

FINANCIAL LITERACY AND BORROWING BEHAVIOR IN DIFFERENT AGE GROUPS

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ABSTRACT

Financial literacy for younger American adults declined sharply in recent years. Using the 2018 National Financial Capability Study (NFCS) survey data, we examine the differences in financial literacy across various age, gender, and racial groups. We find that younger age groups have a much lower level of financial literacy when compared to older age groups, with apparent gender and racial gaps present in all age groups. Our results also suggest that financial literacy affects borrowing behavior. Specifically, higher levels of financial literacy are associated with a lower percentage of high interest rate borrowing, a lower percentage of paying the minimum monthly credit card payment, and a lower percentage of overdrawing checking accounts.

Keywords: Financial literacy, National Financial Capability Study, age, gender and racial groups, borrowing behavior.

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INTRODUCTION

Financial literacy research [10] [12] shows alarming evidence of a sharp decrease in financial literacy among younger adults, with only 24% of millennials demonstrating basic financial knowledge and only 8% demonstrating high financial literacy. Younger adults are also subject to more financial difficulties while facing unexpected shocks such as the COVID-19 pandemic, however those with better financial literacy are better prepared to handle such shocks [5]. Furthermore, the financial literacy gap has been widening among gender and racial groups [1] [2] [3] [4] [5] [8] [11].

Our paper contributes to the growing literature on financial literacy by examining factors that affect financial literacy among different age, gender, and racial groups, and further exploring the impact of financial literacy on various borrowing behaviors. We address the following four research questions. First, what are the factors that contribute to differences in financial literacy and are there are gaps among different age, gender, and racial groups, and does financial education effectively increase financial literacy? Second, does financial literacy affect high interest rate borrowing behavior and are there gaps among different age, gender, and racial groups? Third, does financial literacy affect minimum monthly credit card payment behavior and are there gaps among different age, gender, and racial groups. Fourth, does financial literacy affect checking account overdraft behavior and are there gaps among different age, gender, and racial groups?

The plan of the paper is as follows. In the next section, we describe our data and discuss summary statistics. Section three explores the factors related to financial literacy levels. Sections four, five, and six examine the effect of financial literacy on high interest rate borrowing, minimum monthly credit card payment, and checking account overdraft, respectively. The final section concludes.

DATA AND SUMMARY STATISTICS

Data

The primary data used in this study is the 2018 National Financial Capability Study (NFCS) data. The NFCS was first commissioned by the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation and conducted by ARC Research in 2009. It is the first national study of the financial capability and assessment of financial literacy of American adults, by conducting nationwide online surveys of over 25,000 American adults every three years. The national survey data are weighted to be representative of age, gender, ethnicity, education, and Census Division. There have been four national studies conducted since 2009 (2009, 2012, 2015, and 2018), with the 2018 NFCS data being the most current one.

[Table 1 about here]

Summary Statistics

Table 2 presents summary statistics of the variables used in our regression analysis by age groups. Examining the financial literacy variables among different age groups, we find that the average American adult answered 3.12, or 51.9%, of the six financial literacy quiz questions correctly, with the youngest age group (age 18-24) scoring the lowest, and the oldest age group (age 65+) scoring the highest. For other age groups, younger age groups tend to score lower than older age groups, suggesting that younger adults have lower financial literacy levels than older adults, consistent with previous findings that young adults severely lack basic knowledge of interest rates, inflation, and risk diversification skills [6]. Interestingly, the financial education variable (*fin_edu*) shows that a higher percentage of younger adults (age groups 18-24 and 25-34) are required to take financial education when compared to older adults, with recent research concluding that financial education interventions may only explain a small variance in financial behaviors [7]. The average percentage of adults required to take financial education in age groups 18-24 and 25-34 are 28.3% and 22.9%, compared to only 10.6% and 6.9% in age groups 55-64 and 65+.

[Table 2 about here]

The summary statistics also reveal other interesting differences among age groups. For example, younger age groups are associated with higher percentages of high interest rate borrowing, paying the minimum monthly credit card payment, and overdrawing checking accounts.¹ Even before the COVID-19 shock, the data show that younger age groups exhibit a higher level of financial anxiety (*fin_anxiety*), lower confidence with day-to-day financial matters (*self_conf*), lower confidence at math (*conf_math*), and lower confidence about financial knowledge (*conf_fin_know*) when compared to older age groups. Despite lower confidence in financial matters and financial knowledge, we find that younger adults use mobile banking much more frequently than older adults. For example, the percentages of adults that frequently use mobile banking are 56.8% and 56.3% for age groups 18-24 and 25-34, while they are only 27.0% and 16.1% for age groups 55-64 and 65+.

To further explore the levels of financial literacy and education among different gender and ethnicity groups, we divide each age group into four subgroups: white male, minority male, white female, and minority female. The results are shown in Table 3.

[Table 3 about here]

For each of the six age groups, we find that white male adults consistently score the highest number (*fin_lit_total*) and percentage (*fin_lit_pct*) of correct answers and minority female adults score the lowest number and percentage of correct answers. The difference is generally bigger for older age groups than for younger age groups. For example, the percentage difference in financial literacy between white male and minority female is 9.6% for age group 25-34, compared to 23.3% for age group 65+. In terms of differences in financial education, the results are mixed. For younger age groups, a higher percentage of white male adults received financial education than that of minority female adults, but the differences for older age groups are less obvious. Our results suggest the existence of racial and gender gaps in financial literacy and the widening of these gaps among older age groups.

Table 4 shows the correlation matrix of dependent and independent variables used in our regression analysis. It further confirms that female and minority adults are associated with lower levels of financial literacy. Moreover, they are also associated with higher levels of financial anxiety and lower levels of confidence. The correlation matrix further shows that higher levels of financial literacy are associated with

¹ With the exception of age group 18-24, probably because a larger proportion of young adults in this age group do not have a checking account.

a lower percentage of high interest rate borrowing, a lower percentage of paying the minimum monthly credit card payment, and a lower percentage of overdrawing checking accounts.

[Table 4 about here]

Factors that affect financial literacy

To examine our first research question on the factors that contribute to differences in financial literacy and whether there are gaps among different age, gender, and racial groups, we specify the following regression model:

$$fin_lit_pct_i = \alpha + \beta Education_i + \delta Income_i + \phi Confidence_i + \gamma Gender_i + \theta Minority_i + \varepsilon_i \quad (1)$$

where $fin_lit_pct_i$ is the percent of correct answers from the financial literacy quiz for individual i . The vector of variables $Education$ include fin_edu , $college_degree$, and $parent_college$. The vector of variables $Income$ include various income levels. The vector of variables $Confidence$ include $self_conf$, $conf_math$, and $conf_fin_know$. Race and gender variables are also included in the regression. State fixed effect is used to control for unobservables, such as the economic and political conditions in the state that may affect financial literacy. The results are shown in Table 5.

[Table 5 about here]

Table 5 shows that participation in financial education may not increase the level of financial literacy for all age groups, but it is associated with higher financial literacy for some age groups, such as young adults between age 18 to 24. This finding may provide policy implications on the targeting of financial education programs. For all age groups, college education affects financial literacy positively. Parents' college education also plays an important role in financial literacy, especially for young adults between age 18 and 24. We also find that higher income levels are associated with higher financial literacy for all age groups except age 18-24, probably because a large percentage of individuals in this age groups are still in college. Higher self-confidence positively affects financial literacy. Interestingly, among the three self-confidence variables of day-to-day financial matters, math, and financial knowledge, math confidence has the biggest impact on financial literacy across all age groups. Lastly, female and minority adults perform less well on financial literacy assessments among all age groups. The gender effect is stronger in older age groups.

Financial literacy and high interest borrowing behavior

We next examine our second research question: whether financial literacy affects an individual's high interest borrowing behavior and whether the impact varies among different age, gender, and racial groups. The logistic regression model is specified below.

$$Logit(high_int_borrow_i) = \alpha + \lambda Literacy + \beta Education_i + \delta Income_i + \phi Confidence_i + \varkappa Other + \gamma Gender_i + \theta Minority_i + \varepsilon_i \quad (2)$$

where $high_int_borrow_i$ is a dummy variable that equals 1 if individual i took out an auto title loan,² or payday loan, or got an advance on tax refund, or used a pawn shop, or a rent-to-own store in the last 12 months, and 0 otherwise. All these types of borrowing have an implied high interest rate. The vector of variables $Other$ includes additional variables such as employment status, dependent, financial anxiety, mobile banking, participation in stock, bonds, mutual funds, or other securities investment. We also include state fixed effect to control for unobservables. The results are summarized in Table 6.

[Table 6 about here]

Overall, better financial literacy is associated with a lower likelihood of high interest rate borrowing, with the effect more evident in younger age groups than older age groups. Individuals with a bachelor's degree or post-graduate degree are less likely to engage in high interest rate borrowing behavior. Parents' education, again, plays an important role in the likelihood of high interest rate borrowing for young adults. Higher income individuals, homeowners, and individuals who are more confident in managing day-to-day financial matters are less likely to take on high interest rate borrowing, while individuals with more financial anxiety, invest in securities, and more frequently use mobile banking are more likely to take part in high interest rate borrowing. It is also interesting to find that females are less likely to participate in high interest rate borrowing, while minorities are more likely to do so, across all age groups.

Financial literacy and minimum credit card payment

We next examine our third research question: whether financial literacy affects an individual's minimum monthly credit card payment behavior and whether the impact varies among different age, gender, and racial groups. The logistic regression model is specified below.

$$\begin{aligned} \text{Logit}(\min_pay_i) = & \alpha + \lambda \text{Literacy} + \beta \text{Education}_i + \delta \text{Income}_i + \phi \text{Confidence}_i \\ & + \varkappa \text{Other} + \gamma \text{Gender}_i + \theta \text{Minority}_i + \varepsilon_i \end{aligned} \quad (3)$$

where \min_pay_i is a dummy variable that equals to 1 if individual i paid minimum credit card payment in some months in the last 12 months and 0 otherwise. State fixed effect is used to control for unobservables. The results are presented in Table 7.

[Table 7 about here]

Overall, financial literacy is associated with a lower likelihood of paying the minimum monthly credit card payment, but the effect is only statistically significant in age groups 35-44 and 55-64. College degree and parents' college degree continue to associate with the lower likelihood of making the minimum monthly payment. Surprisingly, higher income levels are not necessarily associated with the lower likelihood of making the minimum monthly payment. Only the highest income bracket individuals (\$150k+) are less likely to make the minimum payment, compared to individuals with annual income below \$15k. Individuals with higher financial anxiety and more frequently use mobile banking are more likely to make the minimum credit card payment, across all age groups. The results for gender is mixed. Overall, females are not associated with a higher likelihood of paying the minimum monthly credit card payment, but younger females (age 18-24) do exhibit a higher probability of making the minimum payment, while older females (age 65+) are less likely to make the minimum payment. The results are

² According to NFCS, "auto title loans are loans where a car title is used to borrow money for a short period of time. They are NOT loans used to purchase an automobile."

more compelling for minorities. Across almost all age groups, except for age 45-54, minorities are more likely to pay the minimum monthly payment.

Financial literacy and checking account overdraft

Lastly, we examine our last research question: whether financial literacy affects an individual’s checking account overdraft behavior and whether the impact varies among different age, gender, and racial groups. The logistic regression model is specified below.

$$\begin{aligned} \text{Logit}(\text{Overdraft}_i) = & \alpha + \lambda \text{Literacy} + \beta \text{Education}_i + \delta \text{Income}_i + \phi \text{Confidence}_i \\ & + \varkappa \text{Other} + \gamma \text{Gender}_i + \theta \text{Minority}_i + \varepsilon_i \end{aligned} \quad (4)$$

where Overdraft_i is a dummy variable that equals to 1 if individual i overdraw from a checking account, and 0 otherwise. State fixed effect is used to control for unobservables. The results are presented in Table 8.

[Table 8 about here]

In general, higher financial literacy is related to a lower likelihood of checking account overdraft. However, the effect is statistically significant for only two age groups, age 25-34 and age 35-44, and not significant for older age groups. College education and parents’ college education do not play an important role in the overdraft behavior. Similar to the minimum credit card payment behavior, higher income levels are not necessarily associated with the lower likelihood of overdraft, except for the highest income bracket (\$150k+). Individuals with higher financial anxiety are more likely to overdraw, while individuals with higher confidence of day-to-day financial matters are less likely to overdraw, consistent among all age groups. Another riveting finding is that mobile banking has a significant impact on overdraft. Among all age groups, individuals who use mobile banking more frequently are more likely to overdraw, suggesting that the convenience of FinTech may have a negative impact on financial self-discipline. Also similar to the findings of minimum credit card payment, we find that females, in general, are less likely to overdraw from a checking account, while minorities are more prone to overdraft.

CONCLUSIONS

Using the 2018 NFCS data, we examine the impact of financial literacy on borrowing behavior among different age, gender, and racial groups. We find that younger age groups have lower levels of financial literacy than older age groups. On average, the youngest age group (age 18-24) scored 39.1% on the NFCS financial literacy quiz, while the oldest age group (age 65+) correctly scored 62.6% on the same quiz, which is alarming evidence suggesting a deterioration of financial literacy among young adults. Furthermore, we find that the financial literacy gaps widen among racial and gender subgroups within each age group. In particular, female adults score lower than male adults, and minority adults score lower than white adults, with female minority adults scoring the lowest within every age group.

Regarding borrowing behaviors such as high interest rate borrowing, minimum monthly credit card payment, and checking account overdraft, our results show that younger age groups generally have higher percentages of all three types of borrowing behaviors than older age groups. In addition, younger adults have a higher level of financial anxiety and a lower level of financial and math confidence.

We also find that although participation in financial education may not increase the level of financial literacy for all age groups, it does have a positive effect on the financial literacy for young adults between age 18 and 24, consistent with [9]. In addition, college education and parents' college education play an important role in financial literacy. Self-confidence, especially math confidence, is strongly associated with higher levels of financial literacy.

To examine the impact of financial literacy on borrowing behavior of different age, gender, and racial groups, we perform a logistical regression analysis on three types of borrowing behavior: high interest rate borrowing, minimum monthly credit card payment, and checking account overdraft. Our results suggest that higher financial literacy is associated with the lower likelihood of all three types of borrowing behavior. Looking into the gender and racial differences, we find that although females have lower financial literacy, they are not associated with a higher likelihood of any of the three types of borrowing behavior. For minorities, we find compelling evidence that they are more prone to all three types of borrowing behavior, across almost all age groups. Our results also suggest that lower income levels are not necessarily associated with the higher likelihood of paying the minimum monthly credit card payment or overdrawing from a checking account, however, more frequent use of mobile banking is linked to a higher probability of engaging in all three types of borrowing behavior. This indicates that the convenience of FinTech may come at the cost of less financial self-discipline.

APPENDIX

Figure 1: Financial Literacy Map

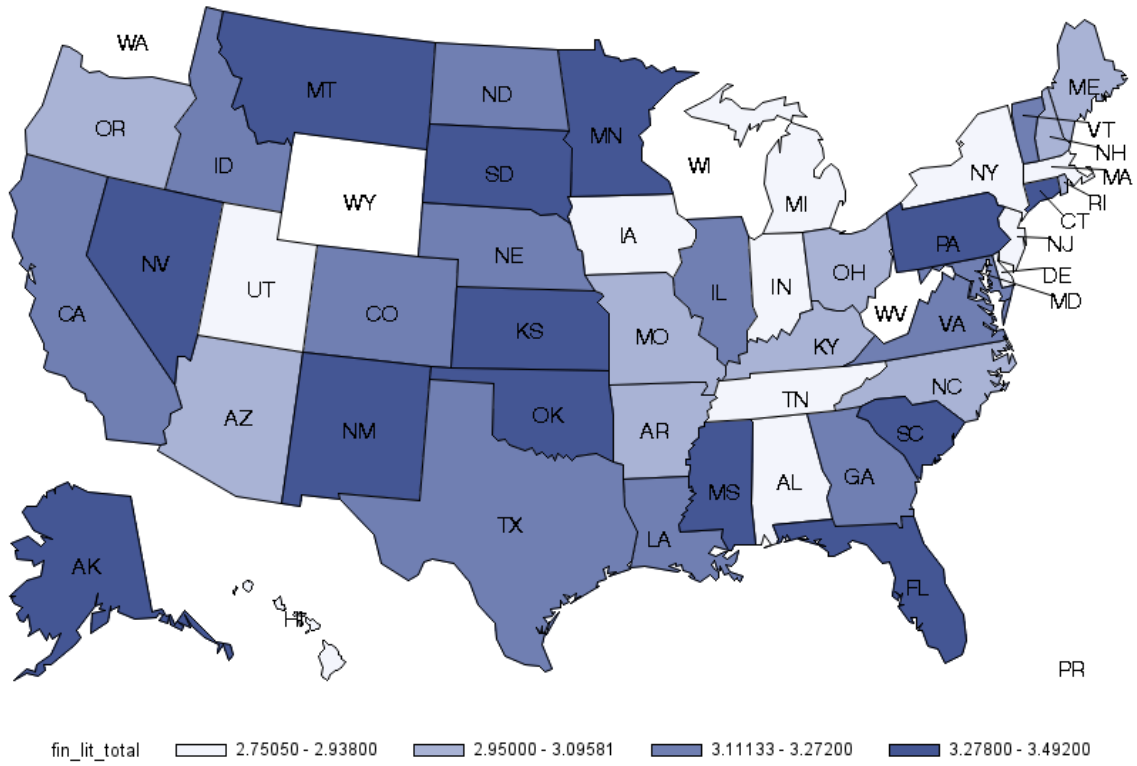


Table 1: Variable Descriptions

Variables	Descriptions
Age 18-24	Age between 18 and 24
Age 25-34	Age between 25 and 34
Age 35-44	Age between 35 and 44
Age 45-54	Age between 45 and 54
Age 55-64	Age between 55 and 64
Age 65+	Age above 65
fin_lit_total	Number of correct answers from the financial literacy quiz
fin_lit_pct	Percent of correct answers from the financial literacy quiz
high_int_borrow	A dummy variable that equals 1 if taken out an auto title loan, or payday loan, or gotten an advance on tax refund, or used a pawn shop, or a rent-to-own store, and 0 otherwise
min_pay	A dummy variable that equals 1 if paid minimum credit card payment in some months in the past 12 months, and 0 otherwise
overdraft	A dummy variable that equals 1 if overdraw from checking account, and 0 otherwise
fin_edu	A dummy variable that equals 1 if required to take financial education, and 0 otherwise
college_degree	A dummy variable that equals 1 if the highest level of education completed is a bachelor's degree or post graduate degree, and 0 otherwise
parent_college	A dummy variable that equals 1 if the highest level of education completed by a parent is a bachelor's degree or post graduate degree, and 0 otherwise
dependent	A dummy variable that equals 1 if the number of dependents is 1 or more, and 0 otherwise
employed	A dummy variable that equals 1 if current employment is either self-employed or work full-time for an employer, and 0 otherwise
inc_15k	Household annual income less than \$15,000
inc_15to25k	Household annual income at least \$15,000 but less than \$25,000
inc_25to35k	Household annual income at least \$25,000 but less than \$35,000
inc_35to50k	Household annual income at least \$35,000 but less than \$50,000
inc_50to75k	Household annual income at least \$50,000 but less than \$75,000
inc_75to100k	Household annual income at least \$75,000 but less than \$100,000
inc_100to150k	Household annual income at least \$100,000 but less than \$150,000
inc_150k	Household annual income \$150,000 or more
sec_invest	A dummy variable that equals 1 if any investments in stocks, bonds, mutual funds, or other securities, and 0 otherwise
home_owner	A dummy variable that equals 1 if currently own a home, and 0 otherwise
fin_anxiety	A dummy variable that equals 1 if strongly agree (6 or 7 on a scale of 1-7) that personal finance can make one feel anxious, and 0 otherwise
self_conf	A dummy variable that equals 1 if good at dealing with day-to-day financial matters (5, 6 or 7 on a scale of 1-7), and 0 otherwise
conf_math	A dummy variable that equals 1 if good at math (5, 6 or 7 on a scale of 1-7), and 0 otherwise
conf_fin_know	A dummy variable that equals 1 if good at financial knowledge (5, 6 or 7 on a scale of 1-7), and 0 otherwise
mobile_banking	A dummy variable that equals 1 if frequently use mobile banking, and 0 otherwise
gender	A dummy variable that equals 1 if gender is female, and 0 if male
minority	A dummy variable that equals 1 if non-white, and 0 otherwise

This table summarizes the key variables used in our regression analysis.

Table 2: Summary Statistics by Age Groups

Age Groups	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+	Total
number	2,795	4,686	4,522	4,669	4,907	5,512	27,091
fin_lit_total	2.35	2.55	2.86	3.21	3.52	3.76	3.12
fin_lit_pct	39.1%	42.5%	47.7%	53.5%	58.6%	62.6%	51.9%
high_int_borrow	40.9%	43.9%	36.3%	26.0%	15.6%	7.8%	26.8%
min_pay	27.6%	40.2%	36.6%	29.6%	20.3%	12.3%	27.2%
overdraft	19.8%	26.8%	22.6%	16.1%	10.6%	6.9%	16.6%
fin_edu	28.3%	22.9%	17.3%	13.0%	10.4%	7.4%	15.4%
college_degree	20.5%	39.0%	36.8%	32.6%	34.2%	39.6%	34.9%
parent_college	34.4%	36.3%	34.3%	29.1%	26.5%	24.9%	30.4%
dependent	25.3%	55.0%	63.6%	45.8%	19.3%	6.7%	35.5%
employed	39.4%	64.3%	67.4%	62.9%	43.5%	10.0%	47.2%
inc_15k	29.9%	11.6%	9.9%	10.5%	8.2%	5.8%	11.2%
inc_15to25k	16.0%	10.3%	8.8%	9.0%	10.0%	10.2%	10.4%
inc_25to35k	13.0%	11.8%	9.8%	8.7%	10.3%	12.0%	10.8%
inc_35to50k	14.3%	16.5%	13.6%	12.8%	13.3%	15.9%	14.5%
inc_50to75k	13.3%	20.1%	19.9%	18.3%	19.6%	22.2%	19.4%
inc_75to100k	6.9%	15.9%	16.0%	15.0%	14.2%	14.5%	14.2%
inc_100to150k	4.4%	10.3%	14.2%	16.1%	15.2%	12.6%	12.7%
inc_150k	2.1%	3.4%	7.7%	9.6%	9.1%	6.9%	6.8%
sec_invest	20.0%	29.0%	27.4%	28.7%	37.6%	47.3%	33.0%
home_owner	24.0%	44.8%	57.6%	64.0%	73.9%	82.0%	60.9%
fin_anxiety	45.0%	49.2%	45.0%	39.3%	29.3%	18.4%	36.5%
self_conf	61.9%	71.5%	74.1%	78.4%	85.4%	90.3%	78.5%
conf_math	65.4%	70.4%	73.0%	76.8%	79.8%	83.3%	75.8%
conf_fin_know	52.9%	63.7%	67.0%	70.7%	78.7%	85.1%	71.4%
mobile_banking	56.8%	56.3%	50.3%	38.7%	27.0%	16.1%	38.8%
gender	61.3%	57.4%	55.7%	55.5%	52.7%	55.0%	55.9%
minority	39.7%	38.7%	31.9%	23.2%	18.3%	11.6%	25.8%

This table presents summary statistics for the key variables used in our analysis, by age groups.

Table 3: Financial Literacy by Age, Gender, and Ethnicity

Age Groups	Gender	Minority	fin_lit_total	fin_lit_pct	fin_edu
Age 18-24	Male	No	2.92	48.7%	31.3%
Age 18-24	Male	Yes	2.18	36.3%	31.5%
Age 18-24	Female	No	2.29	38.2%	27.3%
Age 18-24	Female	Yes	2.02	33.6%	24.9%
Age 25-34	Male	No	2.87	47.9%	27.9%
Age 25-34	Male	Yes	2.54	42.4%	34.1%
Age 25-34	Female	No	2.47	41.1%	16.9%
Age 25-34	Female	Yes	2.30	38.3%	18.5%
Age 35-44	Male	No	3.39	56.5%	19.6%
Age 35-44	Male	Yes	2.92	48.6%	20.4%
Age 35-44	Female	No	2.65	44.2%	15.7%
Age 35-44	Female	Yes	2.38	39.6%	14.5%
Age 45-54	Male	No	3.78	63.0%	14.3%
Age 45-54	Male	Yes	3.14	52.4%	12.4%
Age 45-54	Female	No	2.90	48.3%	12.2%
Age 45-54	Female	Yes	2.76	46.1%	12.5%
Age 55-64	Male	No	4.08	67.9%	11.2%
Age 55-64	Male	Yes	3.53	58.8%	14.2%
Age 55-64	Female	No	3.18	53.0%	8.8%
Age 55-64	Female	Yes	2.78	46.3%	11.3%
Age 65+	Male	No	4.35	72.5%	9.2%
Age 65+	Male	Yes	3.90	65.1%	11.7%
Age 65+	Female	No	3.36	56.0%	5.2%
Age 65+	Female	Yes	2.95	49.2%	9.2%

This table presents the average financial literacy and education, by age groups.

Table 4: Correlation Matrix

	fin_lit_pct	high_int_borrow	min_pay	overdraft	fin_edu	college_degree	parent_college	dependent	employed	inc_15k	sec_invest	home_owner	fin_anxiety	self_conf	conf_math	conf_fin_know	mobile_banking	gender	minority
fin_lit_pct	1.00																		
high_int_borrow	-0.23**	1.00																	
min_pay	-0.11**	0.20**	1.00																
overdraft	-0.11**	0.27**	0.27**	1.00															
fin_edu	0.04**	0.14**	0.10**	0.16**	1.00														
college_degree	0.30**	-0.16**	-0.07**	-0.05**	0.06**	1.00													
parent_college	0.19**	-0.09**	-0.04**	-0.02**	0.07**	0.57**	1.00												
dependent	-0.10**	0.21**	0.17**	0.17**	0.09**	-0.01	0.02**	1.00											
employed	0.06**	0.06**	0.14**	0.08**	0.09**	0.17**	0.15**	0.20**	1.00										
inc_15k	-0.22**	0.08**	-0.05**	0.00	0.00	-0.18**	-0.10**	-0.07**	-0.23**	1.00									
sec_invest	0.31**	-0.10**	-0.09**	-0.02**	0.10**	0.24**	0.16**	-0.04**	0.07**	-0.19**	1.00								
home_owner	0.27**	-0.22**	-0.05**	-0.06**	0.00	0.16**	0.06**	0.02**	0.04**	-0.28**	0.30**	1.00							
fin_anxiety	-0.17**	0.21**	0.24**	0.25**	0.08**	-0.08**	-0.02**	0.14**	0.05**	0.09**	-0.16**	-0.16**	1.00						
self_conf	0.30**	-0.16**	-0.06**	-0.11**	0.04**	0.15**	0.08**	-0.06**	0.04**	-0.18**	0.19**	0.21**	-0.10**	1.00					
conf_math	0.33**	-0.09**	-0.03**	-0.04**	0.07**	0.14**	0.09**	-0.02**	0.07**	-0.15**	0.15**	0.16**	-0.06**	0.43**	1.00				
conf_fin_know	0.28**	-0.10**	-0.04**	-0.07**	0.07**	0.15**	0.08**	-0.02**	0.06**	-0.19**	0.25**	0.25**	-0.16**	0.39**	0.34**	1.00			
mobile_banking	-0.02**	0.11**	0.20**	0.18**	0.12**	0.02**	0.07**	0.15**	0.20**	-0.07**	-0.01**	-0.09**	0.13**	0.02**	0.03**	0.00	1.00		
gender	-0.22**	-0.01*	0.03**	0.02**	-0.06**	-0.09**	-0.07**	0.04**	-0.17**	0.05**	-0.16**	-0.08**	0.13**	-0.04**	-0.12**	-0.12**	0.04**	1.00	
minority	-0.16**	0.17**	0.10**	0.09**	0.06**	-0.02**	-0.01	0.11**	0.06**	0.09**	-0.07**	-0.17**	0.05**	-0.09**	-0.06**	-0.06**	0.08**	0.02**	1.00

This table shows the correlation coefficient matrix of variables used in We use **, *, and + to denote significance at the 1%, 5%, and 10% level.

Table 5: Financial Literacy Regression

	All age groups	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
fin_edu	0.001 -0.16	0.065 (6.04)**	0.015 (1.81)+	0.003 -0.31	0.038 (3.48)**	0.033 (3.19)**	0.050 (3.99)**
college_degree	0.097 (23.69)**	0.034 (1.89)+	0.083 (8.94)**	0.104 (10.18)**	0.087 (9.24)**	0.095 (12.39)**	0.094 (13.65)**
parent_college	0.010 (2.36)*	0.074 (5.94)**	0.016 -1.58	0.034 (3.55)**	0.034 (3.08)**	0.017 (2.08)*	0.021 (2.89)**
inc_15to25k	0.034 (5.29)**	-0.013 -1.01	0.056 (4.32)**	0.069 (4.81)**	0.027 (1.75)+	0.057 (3.49)**	0.044 (2.41)*
inc_25to35k	0.058 (9.01)**	-0.009 -0.65	0.063 (5.13)**	0.083 (5.84)**	0.069 (4.51)**	0.079 (4.51)**	0.087 (4.59)**
inc_35to50k	0.078 (14.28)**	-0.01 -0.76	0.084 (6.80)**	0.094 (6.28)**	0.094 (6.15)**	0.107 (7.58)**	0.121 (6.97)**
inc_50to75k	0.108 (19.32)**	0.003 -0.23	0.108 (7.69)**	0.126 (9.37)**	0.127 (9.45)**	0.136 (8.22)**	0.147 (8.79)**
inc_75to100k	0.1 (14.22)**	-0.032 -1.56	0.069 (4.96)**	0.105 (6.15)**	0.141 (10.63)**	0.136 (7.88)**	0.171 (8.18)**
inc_100to150k	0.151 (21.98)**	-0.022 -0.96	0.125 (7.30)**	0.179 (10.43)**	0.169 (12.06)**	0.175 (13.67)**	0.191 (9.85)**
inc_150k	0.172 (21.59)**	-0.041 -1.21	0.166 (6.05)**	0.189 (9.24)**	0.184 (15.41)**	0.187 (11.60)**	0.194 (9.39)**
self_conf	0.074 (18.01)**	0.067 (5.86)**	0.064 (7.03)**	0.035 (3.47)**	0.067 (7.54)**	0.083 (7.79)**	0.05 (3.98)**
conf_math	0.112 (27.89)**	0.111 (11.80)**	0.111 (12.00)**	0.112 (14.93)**	0.115 (11.62)**	0.096 (10.84)**	0.09 (9.83)**
conf_fin_know	0.056 (16.48)**	0.023 (2.04)*	0.013 -1.34	0.042 (5.21)**	0.042 (5.68)**	0.072 (9.79)**	0.057 (5.77)**
gender	-0.081 (21.91)**	-0.061 (6.30)**	-0.034 (3.69)**	-0.074 (9.19)**	-0.083 (11.09)**	-0.103 (14.25)**	-0.104 (18.10)**
minority	-0.071 (13.17)**	-0.055 (4.97)**	-0.027 (3.90)**	-0.049 (7.01)**	-0.039 (5.79)**	-0.053 (6.01)**	-0.059 (5.00)**
Constant	0.276 (45.03)**	0.281 (21.04)**	0.202 (14.41)**	0.24 (16.85)**	0.267 (18.96)**	0.287 (20.03)**	0.346 (16.68)**
N	27,091	2,795	4,686	4,522	4,669	4,907	5,512
Adjusted R-squared	0.28	0.18	0.19	0.27	0.29	0.29	0.27

This table shows the regression of financial literacy (percent of correct answers in the financial literacy quiz) on financial education, income, gender, ethnicity, and other control variables, across various age groups. State fixed effects are used. We use **, *, and + to denote significance at the 1%, 5%, and 10% level.

Table 6: Effect of Financial Literacy on High Interest Rate Borrowing

	All age groups	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
fin_lit_pct	-1.053 (15.02)**	-0.384 (2.54)*	-1.088 (7.13)**	-1.113 (8.26)**	-0.168 -1.13	-0.351 (1.71)+	-0.147 -0.62
college_degree	-0.444 (8.88)**	-0.344 (2.33)*	-0.538 (6.13)**	-0.457 (5.27)**	-0.352 (2.56)*	-0.391 (3.62)**	-0.240 (1.86)+
parent_college	-0.075 (1.73)+	-0.468 (4.54)**	-0.147 (1.72)+	-0.156 (1.80)+	-0.145 -1.17	-0.052 -0.41	-0.060 -0.38
dependent	0.910 (23.87)**	1.148 (10.98)**	0.953 (12.57)**	0.640 (8.35)**	0.310 (4.26)**	0.490 (4.72)**	0.587 (3.97)**
employed	0.293 (8.81)**	0.175 (2.21)*	0.149 (1.65)+	0.069 -0.81	-0.012 -0.13	-0.013 -0.18	-0.216 -1.06
inc_15to25k	0.188 (3.10)**	0.284 (2.12)*	0.399 (3.03)**	0.322 (2.20)*	0.225 (1.75)+	0.080 -0.59	0.102 -0.49
inc_25to35k	0.073 -1.26	0.336 (2.21)*	0.345 (2.71)**	0.080 -0.58	0.186 -1.20	-0.060 -0.40	0.092 -0.46
inc_35to50k	-0.083 -1.47	0.539 (4.48)**	-0.169 -1.28	0.108 -0.88	-0.053 -0.37	-0.090 -0.52	-0.133 -0.66
inc_50to75k	-0.369 (6.94)**	0.211 -1.34	-0.211 -1.56	-0.250 (1.89)+	-0.306 (2.35)*	-0.730 (3.98)**	-0.379 (1.77)+
inc_75to100k	-0.342 (5.04)**	0.414 (2.00)*	-0.086 -0.52	-0.409 (2.87)**	-0.506 (3.06)**	-0.959 (4.86)**	-0.076 -0.32
inc_100to150k	-0.764 (10.63)**	0.374 (1.96)+	-0.424 (2.37)*	-0.867 (5.95)**	-0.820 (4.23)**	-0.875 (4.57)**	-0.621 (2.11)*
inc_150k	-1.124 (10.79)**	0.166 -0.66	-0.917 (3.33)**	-0.921 (4.16)**	-1.202 (6.68)**	-1.110 (4.07)**	-1.123 (2.08)*
sec_invest	0.221 (5.29)**	0.352 (3.48)**	0.665 (7.13)**	0.430 (5.10)**	-0.110 -1.13	-0.177 (1.67)+	-0.530 (5.04)**
home_owner	-0.550 (11.54)**	0.399 (4.49)**	-0.047 -0.47	-0.580 (6.04)**	-0.803 (8.45)**	-0.653 (5.65)**	-0.932 (7.19)**

fin_anxiety	0.655 (17.30)**	0.383 (4.14)**	0.659 (8.79)**	0.699 (9.83)**	0.603 (6.34)**	0.470 (4.41)**	0.444 (4.09)**
self_conf	-0.384 (9.65)**	-0.230 (2.20)*	-0.135 (1.65)+	-0.420 (5.17)**	-0.470 (4.79)**	-0.546 (3.94)**	-0.293 (1.75)+
conf_math	0.062 -1.53	-0.145 -1.23	0.211 (2.52)*	0.136 -1.52	0.107 -1.05	0.029 -0.25	-0.084 -0.61
conf_fin_know	0.134 (3.21)**	0.388 (4.17)**	0.188 (2.85)**	0.279 (3.49)**	-0.054 -0.66	0.086 -0.76	-0.089 -0.61
mobile_banking	0.323 (10.02)**	-0.368 (4.26)**	-0.057 -0.81	0.267 (4.33)**	0.454 (7.35)**	0.511 (6.46)**	0.559 (5.08)**
gender	-0.427 (13.25)**	-0.547 (5.27)**	-0.771 (10.43)**	-0.306 (4.70)**	0.014 -0.2	-0.176 (1.82)+	-0.186 (1.75)+
minority	0.486 (8.45)**	0.306 (3.41)**	0.376 (5.01)**	0.323 (3.84)**	0.335 (3.20)**	0.471 (4.54)**	0.596 (4.06)**
Constant	-0.547 (7.75)**	-0.523 (2.98)**	-0.456 (3.18)**	-0.274 (1.99)*	-0.442 (2.69)**	-0.549 (2.77)**	-1.097 (4.86)**
<i>N</i>	27,091	2,795	4,686	4,522	4,669	4,907	5,512
Log pseudolikelihood	-13209.79	-1660.30	-2757.84	-2301.12	-2301.12	-1845.23	-1342.53

This table shows the regression of high interest rate borrowing on financial literacy, income, gender, ethnicity, and other control variables, across various age groups. State fixed effects are used. We use **, *, and + to denote significance at the 1%, 5%, and 10% level.

Table 7: Effect of Financial Literacy on Minimum Credit Card Payment

	All age groups	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
fin_lit_pct	-0.440 (6.56)**	-0.055 -0.24	-0.097 -0.54	-0.482 (2.60)**	-0.129 -0.92	-0.541 (3.50)**	-0.140 -0.74
college_degree	-0.165 (4.01)**	0.003 -0.02	-0.112 -1.43	-0.284 (2.28)*	-0.124 -1.41	-0.188 (2.08)*	-0.192 -1.46
parent_college	-0.117 (3.43)**	-0.202 (1.81)+	-0.231 (2.58)**	-0.271 (2.84)**	-0.150 (1.80)+	-0.012 -0.12	-0.170 -1.47
dependent	0.476 (14.28)**	0.339 (3.21)**	0.391 (5.28)**	0.150 (1.97)*	0.252 (3.55)**	0.363 (4.84)**	0.385 (2.22)*
employed	0.420 (12.31)**	0.267 (3.01)**	0.305 (3.37)**	0.108 -1.41	0.144 (1.93)+	0.274 (3.32)**	0.232 -1.39
inc_15to25k	0.383 (5.41)**	0.598 (3.79)**	0.263 (1.94)+	0.317 (1.84)+	0.418 (2.37)*	0.466 (2.22)*	0.003 -0.02
inc_25to35k	0.529 (6.81)**	0.657 (3.76)**	0.521 (3.11)**	0.786 (3.98)**	0.719 (4.13)**	0.429 (2.12)*	0.011 -0.06
inc_35to50k	0.625 (7.59)**	1.004 (6.47)**	0.611 (4.27)**	0.974 (5.74)**	0.966 (6.03)**	0.453 (2.41)*	-0.251 -1.32
inc_50to75k	0.670 (9.49)**	0.609 (3.98)**	0.782 (6.59)**	1.210 (7.18)**	0.976 (6.00)**	0.386 (2.31)*	-0.197 -1.05
inc_75to100k	0.564 (6.67)**	0.720 (3.84)**	0.727 (5.48)**	0.996 (5.47)**	0.661 (3.33)**	0.332 (1.76)+	-0.378 (1.85)+
inc_100to150k	0.309 (3.44)**	0.663 (3.25)**	0.304 (2.55)*	0.823 (4.05)**	0.619 (3.15)**	-0.007 -0.03	-0.436 (2.05)*
inc_150k	-0.161 (1.80)+	0.338 -1.13	-0.339 -1.18	-0.048 -0.18	0.458 (2.10)*	-0.050 -0.26	-1.428 (3.70)**
sec_invest	-0.247 (6.21)**	0.237 (2.16)*	0.121 -1.45	0.068 -0.81	-0.329 (3.64)**	-0.746 (7.00)**	-0.719 (5.98)**
home_owner	0.057 -1.39	0.400 (4.29)**	0.334 (4.71)**	0.098 -1.17	0.060 -0.58	-0.066 -0.61	-0.363 (3.02)**

fin_anxiety	0.893 (28.36)**	0.485 (4.74)**	0.896 (15.19)**	0.791 (12.85)**	0.762 (9.03)**	0.889 (10.65)**	1.137 (13.52)**
self_conf	-0.178 (4.21)**	-0.195 (1.79)+	-0.048 -0.55	-0.162 (1.82)+	-0.083 -0.9	-0.461 (4.38)**	-0.489 (3.64)**
conf_math	-0.007 -0.14	0.080 -0.72	0.033 -0.35	-0.075 -0.72	-0.055 -0.61	0.039 -0.37	-0.063 -0.51
conf_fin_know	0.121 (3.62)**	0.126 -1.4	0.121 (2.00)*	0.185 (2.53)*	-0.012 -0.18	0.364 (4.22)**	0.002 -0.01
mobile_banking	0.686 (23.94)**	0.541 (5.51)**	0.541 (8.83)**	0.800 (10.66)**	0.629 (9.38)**	0.474 (5.67)**	0.679 (7.02)**
gender	-0.029 -0.76	0.244 (2.69)**	-0.016 -0.21	0.153 (2.10)*	-0.048 -0.72	-0.094 -1.16	-0.265 (2.48)*
minority	0.293 (8.19)**	0.198 (1.85)+	0.245 (3.77)**	0.214 (2.89)**	0.115 -1.2	0.338 (3.84)**	0.572 (4.37)**
Constant	-2.160 (32.59)**	-2.551 (15.78)**	-2.261 (14.65)**	-2.070 (13.11)**	-2.019 (12.76)**	-1.626 (7.24)**	-0.983 (4.82)**
<i>N</i>	27,091	2,795	4,686	4,522	4,669	4,907	5,512
Log pseudolikelihood	-14073.78	-1530.77	-2859.50	-2659.88	-2641.92	-2233.78	-1777.42

This table shows the regression of minimum credit card payment on financial literacy, income, gender, ethnicity, and other control variables, across various age groups. State fixed effects are used. We use **, *, and + to denote significance at the 1%, 5%, and 10% level.

Table 8: Effect of Financial Literacy on Overdraft

	All age groups	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
fin_lit_pct	-0.493 (7.08)**	0.069 -0.30	-0.474 (5.59)**	-0.684 (3.84)**	0.166 -0.88	-0.060 -0.25	-0.113 -0.49
college_degree	-0.067 -1.37	-0.717 (4.95)**	-0.005 -0.05	-0.297 (2.74)**	0.327 (2.57)*	0.216 -1.42	0.057 -0.37
parent_college	-0.019 -0.37	0.062 -0.48	-0.099 -1.01	0.000 0.00	-0.145 -1.13	-0.257 (2.09)*	-0.023 -0.13
dependent	0.617 (14.54)**	0.564 (4.91)**	0.666 (9.29)**	0.324 (3.54)**	0.460 (4.77)**	0.579 (5.19)**	0.453 (2.61)**
employed	0.224 (6.20)**	0.226 (1.81)+	0.190 (2.38)*	0.141 -1.60	-0.069 -0.71	0.001 -0.01	0.145 -0.68
inc_15to25k	0.140 (1.94)+	0.319 (2.19)*	0.350 (2.07)*	0.074 -0.32	-0.118 -0.62	0.218 -1.10	-0.060 -0.32
inc_25to35k	0.073 -0.96	0.172 -1.12	0.451 (2.72)**	0.233 -1.14	-0.250 -1.26	0.044 -0.18	-0.022 -0.11
inc_35to50k	0.087 -1.20	0.202 -1.23	0.356 (2.05)*	0.541 (2.78)**	-0.099 -0.55	-0.104 -0.47	-0.131 -0.61
inc_50to75k	0.003 -0.05	0.047 -0.33	0.316 (1.86)+	0.408 (2.04)*	-0.203 -1.20	-0.139 -0.73	-0.180 -0.82
inc_75to100k	0.110 -1.42	0.302 -1.42	0.606 (3.80)**	0.432 (1.99)*	-0.213 -1.04	-0.598 (2.83)**	-0.339 -1.26
inc_100to150k	-0.274 (3.17)**	0.363 (1.65)+	0.058 -0.26	0.159 -0.76	-0.440 (2.26)*	-0.720 (3.32)**	-0.514 (1.78)+
inc_150k	-0.685 (6.25)**	-0.212 -0.49	-0.711 (2.36)*	-0.367 -1.32	-0.826 (3.62)**	-0.747 (2.44)*	-0.124 -0.43
sec_invest	0.301 (6.31)**	0.508 (3.37)**	0.631 (6.79)**	0.600 (6.47)**	-0.047 -0.44	-0.264 (2.20)*	-0.364 (3.09)**

home_owner	0.047	0.447	0.374	0.042	-0.114	-0.297	-0.398
	-1.11	(3.17)**	(6.15)**	-0.49	-1.14	(2.40)*	(2.82)**
fin_anxiety	1.149	0.964	1.359	0.926	0.890	1.040	1.178
	(21.49)**	(10.39)**	(15.09)**	(9.64)**	(9.19)**	(9.06)**	(9.63)**
self_conf	-0.485	-0.283	-0.225	-0.634	-0.563	-0.831	-0.732
	(9.70)**	(2.42)*	(2.19)*	(7.25)**	(4.79)**	(6.53)**	(4.30)**
conf_math	0.064	-0.135	0.185	0.283	-0.142	-0.008	-0.065
	-1.40	-0.95	(2.17)*	(2.73)**	-1.31	-0.06	-0.37
conf_fin_know	-0.073	-0.030	-0.002	0.001	-0.236	-0.139	-0.157
	(1.69)+	-0.33	-0.02	-0.01	(2.11)*	-1.07	-1.02
mobile_banking	0.777	0.768	0.596	0.782	0.721	0.826	0.851
	(18.72)**	(5.70)**	(8.27)**	(9.63)**	(7.65)**	(7.01)**	(6.75)**
gender	-0.124	-0.003	-0.308	0.044	0.078	-0.136	0.109
	(3.84)**	-0.02	(4.03)**	-0.52	-0.76	-1.22	-0.84
minority	0.281	0.277	0.167	0.165	0.110	0.286	0.694
	(6.36)**	(2.76)**	(2.30)*	(1.90)+	-1.03	(2.11)*	(4.80)**
Constant	-2.389	-2.772	-2.972	-2.338	-1.805	-1.672	-1.917
	(35.07)**	(14.68)**	(20.22)**	(12.33)**	(10.03)**	(7.92)**	(8.94)**
<i>N</i>	27,091	2,795	4,686	4,522	4,669	4,907	5,512
Log pseudolikelihood	-10575.50	-1256.33	-2312.63	-2172.57	-1872.97	-1439.41	-1209.25

This table shows the regression of overdraft on financial literacy, income, gender, ethnicity, and other control variables, across various age groups. State fixed effects are used. We use **, *, and + to denote significance at the 1%, 5%, and 10% level.

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