are also bombarded with mobile apps that state individuals can do all their own planning. This information overload can lead to paralysis and inaction when it comes to financial planning (J. R. Agnew & Szykman, 2005; Sethi-Iyengar, Huberman, & Jiang, 2004). Individuals who become overwhelmed may choose to do nothing because they cannot sift through the relevant information.

Individuals may choose to calculate their retirement needs on their own and forgo seeking professional advice. Individuals who either calculate their own retirement needs or seek professional advice tend to have higher net worth (Hanna, 2011), compared with those who do no planning. Individuals who calculate their retirement needs can more effectively manage their 401(k) contributions than those who do no planning. Those who contribute regularly are more likely to be better prepared for retirement than those who do not. Contributions can affect future taxation (Gokhale & Kotlikoff, 2003), so in this case it may be wise to seek additional levels of financial planning, like from a professional. Individuals who calculate their retirement needs only may shortchange themselves as they are only focused on one area of their financial lives. They may be overlooking items such as wills and healthcare if they only focus on retirement. Healthcare costs can skyrocket as people age and this can be

burdensome with limited income during retirement (Butrica, Goldwyn, & Johnson, 2005). Working with a professional may have the same pitfalls as focusing solely on retirement, if the professional does not offer comprehensive advice.

Due to the complex nature of the financial arena, individuals may choose to rent the human capital of a professional rather than invest in increasing their own financial literacy. Individuals who seek a financial planner may not wish to do their own financial planning. There are multiple definitions of financial planners and each one offers different services (Elmerick, Montalto, & Fox, 2002). While there is much to be said about variation in the types of advice and advice quality, we focus on the evidence related to engaging a financial professional and how that decision is related to the outcomes that individuals experience. Financial planners are specialists in their field. They have invested considerable amounts of time studying the complexities of the financial area so they can give advice. Use of financial planners is associated with positive financial outcomes. Financial planners can help individuals understand the risk associated with holding on to losing stocks. They can also help set up investment plans that prevent individuals from constantly buying and selling; thereby, losing money (Barber & Odean, 2000).

Finally, individuals may choose a comprehensive level of financial planning. At this point, individuals would have looked at their own financial situation as well as recognizing the need for outside help. They may have decided that they should take an active part in planning their financial future but also recognize the need for professional services. Even when seeking the help of a professional it would be wise for individuals to maintain some level of financial literacy so they can be aware of the level of assistance they are getting. Individuals would still need to understand the workings of their financial situation instead of simply leaving it all in the hands of the professional. Individuals who are aware of their financial standing tend to make better informed decisions than those who are not. Individuals who choose the comprehensive level of financial planning seek help from some financial planning professional. Financial planners can guide individuals to the right investments for their given level of risk, avoid frequent trades, and avoid behavioral mistakes such as the disposition effect (Collins, 2012). Financial planners can provide expertise to help individuals make better choices (Hackethal et al., 2012), but few individuals actually use a planner (Hanna, 2011) when they need one. Although individuals can make these decisions through great mental effort, it would be better left to a professional.

We analyze data from the 2012 and 2014 waves of the NLSY79 to examine the relationship between financial literacy and levels of financial planning. We found support for the hypothesis that increased financial literacy is positively associated with higher levels of financial planning.

5. Data, hypotheses, and methods

5.1. Data

This article uses the 2012 and 2014 waves of the NLSY79. This is a nationally representative longitudinal study of Americans ranging from age 14 to age 22 at date of first interview in 1979. The United States Bureau of Labor Statistics sponsors the survey and the interviews are collected by The Ohio State University. The full survey contains 12,868 respondents and our final sample contains 9,432 observations. The study contains questions related to the level of financial planning individuals use, making it an excellent choice for analysis. It explicitly asks if

individuals have calculated their retirement needs, along with asking if they have sought any type of financial planning advice. The study also contains questions about the relevant independent variables such as income and age, which we include in our analysis.

5.2. Sample

The sample used in this article contains 9,432 respondents after we censor the data. We initialize the sample by removing any observations who did not provide a response to the following two questions:

1. Have you [or] [Spouse/partner's name]: "... ever calculated how much retirement income you would need at retirement?"
2. Have you [or] [Spouse/partner's name]: "... consulted a financial planner about how to plan your finances after retirement?"

We further censor the sample by removing nonresponses to the independent variable of interest, financial literacy. The three questions used are as follows:

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: more than $102, exactly $102, less than $102?
2. 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?
3. 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."

We finalize the sample by removing nonresponses to other independent variables, arriving at the final sample size of 9,432 observations.

6. Hypothesis

Hypothesis 1: Financial literacy is not related to the Level of Financial Planning individuals choose.

Hypothesis 1a: Financial literacy is related to the Level of Financial Planning individuals choose.

We expect to find a positive relationship between financial literacy and comprehensive financial planning. Theory indicates that individuals would invest in financial literacy if the benefits outweigh the costs. This could mean increasing their own financial literacy or using the financial literacy of a professional as a proxy. Prior literature indicates the more financially literate tend to be more educated, wealthier, and use financial planning at more comprehensive levels.

7. Method

To test the question, we use the following conceptual model:

$$Level\ of\ financial\ planning = f\left(financial - literacy, demographics\right)$$

We use the multinomial Probit model as follows:

$$y_{ij}^{*} = \left(\beta_j X_i' + \varepsilon_{ij}\right)$$

Here y_{ij}^{*} represents the probability of choosing one of the four levels of financial planning (LFP), X_i' represents a vector of variables including financial literacy, race/ethnicity, gender, income, net worth, education level, age, and marital status, and ε_{ij} represents the error term.

7.1. Dependent variable

The dependent variable is LFP and there are four categories, namely Comprehensive, Plan Only, Retirement Only, and No Plan.

We create the LFP variables by combining two questions from the survey (see Appendix B). One question asks if the respondent consulted a financial planner and they could answer yes or no, as well as refuse to answer the question. The second question asks if the respondent has calculated the amount needed for retirement, and the available choices are the same as for the question on whether they consult a planner. We combine these two questions to form the four LFP options. Respondents are given a value of 1 if they answered yes to the questions and 0 if they did not. Respondents who consult a planner and calculate retirement income needs are coded as "comprehensive plan." Respondents who only consult a planner but do not calculate retirement needs are coded as "plan only" (non-comprehensive). Respondents who do not see a planner but have calculated retirement income are coded as Retirement Only (non-comprehensive). Finally, respondents who have neither consulted a planner nor calculated retirement income needs are classified as No Plan.

7.2. Independent variables

The independent variables comprise financial literacy (generated using three questions), race/ethnicity, sex, income, net-worth, education, age, and marital-status. The level of risk aversion is an important factor in the demand for financial advice (Hanna, 2011); however, only 247 responded to the question and after censoring it dropped the responses to 214. We decided to omit the risk variable due to the small number of viable responses.

7.3. Financial literacy variable

We create the financial literacy variable using a prior model (Lusardi & Mitchell, 2005) by combining three questions from the NLSY79. The three questions are a measure of inflation, numeracy, and stock fund knowledge. The financial literacy measure was developed in 2005 and has been used in various studies (Lusardi & Mitchell, 2006). This measure of financial literacy is divided into three groups as follows: Low literacy, Moderate literacy, and

High literacy. Low literacy is defined as getting zero questions correct, Moderate literacy is defined as getting one to two questions correct, and High literacy is defined as getting all three questions correct.

The income variable is a self-reported, continuous variable and will be transformed into four quartiles for the regression. Net worth is also self-reported and is grouped into four quartiles for the analysis. The age variable is a self-reported linear variable and will be transformed into the following age ranges: 47–50, 51–55, and 56 and above.

Education is an ordinal variable ranging from 0 to 20. A value of 0 represents no school completed, 1 means first grade is the highest grade completed and so on with 20 representing the eighth year of college. The varying levels of education are broken down into categories based on College Degree versus No Degree for the purpose of this article. The gender variable is a binomial value with 1 being male and 0 being female.

Race/ethnicity is a discrete variable ranging from 1 through 3 with 1 being Hispanic, 2 Black, and 3 being non-Hispanic non-Black. Race/ethnicity will be used as a dummy variable for the regression.

8. Model

We use the Multinomial Probit regression method to measure the relationships between the independent variables and the level of financial planning used by respondents. This regression method allows for choice when there is no specified order to the options. While one could argue that having some level of financial planning is better than doing nothing at all we cannot make a case for a ranking between Retirement Only and Plan Only. In fact Lusardi and Mitchell (Lusardi & Mitchell, 2005) refer to those who calculate their retirement needs as using simple planning. The simple level of financial planning would fall in between no planning and comprehensive planning. It would be difficult to make a hierarchical case for retirement only versus plan only at this point.

9. Results

9.1. Univariate analysis

The sample for analysis contains 9,432 observations. Table 1 shows the descriptive statistics for the sample. About 18% of the sample use a comprehensive level of financial planning, about 7% use the plan only level of financial planning. About 17% use the retire only level, and about 58% use no plan.

About 50% of the sample have high financial literacy, meaning they got all three questions correct. About 35% of the sample have moderate literacy, with the remaining 14% of the sample scoring in the low literacy range.

About 19% of the final sample is Hispanic, 31% is Black, and the remaining 50% is non-Black non-Hispanic. Although we recognize that Hispanic is not a race classification, this is

Table 1 Descriptive statistics for level of financial planning sample (N = 9,432)

Variable	Frequency
Level of financial planning	
Comprehensive	17.90%
Plan Only	6.81%
Retire Only	17.26%
No Plan	58.04%
Financial literacy	
Low	14.40%
Moderate	35.41%
High	50.19%
Race/ethnicity	
Hispanic	17.37%
Black	31.09%
Non-Black non-Hispanic	51.54%
Sex	
Male	51.48%
Female	48.52%
Income quartiles	
$0 to $10,000	25.59%
$10,001 to $35,000	24.87%
$35,001 to $64,000	24.71%
$64,001 and above	24.83%
Net worth quartiles	
$0 to $2,000	25.48%
$2,001 to $67,000	24.54%
$67,001 to $270,750	24.98%
$290,751 and above	25.00%
Education	
College degree	28.11%
Less than college	71.89%
Marital status	
Married	62.12%
Not married	37.88%

the title that is used in the data collection method of the survey (see Appendix 3: Demographics Questions).

About 51% of the sample is male, while the remaining 49% is female. The sample has a mean age of 52 years and ranged from 47 years to 58 years. About 71% of the sample have less than a college degree, with the remaining 28% having a college degree or higher. The portion of those reporting no college degree includes respondents currently in college who have not completed their degree at the time of the survey. This sample has a mean income of about $44,000, with a maximum income of about $370,000. The mean net worth for the sample is about $270,000, with a maximum net worth of slightly above $5,000,000. The income and net worth of the respondents are divided into quartiles for the purpose of analysis.

Finally, about 62% of the sample is married, including those who are currently separated. The remaining 38% are unmarried and this includes divorced, widowed, and never married individuals.

Table 2 Cross tabulations of sample by level of financial planning (N = 9,432)

Variables	Level of financial planning			
	Comprehensive	Plan Only	Retire Only	No Plan
Financial literacy				
Low	8.98%	6.41%	14.43%	70.18%
Moderate	13.35%	5.63%	16.62%	64.40%
High	23.66%	7.75%	18.53%	50.06%
Race/ethnicity				
Hispanic	13.61%	5.92%	17.58%	62.88%
Black	12.04%	5.87%	15.89%	66.20%
Non-Black non-Hispanic	22.87%	7.67%	17.98%	51.48%
Sex				
Male	16.95%	6.55%	18.22%	58.28%
Female	18.90%	7.08%	16.24%	57.78%
Income quartiles				
$0 to $10,000	13.30%	4.72%	12.60%	69.37%
$10,001 to $35,000	9.93%	5.67%	14.49%	69.91%
$35,001 to $64,000	17.55%	8.54%	20.29%	53.63%
$64,001 and above	30.96%	8.37%	21.82%	38.86%
Net worth quartiles				
$0 to $2,000	8.11%	4.54%	13.20%	73.82%
$2,001 to $67,000	9.29%	5.01%	14.95%	70.76%
$67,001 to $270,750	17.36%	7.72%	19.10%	55.81%
$290,751 and above	36.85%	9.97%	21.50%	31.68%
Education				
College degree	33.42%	10.00%	19.16%	37.42%
Less than college	11.83%	5.56%	16.52%	66.10%
Age				
47–50	15.05%	5.58%	15.46%	63.91%
51–55	18.21%	7.30%	17.59%	56.90%
56+	22.54%	6.86%	19.48%	51.11%
Marital status				
Married	20.74%	7.15%	18.36%	53.75%
Not married	13.24%	6.24%	15.45%	65.07%

Table 2 shows the cross tabulations of the sample by level of financial planning. It is important to note that across all categories most individuals choose the no plan level of financial planning. We see that among those with low levels of financial literacy, about 70% choose the no plan level of financial planning. This drops to about 50% for those with high levels of financial literacy. As financial literacy levels increase, there is a drop in the chance of respondents using the no plan level financial planning. About 24% of those with high financial literacy use the comprehensive level of financial planning, about 8% use plan only, about 19% use retire only, and about 50% use no plan.

About 14% of Hispanics use the comprehensive level of financial planning, while about 63% use no plan. About 12% of Blacks use the comprehensive level of financial planning, while about 66% use no plan. About 23% of non-Black non-Hispanics use the comprehensive level of financial planning, compared with about 52% who use no plan. About 17% of males and about 19% of females use the comprehensive level of financial planning. About 58% of both males and females use the no plan level of financial planning.

Table 3 Summary statistics for three financial literacy questions (N = 9,432)

	Full sample	Low literacy	Moderate literacy	High literacy
Interest				
More than $102 (correct response)	75.08%	33.28%	56.77%	100.00%
Exactly $102	14.40%	39.62%	24.55%	0.00%
Less than $102	10.52%	27.10%	18.68%	0.00%
Inflation				
More than today	8.02%	28.13%	11.20%	0.00%
Exactly the same	9.78%	35.94%	12.99%	0.00%
Less than today (correct response)	82.21%	35.94%	75.81%	100.00%
Risk				
True	77.18%	21.65%	67.43%	0.00%
False (correct response)	22.82%	78.35%	32.57%	100.00%

As income increases, we see an increase in the proportions of individuals who use the comprehensive level of financial planning except for the lowest quartile of income. As income increases, we see a reduction in the proportion of individuals who use the no plan level of financial planning. About 69% of those in the lowest income bracket use the no plan level of financial planning, compared with about 39% in the highest income bracket. We see a similar trend with net worth with those in the lowest bracket choose the no plan level of financial planning. As net worth increases, we see a significant drop in the proportion of the sample that use the no plan level of financial planning. About 74% of those in the lowest wealth bracket use the no plan level of financial planning, while about 32% of those in the highest wealth bracket do so.

Of individuals with a college degree, about 33% use the comprehensive level of financial planning, while about 37% use no plan. As age increased the proportion of individuals who use the comprehensive level of financial planning increases. About 64% of individuals aged 47-50 use no plan and this falls to about 51% around age 65+. About 21% of individuals use the comprehensive level of financial planning compared with about 13% of individuals who are not married. About 54% of those who are married use no plan, compared with about 65% who are not married.

Table 3 shows the summary statistics of the three financial literacy questions. Although about 75% of the full sample got the interest question correct, only about 33% of individuals with low financial literacy and about 57% with moderate literacy got it correct. About 82% of the full sample got the inflation question correct. About 36% of those with low literacy and about 76% of those with moderate literacy were able to answer correctly. The risk question seemed to be the most difficult of the three to get correct. Only about 23% of the full sample got this question correct, compared with about 82% who got the interest question correct and about 75% who got the interest question correct.

9.2. Multivariate analysis

Table 4 shows the Marginal Effects of the Multinomial Probit regression of the independent variables on the Level of Financial Planning. Each marginal effect estimates the

Table 4 Marginal effects of independent variables on the level of financial planning (N = 9,432)

Group	Marginal effect	Standard error	Significance
Comprehensive			
Literacy (none)			
Moderate	0.0253	(0.0344)	
High	0.0697	(0.0346)	**
Race/ethnicity (Hispanic)			
Black	0.0156	(0.0116)	
Non-Black non-Hispanic	0.0204	(0.0104)	**
Gender (male)			
Female	0.0405	(0.0078)	***
Income quartile (1st)			
2	−0.0329	(0.0107)	***
3	0.0108	(0.0111)	
4	0.0448	(0.0122)	***
Net worth quartile (1st)			
2	0.0130	(0.0095)	
3	0.0709	(0.0106)	***
4	0.1925	(0.0133)	***
Education (no degree)			
College degree	0.1038	(0.0098)	***
Age (47–50)			
51–55	0.0288	(0.0083)	***
56+	0.0710	(0.0136)	***
Status (not married)			
Married	0.0000	(0.0083)	
Plan Only			
Literacy (none)			
Moderate	0.0084	(0.0238)	
High	0.0136	(0.0239)	
Race/ethnicity (Hispanic)			
Black	0.0058	(0.0081)	
Non-Black non-Hispanic	0.0024	(0.0073)	
Gender (male)			
Female	0.0069	(0.0054)	
Income quartile (1st)			
2	0.0104	(0.0074)	
3	0.0280	(0.0078)	***
4	0.0107	(0.0079)	
Net worth quartile (1st)			
2	0.0028	(0.0068)	
3	0.0241	(0.0076)	***
4	0.0451	(0.0092)	***
Education (no degree)			
College degree	0.0293	(0.0069)	***
Age (47–50)			
51–55	0.0163	(0.0057)	***
56+	0.0125	(0.0090)	
Status (not married)			
Married	−0.0076	(0.0058)	

(continued on next page)

Table 4 (Continued)

Group	Marginal effect	Standard error	Significance
Retire Only			
Literacy (none)			
Moderate	0.0419	(0.0327)	
High	0.0466	(0.0329)	
Race/ethnicity (Hispanic)			
Black	−0.0015	(0.0122)	
Non-Black non-Hispanic	−0.0155	(0.0111)	
Gender (male)			
Female	−0.0055	(0.0081)	
Income quartile (1st)			
2	0.0187	(0.0105)	*
3	0.0638	(0.0113)	***
4	0.0686	(0.0126)	***
Net worth quartile (1st)			
2	0.0049	(0.0109)	
3	0.0323	(0.0117)	***
4	0.0599	(0.0136)	***
Education (no degree)			
College degree	−0.0036	(0.0096)	
Age (47–50)			
51–55	0.0209	(0.0088)	**
56+	0.0409	(0.0141)	***
Status (not married)			
Married	0.0061	(0.0085)	–
No Plan (base outcome)			

Note. Denotes significance at the following levels: *$p < .1$, **$p < .05$, ***$p < .01$.

probability of using a level of financial planning given a change in one independent variable, holding all others constant. The base category is no plan and all categories will be compared with it.

9.3. Comprehensive level of financial planning

We found that individuals with high financial literacy were more likely than those with low literacy to use comprehensive financial planning over no plan. This is consistent with our hypothesis that increased financial literacy is associated with using the comprehensive level of financial planning.

Non-Black non-Hispanic individuals were more likely than Hispanics to use comprehensive financial planning over no plan. Our results indicate that females were more likely than males to use comprehensive financial planning over no plan. Individuals in the second quartile of income were less likely than those in the first quartile to use comprehensive over no plan. As individuals move up to the top quartile of income they are more likely than those in the first quartile to use comprehensive over no plan. Individuals in the third and fourth quartiles of wealth are more likely than those in the first quartile to use comprehensive over no plan. We also found that individuals with a college degree were more likely than those with no degree to use comprehensive over no plan. This result is consistent with the hypothesis as

financial literacy and education tend to be correlated. Finally, we found that older individuals were more likely than younger ones to use comprehensive over no plan.

9.4. Plan only level of financial planning

We found that individuals in the third income quartile were more likely than those in the first quartile to use plan only over no plan. We also found that individuals in the third and fourth wealth quartiles were more lkeily than those in the first quartile to use plan only over no plan. Individuals with a college degree were more likely than those with no degree to use plan only over no plan. Finally, we found that individuals in the accumulation stage (age 51–55) were more likely than those at the acquisition stage (age 47–50) to use plan only over no plan.

9.5. Retire only level of financial planning

We found that individuals in the second, third, and fourth income quartiles were more likely than those in the first quartile to use retire only over no plan. These results are consistent with the Life Cycle Theory which indicates these individuals are aware of the need for consumption smoothing. We also found that individuals in the third and fourth wealth quartiles were more likely than those in the first quartile to use retire only over no plan. Individuals at the accumulation and decumlation stages were more likely than those at the acquisition stage to use retire only over no plan.

10. Discussion

The current study examines the association between financial literacy on the level of financial planning individuals use. We found that individuals with high levels of financial literacy were more likely to engage in the comprehensive level of financial planning than those with no literacy. We also found that as financial literacy increases individuals were less likely to use no plan than those with no financial literacy. These results are consistent with our hypothesis that financial literacy is related to the level of financial planning individuals use. Human Capital Theory would indicate that more educated individuals may also invest in either their own financial literacy or renting someone else's human capital. By choosing the the comprehensive level of financial planning they are combining their own human capital with that of a professional to obtain the best decision-making set.

Our results indicate that there may be some value in providing broad-based financial education that is tilted towards the value of planning and how to select a quality advisor where the costs of human capital acquisition are high.This may be especially valuable for those that do not want to make heavy investments in the human capital required to make quality decision in complex domains. This type of education could make the delegation decision more efficient, while also increasing the demand for quality professional advice.

While we note that increased financial literacy is associated with comprehensive financial planning, we also note that respondents have seen the questions in prior surveys. We may be observing a bit of the learning effect here if respondents have simply remembered the

questions. This is a limitation of the current study. Future research may want to assess the level of financial planning with different literacy questions or with a different sample. The respondents in this survey have seen the questions in prior years and the responses may not be capturing true financial literacy but rather memorization of the answers.

Appendix A: Financial Literacy Questions

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: More than $102, exactly $102, less than $102?
2. 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?
3. 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."

Appendix B: Levels of Financial Planning Questions

1. Have you [or] [Spouse/partner's name]: ". . . ever calculated how much retirement income you would need at retirement?"
2. Have you [or] [Spouse/partner's name]: ". . . consulted a financial planner about how to plan your finances after retirement?"

Appendix C: Correlation Matrix of Level of Financial Planning Data

	Group	Literacy12	Race	Sex	Incqt	Netqt	Edlevel	Ages1	MarStatus
Group	1								
Literacy12	−0.1787	1							
Race	−0.1306	0.1563	1						
Sex	−0.0213	−0.0987	−0.0191	1					
Incqt	−0.2341	0.2142	0.1504	−0.2254	1				
Netqt	−0.3372	0.2265	0.2732	−0.0443	0.4175	1			
Edlevel	−0.2962	0.242	0.1792	0.0353	0.3256	0.3177	1		
Ages1	−0.075	0.0151	−0.0087	0.0145	−0.0075	−0.0082	0.0135	1	
MarStatus	−0.1141	0.1045	0.1402	−0.0444	0.1784	0.3187	0.1295	0.0148	1

Note. Literacy12 = literacy questions; Incqt = income quartiles; Netqt = net worth quartiles; Edlevel = education level; Ages1 = age groups; MarStatus = marital status.

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