The Role of Math Confidence in Explaining the Financial Literacy Gender Gap.

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ABSTRACT

The level of financial literacy in the United States is surprisingly low. Researchers have attributed the low level of financial knowledge to the lack of financial education. We study college level students' understanding of financial concepts with special interest in attempting to explain the gender gap in financial literacy. Using a sample of 529 students at three different institutions we find that a gender gap in understanding has already developed by college, with men scoring higher on financial literacy exams. Using an ordered probit model we identify that both math ability and math confidence are determinants of financial literacy. While researchers have already identified the positive relationship between math ability and financial literacy, our contribution is that confidence of math ability is also a contributor to financial success. We find that math confidence is a predictor of women's success on financial exams but is not for men.

INTRODUCTION

The most recent US National Financial Capabilities Study finds that on average Americans score 53% on a standardized set of financial literacy questions. While this is surprisingly low, more alarming is that women did less favorably on the test relative to men and they were also more likely to not respond to questions.[1] The gender gap in financial literacy has received a lot of attention from researchers.[2] The connection between financial literacy and financial behavior shows that when financial literacy increases there is an increase in desirable

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[1] http://www.usfinancialcapability.org/downloads/NFCS_2015_Report_Natl_Findings.pdf
[2] See Agarwal et al. 2009, Lusardi and Mitchell 2008, Chen and Volpe 2002; Worthington 2006; Goldsmith and Goldsmith 1997; Lusardi, Mitchell, and Crudo 2010; Da Bassa Scheresberg 2013; Chen, Volpe; and Pavlicko 1996

financial outcomes. When financial literacy increases so do saving rates, stock market participation, retirement planning and the chances of making financial mistakes are reduced.

Researchers have proposed gender specialization, math ability, and general confidence as reasons why the financial literacy gender gap exists. In this paper we study the relationship between math ability, math confidence, and financial literacy. We first examine whether there are gender differences in actual financial literacy for college students. After identifying the gender differences, we then test if those differences are explained by math ability, as measured by their performance on a math exam, or self-reported confidence in math ability. We choose to focus on college students because most studies have found that the gap exists in the national samples, but little evidence is provided on how early the financial literacy gap appears. Finding differences in financial literacy as early as college level would suggest that the gap is not due to experience differences but due to the differential treatment due to education, culture, and family.

We find that the financial literacy gender gap exists with college level students. By sophomore year the differences between men and women's understanding of financial concepts has already developed. Therefore, the source of financial literacy gap must exist early on in individual's lives. In an attempt to explain the financial literacy gap we find that both math ability and math confidence are determinants of students' financial literacy. Students with higher level of math confidence have higher rates of financial literacy than students that report low levels of math confidence. Students that are above average in their math ability also score higher on the financial literacy exam. This suggest that both confidence and true math ability impact students' knowledge of personal finance concepts. While studies have identified how math ability impacts financial knowledge, it is less clear on why math confidence impacts financial literacy. We also cannot identify the direction of causation. It is possible that the causation is reversed such that

students with low financial ability are also less confident with their math ability. We find that the impact of confidence on financial literacy is sensitive to gender. Men's financial literacy outcomes are less likely to be impacted by their confidence.

LITERATURE REVIEW

There is a direct connection between financial literacy and financial behavior. Van Rooji et al. (2011) find that individuals with lower financial literacy avoid investing in stocks. This is important since most retirement planning has moved to privatized programs that are ever increasingly more complex. However, they are rarely accompanied with financial education programs. Under investment in stocks would imply less than optimally diversified portfolios which may lead to a lower level of wealth accumulation. Research has also found that the less financial literate individuals are more likely to borrow and accumulate less wealth. Stango and Zinman (2007) attributes the higher levels of borrowing to the inability to calculate interest rate payments due to lack of financial literacy. Agarwal et al. (2009) find that there is a relationship between financial literacy and the likelihood of making financial mistakes. The young and the elderly are more likely to make less than optimal financial decisions.

Lusardi and Mitchell (2008) find that women that are 50 and over and are close to retirement have under-saved for retirement and attribute that due to their lack of financial literacy. While Wagland and Taylor (2009) finds no disadvantage on the part of women in regards to financial knowledge, many others do find a gender gap in financial literacy (Chen and Volpe 2002; Worthington 2006; Goldsmith and Goldsmith 1997; Lusardi, Mitchell, and Crudo 2010; Da Bassa Scheresberg 2013; Chen, Volpe; and Pavlicko 1996.) Although means testing and multivariate logistic regression analysis in the previously mentioned studies indicate a difference across gender,

Hamacher (2001) suggests that at the individual level this finding is irrelevant as the differences between genders is much lower than the differences within genders.

There is evidence that indicates financial literacy increases positive outcomes in financial decision making (Campbell 2006; Stango and Zinman 2009; Lusardi and Mitchel 2007; Lusardi and Tufano 2009; Hilgert and Hogarth 2003; Van Rooij, Lusardi, and Alessie 2011; Hogarth and O'Donnell 1999; Mandell 2007; De Bassa Scheresberg 2013). The attempts to explain differences in financial literacy and gender financial outcomes is inconclusive. Evidence that financial education has an impact on financial literacy is mixed. Financial literacy is correlated with household income (De Bassa Scheresberg 2013) and thus one's income is a confounding variable in the efficacy of financial education. In fact, Lusardi, Mitchell and Curdo (2010) find that financial literacy is most strongly tied with the financial sophistication of the family of origin.

Fonseca et al. (2012) attempts to explain the gender gap, hypothesizing that men specialize in a household's financial decision making and are thus more likely to be concerned with acquiring financial skills. The analysis put forth in Fonseca et al. does not support this hypothesis; instead the authors find that financial specialization is sensitive to relative education levels of spouses. Chen and Volpe (2002) attempt to explain the gap by suggesting that women's financial confidence and enthusiasm levels are lower than their male counterparts. However, this paper does not explain why that might be the case. Goldsmith and Goldsmith (1997) also found a gender gap in financial confidence levels but were able to close both this gap and a gap in objective knowledge levels through a one semester financial education treatment. Another possible explanation is that women are more risk averse than men and this behavioral context may affect their financial actions (Goldsmith and Goldsmith 1997; Goldsmith, Goldsmith, and Heany 1997; and Chen and Volpe 1998.)

Much of the existing literature supports the importance of mathematical skills as a support for financial understanding. Financial literacy is often defined in terms of mathematical ability (Worthington 2006). The questions developed by Lusardi and Mitchell (2010) that currently serve as the gold standard for measuring financial literacy are mathematical in nature. De Bassa Scheresberg (2013) finds that those that rate themselves as "good at math" are less likely to engage in high cost borrowing behavior but more likely to have an emergency fund and retirement savings. Cole et al. (2015) uses difference and difference estimation to show that increases in state math requirements results in greater financial literacy and action, specifically greater financial market participation, larger investment income stocks, better credit management, and fewer home foreclosures.

Allgood and Walstad (2016) use objective and subjective measures of financial literacy to identify which is better at predicting actual financial behavior. They find that consumer's subjective assessment of their financial ability is a better measure then their actual financial literacy at predicting "bad" financial behavior. This suggests that consumers are acting on their confidence and not on their true knowledge of finance.

While confidence and math ability have been shown to impact financial literacy and financial behavior, less attention has been given to the role of confidence in math ability and financial literacy. In this paper we are interested in whether math confidence has a similar impact as found with financial confidence. While we don't observe financial behavior, we measure the relationship between math confidence and financial literacy.

STUDY DESIGN

The goal of this study is to assess the overall level of financial literacy for a sample of college students and determine if that level is impacted by mathematical knowledge or confidence controlling for gender. In addition, we attempt to identify if financial literacy could proxy for a measure of ability and help predict student learning of economics. The study was implemented in economics classes taught at 2 regional universities: Northern Kentucky University and University of Kentucky and a liberal arts college: Young Harris College. The study was administered in a variety of classes, ranging from introductory level courses to upper division classes. Data for our study come from student survey and knowledge assessment. Data collection began during the second week of classes after the add/drop date. Students were given a math assessment comprised of ten SAT and ACT based questions centered on topics frequently covered in introductory economics. In addition to the math test, students completed a survey that included five financial literacy assessment questions and questions asking participants to self-rate their level of math confidence.

DESCRIPTIVE STATISTICS

Demographics

Of the 671 students asked to complete the survey, 529 did so, for an overall participation rate of 78%. The participation rate by institution was 98% for NKU, 74% for UK, and 80% for YHC, respectively. There were 105 non-respondents, 27 students chose to opt out and 10 students started the survey but never completed it.

Table 1 Summary Statistics

Variable	All		NKU		UK		YHC	
	Mean	Std. Dev	**Mean**	Std. Dev	**Mean**	Std. Dev	**Mean**	Std. Dev
Female	**0.432**	0.496	**0.374**	0.486	**0.456**	0.499	**0.390**	0.492
Male	**0.567**	0.496	**0.617**	0.488	**0.544**	0.499	**0.610**	0.492
White/Non Hispanic	**0.798**	0.402	**0.804**	0.399	**0.784**	0.412	**0.864**	0.345
White/Hispanic	**0.080**	0.271	**0.037**	0.191	**0.089**	0.285	**0.102**	0.305
Black	**0.068**	0.252	**0.103**	0.305	**0.063**	0.244	**0.034**	0.183
Asian	**0.041**	0.198	**0.047**	0.212	**0.046**	0.210	**0.000**	0.000
Other Race	**0.014**	0.116	**0.009**	0.097	**0.017**	0.130	**0.000**	0.000
Transfer	**0.165**	0.372	**0.271**	0.447	**0.156**	0.363	**0.034**	0.183
Instate	**0.677**	0.468	**0.748**	0.436	**0.645**	0.479	**0.746**	0.439
International Student	**0.059**	0.236	**0.056**	0.231	**0.039**	0.194	**0.186**	0.393
On Campus	**0.582**	0.494	**0.252**	0.436	**0.621**	0.486	**0.949**	0.222
Private School	**0.216**	0.412	**0.198**	0.400	**0.236**	0.425	**0.136**	0.345
First Economc Class	**1.413**	0.493	**1.538**	0.501	**1.282**	0.450	**1.966**	0.183
College GPA (0-0.99)		0	0	0	0	0	0	0
College GPA (between 1-1.99)	**0.014**	0.116	**0.000**	0.000	**0.020**	0.141	**0.000**	0.000
College GPA (between 2-2.49)	**0.104**	0.305	**0.085**	0.280	**0.112**	0.316	**0.085**	0.281
College GPA (between 2.5-2.99)	**0.223**	0.416	**0.283**	0.453	**0.196**	0.398	**0.271**	0.448
College GPA (between 3-3.49)	**0.313**	0.464	**0.283**	0.453	**0.334**	0.472	**0.237**	0.429
College GPA (between 3.5-4)	**0.348**	0.477	**0.349**	0.479	**0.337**	0.473	**0.407**	0.495
Job	**0.465**	0.499	**0.755**	0.432	**0.389**	0.488	**0.390**	0.492
Fin Lit	**2.928**	1.374	**3.157**	1.312	**2.818**	1.398	**3.186**	1.266
Fin Lit Male	**3.131**	1.346	**3.934**	1.251	**3.005**	1.409	**3.333**	1.069
Fin Lit Female	**2.701**	1.343	**2.854**	1.276	**2.628**	1.335	**2.957**	1.522
Math	**0.991**	0.097	**0.991**	0.096	**0.989**	0.105	**1.000**	0.000

Freshman	**0.371**	0.484	**0.038**	0.191	**0.528**	0.500	**0.017**	0.130
Sophomore	**0.314**	0.465	**0.481**	0.502	**0.239**	0.427	**0.475**	0.504
Junior	**0.221**	0.415	**0.311**	0.465	**0.181**	0.385	**0.305**	0.464
Senior	**0.093**	0.291	**0.170**	0.377	**0.053**	0.224	**0.203**	0.406
Total # of Students	529		108		362		59	
Percent of students	100%		20%		68%		11%	

Table 1 contains student-level descriptive statistics. The final sample contains 529 students who completed the survey, out of which 43% are female and 57% are male. The sample is classified as 37% freshmen, 31% sophomores, 22% juniors and 9% seniors. The average student's age is 21.3 years. The sample is 80% white/non-Hispanic, 8% white/Hispanic, 7% Black, 4% Asian, and 1.4% other race. Approximately 17% transferred from other institutions, 68% are from within the respective institution's state, 6% are international students and 58% live on campus. We asked students to identify what bracket of college GPA do they fall under: 0% have a college GPA between 0-0.99, 1.5% have a college GPA between 1-1.99, 10% have a college GPA between 2-2.49, 22% have a college GPA between 2.5-2.99, 31% have a college GPA between 3-3.49 and 35% have a college GPA between 3.5-4. All but 1% of the samples have had some sort of math course either in high school or college and approximately 47% of the sample work while they attend college. On average, students attempt 5-6 courses per semester. The average final course grade is 81.8. The final average on the SAT/ACT based math assessment is 53.82%.

We utilize the NFCS questions to test financial literacy. The questions are listed in Table 2 and includes the percent of students that answered each question correctly.

Table 2: Summary of NFCS Questions

Question	Correct (%)	No. of No Answers	% Male
Q1 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?	85.63	23	48
Q2 Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?	57.66	26	50
Q3 Do you think that the following statement is true or false: buying a single company stock usually provides a safer return than a stock mutual fund?	51.8	18	55
Q4 A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage but the total interest over the life of the loan will be less.	70.13	18	55
Q5 If interest rates rise, what will typically happen to bond prices?	27.6	31	48

A financial literacy index was created from the five questions used to assess participants' financial knowledge. The financial literacy index is the sum of number of correct answers. The average score in the sample was 2.928. This is comparable to the national average of 2.9885 in 2012 (Allgood and Walstad 2016). We find that men score higher than women. Men answer 3.13 questions correctly, while women score 2.7 questions correctly. The difference in correct responses is statistically significant. Therefore, we find that the financial literacy gender gap has already developed by the time students are in college.

We find several similarities and differences among students at the three institutions.[3] While there are more males than females in the sample there is no statically significant differences in gender proportions across institutions. The majority of the students at all 3 institutions are white (more than three-fourths). While black students account for the next largest race proportion at NKU, Hispanics represent the next largest group at YHC and UK. There are not significant differences in racial make-up across institutions except for the notable lack of Asian students in the YHC sample. Transfer rates vary considerably among the three institutions: 27% of NKU participants transferred from another institution, as did 15% of UK students and only 3% of YHC students. Campus residential rates are also quite different. Only 25% of NKU students live on campus, 62% of UK students do, and 95% of YHC are residential. NKU students are also most likely to have a job; 76% of NKU students work while only 39% of UK and YHC students work. Perhaps this explains why NKU students take slightly fewer semester hours than participants at other institutions. Young Harris also has significantly more international students (18%) than the other institutions (5.9% NKU and 3.9% UK). The course grade differed across institutions. The average grade at NKU is 79.21, at UK it is 82.12, and at YHC it is 84.59.[4] The sample also varies across institutions in terms of class: Freshmen are mostly UK students and seniors are mostly YHC students.

Using responses from the survey we identify student confidence towards math. Students were asked to respond to the question "I am confident of my math ability" using a 5- point response Likert scale. We identified students as confident if they responded with Agree or Strongly Agree.

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[3] We tested the differences between the means of the characteristics with each institution and with the overall average as well. There were some statistically significant (5% level) differences for some covariates. These t-stats are available upon request. By survey institutions with different student bodies, we hope to gain insight from a diversity of attitudes and perceptions from different students and different institutions.

[4] The relatively high average is due to the inclusion of upper division courses and principle level courses. Additionally, it might reflect the selection bias with respect to students that self selected into the study.

Table 3 : Math confidence and ability by gender

	All %	Male %	Female %
High Math Confidence	50.85	55.7	44.9
High Math Ability	50.47	56.38	42.73
Total respondents	529	298	227

Our sample is equally distributed between high and low confidence students, with 50.85%

reporting that they are confident of their math ability. However, males are more likely to report

that they are confident of their ability. They report at 55.7% relative to 45% for females. We

identify students as having high mathematics ability if they score above the mean on the math quiz.

Men are more likely to score above the mean relative to females. However, overall correlation

between math ability and math confidence is low at 0.26. The fact that the two measures are not

correlated reduces issues of multicollinearity in regression analysis.

METHODS

In this study we are interested in the determinants of students' financial literacy. We estimate the

following equation using ordered probit

$$FIN\ LIT_j = \beta_0 + \beta_1 X_j + \beta_2 \mu_j + \epsilon_j$$

Where $FINLIT_j$ is a variable indicating student j's number of correctly answered NFCS questions.

FINLIT can take on the values from zero to five. We employee an ordered probit methodology

because the dependent variable is discrete and therefore Ordinary Least Square (OLS) assumptions

of continuous random variable is violated.[5] The vector X_j are control variables measuring student

j's demographic and educational attributes. Vector μ_j measures student's j's confidence and math

ability.

Table 4: Ordered Probit estimation of the number questions answered correctly

VARIABLES	(1) Fin Lit	(2) Fin Lit Male	(3) Fin Lit Female
Male	0.23***		
	(0.10)		
Age	-0.01	-0.00	-0.04
	(0.03)	(0.03)	(0.07)
Hispanic	-0.08	-0.23	0.24
	(0.18)	(0.22)	(0.30)
Black	-0.39***	-0.48	-0.14
	(0.20)	(0.32)	(0.27)
Asian	-0.33	-0.23	-0.41
	(0.29)	(0.50)	(0.36)
Other	-0.64	-0.35	-1.65
	(0.44)	(0.50)	(1.09)
Sophomore	-0.08	-0.03	-0.09
	(0.13)	(0.18)	(0.20)
Junior	-0.04	-0.04	-0.03
	(0.16)	(0.22)	(0.26)
Senior	0.27	0.46	-0.44
	(0.23)	(0.29)	(0.50)
Private School	0.11	0.23	-0.06
	(0.12)	(0.16)	(0.20)
Job	0.10	0.21	-0.05
	(0.10)	(0.14)	(0.16)
First Econ Course	0.42***	0.34***	0.62***
	(0.12)	(0.16)	(0.18)
Courses this semester	0.04	-0.00	0.09
	(0.07)	(0.09)	(0.10)
International Student	-0.53***	-0.79***	-0.32
	(0.26)	(0.34)	(0.44)
Transfer Student	0.14	-0.05	0.70***
	(0.15)	(0.18)	(0.30)
College Cumulative GPA	0.08	0.05	0.11
	(0.05)	(0.07)	(0.08)
Reported HS GPA	-0.01	0.15	-0.03
	(0.04)	(0.15)	(0.05)
High Math Confidence	0.28***	0.12	0.43***
	(0.10)	(0.14)	(0.16)
High Math Ability	0.25***	0.30***	0.24
	(0.10)	(0.14)	(0.16)
Constant cut1	-0.67	-0.53	-0.77
	(0.75)	(1.03)	(1.50)
Constant cut2	0.13	0.12	0.20

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[5] We include the OLS results in the appendix. Our findings do not change. The coefficients are to be interpreted with caution.

	(0.74)	(1.02)	(1.50)
Constant cut3	0.78	0.77	0.89
	(0.74)	(1.02)	(1.50)
Constant cut4	1.65***	1.64	1.81
	(0.74)	(1.02)	(1.50)
Constant cut5	2.63***	2.70***	2.73***
	(0.75)	(1.03)	(1.51)
Observations	478	273	205

Standard errors in parentheses
*** p<0.10, ** p<0.05, * p<0.01

When estimating student financial literacy for the entire sample (1) we find that being male increases the financial literacy score. Therefore, holding everything else constant men are more financial literate than women. We also find that there is a racial financial literacy gap. Black students score lower on the financial literacy exam than white students. There are no statistically significant differences between white students and other races. Relative to domestic students, international students score lower on the financial literacy exam. It is difficult to determine if this is due to financial knowledge or language limitations. Class standing does not impact financial knowledge, which implies that there is no evidence that students gain financial literacy as they progress through college. Similarly, age is statistically insignificant. Students with jobs and those that attended private high schools do not do better than their counter parts. Students taking economics for the first time score higher than those that have had economics previously. This result seems counterintuitive initially, but since most of our sample is principle level classes, students taking economics multiple times are repeat students who did not do well the first time around. Therefore, the first econ class variable is a measure of success in economic classes.

Our variables of interest are math confidence and math ability. Students that scored above the mean on the ACT/SAT math test scored better on the financial literacy exam. More importantly, students that self-reported that they are confident in their math ability have higher financial literacy scores. This result does not imply causation but merely points out the correlation

between financial literacy and confidence of the student with their math ability. Students might be more likely to guess when they are confident, or more likely to tackle the problem. Students with low levels of academic or mathematical confidence may also avoid learning about financial topics due to fear the concepts will be out of reach. One limitation of our research is that we do not control for socioeconomic differences. There might be a correlation between household income and financial literacy (Lusardi, A., Mitchell, O. S., & Curto, V., 2010).

In specification 2 and 3 we repeat the regression for men and women, respectively. While confidence is significant for financial literacy for women, mathematical ability is a significant indicator for men. For men, confidence does not impact students' financial literacy. Holding everything else constant, men who are more confident of their math ability do not do better on the financial literacy exam than men with lower confidence. However, for women, confidence does play a role. Women who are more confident of their math ability, regardless of their true ability, do in fact score higher on the financial literacy exam. On the other hand, women with higher math ability do not do better than women with lower math ability. We find that confidence of math ability impacts women's score on the financial literacy exam. There are gender differences in the way confidence about math ability influences the financial literacy outcomes. While most studies have focused on math ability as the source of the gender gap, we find that confidence also effects it. This relationship holds even when correlation between math ability and math confidence is low (0.26).

CONCLUSION

In this study we examine the determinants of financial literacy. Research has indicated that knowledge of financial concepts is universally low in the U.S. We extend the research by examining a new channel, student confidence of their math ability and their true math ability.

Using a set of math questions, and self-reported confidence measures we find that math ability and math confidence are determinants of students' financial literacy. Student with higher level of math confidence do better than students that report low levels of math confidence. Students that are above average in their math ability also score higher on the financial literacy exam. This suggest that both confidence and true math ability impact students' knowledge of personal finance. Our results help identifies a source of gender differences in financial literacy.

Efforts devoted to adjusting financial behavior through financial literacy must focus on the role of math confidence and ability on financial literacy outcomes. Moreover, resources must be devoted earlier on in the education system to ensure that financial literacy receives attention, and that the resources are equally distributed with respect to gender. Adult and college level financial education might be a little too late to help minimize the gender financial literacy gap.

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APPENDIX

OLS estimation of the model

Table 5: Regression analysis for the Sample and by gender

VARIABLES	(1) FinLit	(2) FinLit	(3) FinLit
Male	0.25***		
	(0.12)		
Age	-0.01	-0.00	-0.05
	(0.03)	(0.04)	(0.08)
White Hispanic	-0.06	-0.26	0.33
	(0.21)	(0.26)	(0.35)
Black	-0.45***	-0.55	-0.18
	(0.23)	(0.37)	(0.32)
Asian	-0.40	-0.43	-0.41
	(0.33)	(0.57)	(0.42)
Race-Other	-0.77	-0.47	-1.87
	(0.50)	(0.56)	(1.28)
Sophomore	-0.16	-0.12	-0.15
	(0.16)	(0.22)	(0.25)
Junior	-0.10	-0.10	-0.04
	(0.19)	(0.26)	(0.31)
Senior	0.24	0.44	-0.35
	(0.27)	(0.33)	(0.64)
Private school	0.12	0.28	-0.07
	(0.14)	(0.19)	(0.23)
Job	0.10	0.20	-0.07
	(0.12)	(0.16)	(0.19)
First Econ Class	0.47***	0.34***	0.68***
	(0.14)	(0.19)	(0.22)
Number of current courses	0.05	-0.01	0.09
	(0.08)	(0.11)	(0.12)
International student	-0.65***	-0.96***	-0.44
	(0.30)	(0.40)	(0.51)
Transfer	0.17	-0.03	0.69***
	(0.17)	(0.21)	(0.36)
Cumulative GPA	0.07	0.03	0.11
	(0.06)	(0.08)	(0.09)
High school GPA	-0.01	0.19	-0.02

	(0.05)	(0.18)	(0.06)
High confidence	0.32***	0.12	0.50***
	(0.12)	(0.16)	(0.19)
High math ability	0.30***	0.37***	0.23
	(0.12)	(0.16)	(0.18)
NKU	0.14	0.15	0.13
	(0.16)	(0.21)	(0.28)
YHC	0.10	0.17	0.07
	(0.21)	(0.27)	(0.35)
Constant	1.66***	1.65	1.62
	(0.86)	(1.16)	(1.79)
Observations	478	273	204
R-squared	0.15	0.16	0.17

Standard errors in parentheses

*** p<0.10, ** p<0.05, * p<0.01

When estimating student financial literacy using OLS for the entire sample (1) we find that males score a quarter of a question higher than females. A quarter of a question on a 5 question test is a five percentage point difference. We also find that Black students score 10 percent lower on the financial literacy exam than white students. Relative to domestic students, international students score lower on the financial literacy exam. It is difficult to determine if this is due to financial knowledge or lack of financial vocabulary. Class standing does not impact financial knowledge, which implies that students do not gain financial literacy during college. Students with jobs and those that attended private school do not do better than their counter parts. Students taking economics for the first time score higher than those that have had economics previously. This result seems counterintuitive initially, but since most of our sample is principle classes, students taking economics multiple times are repeat students who did not do well the first time around.

Our variables of interest are math confidence and math ability. Students that scored above the mean on the ACT/SAT math test scored better on the financial literacy exam. More

importantly, students that self-reported that they are confident in their math ability have higher financial literacy scores. This result does not imply causation but merely points out the correlation between financial literacy and confidence of the student with their math ability. Students might be more likely to guess when they are confident, or more likely to tackle the problem. Students with low levels of academic or mathematical confidence may also avoid learning about financial topics due to fear the concepts will be out of reach.

In specification 2 and 3 we repeat the regression for men and women, respectively. While confidence is significant for financial literacy for women, mathematical knowledge is a significant indicator for men. For men, confidence does not impact students' financial literacy. Men who are more confident of their math ability do not do better on the financial literacy exam than men with lower confidence. However, for women, confidence does play a role. Women who are more confident of their math ability do in fact score higher on the financial literacy exam. Women who score higher on the math ability exam do not do better than women with lower math ability. We find that confidence of math ability impacts women's score on the financial literacy exam.