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Racial Differences in the Returns to Financial Literacy Education

We examine financial literacy and the returns to financial literacy education, specifically focusing on the racial financial literacy gap. We confirm evidence that whites have higher financial literacy scores relative to minorities and that financial literacy increases with participation in financial literacy education. However, we find the benefit of participation in financial literacy education is higher for whites than that for minorities. Thus, the impact of being white alone persists, indicating a racial financial literacy and/or behavioral difference despite financial literacy education. Our findings have implications for policymakers interested in narrowing the racial wealth gap via financial literacy education.

The racial wealth gap in the United States is widening. Between 2010 and 2013, net worth for white households grew from 10 times that of black households to 13 times (Kochhar and Fry 2014). Researchers attribute the roots of this disparity to reasons including property values, homeownership rates, income differences, employment opportunities, college education, and intergenerational wealth (Shapiro, Meschede, and Osoro 2013). Furthermore, there are conventional claims of minorities making poor financial decisions due to a lack of basic financial knowledge (van Rooij, Lusardi, and Alessie 2012) and consequently, perpetuating the racial wealth gap (Lusardi and Mitchell 2011a). This prevailing sentiment has inspired a financial literacy movement nationwide with financial education program initiatives targeting both women and minorities.[1] Our research investigates

1. The Financial Literacy and Education Commission (established under the Fair and Accurate Credit Transactions Act of 2003) is tasked with the development and maintenance of a national financial

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determinants of financial literacy with a focus on the variation of determinant effect by race.

There is abundant evidence linking financial literacy and wealth (e.g., Bucher-Koenen et al. 2017; Disney and Gathergood 2013; Jappelli and Padula 2013; Lusardi and Mitchell 2011b; Lusardi, Mitchell, and Curto 2010). High levels of financial literacy reduce the barriers to investing in stocks and are associated with positive behaviors related to financial planning (van Rooij, Lusardi, and Alessie 2012). Furthermore, Mandell and Klein (2009) provide empirical evidence linking increases in financial literacy with financial literacy education. Therefore, if there are differences in financial literacy education based on race, we can infer that those differences may represent a possible explanation of the disparity in wealth accumulation. Hamilton and Darity (2017), however, argue that poor economic choices and financial decisions by minorities are not attributed to a lack of financial literacy but rather to the socioeconomic and political structures of this country (i.e., racial barriers deeply ingrained in our culture and infrastructures). Their argument suggests that since financial behaviors and wealth accumulation are not a consequence of financial literacy acuity, financial literacy education efforts will not close the racial wealth gap.

In this paper, we explore these conflicting ideologies and test whether acumen incongruences are in fact dependent upon participation in financial literacy education, if variation in exposure to financial education impacts financial literacy, and whether these outcomes are dependent on race. The Hamilton and Darity (2017) claim holds if (1) financial literacy is independent of financial education and exposure or (2) race persists as a predictor of financial literacy. However, if race and financial literacy, and financial literacy education are correlated, then access (or lack of access) to financial education and its impact on financial behavior may in fact attribute to the widening of the wealth gap.

We use the most recent iteration of the National Financial Capability Study (NFCS) to examine financial literacy outcomes and find evidence of a racial financial literacy gap between white and minority. Using ordinary least square (OLS) estimation to examine the determinants of financial literacy, we find that financial literacy education does increase financial literacy; however the returns to financial literacy education are

education website (MyMoney.gov) and a national strategy on financial education. Financial Literacy Month (April) became officially recognized by the United States in 2004; Resolution 316, "States that the Senate designates April 2004 as Financial Literacy Month to raise public awareness about the importance of financial education in the United States and the serious consequences that may be associated with a lack of understanding about personal finances." https://www.congress.gov/bill/108th-congress/senate-resolution/316

higher for whites than minorities; whites score 6.9%–11.3% higher on financial literacy measures. Financial literacy education increases financial literacy scores by 4.1% for minorities and increases it by 5.6% for whites. Therefore, providing financial literacy education, in its current form, increases the financial knowledge gap between whites and minorities. Our findings have policy implication in the growing area attempting to address the racial wealth gap and other racial outcome gaps. In particular, our paper supports the efforts of policymakers interested in narrowing the racial wealth gap and encourages analysis of the true efficacy of conventional financial education programs.

LITERATURE REVIEW

In the past several years, there has been an increased interest in the widening racial wealth gap. Between 2010 and 2013, net worth for white households grew from 10 times that of black households to 13 times (Kochhar and Fry 2014). There is a clear correlation between the widening racial wealth gap and differences in racial economic outcomes. Noted reasons for this phenomenon range from differences in knowledge and/or financial choices to a historically biased systemic infrastructure.

Xiao and O'Neill (2016) use NFCS 2012 data and find that higher measures of financial literacy positively impact financial capabilities and behaviors; concluding that more financial awareness leads to better financial outcomes. However, they do not identify if this relationship holds for both whites and minorities. Financial literacy acuity is negatively correlated with usage of payday loans and other high-cost credit options (O'Neill and Xiao 2015) and positively correlated with increased participation in stock market and retirement savings (van Rooij, Lusardi, and Alessie 2012). In general, the literature indicates both a cost premium for a lack of financial literacy and improved financial decision making with increased financial literacy. This widespread belief has led to the recent push to educate minorities and women specifically in order to decrease the wealth gap in these groups relative to whites and men, respectively. The underlying assumption being the existing (and growing) wealth gap for these groups must be due to a lack of knowledge.

In Harris and Yelowitz (2018) examination of racial differences in the acquisition of life insurance, they find that blacks not only have higher mortality rates but also are more likely to carry life insurance relative to whites. This empirical evidence contradicts the claim citing poor financial

choices as the main determinant of the racial wealth gap. Choosing life insurance coverage should decrease the racial wealth gap given that the loss of (potential) income is being hedged and thus providing conceivable impetus toward greater intergenerational wealth mobility. Financial experts agree that life insurance is one of the key ingredients of a responsible estate. However, even when controlling for choices such as occupation, blacks still accumulate less wealth (Oliver and Shapiro 2013). Hence, there must be reasons beyond informed choices that lead to differences in wealth accumulation.

A closer look at the structural difference argument forces us to face the idea and understanding of how racism is impacting education, employment, income, credit, housing, and inheritance; all variables that are affected by structural racism and affect the racial wealth gap Shapiro, Meschede, and Osoro 2013. Specific to intergenerational wealth, structural racism can impact credit risk, home equity, interest rates, and thus, savings. From a stratification economics perspective, one possible cause for disparate outcomes in financial wellness is due to consumers' misinformation about their own credit quality (Ards et al. 2015). Individuals likely to underestimate their credit score will not seek lending opportunities to avoid being denied. Ards and Myers Jr. (2001) find no evidence suggesting that blacks and whites have different credit risk but do find that black borrowers incorrectly believe that they have higher credit risk; thus, creating an outcome where black households are less likely to seek homeownership and consequently underinvest in home equity.

According to a study by Shapiro, Meschede, and Osoro (2013)), which followed 1,700 individuals from 1984 to 2009, homeownership explains 27% of the racial wealth gap; the largest contributor to differences in wealth accumulation is the ability to build home equity. The black homeownership rate is 38% compared with 66% for whites, and conditional on owning a home, house values for blacks are roughly 50% of that for whites (Shapiro, Meschede, and Osoro 2013).[2] For the average American, home equity is their largest asset and greatest determinant of wealth accumulation and intergenerational wealth and the black household's ability to accumulate home equity is severely limited due to their home values. Additionally, research has found that blacks pay more for mortgage loans, auto loans, and other goods and services (e.g., Black, Boehm, and DeGennaro 2003; Cheng, Lin, and Liu 2015; Clarke, Roy, and Courchane 2009; Munnell

2. Practices such as redlining—denial of services and/or increased pricing based on the racial composition of an area—continue to attribute to homeownership disparities.

et al. 1996; Wheeler and Olson 2015). Relative to white borrowers, blacks are more likely to be denied a mortgage (Wheeler and Olson 2015) and if approved, blacks receive interest rates on mortgages that are 29 basis points higher (Cheng, Lin, and Liu 2015).

In addition to increased expenses, minorities experience lower income relative to whites. Research has found that blacks specifically are less likely to be hired, receive lower wages when hired, and are less likely to be promoted (Gobillon, Rupert, and Wasmer 2014). This effect is compounded with the fact that minorities are less likely to attend college (Shapiro, Meschede, and Osoro 2013). These are all probable differences that may lead to wealth accumulation disparities. Financial literacy differences are also a plausible reason causing wealth disparities. Boshara, Emmons, and Noeth (2015) find that blacks are more likely to have lower "financial health" as measured by the index they construct that considers savings rate, payment behavior, and monthly credit card balance, having 10% of the value of their assets in liquid form, having a debt-to-income ratio less than 40%. A mix of financial choices and behaviors that can lead to wealth accumulation. Still, it is unclear whether this lower financial health is related in any way to financial literacy or knowledge.

According to Charles and Hurst (2002), the gap in median net worth between black and white households was approximately $67k, whereas more recently Hamilton and Darity (2017) report the gap at more than $93k. To calibrate this, racial wealth gap governments and educational institutions have invested in the provision of financial literacy education. According to The National Council of Economic Education "Survey of State,"[3] there has been an increase from 13 to 20 states that require economic education in high school since 1998. For financial literacy, an increase from 1 to 17 occurred during the same period. However, these education programs were developed without input from the community that it serves (Schaffer and Mohs 2016). Raising concerns that the curriculum development does not match the needs of low income and minority consumers. Reich and Berman (2015) find that although financial literacy education programs improve financial literacy and financial behavior, attrition is high in low-income areas. Thus, blanket provision of financial literacy education may not lead to the intended financial literacy ingenuity necessary to impact financial behaviors in areas that need it most.

3. http://councilforeconed.org/wp/wp-content/uploads/2016/02/sos-16-final.pdf

DATA

National Financial Capabilities Study

We use data from the 2015 iteration of the NFCS.[4] The study examines individuals' financial literacy and financial behavior. The survey is administered online and collects data on four areas: demographics, financial behaviors, financial knowledge, and opinions about financial concepts. These data are nationally representative, including 500 observations from each state and the District of Columbia. It is often used to compare financial behaviors of different demographics (Allgood and Walstad 2016; Knoll and Houts 2012; Skimmyhorn 2016). The survey has been conducted in years 2009, 2012, and 2015. It was designed by the US Department of Treasury, President Bush's Council on Financial Literacy, and FINRA Investor Education Foundation. The objective in 2009 was to start evaluating key financial literacy indicators and to be able to analyze the data by demographics and individuals' behavior.

Measuring Financial Literacy

Researchers have been inconsistent in their methodology when measuring financial literacy making it difficult to construct a standardized measure. In a study of 52 different data sets used in 71 different studies, Huston (2010) finds that there is no standardized consistent measure or definition of financial literacy. To avoid introducing yet another measure of financial literacy we use the "Big Five" questions Hastings, Madrian, and Skimmyhorn 2013), which rely heavily on the measures foundationally constructed by Lusardi and Mitchell's (2007) "Big Three" questions. These questions are the commonly used questions in the literature to measure financial literacy (Knoll and Houts 2012) and given the research suffers from the constraint of no common measurement, we decided it was best practice to rely on a measure that will allow future researchers to compare our results using other time variant samples.[5] Our measure of financial literacy is determined by respondents' performance on five financial literacy questions which focus on understanding the relationship between bonds and interest rates, compound interest, diversification, real rates of returns, and loan maturity.[6]

4. http://www.usfinancialcapability.org/about.php

5. The first NFCS study was conducted in 2009 followed by additional studies in 2012 and 2015 thus far (FINRA Investor Education Foundation 2016).

6. See Appendix B for actual questions and answers.

Measuring Financial Literacy Education

Measuring financial literacy education is also intricate. NFCS respondents answer questions about their access to financial literacy education and the sources of that education. For example, respondents are asked whether they receive financial literacy education from their parents and whether financial education was offered at their school. Respondents are also given the opportunity to acknowledge additional sources of financial literacy education via high school, college, employer, and/or military. We use these responses to create three measures of financial literacy education. First, we determine access to financial literacy by denoting when a respondent's education system offered financial literacy classes. Second, we identify participants, conditional on classes being offered, when respondents confirm their participation. Finally, we measure the intensity of respondents' financial literacy education by aggregating the sum of their sources of financial literacy education.

Although we identify measures of financial literacy education, our measures do not account for the quality of education. Implicit in our measures is the assumption that quality is comparable across different sources. Measuring financial literacy education is complex and there is a myriad of available educational programs (Fox, Bartholomae, and Lee 2005). In addition to formal education curriculum provided by the schooling system and employers, access to financial literacy education can be provided by community organizers, cooperative extension services, businesses, online programs, and faith-based organizations.

Summary Statistics

Table 1 provides summary statistics for the variables we use in this study. The average respondent scored 60% correct on the financial literacy questions. White respondents scored 12% higher than minorities on the same test. This difference is statistically significant. Minorities are more likely to have access to financial literacy education, with 41% of minorities being offered financial literacy education compared with only 32% of whites. We also find that 27% of minorities, compared with 22% of whites, participate in the offered financial literacy education. Therefore, the financial literacy gap is present even though minorities have more access to financial education and presumably receive more financial literacy education.[7]

7. NFCS does not provide attrition rate data.

TABLE 1
Summary Statistics

	Minority	White	Total		Minority	White	Total
actual literacy %	0.5192	0.6310	0.5997	selfemp	0.0680	0.0741	0.0724
fin edu offer	0.4107	0.3296	0.3523	fulltime	0.4140	0.3815	0.3906
fin edu participate	0.2750	0.2299	0.2425	parttime	0.1085	0.0937	0.0979
fin edu exposure[a]	0.8482	0.8479	0.8480	homemaker	0.0800	0.0925	0.0890
Male	0.4332	0.4586	0.4515	student	0.0853	0.0320	0.0469
child[b]	0.7721	0.6495	0.6838	disabled	0.0397	0.0453	0.0438
income drop	0.2763	0.1931	0.2164	unemp	0.0791	0.0460	0.0553
age 18–24	0.1798	0.0806	0.1084	retired	0.1254	0.2349	0.2043
age 25–34	0.2398	0.1568	0.1800	live alone	0.2598	0.2304	0.2386
age 35–44	0.1830	0.1595	0.1661	live sigother	0.4853	0.6390	0.5959
age 45–54	0.1617	0.1890	0.1814	live parents	0.1384	0.0559	0.0790
age 55–64	0.1380	0.1906	0.1758	live other	0.1165	0.0748	0.0865
age 65+	0.0977	0.2235	0.1882	less$15 k	0.1568	0.0922	0.1103
< highschool	0.0218	0.0202	0.0207	$15_25k	0.1185	0.1023	0.1068
= highschool	0.1348	0.1726	0.1620	$25_35k	0.1188	0.1040	0.1081
highschoolalt	0.0686	0.0598	0.0622	$35_50k	0.1513	0.1437	0.1458
somecollege	0.2797	0.2760	0.2770	$50_75k	0.1897	0.2135	0.2068
associates	0.1119	0.1089	0.1097	$75_100k	0.1156	0.1461	0.1376
bachelors	0.2442	0.2235	0.2293	$100_150k	0.1008	0.1332	0.1241
postgrad	0.1390	0.1390	0.1390	150 k+	0.0486	0.0649	0.0604
married	0.4343	0.5957	0.5505	Observations	6,928	17,801	24,729
single	0.4281	0.2343	0.2886				
div/separated	0.1068	0.1236	0.1189				
widowed/er	0.0307	0.0464	0.0420				

[a]Range: 0–5 possible financial education sources.
[b]Range: 0–4 where 4 represents 4 or more children.

The sample is relatively equally divided between male and female and is equally distributed across the age distribution. Minorities are more likely to be in the age group of 25–34 years, while whites are more likely to be 65+ years. Therefore, the white sample is relatively older and is more likely to be retired relative to minorities.[8] The majority of our sample works full time. Minorities are more likely to be single and living with parents compared to whites. This finding is likely correlated with the younger age of minorities compared to whites. The income and education distribution are equal across the race groups; the majority of respondents

8. "National and state-level findings are based on data from the 2015, 2012, and 2009 NFCS State-by-State Surveys, each of which were nationwide online surveys of over 25,000 American adults. Findings from the survey are weighted to be representative of Census distributions according to the American Community Survey. National figures are weighted to be representative of the national population in terms of age, gender, ethnicity, education and Census Division." http://www.usfinancialcapability.org/about.php

are in the 50–75 K individual income range; the US average pretax income per "consumer unit" as of 2015 is US$69,629 according to the Bureau of Labor Statistics.[9]

METHODOLOGY

We use OLSs to estimate the impact of race on financial literacy outcomes. Our main regression is as follows:

$$Y_i = \beta_0 + \beta_i X_i + \varphi W_i + \tau E_i + \gamma \left(W_i * E_i\right) + \varepsilon \quad (1)$$

where Y_i is the measure of individual i's financial literacy knowledge as measured by their percentage performance on the five financial literacy questions. The vector X_i includes demographic, income, education, marital status, employment status, and family structure variables. The dummy variable W_i identifies white respondents. The vector E_i includes three financial literacy education measures. First, we include whether financial literacy education is offered; second, whether the individual participated in financial literacy education conditional on it being offered; and third, a variable measuring the intensity of financial education exposure by summation of the sources of financial education. Individuals can receive financial literacy through several educational providers. Therefore, it is important that we control for the frequency of financial education received. We also include an interaction term, white and financial literacy participation, to measure the returns to financial literacy education for whites compared to minorities.

RESULTS

We estimate the model for following three samples: the entire sample, whites only, and minorities only. For each sample, we estimate seven to nine specifications. In Table 2, we report the results for the entire sample and find that even when controlling for financial literacy education and intensity of exposure, whites score 6.8%–11.3% higher on financial literacy knowledge measure relative to minorities. Financial literacy classes being offered increases financial knowledge by 2.9%. Participating in financial literacy education increases financial literacy knowledge by 5.2%. We expect that the coefficient on offered is a measure of positive externalities from education, or a measure of the importance the local area

9. https://www.bls.gov/news.release/cesan.nr0.htm

TABLE 2
Regression Results (Whole Sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
white	.069***	.068***	.068***	.068***	.066***	.067***	.063***	.112***	.113***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
fin edu offer		.029***			.006			.007	
		[0.003]			[0.004]			[0.005]	
fin edu participate			.052***			.036***	.025***		.032***
			[0.004]			[0.006]	[0.008]		[0.006]
fin edu exposure				.024***	.019***	.009***	.009***	.037***	.029***
				[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
white × fin edu participate							.017**		
							[0.008]		
male	.080***	.079***	.079***	.078***	.079***	.078***	.078***		
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]		
child	−.009***	−.010***	−.010***	−.010***	−.010***	−.010***	−.010***		
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]		
idropyes	−.014***	−.019***	−.018***	−.015***	−.019***	−.018***	−.018***		
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]		
age25	−.008	−.004	−.003	−.003	−.003	−.003	−.003		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		
age35	.051***	.057***	.057***	.057***	.057***	.057***	.057***		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		
age45	.103***	.112***	.111***	.109***	.112***	.112***	.112***		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		

TABLE 2
(Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
age55	.138***	.145***	.144***	.144***	.145***	.145***	.145***		
	[0.007]	[0.008]	[0.008]	[0.007]	[0.008]	[0.008]	[0.008]		
age65	.161***	.167***	.166***	.168***	.167***	.167***	.168***		
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]		
nohighschool	−.267***	−.249***	−.246***	−.255***	−.244***	−.244***	−.244***		
	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]		
highschool	−.178***	−.170***	−.168***	−.169***	−.167***	−.167***	−.167***		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
highschoolalt	−.196***	−.186***	−.183***	−.186***	−.182***	−.181***	−.181***		
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]		
somecollege	−.099***	−.094***	−.093***	−.095***	−.092***	−.092***	−.092***		
	[0.005]	[0.006]	[0.006]	[0.005]	[0.006]	[0.006]	[0.006]		
associates	−.101***	−.100***	−.099***	−.099***	−.099***	−.099***	−.099***		
	[0.006]	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]	[0.007]		
bachelors	−.021***	−.021***	−.021***	−.022***	−.021***	−.021***	−.021***		
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]		
single	.015**	.017***	.016**	.015**	.016***	.016**	.016**		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
div_sep	.034***	.036***	.035***	.035***	.036***	.035***	.035***		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		
widowed	.020**	.025**	.023**	.021**	.024**	.024**	.024**		
	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]		
selfemp	.014**	.015**	.014**	.012*	.013**	.014**	.014**		
	[0.006]	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]	[0.007]		

TABLE 2
(Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
parttime	−.016***	−.019***	−.020***	−.017***	−.019***	−.020***	−.020***		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
homemaker	−.017***	−.014**	−.016**	−.017***	−.015**	−.015**	−.016**		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
student	.032***	.029***	.027***	.030***	.029***	.028***	.028***		
	[0.009]	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]	[0.009]		
disabled	−.050***	−.053***	−.054***	−.051***	−.054***	−.054***	−.054***		
	[0.008]	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]	[0.009]		
unemp	−.016**	−.015*	−.016**	−.015*	−.015*	−.015**	−.016**		
	[0.008]	[0.008]	[0.008]	[0.007]	[0.008]	[0.008]	[0.008]		
retired	.002	.002	.000	−.000	.000	.000	.000		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
lalone	−.049***	−.051***	−.049***	−.051***	−.051***	−.050***	−.050***		
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]		
lparents	−.047***	−.044***	−.043***	−.048***	−.043***	−.043***	−.043***		
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]		
lother	−.032***	−.038***	−.037***	−.034***	−.038***	−.037***	−.037***		
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]		
less15k	−.164***	−.156***	−.156***	−.157***	−.154***	−.155***	−.155***		
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]		
i15_25k	−.138***	−.131***	−.131***	−.133***	−.130***	−.131***	−.130***		
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]		
i25_35k	−.131***	−.127***	−.126***	−.125***	−.125***	−.125***	−.125***		
	[0.008]	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]	[0.009]		

TABLE 2
(Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i35_50k	−.089***	−.083***	−.082***	−.084***	−.081***	−.081***	−.081***		
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]		
i50_75k	−.074***	−.069***	−.068***	−.069***	−.068***	−.068***	−.067***		
	[0.007]	[0.008]	[0.008]	[0.007]	[0.008]	[0.008]	[0.008]		
i75_100k	−.056***	−.057***	−.057***	−.054***	−.056***	−.056***	−.056***		
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]		
i100_150k	−.015*	−.014*	−.015*	−.014*	−.014*	−.014*	−.014*		
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]		
Constant	.622***	.609***	.607***	.594***	.600***	.601***	.604***	.485***	.486***
	[0.010]	[0.011]	[0.011]	[0.010]	[0.011]	[0.011]	[0.011]	[0.004]	[0.004]
Observations	27,564	24,729	24,729	27,564	24,729	24,729	24,729	24,729	24,729
Adjusted R^2	.26	.26	.26	.26	.26	.26	.26	.05	.05

Note: Standard errors in brackets.
*$p < .10$, **$p < .05$, ***$p < 0.01$.

attributes to financial literacy. Lachance (2014) suggest that social factors or "observational learning" have spillover effects. Not all states or jurisdictions provide financial literacy education, thus in areas where it is offered, we can infer the local education system has identified financial literacy as important education to offer. According to the Council for Economic Education, "Survey of States" report, only 22 states required a personal finance course be offered to high school students. Of those, only 17 states required high school students to take a course in personal finance.[10] While that may be considered a low number, it is important to note that in 1998 only one state required and offered personal finance classes.

We find that as the exposure to financial literacy education increases so does financial literacy knowledge. However, a white person participating in financial literacy education will score 1.7% higher than a minority participating in financial literacy education. Therefore, financial literacy education has higher returns for whites than minorities. The coefficient on white is smallest when controlling for all demographic and financial literacy education measures including the interaction term—see specification (7). However, it remains significant at 6.3% and widens to 8% when whites participate in financial literacy education.

Males score between 7.8% and 8% more than females, supporting current findings on lower financial literacy among women (e.g., Chen and Volpe 1998; Goldsmith and Goldsmith 1997; Lusardi and Mitchell 2008; Volpe, Chen, and Pavlicko 1996). Chen and Volpe (2002) use a 36-question survey administered to 1,800 college students and find that women and men perform differently on the financial literacy questions. Fonseca et al. (2012), find that the gender difference in financial literacy can be attributed to how financial knowledge is "produced," suggest that gender roles make men more likely to be financial decision makers thus positioning them in circumstances to perpetuate the gap. Both financial literacy education and how marginalized groups are socialized in relation to financial matters are relevant when analyzing these gaps in knowledge and wealth.

Consistent with the literature, we find age, income, and education are all positively related to financial literacy. Lachance (2014) finds that education levels are a predictor of financial literacy. More importantly, the authors find that their results are sensitive to zip code education levels and less to do with individual level education. This highlights that the returns to financial literacy education might have to do more with zip code-level characteristics than with education itself. The self-employed are more financially knowledgeable than full-time employees, retirees, and part time

10. http://councilforeconed.org/wp/wp-content/uploads/2016/02/sos-16-final.pdf

workers. Additionally, students have higher financial literacy knowledge than nonstudents. Studies that examine student financial literacy (e.g., Chen and Volpe 2002) recommend conscious awareness by policymakers that the student population is very different than the rest of the population with respect to financial literacy performance. Again, an indication of environmental effect on financial literacy.

Robustness Analyses

In Tables 3 and 4, we provide separate estimation results for whites and minorities, respectively. We focus our investigation on the returns by race to financial literacy conditional on education being offered, participation, and source exposure to financial literacy education. The only statistical significance is in the returns to participation. This supports our findings in Table 2 indicating whites have a higher return from participation in financial literacy education.

To further support the differences, we have identified between whites and minorities in their returns to financial literacy education, we employ the Blinder–Oaxaca decomposition and report the results in Table 5. We follow Fonseca et al. (2012) who used the technique (Blinder 1973; Oaxaca 1973) to explain differences in financial literacy between men and women. The Blinder–Oaxaca method provides results for both a total measure of difference in financial literacy between whites and minorities and a decomposition of the total into three separate components: endowment, coefficient, and interaction. The endowment component characterizes the explained variation (E) in returns to financial literacy education, while the sum of the coefficient and interaction describes the unexplained variation (C + I). Thus, the total difference (D) in financial literacy can be decomposed as follows:

$$\mathrm{D} = \mathrm{E} + \mathrm{C} + \mathrm{I}, \tag{2}$$

that is, Difference = Explained + Unexplained.

To estimate the model, we use the specifications from Table 2.

$$E\left[y|\mathbf{X}, d\right] = dX\beta^{W} + (1-d)\,X\beta^{M} \tag{3}$$

where y denotes financial literacy, $\mathbf{X}$ is a vector of individual characteristics including financial education and financial education intensity via summation of source exposure, and whites are represented by the dummy variable (d). β^{W} and β^{M} correspond to the coefficients for whites and minorities, respectively. After specification, we can decompose the racial financial literacy gap as follows:

$$E\left[y|d=0\right] - E\left[y|d=1\right] = \mathbf{X}\beta^{W} - \beta E\left[\mathbf{X}|d=1\right] + \mathbf{X}\,\beta^{M}, \tag{4}$$

TABLE 3
Regression Results (White Sample)

	(10)	(11)	(12)	(13)	(14)
fin edu offer	.033***			.008	
	[0.004]			[0.005]	
fin edu participate		.056***			.039***
		[0.004]			[0.007]
fin edu exposure			.025***	.020***	.010***
			[0.002]	[0.002]	[0.003]
male	.083***	.082***	.081***	.082***	.082***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
child	−.009***	−.009***	−.008***	−.009***	−.009***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
idropyes	−.024***	−.023***	−.020***	−.023***	−.023***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
age25	.004	.005	.004	.004	.005
	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]
age35	.058***	.058***	.062***	.058***	.058***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
age45	.125***	.124***	.122***	.124***	.125***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
age55	.156***	.156***	.157***	.156***	.156***
	[0.010]	[0.010]	[0.009]	[0.010]	[0.010]
age65	.175***	.174***	.178***	.175***	.175***
	[0.011]	[0.011]	[0.010]	[0.011]	[0.011]
nohighschool	−.250***	−.247***	−.258***	−.244***	−.245***
	[0.014]	[0.014]	[0.014]	[0.014]	[0.014]
highschool	−.168***	−.167***	−.166***	−.165***	−.165***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
highschoolalt	−.187***	−.185***	−.188***	−.183***	−.183***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
somecollege	−.085***	−.085***	−.086***	−.083***	−.084***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
associates	−.093***	−.093***	−.092***	−.092***	−.093***
	[0.008]	[0.008]	[0.007]	[0.008]	[0.008]
bachelors	−.016**	−.016**	−.015**	−.016**	−.016**
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
single	.020***	.018**	.017**	.018**	.018**
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
div_sep	.037***	.035***	.035***	.037***	.035***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]
widowed	.029***	.027**	.022**	.028**	.027**
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
selfemp	.016**	.015**	.011	.014*	.015**
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
parttime	−.013*	−.013*	−.011*	−.013*	−.013*
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
homemaker	−.012*	−.014*	−.015**	−.013*	−.014*
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]

TABLE 3
(Continued)

	(10)	(11)	(12)	(13)	(14)
student	.051***	.049***	.055***	.051***	.049***
	[0.012]	[0.012]	[0.011]	[0.012]	[0.012]
disabled	−.053***	−.054***	−.050***	−.053***	−.054***
	[0.010]	[0.010]	[0.009]	[0.010]	[0.010]
unemp	−.011	−.012	−.016*	−.010	−.012
	[0.010]	[0.010]	[0.009]	[0.010]	[0.010]
retired	.008	.006	.006	.007	.006
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
lalone	−.049***	−.047***	−.047***	−.048***	−.047***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
lparents	−.055***	−.052***	−.056***	−.054***	−.053***
	[0.011]	[0.011]	[0.010]	[0.011]	[0.011]
lother	−.026***	−.024***	−.022**	−.025***	−.025***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
less15k	−.158***	−.158***	−.158***	−.155***	−.156***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
i15_25k	−.124***	−.124***	−.125***	−.123***	−.123***
	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]
i25_35k	−.112***	−.112***	−.110***	−.110***	−.110***
	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]
i35_50k	−.073***	−.072***	−.075***	−.071***	−.072***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.009]
i50_75k	−.057***	−.056***	−.057***	−.055***	−.055***
	[0.009]	[0.008]	[0.008]	[0.009]	[0.008]
i75_100k	−.045***	−.045***	−.042***	−.044***	−.045***
	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]
i100_150k	−.004	−.004	−.003	−.004	−.004
	[0.009]	[0.009]	[0.008]	[0.009]	[0.009]
Constant	.648***	.646***	.632***	.637***	.640***
	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]
Observations	17,801	17,801	19,836	17,801	17,801
Adjusted R^2	.25	.26	.26	.26	.26

Note: Standard errors in brackets.
*$p < .10$, **$p < .05$, ***$p < .01$.

where $\mathbf{X} = E[\mathbf{X}|d = 0] - E[\mathbf{X}|d = 1]$ and $\beta = \beta^W - \beta^M$.

The results in Table 5 report the Blinder–Oaxaca decomposition for each of the specifications reported in Table 2. We report the total difference (D) in financial literacy between whites and minorities and find minorities score anywhere between 11.2% and 11.6% lower than whites.[11]

11. The endowment percentage represents explained variations due to differences in observed characteristics between whites and minorities (including participation in financial literacy education and the intensity of financial education exposure), whereas the sum of the coefficient and interaction terms represent the unexplained variation due to differences in the returns of the observables.

TABLE 4
Regression Results (Minority Sample)

	(15)	(16)	(17)	(18)	(19)
fin edu offer	.021***			.002	
	[0.007]			[0.008]	
fin edu participate		.041***			.030***
		[0.007]			[0.010]
fin edu exposure			.021***	.016***	.007
			[0.003]	[0.004]	[0.005]
male	.069***	.069***	.069***	.069***	.069***
	[0.007]	[0.007]	[0.006]	[0.007]	[0.007]
child	−.011***	−.012***	−.012***	−.011***	−.012***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
idropyes	−.009	−.008	−.004	−.009	−.008
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
age25	−.012	−.012	−.012	−.012	−.012
	[0.012]	[0.011]	[0.011]	[0.012]	[0.011]
age35	.064***	.063***	.058***	.064***	.064***
	[0.013]	[0.013]	[0.012]	[0.013]	[0.013]
age45	.090***	.089***	.088***	.089***	.090***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
age55	.126***	.124***	.123***	.125***	.125***
	[0.015]	[0.014]	[0.014]	[0.014]	[0.014]
age65	.156***	.154***	.150***	.156***	.155***
	[0.019]	[0.019]	[0.018]	[0.019]	[0.019]
nohighschool	−.244***	−.240***	−.246***	−.240***	−.239***
	[0.024]	[0.024]	[0.022]	[0.024]	[0.024]
highschool	−.171***	−.169***	−.175***	−.169***	−.168***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
highschoolalt	−.179***	−.175***	−.179***	−.175***	−.174***
	[0.016]	[0.016]	[0.015]	[0.016]	[0.016]
somecollege	−.115***	−.113***	−.116***	−.113***	−.112***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
associates	−.117***	−.115***	−.117***	−.115***	−.115***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
bachelors	−.033***	−.033***	−.036***	−.033***	−.033***
	[0.011]	[0.011]	[0.010]	[0.011]	[0.011]
single	.013	.012	.011	.013	.013
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
div_sep	.035**	.036**	.034**	.037***	.036***
	[0.014]	[0.014]	[0.013]	[0.014]	[0.014]
widowed	.011	.010	.017	.011	.010
	[0.022]	[0.022]	[0.021]	[0.022]	[0.022]
selfemp	.010	.009	.013	.008	.009
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
parttime	−.035***	−.036***	−.031***	−.036***	−.036***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
homemaker	−.020	−.021	−.022*	−.020	−.021
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]

TABLE 4
(Continued)

	(15)	(16)	(17)	(18)	(19)
student	.002	−.000	.000	.002	−.000
	[0.014]	[0.014]	[0.013]	[0.014]	[0.014]
disabled	−.049***	−.050***	−.048***	−.051***	−.051***
	[0.018]	[0.018]	[0.017]	[0.018]	[0.018]
unemp	−.028**	−.028**	−.018	−.028**	−.028**
	[0.014]	[0.014]	[0.013]	[0.014]	[0.014]
retired	−.019	−.021	−.024*	−.021	−.021
	[0.014]	[0.014]	[0.014]	[0.014]	[0.014]
lalone	−.054***	−.054***	−.057***	−.055***	−.054***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
lparents	−.034**	−.034**	−.043***	−.034**	−.035**
	[0.014]	[0.014]	[0.013]	[0.014]	[0.014]
lother	−.057***	−.057***	−.054***	−.058***	−.058***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
less15k	−.171***	−.172***	−.175***	−.170***	−.171***
	[0.019]	[0.019]	[0.018]	[0.019]	[0.019]
i15_25k	−.158***	−.159***	−.163***	−.156***	−.158***
	[0.019]	[0.019]	[0.018]	[0.019]	[0.019]
i25_35k	−.170***	−.170***	−.171***	−.169***	−.169***
	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]
i35_50k	−.116***	−.117***	−.118***	−.114***	−.116***
	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
i50_75k	−.108***	−.108***	−.109***	−.107***	−.108***
	[0.017]	[0.017]	[0.016]	[0.017]	[0.017]
i75_100k	−.097***	−.097***	−.094***	−.096***	−.097***
	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
i100_150k	−.047***	−.049***	−.052***	−.048***	−.049***
	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
Constant	.676***	.674***	.667***	.669***	.670***
	[0.020]	[0.020]	[0.019]	[0.020]	[0.020]
Observations	6,928	6,928	7,728	6,928	6,928
Adjusted R^2	.20	.21	.21	.21	.21

Note: Standard errors in brackets.
*$p < .10$, **$p < .05$, ***$p < .01$.

The explained difference due to observable characteristics accounts for up to 42% of the variation, depending on the specification. We focus on specifications (6) and (7) because they include a more detailed list of control variables. The explained component of these specifications accounts for 41% and 42% of the overall difference between whites and minorities, respectively. Therefore, roughly 40% of the variation is due to the differences in the value of the means of the **X**s. However, the unexplained variation in financial literacy between whites and minorities is

TABLE 5
Oaxaca Pooled Decomposition of Specifications from Table 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Differential									
Minority Fin Lit Score	.507***	.519***	.519***	.507***	.519***	.519***	.519***	.519***	.519***
	[0.003]	[0.004]	[0.004]	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
White Fin Lit Score	.623***	.631***	.631***	.623***	.631***	.631***	.631***	.631***	.631***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Difference	−.116***	−.112***	−.112***	−.116***	−.112***	−.112***	−.112***	−.112***	−.112***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Decomposition									
Explained	−.047***	−.044***	−.044***	−.048***	−.046***	−.045***	−.049***	.001	.001**
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.001]	[0.001]
Unexplained	−.069***	−.068***	−.068***	−.068***	−.066***	−.067***	−.063***	−.112***	−.113***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Explained (%)	41	39	39	41	41	40	44	0	−1
Unexplained (%)	59	61	61	59	59	60	56	100	101
Observations	27,564	24,729	24,729	27,564	24,729	24,729	24,729	24,729	24,729

Note: Standard errors in brackets.
*$p < .10$, **$p < .05$, ***$p < .01$.

TABLE 6
Oaxaca Pooled Decomposition and Detailed Analysis of Specification 6

	Explained		Unexplained		Total Difference	
Fin Edu offered and participate	.002***	[0.000]	−.002	[0.003]		
Total FE sources	.000	[0.000]	−.002	[0.005]		
Controls	−.046***	[0.002]	−.093***	[0.021]		
Constant			.030	[0.022]		
Total	−.045***	[0.002]	−.067***	[0.004]	−.112***	[0.004]
Observations	24,729					

Note: Standard errors in brackets.
*$p < .10$, **$p < .05$, ***$p < .01$.

due to differences in the returns to **X**s; where we find 58%–59% accounts for unexplained variation in specifications (6) and (7), respectively.[12] The difference between whites' and minorities' financial literacy is not due to observed differences but rather to the difference in returns to the control variables. Thus, further evidence of unexplained reasons behind minorities and whites exhibiting different financial literacy knowledge.

In Table 6, we provide details of the Blinder–Oaxaca decomposition for specification (6) (in Table 2). This method allows us to identify each variable's contribution to the difference in financial literacy, how much of the difference can be attributed to explained and unexplained variations and, more importantly, how much of that variation is ascribed specifically to financial literacy education measures.

We confirm participation in financial literacy education is statistically significant in the explained column; that is, the differences in the mean of financial literacy education explain a portion of the difference in financial literacy. In our sample minorities access financial literacy at a higher rate than whites and these results suggest that financial literacy education has helped narrow the financial literacy gap. However, statistically, the majority of difference in financial literacy between whites and minorities is due to the variation in other variables and not due to the returns to financial literacy education. Consequently, while financial literacy education does in fact increase financial literacy, most of the variation in the difference in financial literacy is due to other factors. This finding supports the Hamilton and Darity (2017) proposition that investing in financial education alone is an insufficient method to reduce the financial literacy gap and subsequently the wealth gap. The majority of financial literacy knowledge is gained

12. Specification (7) includes the interaction term for being white and participating in financial literacy education.

through returns to other variables, such as, but not limited to, income, age, gender, and college education.

The persistence of this racial literacy gap even when controlling for education and source exposure suggests there are other factors contributing to higher financial literacy scores for whites relative to minorities. Schaffer and Mohs (2016) find that financial literacy programs are created without including minorities in the curriculum design. Ironically, our nationwide push for more financial literacy education is structured and implemented without consideration of the demographic groups that were foremost determined to need it the most. Furthermore, Reich and Berman (2015) find that attrition in financial literacy education is high among marginalized groups. Therefore, even though it appears minorities are provided financial literacy education at higher rates, they are more likely to abandon the educational program possibly because of the well-intentioned, yet misaligned, structure. Curriculum design and attrition are vital considerations when assessing the efficacy of financial literacy education in general, but especially given our identification of a racial gap in returns to education and the tenacious perception that financial education will alleviate the wealth gap.

One limitation of our research is that we compare the returns to financial literacy education for whites relative to all minority groups. This methodology thus ignores the heterogeneity among minorities and their financial literacy. Chen and Volpe (1998) provide evidence of variation in financial literacy among minorities with their sample of college-level students revealing financial literacy test score variation by race; where black respondents scored lower than whites, Hispanics, and Asians. To better identify the returns to financial literacy, future research may want to consider data that identify racial groups more narrowly.

CONCLUSION

The racial wealth gap has been widening and the inequality has increased policymakers' interest in identifying the reasons behind the concerning trend. Researchers have attributed the differences in wealth to several factors including differences in income, credit perception, housing, occupation, education, and socioeconomic and structural biases present in the economy. In our paper, we examine the racial differences in financial literacy and returns to financial literacy education. While we cannot identify if financial literacy directly impacts wealth outcomes, we have relied on researchers that have identified a relationship between financial literacy and identified financial behaviors positively correlated with wealth.

We have observed increases in funding and policy efforts across the country to provide more financial literacy education. The number of states requiring financial literacy education at the high school level has increased from 1 in 1998 to 17 in 2016. The core of these efforts is prescribed to help reduce the widening wealth gap. We find that financial education does indeed contribute to an increase in financial literacy knowledge; however it is advancing whites at a greater rate than minorities. Thus, provided the given assumption of positive correlation between financial literacy and financial behaviors, the difference in the returns of financial literacy education may be contributing to the perpetuation of the wealth gap instead of closing it as intended. We speculate two related reasons why the returns to financial literacy education are higher for whites than minorities. First, financial literacy curriculum is administered without considering the education and resources available to the students being served; second, our data focus on enrollment into financial literacy education programs and not on completion. The two, however, may be interdependent. Higher attrition rates in minority communities may be attributed to the curriculum design of the financial literacy program.

Finally, our results indicate that financial literacy differences are not solely due to access to financial literacy education, there are other reasons that lead to whites having higher financial literacy than minorities. Bottomline, providing financial literacy education, in its current form, will not accomplish the goal of narrowing the wealth gap. Policymakers should examine the content of their financial literacy programs and the sources of financial literacy education to identify if there is a systemic bias in the provision of financial literacy education.

APPENDIX A

TABLE A1
Variable Names and Description

Variable	Description	
actual literacy %	Dependent variable	Actual Financial Literacy Percentage; (sum of correct answers to five literacy questions) / total questions. Questions and answers listed in Appendix B.
fin edu offer	Independent variables	Financial literacy education offered; 1 = yes, finance education was offered; 0 = finance education was not offered
fin edu participate		Financial literacy education offered and subject participated; 1 = yes, finance education was offered and subject participated; 0 = finance education was offered and subject did not participate
fin edu exposure		Financial education exposure frequency; sum of financial education sources (range 0–5). Possible sources: high school, college, employer, military, and/or parents.
white		Race; 1 = white alone; 0 = nonwhite
male	Gender	1 = male; 0 = nonmale
child	# of financially dependent children	Range 0–4; 4 encapsulates 4+ children
income drop	Large unexpected income drop in past 12 months	1 = household experienced a large unexpected income drop in past 12 months; 0 = no income drop OR don't know OR prefer not to disclose
age 18–24	Age groups	18–24 years old; reference category
age 25–34		25–34 years old
age 35–44		35–44 years old
age 45–54		45–54 years old
age 55–64		55–64 years old
age 65+		65+ years old
< highschool	Highest level of education completed	Did not complete high school
= highschool		High school graduate with high school diploma
highschoolalt		High school graduate with General Educational Development (GED) or alternative credential
somecollege		Some college completed, but no degree
associates		Associate's degree
bachelors		Bachelor's degree

TABLE A1
Continued

postgrad		Post graduate degree; reference category
married	Marital status	Married; reference category
single		Single
div/separated		Divorced or separated
widowed/er		Widowed or widower
selfemp	Current employment or work status	Self employed
fulltime		Work full time for an employer (or the military); reference category
parttime		Work part time for an employer (or the military)
homemaker		Homemaker
student	Cont. current employment or work status	Full-time student
disabled		Permanently sick, disabled, or unable to work
unemp		Unemployed or temporarily laid off
retired		Retired
live alone	Current living arrangements	The only adult in the household
live sigother		Live with spouse/partner/significant other; reference category
live parents		Live with parents
live other		Live with other family, friends, or roommates
less $15 k	Approximate annual household income, including wages, tips, investment income, public assistance, income from retirement plans, etc.	Less than $15,000
$15_25k		At least $15,000 but less than $25,000
$25_35k		At least $25,000 but less than $35,000
$35_50k		At least $35,000 but less than $50,000
$50_75k		At least $50,000 but less than $75,000
$75_100k		At least $75,000 but less than $100,000
$100_150k		At least $100,000 but less than $150,000
$150 k+		$150,000 or more; reference category

APPENDIX B

TABLE B1
Financial Capability Study "Big Five" Financial Literacy Questions

#	Question	Possible answers	Answer
1.	Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?	A. More than $102 B. Exactly $102 C. Less than $102 D. Don't know E. Prefer not to say	A. More 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, how much would you be able to buy with the money in this account?	A. More than today B. Exactly the same C. Less than today D. Don't know E. Prefer not to say	C. Less than today
3.	If interest rates rise, what will typically happen to bond prices?	A. They will rise B. They will fall C. They will stay the same D. There is no relationship between bond prices and the interest rates E. Don't know F. Prefer not to say	B. They will fall
4.	A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.	A. True B. False C. Don't know D. Prefer not to say	A. True
5.	Buying a single company's stock usually provides a safer return than a stock mutual fund.	A. True B. False C. Don't know D. Prefer not to say	B. False

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