The Effect of Problem-Solving Skills and Gender on Financial Behaviors

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ABSTRACT

There is evidence of significant financial illiteracy amongst Americans. Given the nature of modern financial systems, financial literacy is becoming increasingly more important, and personal finance classes are becoming more commonplace throughout the U.S. This paper analyzes how problem-solving skills and gender impact financial behaviors, and part of its intent is to influence developing financial education curricula. For the analysis, I collected data from the Arizona Pathways to Life Success for University Students (APLUS) study and implemented a linear model using interaction terms estimated by OLS. I assessed how problem-solving skills and gender impact financial behaviors including debt, results on a financial literacy quiz, budgeting, and investing. I concluded that problem-solving skills appear to have a higher impact on debt for men than women, negative orientation more greatly impacts women's financial behaviors than men's, and the impulsive-avoidant problem-solving style is the most impactful on financial behaviors overall.

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INTRODUCTION

Financial literacy, the application of financial knowledge in decision-making and a key component of financial well-being, is becoming increasingly important in the modern age. Lusardi (2019) writes, "Throughout their lifetime, individuals today are more responsible for their personal finances than ever before." Lusardi explains that pension and social welfare systems are strained due to rising life expectancies, the responsibility of retirement saving is transitioning from employers to employees (via the growing popularity of private defined contribution plans over employer-sponsored defined benefit plans[1]), more complex and a wider array of financial products are available to consumers, and fintech is rapidly revolutionizing the way people make financial decisions. Longobardi et al. (2018) agree: "[Within] the globally integrated nature of modern economics … individuals are increasingly required to make financial decisions, with the consequence that financial literacy is becoming an important and frequently investigated determinant of human capital formation and development."

Despite the importance of financial literacy, several facts in recent years suggest the ineptness of Americans' financial knowledge. Half of college seniors believe they are 'not very' financially knowledgeable (Mandell & Klein, 2007); corporate benefit administrators identified basic personal finance as "a critical area in which employee knowledge is deficient" (Mandell & Klein, 2007); financial illiteracy has been called "one of the root causes of the financial crisis" (Fox & Bartholomae, 2008); 87% of American students had credit card debt with an average balance of $800 (Gamst-Klaussen et al., 2019); American students had below-average scores on

[1] The Congressional Research Service (2021) shows a visual of this continued growth.

a PISA financial literacy exam given to 18 OECD countries (Longobardi et al., 2018). Lusardi (2019) found that less than 30% of Americans can answer the basic "Big Three"[2] financial questions by the age of 40. This lack of financial literacy in the United States is expensive. One 2018 study estimated that the average annual cost of financial illiteracy for each American was $1,230 and the collective cost was $295 billion (Bartholomae et al., 2021).

With growing recognition of both the importance of financial literacy and poor performance of financial behaviors, many American high schools and colleges have begun to require personal finance classes (Council for Economic Education, 2020). Some classes focus entirely on financial knowledge, but research shows that both cognitive and non-cognitive approaches to education and evaluation are necessary for improving financial outcomes.

Some variables that extend beyond solely cognition include problem-solving orientation, problem-solving style, and gender. In this paper, I research how these variables impact debt, financial knowledge, and other financial behaviors (such as paying bills on time, long-term investing, and saving for emergencies). Minimal research has been done that assesses the relationship between problem-solving skills and financial outcomes; papers that have researched it almost entirely focused on effects on financial debt and have not focused on gender differences. I choose to focus on these variables because I hypothesize there is a correlation

[2] The "Big Three" Financial Literacy Questions (correct answer marked with asterisks) 1) Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? More than $102** Exactly $102 Less than $102 Do not know Refuse to answer 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? More than today Exactly the same Less than today** Do not know Refuse to answer 3) Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund." True False** Do not know Refuse to answer

between how a person approaches general problems and financial problems; if this is the case, lessons pertaining to problem-solving can be included in personal finance curricula. Additionally, I am curious to see how gender interacts with problem-solving, as that could also be impactful in curricula design. I intend to build off the existing literature in two ways: analyzing how problem-solving skills impact financial outcomes beyond debt and how these effects vary by gender. My results inform financial education curriculum designers considering the non-cognitive factors of effective financial education.

LITERATURE REVIEW

To define concepts used in the paper and provide background for the origin of this research, I will provide a literature review. Definitions for financial education, financial knowledge, financial literacy, and financial outcomes have been used interchangeably throughout the literature, so I first distinguish between these terms. I then address the shortcomings of financial education's impact on financial literacy and emphasize the importance of financial evaluations involving non-cognitive traits. Problem-solving is one skill that involves both cognitive and non-cognitive attributes, so I then consult the D'Zurilla et al. (2004) problem-solving model to distinguish between problem-solving orientations and styles, measures suggested to be indicative of financial literacy and outcomes. I conclude the literature review by summarizing gender differences.

It is important to distinguish between financial education, financial knowledge, financial literacy, and financial outcomes, as their definitions within the literature vary considerably. Potrich et al. (2016) write that terms have been used interchangeably; however, "these constructs actually are conceptually different in that financial literacy is deeper than financial education; thus, using them synonymously can cause problems" (Potrich et al., 2016).

To begin, financial education is the process by which one acquires financial knowledge, such as learning of investment options, budgeting, building and improving credit, or the importance of saving. Education sessions commonly take place in high schools, corporate centers, or in community groups and are taught to a variety of audiences. Through financial education, individuals theoretically "improve their comprehension regarding financial products and their associated concepts and risks" (Potrich et al., 2016).

Financial knowledge is an understanding of financial concepts and risks. It is most commonly measured with standardized tests; the most well-known is "The Big Three" assessment explained in the introduction. The Big Three assessment has been used nationally and internationally in various longitudinal and cross-sectional studies, and its objective is to assess an individual's understanding of core financial principles: compound interest, real rates of return, and risk diversification (Hastings et al., 2013; Sunderaraman et al., 2022).

Financial literacy is "crystallized financial knowledge" (Sunderaraman et al., 2022) that consists of financial attitudes and behaviors (Indefenso & Yazon, 2020; Lusardi, 2019; Ramalho & Forte, 2018; Potrich et al., 2016). Whereas financial knowledge simply regards one's awareness of financial principles, financial literacy involves one's competency with finances and ability to act as their own personal finance manager. A complete definition of financial literacy is given by the OECD:

> "Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life'' (Longobardi et al., 2018; Lusardi, 2019; Ramalho & Forte, 2018; Kraitzek & Förster, 2023).

Lastly, financial outcomes are the results – positive or negative – of financial decision-making. Though outcomes are not entirely controllable, positive financial outcomes are likely the result of successful application of financial literacy. These positive outcomes enable an individual to avoid indebtedness and make sound financial decisions on a daily basis (Potrich et al., 2016; Kraitzek and Förster, 2023).

Hypothetically, financial education leads to financial knowledge which leads to financial literacy which leads to more positive financial outcomes. One analogy for these distinctions is

the learning of a language. Attending class in high school or college to learn a new language is analogous to financial education. The grade received on a language exam at the end of a semester is analogous to an assessment of financial knowledge. Passing a language exam is analogous to financial literacy. Completing certain tasks, like successfully ordering dinner at a restaurant or navigating through an airport while speaking in the new language are analogous to financial outcomes (although financial outcomes may be more susceptible to outside influence).

In recent years, the importance of financial literacy has rapidly gained recognition. The annual number of papers on financial literacy has increased 16-fold between the years of 2008 and 2016 (Ramalho & Forte, 2018). Additionally, a plethora of tactics for financial education has been developed worldwide: in 2015, three years after the OECD administered its first financial literacy assessment, "approximately 59 countries had a formal plan to deliver financial education in place or in development, and five countries had the intention to develop a strategy" (Fox & Bartholomae, 2008).

Despite this momentum, the long-term effects of financial education on financial literacy are less certain; there remains substantial disagreement over the efficacy of financial education (Hastings et al., 2013; Mandell & Klein, 2007; Potrich et al., 2016; Fox & Bartholomae, 2008; Longobardi et al., 2018). Some studies have shown little correlation between high school classes in personal finance and financial literacy of students (Mandell & Klein, 2007; Hastings et al., 2013). Hastings et al. (2013) write,

> "Of the few studies that exploit randomization or natural experiments, there is at best mixed evidence that financial education improves financial outcomes. The current literature is inadequate to draw conclusions about if and under what conditions financial education works."

However, recent literature shows otherwise. Stoddard & Urban (2019) found that required high school personal finance classes increase the acceptance of federal loans and decrease the likelihood of holding credit card balances. Additionally, in recent meta-analyses that provide a more nuanced understanding of the impact of financial education, Kaiser et al. (2022) found that "financial education programs have, on average, positive causal treatment effects on financial knowledge and downstream financial behaviors." Despite the historical ambiguity of the effectiveness of personal finance classes, it is hopeful that they positively impact financial behaviors.

With an overabundance of different financial education programs and curriculums entering the scene, it is critical to distinguish which programs most effectively contribute to financial literacy in order to replicate the successful programs in other settings. However, proper measurement and evaluation tools are lacking. Fox & Bartholomae (2008) state that the causal relationship between financial education, financial knowledge, and financial literacy "is weakly demonstrated, particularly due to inadequate evaluation design" and the "lack of rigor in financial education program evaluations is largely responsible" for this disconnect between financial education and literacy. In other words, assessments of financial education, knowledge, and literacy are not yet robust. An underlying factor is that financial education programs are most often evaluated by their impact on financial *knowledge* as opposed to their impact on financial *literacy* and financial *outcomes*. Evaluations tend to only test the cognitive side of finance. While this is sufficient for evaluations of financial knowledge, this is problematic for evaluations of financial literacy and outcomes because non-cognitive attributes are neglected.

There is a broad consensus that both cognitive and non-cognitive components play a role in financial literacy (Weinert, 2001; Arellano et al., 2018; Kraitzek & Förster, 2023). Cognitive components essentially equate to financial knowledge, and these are often assessed through financial knowledge tests – "The Big Three" is a primary example. Non-cognitive components include emotions, attitudes, motivation, interest, and risk preferences (Arellano et al., 2018; Kraitzek & Förster, 2023; Rausch et al., 2019; Ramalho & Forte, 2018; Mandell & Klein, 2007). Arellano et al. remark on how positive and negative emotions, particularly shame and guilt, are "tied to a learner's personal, familial, cultural, and sociological financial experiences…and are part of a person's financial behavior." Kraitzek & Förster write that triggered emotional states and dispositions affect financial well-being and decision-making. Ramalho & Forte (2018) argue that self-confidence is a key behavioral aspect to study when analyzing financial education programs, and Mandell & Klein (2007) found that "motivational variables significantly increased [their] ability to explain differences in financial literacy."

Kraitzek & Förster (2023) highlight the necessity of the cognitive dimension in financial literacy, but claim it is not sufficient. They write, "Although this is in line with the idea that domain knowledge—i.e., the cognitive dimension—is a necessary prerequisite for mastering domain-specific problems… considering the cognitive disposition alone may be too short-sighted." They continue to emphasize the necessity of a "holistic financial competence measurement" that involves "application of knowledge in a behavioral sense…or, to put it more broadly, by an individual's non-cognitive dispositions." Most instruments of financial assessment are insufficient, as they neglect relevant non-cognitive components.

Arellano et al. (2018) agree:

"Evidence on the role of non-cognitive skills should be taken into account for policymakers to both increase financial literacy and reduce the gender gap. Policies should be designed bearing in mind that cognitive skills alone do not explain an individual's financial decision-making, but are only part of the story."

Thus, assessing skills or strategies that involve both the cognitive and non-cognitive facets is likely more indicative of financial literacy than a solely cognitive financial knowledge assessment would be. Problem-solving is one skill that involves both facets. Rausch et al. (2019) write,

"Problem solving is considered to be an orchestration of cognitive, metacognitive, and non-cognitive processes in order to find an initially unknown way of bridging the gap between an actual state and a desired state. Unlike routine action, problem solving is by definition strenuous and problems usually evoke negative emotions that have to be dealt with. Altogether, problem solving is enhanced by motivation, excitement, perseverance, frustration tolerance, emotion regulation, (mild) positive affect, self-confidence, and so forth."

Rausch et al. further explain how problem-solving, unlike financial knowledge tests, incorporates the non-cognitive facets. They write that there are four components of problem-solving competence: knowledge application, action regulation, self-concept, and interests. They further comment on the "Brunswik asymmetry" that explains the poor prediction of problem solving via intelligence, as intelligence is "a very broad construct, while [problem-solving] is derived from a contextualized performance task." Similar definitions are found in research on mathematical problem solving (Rausch et al., 2019), and some studies have shown that mathematical problem-solving ability and numeracy are directly associated with financial literacy (Indefenso & Yazon, 2020). In addition, problem solving ability "has been recognized as a key element of innovative behavior in responding to rapid changes with the ability to find various alternatives and…maximize positive results and minimize negative consequences" (Kim et al., 2018). Given that the realm of finance and financial management is rapidly changing with

advancements in technology, the need to respond with a form of innovation is relevant. Thus, problem-solving abilities and strategies may be strong predictors of financial outcomes.

The research of D'Zurilla et al. (2004) also supports the claim that problem-solving encompasses both cognitive and non-cognitive facets. D'Zurilla et al. constructed a problem-solving process model that regards social problem solving, or "the process of problem solving as it occurs in the natural environment or 'real world'" and "deals with all types of problems that might affect a person's functioning." The researchers define problems as a "self-directed cognitive-behavioral process," and their model regards impersonal problems (such as insufficient finances) and intrapersonal problems (such as emotional or behavioral problems). This framework could be applied to assessing the likelihood an individual would pay back student loans or credit card debt.

Furthermore, the D'Zurilla et al. problem-solving process model (see in Figure 1) aims to explain how problem-solving orientations relate to problem-solving styles and ultimately predict problem-solving abilities. Problem-solving *orientation* is described as "a metacognitive process involving the operation of a set of relatively stable cognitive-emotional schemas that reflect a person's general beliefs, appraisals, and feelings about problems in living" (D'Zurilla et al., 2004), or, more broadly, "a person's cognitive, emotional, and behavioral attitudes toward a given problem" (Shim et al., 2019). Problem-solving *style* is active. This refers to the cognitive and behavioral "activities by which a person attempts to understand problems and find effective solutions or ways of coping with them" (D'Zurilla et al., 2004). Problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification are all skills applied by the problem-solving style.

In the model, there are two types of problem-solving orientations (positive and negative orientation) and three types of problem-solving styles (rational, impulsive, and avoidant styles). Constructive problem-solving is depicted as a process in which positive problem orientation leads to rational problem solving; dysfunctional problem-solving is depicted as a process in which negative problem orientation leads to an impulsive or avoidant style of problem-solving. For either group, if the outcome of the problem-solving is positive, the individual will exit the process. If the outcome is negative, an individual with a positive problem orientation and rational style will likely recycle their efforts and attempt to tackle the problem again. An individual with negative problem orientation and an impulsive or avoidant style will likely give up.

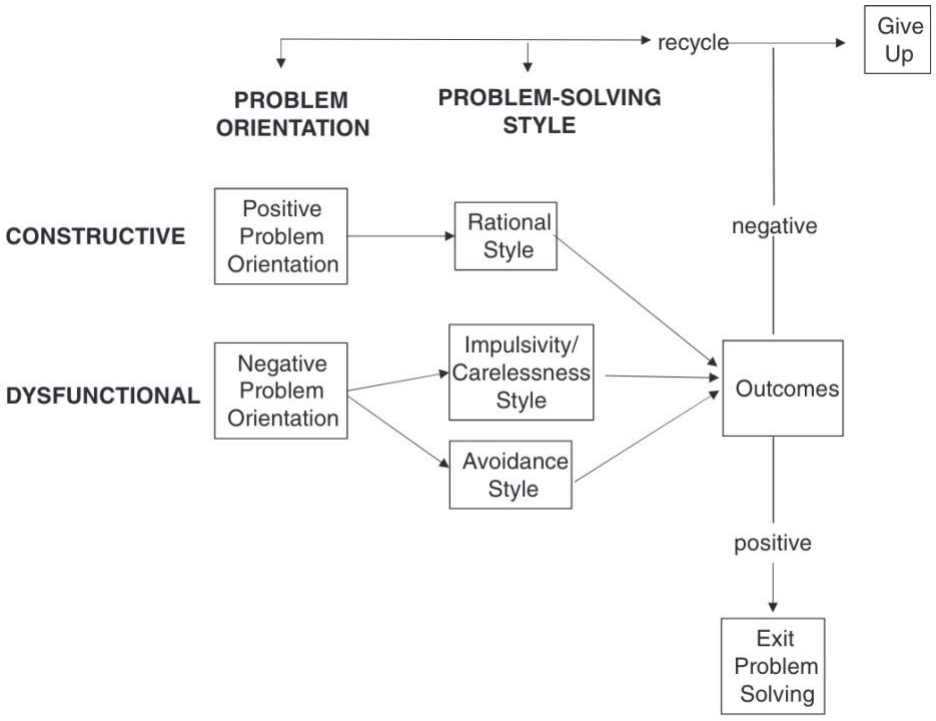

Figure 1

People who are inclined to a positive orientation tend to view problems as challenges or opportunities to display their abilities; they believe they will obtain positive outcomes and

surmount the difficulties that confront them (D'Zurilla et al., 2004; Shim et al., 2019). Those inclined towards a negative orientation face a fear of failure, procrastination, view problems as a threat to their well-being, become easily frustrated with problems and "display a dysfunctional behavioral style when facing a problem" (Shim et al., 2019).

In regard to problem-solving styles, D'Zurilla et al. describe the rational problem-solving style as one that takes a "rational, deliberate, and systematic application of effective problem-solving skills." Rational problem-solving involves gathering as many specific and concrete facts as possible, identifying threats and obstacles, and setting problem-solving goals. The rational problem solver identifies as many solutions as possible, anticipates consequences of decisions, and then makes a judgement and evaluates their decision. The second problem-solving style is the impulsivity or carelessness style. This style consists of solving problems with "narrow, impulsive, careless, hurried, and incomplete" attempts (D'Zurilla et al., 2004). The person with the impulsive style typically does not weigh multiple problem-solving options but impulsively follows the first idea that comes to mind. There is little strategy or systemic approach in this strategy. Lastly, avoidance style is the third problem-solving strategy. This individual puts off problems for as long as possible, attempts to shift the responsibility of solving problems to other people, and is characterized by "procrastination, passivity or inaction, and dependency" (D'Zurilla et al., 2004). Though orientations and styles are independent of one another, a person who acts according to a positive problem-solving orientation will usually employ a rational problem-solving style. A person who acts according to a negative problem-solving orientation will usually employ an impulsive or avoidant problem-solving style (D'Zurilla et al., 2004; Shim et al., 2019). The D'Zurilla et al. model can be viewed in the figure below.

Studies that assess the effects of problem-solving orientations and styles on financial outcomes are, for the most part, organized in one of two ways. Either studies assess the impact of positive and negative problem-solving orientation (i.e. perseverance in solving complex problems) (Arellano et al., 2018; Longobardi et al., 2018; Shim et al., 2019) or they assess the impact of impulsive and rational problem-solving style (Krava et al., 2021; Gamst-Klaussen et al., 2019; Ottaviani & Vandone, 2011). I did not come across any studies that researched the interaction of problem-solving orientation and style.

A number of studies note the effects of positive and negative orientations in problem solving. For example, one study conducted by Arellano et al. (2018) assessed perseverance through two proxies that were created through students' responses to negative and positive problem-solving orientation questions. For the negative proxy, students responded highly to prompts with negative connotations ("When confronted with a problem, I give up easily" and "I put off difficult problems"). For the positive proxy, students responded highly to prompts with positive connotations ("I remain interested in the tasks that I start", "I continue working on tasks until everything is perfect", and "When confronted with a problem, I do more than what is expected of me"). Thus, a low-perseverance student is one who identifies with the negative prompts. A high-perseverance student is one who identifies with the positive prompts. The Arellano et al. study found that both negative and positive perseverance, when taken to extremes, resulted in lower financial literacy scores. Though this seems counterintuitive in regard to the positive orientation, the study offers reasons as to why this may be the case: such students are overconfident in their own abilities, perfectionism that leads to irrational behavior patterns, or

simply the high percentage of students who responded positively as opposed to negatively skewed the data.

A separate study conducted by Shim et al. (2019) sought evidence as to whether or not individuals' views of problems as challenges (positive orientation) or obstructions (negative orientation) impacted their student-loan repayment process. As was expected, a negative problem-solving orientation was significantly associated with perceived difficulty of loan repayment, which suggested that "individuals who tend to adopt a negative problem-solving orientation will be more likely to struggle in their efforts to make loan payments on time than will those who do not have such a tendency." However, the researchers were surprised by the results of the positive problem-solving orientations. They found "no link between positive problem-solving orientation and perceived difficulty of loan repayment." They suspect this is due to the young adults' anxieties and wariness associated with financial matters.

Rational thinking and impulsiveness, two of the problem-solving style variables, and their impact on financial literacy have also been studied. D'Zurilla et al.'s definitions of rationality and impulsiveness previously stated are neither novel nor unique. Jabri (1991) gives a brief history of the two modes of problem-solving. The logical and intuitive modes of problem-solving date back to Taoist thought in China, and the Middle Ages distinguished between ratio (the power of discursive, logical thought that could be expressed by words or symbols) and intuition (the power of thought that could only be made known through judgement or action). A modern example is the book *Thinking Fast and Slow*, written by behavioral economist Daniel Kahneman (2011). He distinguishes between System 1 and System 2 thinking. System 2 allocates "attention to the effortful mental activities that demand it, including complex

concentrations … [agency, choice, and concentration] are also involved" whereas System 1 operates "automatically and quickly, with little or no effort and no sense of voluntary control." Krava et al. (2021) also explain the dual-system approach, in which decision-making is based on two distinct cognitive mechanisms, the deliberative system and the intuitive system:

> "The intuitive system is assumed to be associative, quick, unconscious, effortless, and more error-prone. On the other hand, the deliberative system is characterized by slower, conscious, effortful, and rule-based processes. Intuitive impressions are generated automatically and can be overridden by conscious, effortful, and deliberative reasoning."

Generally, application of the rational style instead of the impulsive style results in more optimal financial behaviors, particularly regarding debt. One study found that while impulsivity was not significantly associated with secured debt such as mortgages, it predicted unsecured debt such as consumer credit (Ottaviani & Vandone, 2011). This is consistent with expectations, as mortgage debt is often seen as a beneficial investment, whereas credit card debt is seen as undesirable and often irresponsible and has much higher interest rates. Also, getting a mortgage is a difficult, multistage process, and using a credit card requires less effort.

Furthermore, Meier and Sprenger (2010) found that present-biased individuals are more likely to have credit card debt and have significantly higher amounts of credit card debt. Another study found a negative association between financial literacy and impulsivity (Katauke et al., 2023). Gamst-Klaussen et al. (2019) write, "Healthy financial decisions require an ability to recognize long-term consequences of current choices" and "procrastination…is strongly associated with impulsivity and present-bias preferences." Their study finds that procrastination and impulsiveness are linked to unhealthy financial behavior, such as ballooning card debt. While Krava et al. (2021) report on some studies that have shown the benefits of impulsivity in

decision-making, they also reported that one of their studies shows a "clear benefit of the deliberate mode-of-thought in making financial decisions."

In our literature review, it appears that most research regarding rational or impulsive thinking in a financial context regards its impact on debt-specific variables. With this paper, I intend to contribute to the literature through analyzing how the rational and impulsive styles of problem-solving impact financial behaviors beyond debt.

One final measure I analyze in my research is the impact gender has on financial literacy and financial outcomes. The literature shows a gender gap in financial literacy; men tend to demonstrate stronger financial literacy skills than women. Longobardi et al. (2018) write that the gender gap in financial literacy is likely to develop while individuals are still of school age. They cite studies that report male high school students in the U.S. had a greater understanding of credit, auto insurance, and investments than female students; female college students are generally more intimidated by, less interested in, and less aware of financial markets than their male counterparts; and U.S. male college students outperform female students on general knowledge, savings and borrowing, and investment questions. In 2012, PISA introduced the first financial literacy assessment to measure the proficiency of 15-year-old students in applying financial knowledge and skills; the only country with significantly different performance between genders was Italy: boys performed better than girls (Lusardi et al., 2015).

Lusardi et al. (2019) also found a gender gap with the "Big Three" questions. Across countries, women are less likely to answer questions correctly; the gap is present "not only on the overall scale but also within each topic, across countries of different income levels, and at different ages." In Finland, a country with relatively equal society in terms of gender, 44% of

men compared to 27% of women answer all three questions correctly. 18% of women compared to 10% of men give at least one "do not know" response. Speculations for this gap include: women appear to be less interested than men in financial issues, women act with lower self-confidence than men when handling financial matters, and women increase their financial knowledge as they age, mainly in preparation for life after a husband's death (Longobardi et al., 2018; Hastings et al., 2013; Katauke et al., 2023).

Longobardi et al. (2018) examine how problem-solving styles and gender interact within the context of financial behaviors. They pose the question, if females could fill the gap in terms of perseverance and openness to solving complex problems, would gender difference in financial literacy decrease significantly? They write, "Our findings suggest that policies intended to bridge the gender gap in financial literacy should ensure that girls improve their approach towards problem solving." In my study, I want to examine the impact that both problem-solving styles and gender have on financial behaviors.

In summary, for this literature review, I first defined financial education, financial knowledge, financial literacy, and financial outcomes. I then noted the shortcomings of financial education and knowledge evaluations and stressed the implementation of non-cognitive traits in said evaluations. The D'Zurilla et al. (2004) problem-solving model identifies positive and negative problem-solving orientations and impulsive, avoidant, and rational problem-solving skills; these may be indicative of financial literacy and outcomes. Lastly, I acknowledged gender differences when it comes to financial knowledge and outcomes. My research intends to analyze the impact both problem-solving orientations, problem-solving skills, and gender have on various financial behaviors, specifically those beyond debt.

DATA

Data Collection

I acquired data from the Arizona Pathways to Life Success for University Students (APLUS) study led by Drs. Joyce Serido and Soyeon Shim. This is a longitudinal research study that follows the same group of young adults from their first year in college through adulthood. While the data consists of a number of variables pertaining to adult life outcomes (e.g. career, family, health, happiness) and financial capability (e.g. financial knowledge, skills, values), I primarily analyzed data regarding an individual's problem-solving style and various financial behaviors. Four waves of data were collected throughout the APLUS study. Wave 1 data were collected in spring of 2008 when individuals were aged 18-21 (N = 2,098). Wave 2 data were collected in fall 2010 (ages 21-24, N = 1,511), Wave 3 data were collected in spring/summer of 2013 (ages 23-26, N = 977), and Wave 4 data were collected in spring/summer 2016 (ages 26-29, N = 855).

To collect the data, participants were sent an online survey for each wave. All participants from the baseline survey (Wave 1) were given the opportunity to take subsequent surveys via email unless they opted out. Participants received a nominal monetary incentive to complete the surveys ($10, $20, $25, then $50 for each wave, respectively). For my research, most of the demographic variables were taken from the Wave 1 survey, and the problem-solving and financial behavior variables were taken from the Wave 4 survey.

Of the individuals who completed the Wave 4 survey, there were more women (63.2%) than men (36.8%). Most participants identified as White (66.5%), then Hispanic/Latino (15.9%), Asian (9.3%), Black/African American (3.0%), Native American (1.5%), and other (3.3%). This

is slightly different than the University of Arizona's overall student population, where the largest racial groups identify as White (48.3%), Hispanic/Latino (25.8%), Asian (5.4%), and Black (3.9%) (DataUSA). Additionally, this is noticeably different than the U.S. race demographics, where the largest racial groups identify as White (58.9%), Hispanic/Latino (19.1%), Black/African American (13.6%), Asian (6.3%), and American Indian and Alaskan Native (1.3%) (United States Census Bureau).

Data Construction

I first transformed the gender, college major, and level of schooling variables into indicator variables to be more effectively used in analysis. I recoded the scales of all financial behavior variables to range from 0 to 4 to maintain consistency with the rest of the ordinal variables in the dataset (originally, these variables ranged from 1 to 5). I also created a financial quiz score variable that measures the percentage of correct answers an individual scored on a designated 16-question financial knowledge quiz. To calculate this score, I recoded correct answers to 1 and incorrect answers to 0, summed, averaged, and multiplied by one hundred for a percentage. Also, I imported an additional set of control variables and merged them with the current dataset. I then transformed the race/ethnicity, participant annual income, and college financial education variables into indicator variables to be more effectively used in analysis.

I also reverse-coded questions 17 and 19. The D'Zurilla scale mostly includes positively worded items. However, Avoidance Style question 17 ("When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible") and Rational Thinking Style question 19 ("I spend more time avoiding my problems than solving them") were

negatively worded for their respective categories, so I reverse-coded them to be consistent with the format of the other questions.

I then created five indices based on the five categories of problem-solving orientation and styles as designated by D'Zurilla et al. (2004): Positive Orientation, Negative Orientation, Impulsive Style, Avoidance Style, and Rational Thinking Style. Each category consists of five questions that were asked in the survey; the specific questions can be viewed in Appendix A. To get a numeric value for each of these indices, I averaged the value of the five questions within each index.

The final variable I created was the "ImpulsiveAvoidant" variable. To create this, I averaged the Impulsive Style and Avoidance style indices. I chose to do this because the Impulsive Style and Avoidant Style are both negative problem-solving styles. Having these in the same category would make my analysis smoother.

Summary Statistics

Table 1 shows the summary statistics of the variables used in analysis. Generally speaking, the survey-takers responded with high results for Positive Orientation and Rational Thinking (more true than not), and low results for Negative Orientation, Impulsive Style, and Avoidance Style (more false than true). Though no index is extremely skewed, I can observe that, in the Totals column, the Positive Orientation and Rational Thinking indices are skewed to the left, suggesting there are more outliers who responded with low values. Negative Orientation, Impulsive Style, and Avoidance Style are skewed to the right, suggesting there are more outliers who responded with high values.

Table 1: Summary Statistics

	Men			Women			Total		
Statistic	N	Mean	Median	N	Mean	Median	N	Mean	Median
Negative Orientation	320	1.16	1	523	1.52	1.4	844	1.38	1.2
Positive Orientation	318	2.96	3	524	2.83	2.8	843	2.88	3
Impulsive Style	317	1.19	1.2	524	1.1	1	842	1.13	1
Avoidance Style	314	1.52	1.6	523	1.5	1.4	838	1.51	1.4
Rational Style	317	2.58	2.6	523	2.51	2.6	841	2.54	2.6
STEM Major	705	0.24	0	1,101	0.2	0	2,083	0.19	0
Business Major	705	0.2	0	1,101	0.09	0	2,083	0.12	0
Social/Behavioral Major	705	0.12	0	1,101	0.15	0	2,083	0.15	0
Liberal Arts Major	705	0.07	0	1,101	0.1	0	2,083	0.08	0
Fine Arts Major	705	0.03	0	1,101	0.06	0	2,083	0.04	0
Medicine Major	705	0.05	0	1,101	0.09	0	2,083	0.07	0
Education Major	705	0.01	0	1,101	0.06	0	2,083	0.03	0
Other Major	705	0.001	0	1,101	0.005	0	2,083	0.003	0
Parent Income	708	2.76	3	1,107	2.6	2	1,816	2.66	3
Mother's Education	719	3.59	4	1,119	3.49	4	1,839	3.53	4
Father's Education	709	3.75	4	1,117	3.56	4	1,827	3.64	4
Bachelor Degree	720	0.42	0	1,125	0.45	0	2,124	0.38	0
Master Degree	720	0.08	0	1,125	0.13	0	2,124	0.1	0
Doctoral Degree	720	0.06	0	1,125	0.06	0	2,124	0.05	0
College Financial Education	720	0.37	0	1,125	0.28	0	2,124	0.3	0
Personal Income: less than 25K	322	0.13	0	526	0.2	0	878	0.17	0
Personal Income: btwn 25K-39,999	322	0.15	0	526	0.23	0	878	0.2	0
Personal Income: btwn 40K-59,999	322	0.25	0	526	0.29	0	878	0.28	0
Personal Income: btwn 60K-74,999	322	0.18	0	526	0.15	0	878	0.16	0
Personal Income: 75K and greater	322	0.29	0	526	0.13	0	878	0.19	0
African American/Black	719	0.03	0	1,125	0.03	0	2,119	0.03	0
Asian/Asian American/ Pacific Islander	719	0.12	0	1,125	0.08	0	2,119	0.09	0
Hispanic/Latino	719	0.15	0	1,125	0.15	0	2,119	0.15	0
Native American/Other	719	0.05	0	1,125	0.05	0	2,119	0.05	0
White	719	0.65	1	1,125	0.68	1	2,119	0.67	1
Credit Card Debt	306	1,792.61	0	508	1,996.15	0	815	1,917.28	0
Other Debt	303	7,694.17	0	497	5,996.39	0	801	6,631.14	0
Financial Literacy Quiz	301	81.46	81.25	509	76.78	81.25	811	78.52	81.25
Learning	315	2.02	2	523	1.46	1	839	1.67	2
Budgeting	316	2.53	3	523	2.53	3	840	2.53	3
Tracking Expenses	316	2.82	3	522	2.76	3	839	2.78	3
Spending within Budget	315	2.75	3	522	2.66	3	838	2.7	3
Paying Bills	316	3.74	4	518	3.75	4	835	3.75	4
Paying off Credit Card	316	2.95	4	522	2.84	4	839	2.88	4
Investing	316	2.32	3	523	1.85	2	840	2.03	2
Contribution	315	2.6	3	523	2.43	3	839	2.49	3
Prehealth Benefits	316	1.16	0	523	0.92	0	840	1.01	0
Saving for Future	316	2.59	3	522	2.63	3	839	2.61	3
Saving for Emergencies	315	2.49	3	523	2.42	3	839	2.44	3
Checking Credit Reports	316	2.18	2	523	1.73	2	840	1.9	2
Checking Credit Score	315	2.23	2	522	1.77	2	838	1.94	2
Maxing Credit Limit	315	0.46	0	523	0.38	0	839	0.41	0

Additionally, the most common college majors for the total population were in the STEM field (19%), Business (12%), and Social/Behavioral Sciences (15%). By the fourth wave of the survey, 38% of the sample size had a Bachelor's degree, 10% a Master's degree, and 5% a PhD.

The rest of the sample did not yet have a higher degree. Percentages do not total to 100% for majors or degrees because a number of participants lacked data entry in these areas. It can also be observed by the "College Financial Education" variable that approximately a third of the participants had either taken a personal finance class at the University of Arizona or attended a personal finance workshop or seminar at the University of Arizona. Lastly, there is a relatively even distribution of personal income levels.

I also included the independent variables in the summary statistics. These variables were a part of Wave 4, so their sample sizes are similar to the problem-solving orientation and style variables. I will discuss these variables to a greater extent in Methods and Results.

Next, I ran three sets of correlation tests as a data validation exercise that will be shown in the following three figures. For the first correlation test, I assume that Positive and Negative Orientations will be negatively correlated and Impulsive and Rational Styles will be negatively correlated. Figure 2 shows the correlation values between each of the five indices. The strongest negative correlations are between Positive and Negative Orientations and Rational and Impulsive Styles. These relationships match my assumptions. There is also a strong negative relationship between Positive Orientation and Avoidance. The strongest positive correlations are between Negative Orientation and Avoidance and between Positive Orientation and Rational Thinking Style.

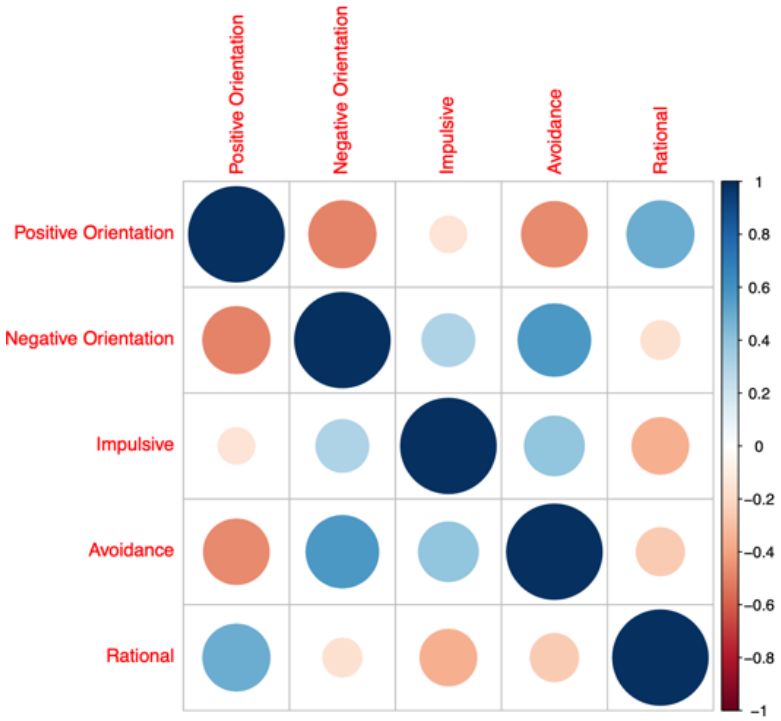

Figure 2

In the next correlation test, I assume Positive Orientation questions will be positively correlated with one another and Negative Orientation questions will be positively correlated with one another. Figure 3 shows the correlation values between the ten Positive and Negative Orientation questions, and the figure matches my assumptions. Furthermore, all Positive and Negative Orientation questions are negatively correlated. The specific questions used in this figure can be viewed in Appendix A.

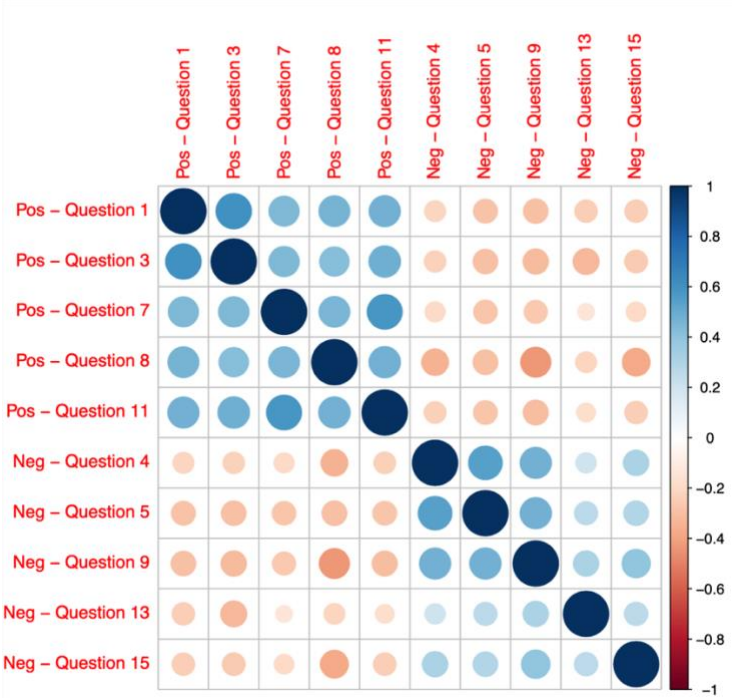

Figure 3

For the final correlation test, I assume all Impulsive Style questions will be positively correlated with one another, and all Rational Thinking questions will be positively correlated with one another. Figure 4 shows the results, and most of them match my assumptions. All Impulsive Style questions are positively correlated with each other and all Rational Style questions are positively correlated. Most Impulsive Style and Rational Thinking questions are negatively correlated. The one exception to this pattern is the Rational Thinking Question 19 ("I spend more time avoiding my problems than solving them"). This is positively correlated with the Impulsive Question 14 ("When problems occur in my life, I like to deal with them as soon as possible"), though the correlation is very weak. Overall, this matches our expectations as well.

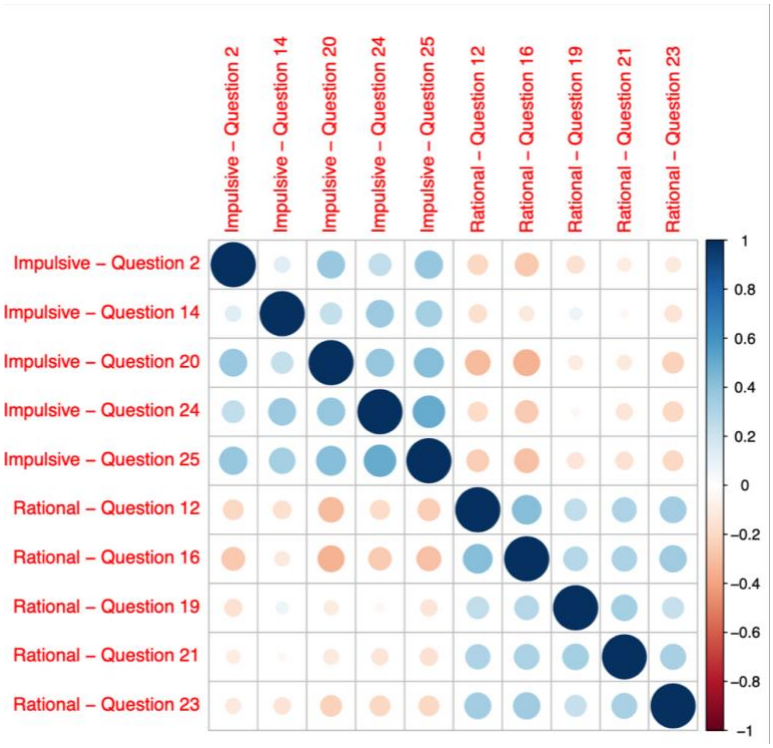

Figure 4

As a final step, there was one outlier I removed. When I later ran regressions regarding other debt, there were extreme differences between the genders. It was estimated, at the 5% level, that women have $105,291 less other debt than men. I created a box-and-whisker plot for men that can be observed in Figure 5. There is one extreme outlier for men (at $1.8 million), which accounts for the extreme difference. I removed this data point for analysis.

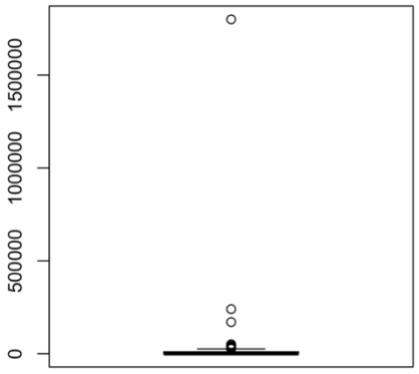

Figure 5

METHODS

The objective of my paper is to understand how problem-solving orientations, problem-solving styles, and gender impact financial outcomes. Based on my research in the literature review, I hypothesize that individuals with a positive orientation and rational thinking style will have better financial outcomes than those with a negative orientation or impulsive-avoidant style. Additionally, I hypothesize that men will score higher on the financial literacy exam than women. I will use a linear model using interaction terms estimated by OLS.

Within the model, I use interaction terms to assess how the effect of positive orientation on men is different than the effect of positive orientation on women. I also use this method with negative orientation, impulsive-avoidant style, and rational style. By estimating the model in this way, I assess the impact of individual orientations or styles with gender while holding all else constant. Additionally, I will be able to note the differences in genders by observing the values of the "female" variable (as 1 = female and 0 = male). The model can be viewed below.

$$
\begin{aligned}
&Financial\ Outcome_i \\
&\quad = \beta_0 + \beta_1 Negative\ Orientation_i + \beta_2 Positive\ Orientation_i \\
&\quad + \beta_3 ImpulsiveAvoidant\ Style_i + \beta_4 Rational\ Style_i + \beta_5 Female_i \\
&\quad + \beta_6 Female * Negative\ Orientation_i + \beta_7 Female * Positive\ Orientation_i \\
&\quad + \beta_8 Female * ImpulsiveAvoidant\ Stlye_i + \beta_9 Female * Rational\ Style_i \\
&\quad + X_i + \varepsilon_i
\end{aligned}
$$

where X_i is the vector of controls and ε_i is the error term.

Model 1

To focus on the specific hypotheses to be tested in our model, I included control variables to reduce unobserved variables and thus reduce omitted variable bias and endogeneity. I interpret all coefficients on variables of interest while holding constant the control variables. I'm interested in understanding how the variables of interest explain outcomes while not impacted by the control variables; if not all variables of interest are not significantly different than 0, there is no explanatory power independent of the controls.

I controlled for major in college (8 binary variables were created for the 8 major categories: STEM, Business, Social and Behavioral Sciences, Liberal Arts, Fine Arts, Education, Medicine, Other); parents' annual income, years of father's and mother's education, and the degree obtained by the participant at the time of Wave 4 (Bachelor's, Master's, or Doctoral). I also included control variables used in the Shim et al. (2019) study: race and ethnicity, annual salary of the participant at Wave 4 (5 binary variables were created for the 5 financial levels: less than $25,000; between $25,000-$39,999; between $40,000-$59,000; between $60,000-$74,999; $75,000 and greater), and college financial education. For this final variable, 1 was assigned to participants who took a personal finance class at the University of Arizona or attended a workshop or seminar on personal finance at the University of Arizona. 0 was assigned to participants who did neither.

I also ran this same regression without the "college financial education" control variable included to observe the impact of that variable. These results are discussed in Appendix C. I add these results because the inclusion of the "college financial education" control variable in the first model may be contested. I chose to include the "college financial education" variable in the first model because I hypothesize that taking a financial education class could impact a person's

problem-solving orientation and style. Thus, if this control variable were to be omitted, the estimates of these values would be biased. However, I chose to omit the "college financial education" control variable in the appendix in case the problem-solving orientation and style was a cause of college financial education rather than an effect; then, it would not make sense to control for college education. It may be the case that participants' orientations and styles cause them to choose to take financial education classes or seminars. My inclination is that this first model most accurately reflects students' behaviors. Regardless, the results of the second model, which can be viewed in Appendix C, are minimally different.

RESULTS

For ease of analysis, I split the results of the model into three tables. Table 2 shows the results related to debt, Table 3 shows the result related to the financial literacy quiz, and Table 4 show the results of other financial outcomes. For complete information of the variables used in these tables, refer to Appendix B.

	Dependent variable:	
	Credit Card Debt	Other Debt
	(1)	(2)
Negative Orientation	-187.56	1,831.51
	(406.27)	(1,772.24)
Positive Orientation	1,287.27***	3,405.32*
	(421.06)	(1,858.03)
Impulsive and Avoidant Style	1,493.81**	-5,596.79**
	(633.48)	(2,794.38)
Rational Style	-1,407.70**	-8,223.91***
	(572.23)	(2,574.24)
Female	1,487.50	-13,533.42
	(2,431.49)	(10,755.26)
Female*Negative Orientation	-372.13	-3,707.69*
	(504.79)	(2,214.75)
Female*Positive Orientation	-1,156.36**	-5,492.82**
	(541.93)	(2,401.56)
Female*ImpulsiveAvoidant Style	-674.02	6,779.59*
	(791.62)	(3,476.19)
Female*Rational Style	1,422.48**	8,980.08***
	(703.43)	(3,137.83)
Observations	754	741
R^2	0.10	0.08
Adjusted R^2	0.06	0.04
Residual Std. Error	3,885.29 (df = 722)	16,929.18 (df = 709)
F Statistic	2.49*** (df = 31; 722)	2.03*** (df = 31; 709)
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 2

Table 2 shows the results problem-solving orientations and styles and gender have on credit card debt and other debt. Credit card debt, measured in dollars and self-reported in Wave 4

of the APLUS dataset, is the total amount a participant owes on all credit cards in their name that would not be paid in full in the month they took the survey; this includes any outstanding credit card debt carried forward from previous months. Other debt, also measured in dollars, includes all debt except credit card debt, educational loans, and mortgages.

Regarding credit card debt, there is no statistically significant difference associated with being male versus female. A positive problem-solving orientation and impulsive-avoidant problem-solving style appear to increase credit card debt for men, and a rational problem-solving style appears to decrease credit card debt for men. It is estimated that for every 1-point increase in Positive Orientation, credit card debt for men increases by $1,287.27. For every 1-point increase in Impulsive-Avoidant Style, credit card debt for men increases by $1,493.81. Additionally, for every 1-point increase in Rational Style, credit card debt for men decreases by $1,407.70.

For women, Positive Orientation has a much smaller impact; it is estimated to increase debt by only $130.91, and this is a statistically significant difference from men at the 5% level. With a one-point increase of the Impulsive-Avoidant Style, women are estimated to increase debt by $14.78, and this is also a statistically significant difference from men at the 5% level. There is no statistically significant difference between the genders pertaining to the Impulsive-Avoidant Style.

Regarding other debt, there again is no statistically significant difference associated with being male versus female, though when assessing magnitude, women are estimated to have $13,533.42 less other debt than men. It is estimated that a one-point increase in Positive Orientation increases other debt for men by $3405.02 but decreases other debt for women by

$2,087.50. A one-point increase in the Impulsive and Avoidant Style is estimated to decrease other debt for men by over $5,000 and increase other debt for women by over $1000. Additionally, a one-point increase in the Rational Style is estimated to decrease other debt for men by approximately $8,000 and increase other debt for women by approximately $700.

Overall, these results were only somewhat consistent with my hypothesis. Impulsive-Avoidant Style increased credit card debt as expected, and the Impulsive-Avoidant Style increased other debt for women and the Rational Style decreased debt for men. However, Positive Orientation increased credit card debt and men and women had opposite results for other debt, which were not expected. The most interesting takeaway from this table is that, across the board, problem-solving orientation and styles appear to have a greater monetary impact on debt for men than they do for women.

This brings into question the importance of household structure in this analysis. It may be too easy to assume that men are more often the household financial decision maker, and women less so. In an attempt to address this, I reran the same regressions in Appendix D with two additional control variables: control over personal finance and partner financial relationship. In Appendix D, I discuss how this changes several of my results, likely in part because adding these variables leads to a large reduction in my sample of observations.

Table 3 shows the results problem-solving orientations and styles and gender have on the financial literacy quiz score. Again, this score is expressed as a percentage. The only statistically significant results here pertained to Positive Orientation. For men, it is estimated that a one-point increase in Positive Orientation leads to a 2.62 percentage-point increase on the financial literacy quiz. For women, it is estimated that a one-point increase in Positive Orientation leads to a 1.49

percentage-point decrease on the financial literacy quiz. Regarding the other variables, results are inconsistent across genders and problem-solving orientations and styles. It is estimated that women will score 5.03 percentage-points higher than men on the financial literacy quiz, though this result is not statistically significant. Overall, there was no obvious trend to these results, and they went against my hypothesis rather than supported it.

	Dependent variable:
	Financial Literacy Quiz
Negative Orientation	1.32
	(1.28)
Positive Orientation	2.62**
	(1.28)
Impulsive and Avoidant Style	-0.92
	(2.03)
Rational Style	-0.51
	(1.82)
Female	5.03
	(7.69)
Female*Negative Orientation	-1.59
	(1.60)
Female*Positive Orientation	-4.11**
	(1.68)
Female * Impulsive-Avoidant Style	-1.26
	(2.54)
Female*Rational Style	2.59
	(2.23)
Observations	759
R^2	0.11
Adjusted R^2	0.07
Residual Std. Error	12.48 (df = 727)
F Statistic	2.82*** (df = 31; 727)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 3

Lastly, Table 4 shows the results problem-solving orientations and styles and gender have on the fourteen remaining financial outcomes. I assembled these results into the same table because all these outcomes fell on a scale of 0-4 (0 meaning a participant never engaged in the listed financial behavior, and 4 meaning the participant very often participated in the listed financial behavior). Additionally, I organized the table so similar dependent variables could be viewed together. Learning about financial management, budgeting on a regular basis, and tracking expenses are all preparation actions. Spending within a budget, paying bills on time each month, and paying off a credit card balance in full every month are all present actions. Investing for long-term financial goals, contributing to an investment or retirement account, using a pre-health benefits account, saving money each month for the future, and saving for emergencies are all forward-thinking actions. Higher scores in any of the variables listed thus far signify stronger financial behaviors and outcomes.

Checking credit reports and checking credit scores are actions that could signify either mindfulness or nervousness, and it can be debated whether higher scores in these areas represent stronger or weaker financial behaviors. Lastly, a higher score with maxing out credit card limits signifies a weaker financial behavior.

As there are many results that can be observed in Table 4, I will comment on the four I find most insightful. First, the most impactful independent variable (regarding number of statistically significant results, magnitude of results, and consistency of results) was the Impulsive-Avoidant Style. Eight of the financial behaviors were statistically significant (six were significant at the 1% level), and all these variables negatively impacted financial behavior. For instance, a one-point increase in the Impulsive-Avoidant style for men resulted in a 0.58-point

decrease of saving for the future and 0.53 increase in maxing out credit card limit. For the most part, women were not statistically significantly different than men. These results matched my hypothesis, as the Impulsive-Avoidant Style has a negative impact on financial behaviors.

Another observation is that a Negative Orientation has a greater impact on women's financial behaviors than men's financial behaviors. For instance, the magnitude of the effect of Negative Orientation on men's is very small; most financial behaviors increased by less than 0.10 of a point when Negative Orientation increased by one point. Additionally, most financial behaviors were positively impacted, and only one behavior (paying bills on time) was statistically significant. However, this was not the case with women. For women with Negative Orientation, almost all behaviors were larger in magnitude and negatively impacted, and four results were statistically significantly different than men (tracking expenses, investing in long-term financial goals, checking credit reports, and checking credit scores). My hypothesis, that Negative Orientation has a negative impact on financial behaviors, was met for women more than it was met for men.

A third observation is that, of all the independent variables, gender appears to have results of the greatest magnitude, though only one financial behavior is statistically significant. Given the categorization of financial behaviors I wrote on previously, women tend to have stronger financial behaviors than men in most preparation actions (budgeting and tracking expenses) and most present actions (spending within budget and paying bills on time). Men tend to have stronger financial behaviors in most forward-thinking actions (investing for long-term goals, using pre-tax health benefits accounts, saving for the future, and saving for emergencies).

	Dependent variable:													
	Learning	Budgeting	Tracking Expenses	Spending within Budget	Paying Bills	Paying Off Credit Card	Investing	Contribution	Prehealth Benefits	Saving for Future	Saving for Emergencies	Checking Credit Reports	Checking Credit Score	Maxing Credit Limit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Negative Orientation	-0.01	0.04	0.08	-0.03	0.10*	0.23	0.09	0.03	-0.09	0.10	0.13	0.06	0.05	-0.08
	(0.12)	(0.13)	(0.12)	(0.11)	(0.06)	(0.14)	(0.14)	(0.15)	(0.14)	(0.13)	(0.13)	(0.14)	(0.14)	(0.09)
Positive Orientation	0.16	0.42***	0.42***	0.23**	0.07	-0.18	0.18	-0.06	-0.20	-0.07	0.08	0.22	0.35**	-0.06
	(0.12)	(0.13)	(0.12)	(0.11)	(0.06)	(0.14)	(0.14)	(0.15)	(0.15)	(0.13)	(0.13)	(0.14)	(0.14)	(0.09)
Impulsive and Avoidant Style	-0.11	-0.29	-0.54***	-0.31*	-0.37***	-0.68***	-0.37*	0.05	0.06	-0.58***	-0.55***	0.02	-0.001	0.53***
	(0.19)	(0.20)	(0.18)	(0.18)	(0.09)	(0.22)	(0.22)	(0.23)	(0.23)	(0.20)	(0.20)	(0.22)	(0.22)	(0.14)
Rational Style	-0.004	0.14	0.004	0.30*	0.23***	0.25	-0.06	0.16	-0.27	0.20	0.06	-0.05	-0.26	-0.18
	(0.18)	(0.18)	(0.17)	(0.16)	(0.08)	(0.20)	(0.20)	(0.21)	(0.21)	(0.19)	(0.19)	(0.20)	(0.20)	(0.13)
Female	-0.28	1.01	0.62	0.89	0.24	-0.83	-0.80	1.43	-1.49*	-0.49	-0.38	-0.24	-0.51	-0.79
	(0.74)	(0.76)	(0.71)	(0.69)	(0.35)	(0.86)	(0.85)	(0.88)	(0.87)	(0.78)	(0.79)	(0.84)	(0.86)	(0.53)
Female*Negative Orientation	-0.23	-0.22	-0.25*	0.02	-0.001	-0.19	-0.33*	-0.27	0.15	-0.12	-0.11	-0.43**	-0.48***	0.06
	(0.15)	(0.16)	(0.15)	(0.14)	(0.07)	(0.18)	(0.18)	(0.18)	(0.18)	(0.16)	(0.16)	(0.17)	(0.18)	(0.11)
Female*Positive Orientation	-0.03	-0.18	-0.26*	-0.04	0.04	0.33*	0.08	0.02	0.16	0.13	0.06	-0.24	-0.40**	0.18
	(0.16)	(0.17)	(0.16)	(0.15)	(0.08)	(0.19)	(0.19)	(0.19)	(0.19)	(0.17)	(0.17)	(0.18)	(0.19)	(0.12)
Female * Impulsive-Avoidant Style	0.08	0.01	0.18	-0.17	0.18	0.32	0.37	-0.09	0.06	0.26	0.08	0.46*	0.66**	-0.29
	(0.24)	(0.25)	(0.23)	(0.22)	(0.11)	(0.28)	(0.28)	(0.29)	(0.28)	(0.26)	(0.26)	(0.27)	(0.28)	(0.18)
Female*Rational Style	0.12	-0.03	0.11	-0.24	-0.22**	-0.11	0.14	-0.32	0.25	0.05	0.12	0.27	0.48*	0.20
	(0.22)	(0.22)	(0.21)	(0.20)	(0.10)	(0.25)	(0.25)	(0.26)	(0.25)	(0.23)	(0.23)	(0.25)	(0.25)	(0.16)
Observations	786	787	786	785	783	786	787	786	787	786	786	787	785	786
R^2	0.19	0.12	0.12	0.10	0.15	0.16	0.27	0.29	0.13	0.18	0.18	0.11	0.12	0.12
Adjusted R^2	0.16	0.08	0.09	0.06	0.11	0.13	0.24	0.26	0.09	0.15	0.15	0.08	0.09	0.09
Residual Std. Error	1.22 (df = 754)	1.25 (df = 755)	1.17 (df = 754)	1.13 (df = 753)	0.58 (df = 751)	1.42 (df = 754)	1.40 (df = 755)	1.45 (df = 754)	1.44 (df = 755)	1.29 (df = 754)	1.30 (df = 754)	1.39 (df = 755)	1.42 (df = 753)	0.89 (df = 754)
F Statistic	5.69*** (df = 31; 754)	3.30*** (df = 31; 755)	3.45*** (df = 31; 754)	2.57*** (df = 31; 753)	4.22*** (df = 31; 751)	4.72*** (df = 31; 754)	9.06*** (df = 31; 755)	10.11*** (df = 31; 754)	3.55*** (df = 31; 755)	5.33*** (df = 31; 754)	5.42*** (df = 31; 754)	3.11*** (df = 31; 755)	3.37*** (df = 31; 753)	3.45*** (df = 31; 754)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4

Lastly, I will compare some of the behavior-orientation/style combinations that are statistically significant for both men and women. For a one-point increase in Positive Orientation for men, their score for tracking expenses on a monthly basis is estimated to increase by 0.42 points, and this is significant at the 1% level. For a one-point increase in Positive Orientation for women, their score for tracking expenses on a monthly basis is estimated to increase by 0.16 points, and this is significantly different than men at the 10% level. Next, for a one-point increase in Rational Style for men, their score for paying bills on time each month is estimated to increase by 0.23 points, and this is statistically significant at the 1% level. For a one-point increase in Rational Style for women, their score for paying bills on time each month is estimated to increase by 0.01 points, and this is statistically significantly different than men at the 5% level. Lastly, for a one-point increase in Positive Orientation for men, their score for checking credit score is estimated to increase by 0.35 points, and this is significant at the 5% level. For a one-point increase in Positive Orientation for women, their score for checking credit score is estimated to decrease by 0.13 points, and this is significantly different than men at the 10% level. For the most part, these results match my hypothesis in that Positive Orientation and Rational Style result in better financial behaviors. Something worth noting, which was also true in many of the results from the debt regressions in Table 2, is that problem-solving orientation and style appear to have a greater impact on men's financial behaviors than women's – at least in terms of magnitude.

CONCLUSIONS AND DISCUSSION

Problem-solving orientations and styles are skills that involve both cognitive and non-cognitive dimensions and can be strong indicators of financial performance. Alongside gender, I research how these variables impact debt, financial knowledge, and other financial behaviors.

My research had some similarities and some differences with the current literature. In my research, I found that higher scores of impulsiveness tend to result in poorer financial behaviors, and this finding aligns with existing literature (Ottaviani & Vandone, 2011; Meier & Sprenger, 2010; Gamst-Klaussen et al., 2019). Additionally, positive problem-solving orientation generally has a positive impact on financial behaviors, and negative problem-solving orientation generally has a negative impact on financial behaviors; this aligns with research conducted by Shim et al. (2019). My research also found that women in the study performed higher than men in the study on the financial literacy quiz (though this was not statistically significant), and this differs from much of the literature which found that males outperform females on financial literacy assessments (Longobardi et al., 2018; Lusardi et al., 2015). Another difference is that the Arellano et al. (2018) study found that both negative and positive perseverance, when taken to extremes, resulted in lower financial literacy scores; my study did not find this to be the case. Finally, I built off the existing literature in two ways: analyzing how problem-solving skills impact financial outcomes beyond debt and how these effects vary by gender. To my knowledge, no studies have attempted to answer these specific questions.

Regarding debt, Positive Orientation is estimated to increase credit card debt for both genders and decrease other debt for women. This inconsistency is surprising, though I offer some possible solutions. To the former, individuals with high Positive Orientation may be overly

optimistic about their ability to problem-solve through difficult situations and unconcerned about possible consequences of their spending habits, thus increasing their credit card debt on lower-cost entertainment items. To the latter, examples of "other debt" may include auto loans or personal loans. As we observe in Table 2, these values are much higher. Perhaps this Positive Orientation perspective of "I can persist through this" hits a cap at a certain monetary value. Also regarding debt, and judging by the magnitude of relevant coefficients, the impacts of problem-solving orientation and style had a much larger impact on men than women. The means and medians of both groups are relatively similar, so I am not sure why this would be. This is a potential area for further research.

The results pertaining to the financial literacy quiz were most contrary to my hypothesis. Positive orientation impacted both men and women at a statistically significant level, but results here were small in magnitude (at a 2.62 percentage-point change or less), so further analysis here does not seem to be beneficial. More interesting is that women score 5.03 percentage points higher than men on the quiz, which counters evidence from the literature review. This is a noteworthy magnitude, though it isn't statistically significant. I observed in the Summary Statistics table that 37% of men and 28% of women had taken a financial education class, seminar, or workshop at the University of Arizona. If that wasn't controlled for, perhaps the results of this study would more accurately reflect those in the literature review. However, in Appendix C when I removed this control variable, results hardly changed.

Thirdly, results from the other behaviors show the Impulsive-Avoidant Style has the strongest (negative) impact on financial behaviors for both genders. Additionally, Negative Orientation has the second strongest (again, negative) impact on women though it has very little

impact on men. While my hypothesis was correct in predicting the Impulsive-Avoidant Style and Negative Orientation to negatively impact financial behaviors, this insight of how men and women are impacted is particularly helpful for the design of developing curricula. As financial education curricula continue to improve in American high schools and universities, these factors should be considered in their development. Teaching students the foundational concepts of financial knowledge must be paired with teaching non-cognitive skills as well. To increase the efficacy of financial education classes, all students should be encouraged to minimize avoidant and impulsive problem-solving styles. Problem-solving styles and orientations seemed to be particularly impactful on men's financial behaviors. Additionally, teaching female students how to avoid a negative orientation towards problem solving should increase the effectiveness of financial education classes. Fostering these dispositions should be a significant portion of financial education curricula; to rely purely on financial knowledge may not be sufficient.

For further research, my recommendations are to analyze the effect of Positive Orientation on debt. Is there a way to estimate a breaking point, whether that's in orientation intensity or monetary value, that changes a Positive Orientation from being beneficial to harmful? Does this vary amongst different types of debt? I further recommend studies continue to analyze gender differences in financial knowledge exams. Though my research did not provide a strong case, it did show that women performed about five percentage-points higher than men on the financial knowledge quiz; this runs contrary to nearly all the literature I came across. Thirdly, I recommend a more thorough analysis into the impact household structure and partner decision-making have on financial behaviors. Finally, I think research that pertains to non-cognitive factors (such as problem-solving orientations and styles) should be built upon. It

appears that teaching all students not to be impulsive and avoidant and particularly female students to persist through problem-solving may be an essential ingredient in financial education curricula.

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APPENDICES

Appendix A

Problem-Solving Orientation and Problem-Solving Style Indices

The following indices were created with the survey questions related to problem-solving. Respondents answered on a five-point scale from 0 ("Not at all true of me") to 4 ("Extremely true of me"). Note: Because the D'Zurilla scale includes both positively and negatively worded items, I reverse-coded W4_prob17 and W4_prob 19 for consistency. Also, the index value is a numeric value that is the average of the five question values.

Index	Question	Question Description
Positive Orientation	4	When my first efforts to solve a problem fail, I know if I persist and do not give up too easily, I will be able to eventually find a good solution
	5	When I have a problem, I try to see it as a challenge, or opportunity to benefit in some positive way from having the problem
	9	Whenever I have a problem, I believe it can be solved
	13	When problems occur in my life, I like to deal with them as soon as possible
	15	When I am trying to solve a problem, I go with the first good idea that comes to mind
Negative Orientation	1	I feel threatened and afraid when I have an important problem to solve
	3	I feel nervous and unsure of myself when I have an important decision to make
	7	When my first efforts to solve a problem fail, I get very frustrated
	8	When I am faced with a difficult problem, I doubt that I will be able to solve it on my own no matter how hard I try
	11	Difficult problems make me very upset
Impulsive Style	2	When making decisions, I do not evaluate all my options carefully enough
	14	When problems occur in my life, I like to deal with them as soon as possible
	20	When I have a decision to make, I do not take the time to consider the pros and cons of each option
	24	When making decisions, I go with my "gut feeling" without thinking too much about the consequences of each options
	25	I am too impulsive when it comes to making decisions

Avoidant Style	6	I wait to see if a problem will resolve itself first, before trying to solve it myself
	10	I go out of my way to avoid having to deal with problems in my life
	17	When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible
	18	When a problem occurs in my life, I put off trying to solve it for as long as possible
	22	I put off solving problems until it is too late to do anything about them
Rational Style	12	When I have a decision to make, I try to predict the positive and negative consequences of each option
	16	When I am faced with a difficult problem, I believe that I will be able to solve it on my own if I try hard enough
	19	I spend more time avoiding my problems than solving them
	21	After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better
	23	When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas

Appendix B

Table 2 Financial Behavior Variables – Debt

Variable Name	Description
Credit Card Debt	Approximately what is the total amount owed on all credit cards in your name (including store specific credit cards) that will not be paid in full this month (i.e., credit card balance carried forward rounded up to nearest 100's)?
Other Debt	Approximately how much other debt (e.g., auto loan; personal loan) do you currently owe (rounded up to nearest 1,000's)? DO NOT include credit card debt, educational loans, and mortgage (if you own a home).
Mortgage Debt	Approximately how much mortgage debt do you (in your name only or jointly with someone else) currently owe (rounded up to nearest 1,000's)?

Table 3 Financial Behavior Variables – Financial Quiz Score

Variable Name	Description
Financial Quiz	Percentage correct on 16-question financial literacy quiz

Table 4 Financial Behavior Variables – Other

The following variables respond to the following prompt: **Indicate how often you have engaged in the following activities within the past six months. 0 = Never and 4 = Very Often.**

Variable Name	Description
Learning	Learned about financial management
Budgeting	Budgeted on a regular basis
Tracking Expenses	Tracked monthly expenses
Spending within Budget	Spent within the budget
Paying Bills	Paid bills on time each month
Paying Off Credit Card	Paid off my credit card balance in full every month
Investing	Invested for long-term financial goals
Contribution	Contributed to an investment or retirement account
Prehealth Benefits	Used pre-tax health benefits account (FSA, HSA)
Saving for Future	Saved money each month for the future
Saving for Emergencies	Saved for emergencies
Checking Credit Reports	Checked credit reports
Checking Credit Score	Checked my credit score
Maxing Credit Limit	Maxed out credit card limit

Appendix C

The model used for these results is the same as Model 1, sans the "college financial education" control variable. These results are included to illustrate the differences in the models. The differences are very minimal, so I did not provide commentary.

	Dependent variable:	
	Credit Card Debt	Other Debt
	(1)	(2)
Negative Orientation	-185.68	1,852.75
	(406.01)	(1,771.90)
Positive Orientation	1,282.87***	3,349.97*
	(420.67)	(1,856.85)
Impulsive and Avoidant Style	1,501.08**	-5,525.11**
	(632.85)	(2,792.98)
Rational Style	-1,393.91**	-8,074.70***
	(570.85)	(2,568.81)
Female	1,517.80	-13,231.39
	(2,428.88)	(10,749.03)
Female*Negative Orientation	-376.76	-3,766.37*
	(504.36)	(2,213.58)
Female*Positive Orientation	-1,156.25**	-5,480.91**
	(541.61)	(2,401.26)
Female*ImpulsiveAvoidant Style	-680.38	6,733.20*
	(791.00)	(3,475.44)
Female*Rational Style	1,418.31**	8,921.46***
	(702.95)	(3,136.83)
Observations	754	741
R^2	0.10	0.08
Adjusted R^2	0.06	0.04
Residual Std. Error	3,883.03 (df = 723)	16,927.29 (df = 710)
F Statistic	2.57*** (df = 30; 723)	2.07*** (df = 30; 710)
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 5

	Dependent variable:
	Financial Literacy Quiz
Negative Orientation	1.32
	(1.28)
Positive Orientation	2.57**
	(1.28)
Impulsive and Avoidant Style	-0.87
	(2.03)
Rational Style	-0.43
	(1.81)
Female	5.10
	(7.69)
Female*Negative Orientation	-1.61
	(1.60)
Female*Positive Orientation	-4.09**
	(1.68)
Female * Impulsive-Avoidant Style	-1.29
	(2.54)
Female*Rational Style	2.58
	(2.23)
Observations	759
R^2	0.11
Adjusted R^2	0.07
Residual Std. Error	12.48 (df = 728)
F Statistic	2.88*** (df = 30; 728)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 6

	Dependent variable:													
	Learning	Budgeting	Tracking Expenses	Spending within Budget	Paying Bills	Paying Off Credit Card	Investing	Contribution	Prehealth Benefits	Saving for Future	Saving for Emergencies	Checking Credit Reports	Checking Credit Score	Maxing Credit Limit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Negative Orientation	-0.004	0.04	0.08	-0.03	0.10*	0.23	0.09	0.03	-0.09	0.09	0.13	0.06	0.05	-0.08
	(0.12)	(0.13)	(0.12)	(0.11)	(0.06)	(0.14)	(0.14)	(0.15)	(0.14)	(0.13)	(0.13)	(0.14)	(0.14)	(0.09)
Positive Orientation	0.17	0.43***	0.42***	0.23**	0.07	-0.17	0.18	-0.07	-0.20	-0.08	0.08	0.23	0.35**	-0.06
	(0.12)	(0.13)	(0.12)	(0.11)	(0.06)	(0.14)	(0.14)	(0.15)	(0.15)	(0.13)	(0.13)	(0.14)	(0.14)	(0.09)
Impulsive and Avoidant Style	-0.12	-0.29	-0.54***	-0.31*	-0.37***	-0.69***	-0.38*	0.06	0.06	-0.57***	-0.55***	0.01	-0.004	0.53***
	(0.19)	(0.20)	(0.18)	(0.18)	(0.09)	(0.22)	(0.22)	(0.23)	(0.23)	(0.20)	(0.20)	(0.22)	(0.22)	(0.14)
Rational Style	-0.03	0.13	0.001	0.30*	0.22***	0.25	-0.06	0.16	-0.26	0.21	0.07	-0.06	-0.27	-0.19
	(0.18)	(0.18)	(0.17)	(0.16)	(0.08)	(0.20)	(0.20)	(0.21)	(0.21)	(0.19)	(0.19)	(0.20)	(0.20)	(0.13)
Female	-0.31	1.00	0.62	0.89	0.24	-0.83	-0.81	1.44	-1.48*	-0.48	-0.38	-0.26	-0.51	-0.80
	(0.74)	(0.76)	(0.71)	(0.69)	(0.35)	(0.85)	(0.85)	(0.88)	(0.87)	(0.78)	(0.78)	(0.84)	(0.86)	(0.53)
Female*Negative Orientation	-0.23	-0.22	-0.25*	0.02	-0.001	-0.19	-0.33*	-0.27	0.15	-0.12	-0.11	-0.42**	-0.48***	0.06
	(0.15)	(0.16)	(0.15)	(0.14)	(0.07)	(0.18)	(0.18)	(0.18)	(0.18)	(0.16)	(0.16)	(0.17)	(0.18)	(0.11)
Female*Positive Orientation	-0.03	-0.18	-0.26*	-0.04	0.04	0.33*	0.08	0.02	0.16	0.14	0.06	-0.24	-0.40**	0.18
	(0.16)	(0.17)	(0.16)	(0.15)	(0.08)	(0.19)	(0.19)	(0.19)	(0.19)	(0.17)	(0.17)	(0.18)	(0.19)	(0.12)
Female * Impulsive-Avoidant Style	0.09	0.02	0.18	-0.17	0.18	0.32	0.37	-0.09	0.05	0.25	0.08	0.47*	0.67**	-0.28
	(0.24)	(0.25)	(0.23)	(0.22)	(0.11)	(0.28)	(0.28)	(0.29)	(0.28)	(0.26)	(0.26)	(0.27)	(0.28)	(0.18)
Female*Rational Style	0.13	-0.03	0.11	-0.24	-0.22**	-0.11	0.14	-0.32	0.25	0.05	0.12	0.27	0.48*	0.20
	(0.22)	(0.22)	(0.21)	(0.20)	(0.10)	(0.25)	(0.25)	(0.26)	(0.25)	(0.23)	(0.23)	(0.25)	(0.25)	(0.16)
Observations	786	787	786	785	783	786	787	786	787	786	786	787	785	786
R^2	0.18	0.12	0.12	0.10	0.15	0.16	0.27	0.29	0.13	0.18	0.18	0.11	0.12	0.12
Adjusted R^2	0.15	0.08	0.09	0.06	0.11	0.13	0.24	0.27	0.09	0.15	0.15	0.08	0.09	0.09
Residual Std. Error	1.23 (df = 755)	1.25 (df = 756)	1.17 (df = 755)	1.13 (df = 754)	0.58 (df = 752)	1.42 (df = 755)	1.40 (df = 756)	1.45 (df = 755)	1.44 (df = 756)	1.29 (df = 755)	1.30 (df = 755)	1.39 (df = 756)	1.42 (df = 754)	0.89 (df = 755)
F Statistic	5.63*** (df = 30; 755)	3.39*** (df = 30; 756)	3.56*** (df = 30; 755)	2.66*** (df = 30; 754)	4.36*** (df = 30; 752)	4.88*** (df = 30; 755)	9.36*** (df = 30; 756)	10.45*** (df = 30; 755)	3.67*** (df = 30; 756)	5.45*** (df = 30; 755)	5.59*** (df = 30; 755)	3.15*** (df = 30; 756)	3.47*** (df = 30; 754)	3.53*** (df = 30; 755)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 7

Appendix D

In order to account for household structure and to provide insight of how financial decisions are made between married partners, I ran the same regressions and included two additional control variables:

Variable Name	Prompt	Scale
Control Over Personal Finance	"How much personal control do you feel you have over managing your personal finances?"	1 – Very Little 7 – Complete Control
Partner Financial Relationship*	"We make financial decisions jointly"	1 – Strongly Disagree 5 – Strongly Agree

** Frequencies for only those respondents who are married ("2" to Q4) or in a significant relationship ("2 or 3" to Q5)*

Here are the summary statistics for the two variables:

Table 8: Summary Statistics

	Men			Women			Total		
Statistic	N	Mean	Median	N	Mean	Median	N	Mean	Median
Control Over Personal Finance	315	5.57	6	522	5.60	6	867	5.58	6
Partner Financial Relationship	182	3.87	4	348	3.87	4	551	3.87	4

It can be observed that men and women have similar results in the summary statistics table. The following tables show the regression results for debt, the financial literacy quiz, and other financial behavior variables.

There are a number of differences between these regression results and those in the body of the paper. I provide commentary beneath each table. Worth noting is that the sample size is much smaller in these regressions compared to the regressions in the main body of the paper (486 and 473 observations compared to 754 and 741 observations, respectively).

	Dependent variable:	
	Credit Card Debt	Other Debt
	(1)	(2)
Negative Orientation	96.79	5,300.85**
	(596.59)	(2,473.07)
Positive Orientation	1,254.22**	6,003.39**
	(584.07)	(2,465.81)
Impulsive and Avoidant Style	780.13	-8,174.56**
	(881.83)	(3,687.00)
Rational Style	-1,108.63	-10,434.76***
	(787.54)	(3,446.51)
Female	1,928.30	-17,828.80
	(3,365.76)	(14,204.18)
Female*Negative Orientation	-836.59	-7,359.21**
	(719.90)	(3,000.60)
Female*Positive Orientation	-1,151.81	-7,571.08**
	(746.06)	(3,154.80)
Female*ImpulsiveAvoidant Style	171.85	9,769.70**
	(1,101.35)	(4,593.37)
Female*Rational Style	1,089.80	12,878.03***
	(960.88)	(4,130.00)
Observations	486	473
R^2	0.10	0.11
Adjusted R^2	0.04	0.04
Residual Std. Error	4,208.76 (df = 452)	17,427.26 (df = 439)
F Statistic	1.57** (df = 33; 452)	1.66** (df = 33; 439)
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 9

When control over personal finance and partner financial relationship were controlled for, there are a few changes in the results worth noting. Many of the variables impacting credit card debt lost statistical significance, including Impulsive and Avoidant Style, Rational Style, Female*Positive Orientation, and Female*Rational Style. On the contrary, many of the variables impacting other debt gained levels of statistical significance, including Negative Orientation, Positive Orientation, Female*Negative Orientation, and Female*Impulsive and Avoidant Style. Also, dollar amounts in "other debt" notably changed in magnitude but remained the same in sign.

	Dependent variable:
	Financial Literacy Quiz
Negative Orientation	2.45
	(1.70)
Positive Orientation	5.39***
	(1.76)
Impulsive and Avoidant Style	-1.76
	(2.06)
Rational Style	-1.70
	(1.82)
Female	7.75
	(8.21)
Female*Negative Orientation	-3.01
	(2.07)
Female*Positive Orientation	-6.14***
	(2.27)
Female * Impulsive-Avoidant Style	1.91
	(2.61)
Female*Rational Style	3.45
	(2.30)
Observations	483
R^2	0.17
Adjusted R^2	0.11
Residual Std. Error	12.31 (df = 449)
F Statistic	2.73*** (df = 33; 449)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 10

When control over personal finance and partner financial relationship were controlled for, we observe that, for men, positive orientation is estimated to increase financial literacy quiz scores by 5.39 percentage points as opposed to 2.62 percentage points. Positive orientation for women is estimated to decrease financial literacy quiz scores by 0.75 percentage points as opposed to 1.49 percentage points. The only sign to change between regressions was Female*Impulsive-Avoidant Style (the coefficient was -1.26 in the original regression).

	Dependent variable:													
	Learning	Budgeting	Tracking Expenses	Spending within Budget	Paying Bills	Paying Off Credit Card	Investing	Contribution	Prehealth Benefits	Saving for Future	Saving for Emergencies	Checking Credit Reports	Checking Credit Score	Maxing Credit Limit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Negative Orientation	0.03	0.27	0.26*	0.11	0.08	0.10	-0.06	-0.29	-0.58***	0.07	0.01	0.27	0.15	0.15
	(0.17)	(0.17)	(0.14)	(0.14)	(0.07)	(0.19)	(0.19)	(0.20)	(0.20)	(0.17)	(0.17)	(0.19)	(0.20)	(0.12)
Positive Orientation	-0.17	0.20	0.22	0.17	-0.04	-0.16	-0.10	-0.34*	-0.54***	-0.29	-0.18	0.05	0.28	-0.07
	(0.17)	(0.17)	(0.15)	(0.15)	(0.08)	(0.20)	(0.19)	(0.20)	(0.20)	(0.17)	(0.18)	(0.20)	(0.20)	(0.12)
Impulsive and Avoidant Style	-0.12	-0.41**	-0.58***	-0.44**	-0.32***	-0.43*	-0.22	0.27	0.35	-0.28	-0.22	-0.10	-0.13	0.21
	(0.20)	(0.20)	(0.17)	(0.17)	(0.09)	(0.23)	(0.22)	(0.24)	(0.24)	(0.20)	(0.20)	(0.23)	(0.24)	(0.15)
Rational Style	0.21	0.33*	0.02	0.08	0.14*	0.12	0.25	0.25	0.23	0.16	0.20	0.09	-0.21	-0.09
	(0.18)	(0.18)	(0.15)	(0.15)	(0.08)	(0.20)	(0.20)	(0.21)	(0.21)	(0.18)	(0.18)	(0.20)	(0.21)	(0.13)
Female	-1.17	1.43*	0.82	0.10	-0.34	-0.89	-0.69	1.46	-1.28	-0.42	-0.36	-0.50	-1.11	-0.84
	(0.80)	(0.80)	(0.69)	(0.69)	(0.36)	(0.93)	(0.89)	(0.94)	(0.95)	(0.82)	(0.82)	(0.92)	(0.94)	(0.59)
Female*Negative Orientation	-0.32	-0.52**	-0.43**	-0.14	0.05	-0.08	-0.19	-0.02	0.54**	-0.06	0.09	-0.62***	-0.55**	-0.22
	(0.20)	(0.20)	(0.17)	(0.17)	(0.09)	(0.23)	(0.22)	(0.24)	(0.24)	(0.21)	(0.21)	(0.23)	(0.24)	(0.15)
Female*Positive Orientation	0.27	-0.07	-0.13	-0.06	0.16	0.28	0.37	0.28	0.37	0.32	0.35	0.11	-0.09	0.17
	(0.22)	(0.22)	(0.19)	(0.19)	(0.10)	(0.25)	(0.24)	(0.26)	(0.26)	(0.22)	(0.23)	(0.25)	(0.26)	(0.16)
Female * Impulsive-Avoidant Style	0.23	0.21	0.21	0.09	0.23**	0.25	0.20	-0.36	-0.22	0.06	-0.20	0.53*	0.80***	0.03
	(0.25)	(0.25)	(0.22)	(0.22)	(0.11)	(0.29)	(0.28)	(0.30)	(0.30)	(0.26)	(0.26)	(0.29)	(0.30)	(0.18)
Female*Rational Style	0.10	-0.32	-0.09	0.003	-0.18*	-0.04	-0.22	-0.60**	-0.09	-0.15	-0.20	0.03	0.37	0.17
	(0.22)	(0.22)	(0.19)	(0.19)	(0.10)	(0.26)	(0.25)	(0.26)	(0.26)	(0.23)	(0.23)	(0.26)	(0.26)	(0.16)
Observations	499	499	499	498	498	499	499	498	499	499	498	499	498	498
R^2	0.24	0.15	0.16	0.13	0.23	0.22	0.35	0.34	0.17	0.22	0.25	0.14	0.14	0.17
Adjusted R^2	0.18	0.09	0.11	0.07	0.17	0.16	0.30	0.29	0.11	0.17	0.19	0.08	0.08	0.11
Residual Std. Error	1.21 (df = 465)	1.21 (df = 465)	1.05 (df = 465)	1.04 (df = 464)	0.55 (df = 464)	1.40 (df = 465)	1.35 (df = 465)	1.42 (df = 464)	1.44 (df = 465)	1.24 (df = 465)	1.24 (df = 464)	1.39 (df = 465)	1.43 (df = 464)	0.89 (df = 464)
F Statistic	4.40*** (df = 33; 465)	2.58*** (df = 33; 465)	2.78*** (df = 33; 465)	2.11*** (df = 33; 464)	4.15*** (df = 33; 464)	3.87*** (df = 33; 465)	7.43*** (df = 33; 465)	7.13*** (df = 33; 464)	2.95*** (df = 33; 465)	4.04*** (df = 33; 465)	4.58*** (df = 33; 464)	2.38*** (df = 33; 465)	2.30*** (df = 33; 464)	2.94*** (df = 33; 464)
Note:														*p<0.1; **p<0.05; ***p<0.01

Table 11

When control over personal finance and partner financial relationship were controlled for, I observe a few noteworthy differences. The magnitude of the coefficient for negative orientation increases for both men and women, and there are more statistically significant coefficients for women. Coefficients for positive orientation remained relatively similar, though many lost statistical significance. In this regression, for women with a rational style, many of the coefficients that were previously negative became positive in this regression (although they lacked statistical significance). Lastly, many of the coefficients for "Female" increased in magnitude.