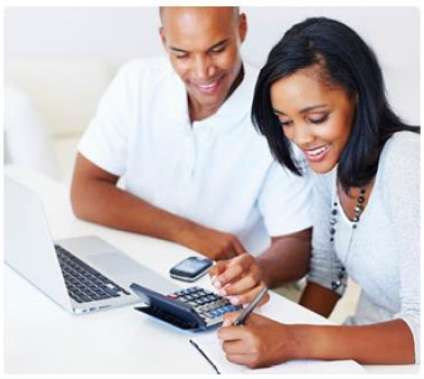
BOLD THINKERS DRIVING REAL-WORLD IMPACT

Understanding the Pathways to Financial Well-Being

National Financial Well-Being Survey: Report 2

Contract # TPDCFPBPA130014



Prepared for:
Bureau of Consumer Financial Protection
Washington D.C.

Submitted by:
Abt Associates
Jessica Thornton Walker
Debbie Gruenstein Bocian
Donna DeMarco
Brian Freeman
4550 Montgomery Avenue
Suite 800 North
Bethesda, MD 20814

In Partnership with:
Dee Warmath
University of Wisconsin-Madison
Center for Financial Security

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Dee Warmath (Center for Financial Security, University of Wisconsin) is the project's principal investigator. Donna DeMarco (Abt Associates) is its project director. Jessica Thornton Walker (Abt Associates) is the study's director of analysis and worked closely with analysts Brian Freeman and Yeqin He (Abt Associates). Debbie Gruenstein Bocian (Abt Associates) served as a content area expert and technical writer. The study's project quality advisors, Jeffrey Lubell and Cristofer Price (Abt Associates), provided technical guidance throughout all phases of the project and thoughtful and constructive comments on this report. Meryl Finkel (Abt Associates) provided management oversight throughout all phases of the project.

Executive Summary

Researchers studying financial capability, financial educators, and policymakers alike have long been interested in better understanding the ways in which people's knowledge, skills, attitudes, behaviors, and economic opportunities jointly influence their financial outcomes and sense of financial well-being. Over the past few years, the Bureau of Consumer Financial Protection (the Bureau) has made defining, measuring, and studying the factors that support financial well-being a central part of its strategy for improving consumers' financial capabilities. As part of this work, the Bureau conducted an in-depth qualitative investigation into financial well-being and related factors, developed a consumer-driven definition of financial well-being,[1] and released a validated scale for measuring it (CFPB, 2015; CFPB, 2017a). A newly available dataset from the Bureau based on the 2016 National Financial Well-Being Survey, provides data on financial well-being and related factors, allowing fresh analysis of these issues in a multivariate framework. Using these data to test the pathways we hypothesized might lead to financial well-being, as depicted in our conceptual model (see Exhibit 1.1), the present study builds on the Bureau's earlier work to examine how financial behavior, knowledge, and skill, and objective financial situation[2] may be related to financial well-being. More specifically, we use structural equation modeling (SEM)—a statistical technique that combines the traditions of factor analysis and simultaneous equation modeling—to answer the following research questions:

- What is the relation between objective financial situation and financial well-being?
- Is financial behavior related to financial well-being?
- What are the relative associations of financial knowledge and financial skill with financial behavior?
- What are the relative associations of financial knowledge, financial skill, financial behavior, and objective financial situation with financial well-being?

Key Findings

An individual's objective financial situation, as measured by key indicators such as financial resources or ability to make ends meet, is strongly correlated with his/her own perceived financial well-being. We observed a high association between a consumer's objective financial situation and his or her subjective assessment of financial well-being.[3] This suggests that how consumers *perceive* their financial circumstances is strongly linked to their (self-reported) objective

[1] The CFPB defines financial well-being as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life" (CFPB, 2015, p. 18). For more information on this definition, see CFPB's (2015) publication, *Financial Well-Being: The Goal of Financial Education*, available at https://www.consumerfinance.gov/data-research/research-reports/financial-well-being/.

[2] In this study, objective financial situation was indicated by self-reported: (1) financial resources (e.g., liquid savings, financial products); (2) the ability to make ends meet; (3) presence (or absence) of material hardship; and (4) self-reported credit standing.

[3] The relation between financial well-being and objective financial situation net of our controls was strong and highly significant at $\beta = 0.820$, $p < .001$.

financial situation (defined in this study as financial resources (e.g., liquid savings, financial products); the ability to make ends meet; presence (or absence) of material hardship; and self-reported credit standing). Though this study does not identify the causal direction of this relationship, the high degree of correlation suggests that helping people improve their objective financial situation could be an important avenue for improving how they perceive their financial well-being. However, the two constructs are not perfectly correlated, meaning that financial well-being captures additional information beyond an individual's objective financial situation. In other words, financial well-being may reflect not only "traditional" financial indicators (such as credit score, liquid savings and other financial resources, or other standard objective metrics) but also individuals' experiences, expectations, and environments.

Financial behavior is associated with financial well-being indirectly through its relation with objective financial situation. Contrary to our hypothesized model, we found no *direct* relation between financial behavior and financial well-being.[4] Rather, more positive financial behavior was associated with a stronger objective financial situation, which, in turn, was related to higher levels of financial well-being. This finding provides additional support for a central role of objective financial situation in an individual's financial well-being. And it suggests that positive financial behavior may make itself felt primarily through real changes in objective financial situation. While not a surprising finding, the simplicity of the result offers a reminder that the actions we take (or fail to take) have important implications for our financial state and thereby for our financial well-being.

Financial skill—that is, the ability to find, process, and use financial knowledge—appears to be more closely related to financial behavior than having factual financial knowledge. Our results align with other research suggesting that financial education programs and policies that focus solely on explicit "knowledge transmission" are likely not the best approach for improving financial behavior. Rather, our findings suggest that approaches to financial education that help build an individual's decision-making skills may be more impactful in ultimately improving financial well-being. These findings suggest that the field of financial education might explore experiential learning and other innovative education techniques that help build skill.

In summary, these findings move the field of financial education forward in several important ways. First, by analyzing the relationship between financial well-being and objective financial situation, the current research suggests that the Bureau's measure of financial well-being captures information about the financial conditions of individuals' lives in a comprehensive way. Second, the findings are consistent with a model of financial well-being in which financial behavior influences objective financial situation, which in turn influences financial well-being. Finally, the results imply that financial education policies and programs should continue to evolve to focus more on building financial skill (rather than solely on factual financial knowledge) as a way to influence financial behavior. This research represents an important step in demonstrating quantitative links between

[4] In this report, our measure of financial behavior is based on the Bureau's 2015 research findings that suggest that there are four types of financial behaviors that influence financial well-being: (1) effective routine money management, (2) financial research and knowledge-seeking, (3) financial planning and goal-setting, and (4) following through on financial decisions (CFPB, 2015).

financial skill, behavior, objective situation and well-being. The National Financial Well-Being Survey data provides an important opportunity to continue exploring these relations.

Structural Equation Modeling

To address our research questions, we used a specialized type of quantitative analysis known as structural equation modeling with latent variables (SEM). SEM is a "second generation" statistical technique that builds on linear regression and factor analysis. It is well-suited for studying pathways, processes, and other complex phenomena for two reasons.

First, it allows researchers to run more than one regression in a single model (a technique known as simultaneous equation modeling). In this study, we sought to understand the relationships depicted in our conceptual model (Exhibit 1.1), assessing whether financial skill and financial knowledge are each related to financial behavior, and whether financial behavior, in turn, is related to financial well-being and objective financial situation, and whether objective financial situation is related to financial well-being. A traditional "first generation" approach would be to run five separate regression models, each in isolation of the others, to obtain an estimate for each relationship in the conceptual model. However, this would not enhance understanding of the sequential pathways from one outcome to another to another. Furthermore, the estimates obtained for any one relationship would not take into account the other four relationships, leading to some error in the estimate. SEM solves these problems through simultaneous equation modeling. Using SEM, the researcher runs all five regression equations in one model, obtaining estimates that take into account all relationships and all variables in the model. In addition, SEM provides model fit statistics that indicate whether the data support the pathway or sequence of outcomes that the researcher specified. Poor fit statistics indicate the researcher needs to revisit their notions about the model. Strong model fit statistics suggest the researcher's hypothesis about the pathway or process are promising. (More detail on fit statistics is provided in Section 2.4.) With SEM, the ultimate result is a more accurate picture of relationships as they may occur in the real world.

Second, SEM allows the researcher to create latent variables and include them in simultaneous equation modeling. A latent variable is a hypothetical concept that is not directly measured but can be inferred from multiple items that were directly measured. When creating a latent variable, the researcher leverages the relatedness of the measured items to each other and to some underlying concept that each reflects. Thus, a latent variable reflects the essence of a concept that is hard to fully capture in just one item. For example, in this study, we created a latent variable for objective financial situation. A person's objective financial situation is complex and multifaceted—it reflects savings, assets, debts, hardships, and credit worthiness, among other elements. Collectively, these elements provide a clearer picture of one's objective financial situation than any one of them alone. Moreover, by creating a latent variable for objective financial situation, the researcher builds efficiency into the analysis. Instead of examining a series of objective financial situation items as outcomes, the researcher analyzes just one variable that provides a more complete and accurate picture of objective financial situation.

Introduction

In order to measure and study the factors that support consumer financial well-being, in 2015, the Bureau of Consumer Financial Protection (the Bureau) contracted with Abt Associates to field a large, national survey to collect information on the financial well-being of U.S. adults (CFPB, 2017a; CFPB, 2017b).[5] The present report uses data collected from that survey to answer a series of questions on the relationship among financial well-being and four key factors: objective financial situation, financial behavior, financial skill, and financial knowledge. In this study, we aim to enhance understanding of financial well-being and the factors that may support it by exploring these relationships. We hope that this work provides a framework for future research on the pathways to financial well-being and, as a result, lays important groundwork for evidence-based best practices in the field of financial education.

1.1 Background

Enhancing financial well-being is the "ultimate goal" of financial education policies, programs and interventions (CFPB, 2015, p. 11). Yet, until recently, the field of financial education has largely operated without a definiton or measure of financial well-being (CFPB, 2015). Prior to 2012 financial education research primarily focused on the antedecents and consequences of financial literacy,[6] which was typically measured in terms of levels of or gains in financial knowledge.[7] While a handful of studies did cite financial well-being as an important outcome of financial literacy or financial education, financial well-being itself was not defined or measured. Rather, these studies relied on other factors (e.g., knowledge or behaviors) as outcomes of interest.[8]

Over the past few years, the Bureau has commisioned foundational research to develop a widely-accepted and measurable definition of financial well-being (CFPB, 2015). Based on an extensive qualitative research effort, the Bureau has defined financial well-being as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life" (CFPB, 2015, p. 18).

An important feature of the financial well-being construct is that it is intentionally meant to reflect consumers' perspectives on their financial situations, rather than how well their situations meet an external, normative standard. The qualitative research effort on which the financial well-being

[5] The research was funded under a competitive award (contract number TPDCFPBPA130014).

[6] This assertion is based on a 2012 literature review conducted by the Urban Institute, University of Wisconsin-Madison, and the Corporation for Enterprise Development submitted by the Corporation for Enterprise Development (CFED) under contract with the CFPB.

[7] In the CFED literature review (see footnote 5), the authors discuss two primary types of financial knowledge measurements: 1) "actual/objective" measures, which include measures of knowledge of household finance concepts or general numeracy (e.g., Lusardi and Mitchel, 2007; Allgood and Walstad, 2011; Soll, Keeney, and Larrick, 2013; Gerardi, Goette, and Meier, 2010) and 2) perceived or subjective measures that ask consumers to self-report their financial knowledge (e.g., Perry and Morris, 2005).

[8] This finding from the CFED literature review (see footnote 6) is based on the following studies: Allgood and Walstad (2011); Atkinson and Messy (2012); Bucks and Pence (2008); and Geradi, Goette, and Meier (2010).

definition was based included an extensive literature review and analysis of 89 interviews with consumers and financial practitioners. This work revealed that, while specific financial goals, aspirations and pressures vary among consumers, clear patterns exist in how individuals describe the essential elements of their financial well-being. In general, the qualitative data suggested that consumers assess their financial well-being in terms of:

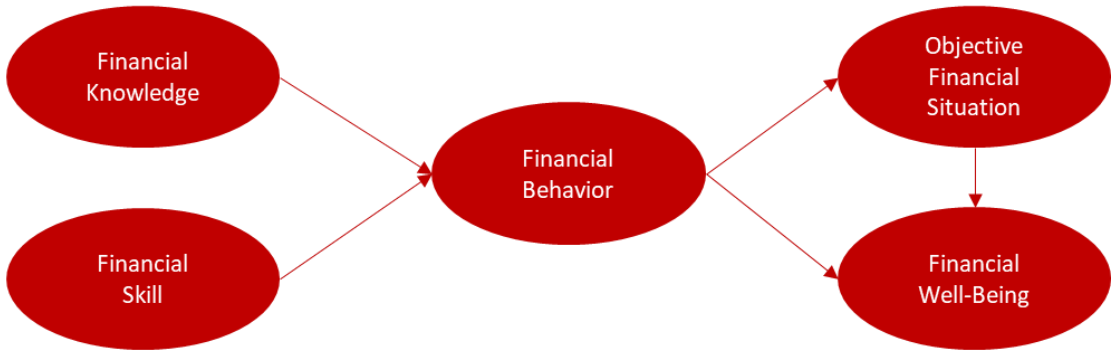
- Having control over day-to-day, month-to-month finances;
- Having the capacity to absorb a financial shock;
- Being on track to meet your financial goals; and
- Having the financial freedom to make the choices that allow you to enjoy life (CFPB, 2015).

The Bureau also spearheaded the development and validation of a survey scale to measure individuals' financial well-being under this consumer-driven definition (CFPB, 2017a). This scale was used in CFPB's National Survey of Financial Well-Being (the primary data source for this report).

1.1.1 Hypotheses about the Relationship between Financial Well-Being and Other Factors

The fact that the financial well-being definition and scale were developed to reflect consumers' perceptions of their financial situation raises important questions about how the construct is related to other key financial factors such as objective financial situation, financial behavior, financial skill, and financial knowledge. The conceptual model presented in Exhibit 1.1 depicts our initial hypotheses about possible interrelations among these constructs.[9] Below, we provide a brief overview of these hypotheses.

Exhibit 1.1: Conceptual model



Financial Well-Being and Objective Financial Situation

Given the Bureau's recent conceptualization and operationalization of financial well-being in the financial well-being scale, it is important to understand how well the concept aligns with measures of objective financial situations traditionally used in the field of financial education. One possibility is

[9] This conceptual model is derived from one published by the Bureau, which depicts financial well-being as being influenced by behavior, opportunities, knowledge, and skill, among a host of personal and contextual factors (see CFPB, 2017b, p. 19).

that consumers' self-assessed (or perceived) financial well-being is closely tied to their objective financial situations. Alternatively, consumers' perceived financial well-being could be detached from their actual financial situations. Understanding the degree to which financial well-being and objective financial situation are related is critical to understanding what role measures of the financial well-being can play in the field of financial education. If the two factors are strongly associated, perceived financial well-being could serve as a proxy for individuals' objective financial situations. Even if objective financial situation and financial well-being are highly correlated, understanding the degree to which they differ will help inform financial educators as to whether measures of perceived financial well-being provide additional insight beyond traditional objective financial metrics (e.g., credit standing, liquid savings). However, if the two factors are unrelated (or only weakly related), using financial well-being as a primary outcome of interest in financial education interventions (rather than objective measures of financial situation) could be unwise (and potentially unhelpful).

Financial Behavior, Financial Knowledge, Financial Skill, and Financial Well-Being

Earlier Bureau research suggested that financial behavior could be a primary factor driving financial well-being, given an individual's economic opportunities (CFPB, 2015).[10] There are two possible dynamics underlying this relation. First, individuals' financial behaviors could *directly* influence their perceived financial well-being. That is, it may be that engaging in particular behaviors affect how people feel about their financial well-being, regardless of whether those behaviors are associated with their objective financial situation. However, it is also possible that individuals' financial behaviors might *indirectly* influence financial well-being. In this scenario, financial behaviors would influence objective financial factors (e.g., savings, debt levels), which would then, in turn, influence perceived financial well-being.

If, in fact, financial behavior contributes to financial well-being (directly and/or indirectly), a key question is what factors can influence financial behavior? Research in the field of consumer financial decision-making has focused heavily on the role of financial literacy in impacting financial behavior. Such studies have typically evaluated the relation between one particular aspect of financial literacy—financial knowledge—and financial behavior. These studies have largely concluded that stores of explicit financial knowledge are insufficient to produce positive changes in financial behavior (CFPB, 2015).

However, it has long been recognized that financial literacy is more than just having knowledge but also includes the ability to use knowledge to make decisions (Remund, 2010 as cited in CFPB, 2015; Huston, 2010 as cited in CFPB, 2015; Hung, Parker and Yoong, 2009 as cited in CFPB, 2015). CFPB's (2015) qualitative research did explore this other dimension of financial literacy. Based on

[10] Financial behavior is traditionally described and measured with a focus on specific domains such as cash-flow management, credit management, saving, and investment (e.g., Hilgert, Hogarth, and Beverly, 2003 as cited in CFPB, 2015). In its qualitative research, however, the CFPB found that consumers tended to think about financial decisions, not in terms of domains, but rather in terms of *activities* such as planning and managing (CFPB, 2015). Specifically, CFPB (2015) concluded that "people have higher levels of financial well-being when they Ask, Plan, and Act, coupled with a strong habit or tendency to live within their means in terms of their day-to-day financial choices" (p. 6). These findings suggested that four types of financial behaviors may be related to financial well-being: 1) effective routine money management, 2) financial research and knowledge-seeking, 3) financial planning and goal-setting, and 4) following through on financial decisions (CFPB, 2015).

interviews with consumers, CFPB (2015) identified a specific set of "financial skills" that enable consumers to:

- Find reliable information to facilitate financial decisions;
- Process information to make sensible financial decisions; and
- Execute financial decisions, adapting as necessary to stay on course to ensure goal attainment.

These financial skills appeared to be distinct from financial behaviors—they represent the *ability* to find, process and use financial knowledge, whereas financial behaviors are *actions* that individuals undertake. In their narratives, consumers often described an interrelatedness between financial knowledge, financial skill and financial behavior. Though consumers described how financial knowledge and skill influence their actions, they also described how they acquire financial knowledge and skill from their behavior and decision-making experiences (CFPB, 2015).

Pulling this all together, Exhibit 1.1 depicts the research team's conceptualization of how these factors—financial knowledge, financial skill, financial behaviors—could be related to each other and, ultimately, to financial well-being. Our conceptual model posits that high levels of financial knowledge and financial skill may be related to positive financial behavior. Engaging in positive financial behaviors, in turn, may be associated with a positive objective financial situation. We hypothesized that financial behavior and objective financial situation would both influence financial well-being. That is, individuals' financial behaviors and the financial consequences of those behaviors may be related to their perceived financial well-being. There are other possible pathways to financial well-being that could be (and we hope will be) examined in future research—for example, financial skill, financial behavior, and financial well-being may have bidirectional associations with each other that unfold over time. Our conceptual model is a starting point for the field. Informed by prior research (CFPB, 2015) and based on the Bureau's depiction of the factors influencing financial well-being (see CFPB, 2017b, p. 19), it represents one possible pathway to financial well-being. In this study, we used cross-sectional data from the National Financial Well-Being Survey and structural equation modeling methods to investigate whether this is a reasonable model.

1.2 Research Questions

The Bureau's prior qualitative work (described above) motivated the research questions addressed in this report. Broadly speaking, we sought to extend that research, using quantitative data from the CFPB's National Financial Well-Being Survey, and thus improve understanding of the potential pathways to financial well-being. In particular, the present study examined the following four questions within a structural equation modeling framework.

1. What is the relation between objective financial situation and financial well-being?

2. Is financial behavior related to financial well-being?

3. What are the relative associations of financial knowledge and financial skill with financial behavior?

4. What are the relative associations of financial knowledge, financial skill, financial behavior, and objective financial situation with financial well-being?

Importantly, when exploring the above questions, we did not attempt to model how other factors (e.g., income, employment status, age, financial self-efficacy, etc.) influence financial well-being. However, we recognized the correlations of such variables with our factors of interest and, consequently, controlled for them in our models in order to produce more precise and accurate estimates of the relation between the primary factors of interest.

By answering these questions, this study uses a comprehensive approach to understanding the relations between financial knowledge, financial skill, financial behavior, objective financial situation and financial well-being. As such, the study takes an important step towards illuminating the pathways to financial well-being. We hope the core framework developed here catalyzes additional research on the topic, which will, in turn, lay the groundwork for innovative approaches to financial capability interventions that improve financial well-being for individuals across the country.

2. Methods

2.1 Overall Analytic Strategy

To address our research questions, we used structural equation modeling with latent variables (SEM). SEM is a second generation statistical technique that builds upon two first generation methods: linear regression and factor analysis. It is well-suited for studying pathways, processes, and other complex phenomena. In technical terms, SEM is a type of covariance structure modeling. Drawing upon the covariances among variables, it offer two advantages over many other statistical methods. First, SEM allows the researcher to estimate latent variables, which are hypothetical constructs that are not directly measured but can be inferred from multiple variables that were directly measured (Bollen, 1989; Kline, 2005). This is accomplished through factor analysis. Second, it allows the researcher to model the relations of latent variables (or measured variables) with multiple other predictors or outcomes (Bollen, 1989; Kline, 2005). This is accomplished through simultaneous equation modeling. As such, SEM includes both a measurement component—i.e., the estimation of one or more latent variables—and a structural component— i.e., the estimation of the relations among multiple variables of interest. In the paragraphs that follow, we describe these techniques and discuss the selection of SEM as the method for this study.

Latent constructs *(also known as "latent factors" or "latent variables") are hypothetical constructs that are not directly measured but that can be inferred from multiple variables that were directly measured.*

In SEM, the measurement component involves the use of confirmatory factor analysis to model latent variables. In broad terms, factor analysis leverages the covariation among a set of conceptually-related measured variables (also called "observed variables" or "factor indicators") to establish whether they reflect one or more underlying latent constructs, also referred to as "latent factors," or "latent variables" (Bandalos & Finney, 2010). In other words, a latent variable represents the essence of a construct that is hard to fully capture in just one item. For example, a person's objective financial situation is complex and multifaceted—it reflects savings, assets, debts, hardships, and credit worthiness, among other elements. Collectively, these elements provide a more complete and accurate representation of one's objective financial situation than any one of them alone. When combined in a latent variable, the effect is to reduce measurement error. Thus, a key advantage of using latent constructs over a single observed variable is a reduction in the confounding influence of measurement error on the relations modeled (Kline, 2005). Moreover, by using one latent variable in place of multiple observed variables, the researcher builds efficiency into the analysis. For example, to understand how objective financial situation is related to another key variable, say, financial well-being, the researcher estimates the association of financial well-being with just one measure of objective financial situation, rather than a handful of items, obtaining a single regression coefficient. In the present study, we used factor analytic techniques to create a latent variable for objective financial situation and a latent variable for financial behavior.

The structural component of SEM involves using linear regression to estimate the association between "exogenous" independent variables (predictors) and "endogenous" dependent variables

(outcomes).[11] Here, SEM has the advantage of allowing simultaneous equation modeling, a process in which multiple regression models for multiple outcomes can be estimated at the same time. This approach is needed to model complex phenomena with multiple determinants and outcomes, such as those at the heart of this study. Within a structural equation modeling framework, simultaneous equations are used to concurrently estimate a series of structural models among both observed and latent variables. These are often used to establish a pathway from one or more predictors to one or more outcomes.

Through our research questions, we sought to understand the relative contribution of multiple predictors to multiple outcomes and the pathways among them, which requires simultaneous equation modeling. For example, as shown in the core conceptual model presented in Exhibit 1.1, we hypothesized that financial skill and financial knowledge are each related to financial behavior, which in turn, is related to both financial well-being and objective financial situation, and objective financial situation is related to financial well-being. A traditional analytic approach would be to run five separate regression models, each in isolation of the others, to obtain an estimate for each of the five relations in the conceptual model. This traditional approach would not enhance understanding of the sequential pathways from one outcome to another to another. Furthermore, the estimate obtained for any given relation would not take into account the other four relations in the conceptual model, leading to some error in the estimate relative to reality. SEM solves these problems through simultaneous equation modeling. Using SEM, the researcher runs all five regression equations in one model, obtaining estimates that take into account all relationships and all variables in the model. In addition, SEM provides model fit statistics that indicate whether the data support the pathway or sequence of outcomes that the researcher specified. Poor fit statistics indicate the researcher needs to revisit their notions about the model. Strong model fit statistics, on the other hand, provide support for the researcher's hypothesis about the pathway or process. (More detail on fit statistics is provided in Section 2.4.) In short, SEM provides a more accurate picture of relations as they may occur in the real world.

Our analysis proceeded in the following phases: (1) selection of measures to represent the five core constructs in the conceptual model, which included development of latent constructs representing objective financial situation and financial behavior, as well as selection of appropriate control variables for the analysis, and (2) structural equation model estimation to examine our four research questions about the relations among financial well-being, objective financial situation, financial behavior, financial knowledge, and financial skill. We describe these phases below, in Sections 2.3 and 2.4, after a brief preface about the data source and sample for this study.

[11] In SEM, the terms exogenous and endogenous are used in a different sense than they are in econometrics or in the context of an experiment. Within this modeling context, exogenous refers to variables that function only as independent variables across all regressions estimated in the structural equation model and are not predicted by any of the other variables being modeled. Endogenous refers to variables that serve as outcomes in any of the multiple equations being estimated.

2.2 Data and Sample

The data for this study come from the CFPB's National Financial Well-Being Survey. This national survey of adults in the United States was fielded in late 2016 and designed to measure financial well-being and such possible correlates as financial behaviors, skills and attitudes; individual characteristics; household and family characteristics; income and employment characteristics; savings and safety nets; and financial experiences (CFPB, 2017b).[12]

Participants were members either of the GfK Knowledge Panel®, a nationally representative probability-based recruited Internet panel, or the GfK KnowledgePanel Latino℠.[13] The survey sampling strategy provided for representation across key population groups (age, race/ethnicity, and poverty level) in proportion to the general U.S. population and included an oversample of adults ages 62 or older. A total of 6,394 participants (5,395 from the general population sample and 999 from the oversample of older adults) completed the survey in English or Spanish, according to their language preference.[14] We present their weighted characteristics below and in Exhibit 2.1.[15]

All 6,394 respondents to the National Financial Well-Being Survey were included in our analysis. Sample members ranged in age from 18 to 94 years and averaged 48 years old. Similar percentages of male and female adults participated. A 64-percent majority was White non-Hispanic; 16 percent was Hispanic; and 12 percent was Black non-Hispanic. Most (62 percent) were married or living with a partner, and about one third financially supported children at the time of the survey. Most (69 percent) had attained less education than a bachelor's degree, and most (61 percent) reported annual household incomes of at least $50,000. Roughly half worked full-time or part-time for an employer. One fifth was retired and not otherwise employed.

Exhibit 2.1: Sample characteristics

Characteristic	Percentage (N = 6,394)
Age (M = 47.5, SD = 17.8)	
Ages 18 to 24	9.8
Ages 25 to 34	21.2
Ages 35 to 44	14.1
Ages 45 to 54	19.0
Ages 55 to 64	16.1
Ages 65 to 74	11.7
Ages 75 and older	8.0
Sex	

Characteristic	Percentage (N = 6,394)
Employment status	
Self employed	7.0
Work for employer/ military	50.5
Home-maker	6.9
Student	4.8
Sick/disabled	5.2
Unemployed or laid off	4.7
Retired	20.8
Annual household income	

[12] The data used in this study are from a restricted-access file. A public-use data file and documentation is available at https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/.

[13] Including the GfK KnowledgePanel Latino℠ helped ensure adequate representation of the U.S. Hispanic population, including Spanish speakers.

[14] Further details on the survey and sampling methodologies are available in the CFPB's National Financial Well-Being Survey Public Use File User Guide (https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/).

[15] Values presented are weighted to account for differential sampling and differential non-response rates and ensure representativeness on geographic and demographic characteristics.

Characteristic	Percentage (N = 6,394)
Female	51.6
Male	48.4
Race/ethnicity	
White non-Hispanic	64.3
Black non-Hispanic	11.9
Other or multiracial non-Hispanic	8.0
Hispanic	15.8
Marital status	
Married or living with partner	61.9
Never married	22.4
Separated or divorced	10.9
Widowed	4.8
Financially supporting children	
Yes	36.5
No	63.5

Characteristic	Percentage (N = 6,394)
Less than $50,000	38.9
$50,000 or more	61.1
Federal poverty status	
Less than 100% FPL	11.7
100 to 199% FPL	17.0
200% or more FPL	71.4
Education level	
Less than high school degree	11.7
High school degree or GED	29.0
Some college/Associates' degree	28.6
Bachelors' degree	19.5
Graduate or professional degree	11.2
Census region	
Northeast	17.9
Midwest	21.0
South	37.4
West	23.6

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Values presented are weighted to account for differential sampling and differential non-response rates and ensure representativeness on geographic and demographic characteristics. Percentages for some categories may not add up to 100 due to rounding or missing values.

2.3 Measures

We identified the measures for this study based on the five domains depicted in our conceptual model (Exhibit 1.1): (1) financial well-being, (2) objective financial situation, (3) financial behavior, (4) financial skill, and (5) financial knowledge. For three of the domains—*financial well-being*, *financial skill*, and *financial knowledge*—the National Financial Well-Being Survey included validated scales that captured their key dimensions in a single score and were analysis-ready. Specifically, participants' scores on a financial well-being scale, a financial skill scale, and two financial knowledge scales were present in the data and used in our analysis. For the other two domains—*objective financial situation* and *financial behavior*—a validated scale was not available in the data but a rich set of related survey items was. From these items, we developed one representative measure per domain. To do so, we used factor analytic techniques to create a latent variable (described below and in Appendix C). The specific scales and survey items used in our analysis are described below, and their descriptive statistics are presented in Appendix A, Exhibit A.1.

2.3.1 Financial Well-Being

The key outcome for this study was perceived financial well-being, which reflects financial security and financial freedom of choice in the present and when looking toward the future (CFPB, 2017a). Financial well-being was measured using the Bureau's validated 10-item financial well-being scale, a self-report battery measuring perceptions of present and future financial choice and security (CFPB, 2017a). Participants responded to such questions as *"I am just getting by financially"* and *"I can enjoy life because of the way I'm managing my money"* on a 5-point scale either from *Not at all* to *Completely* or from *Never* to *Always*, depending on the item. Financial well-being scale scores, which have a possible range from 0 to 100, were calculated using a software-based item-response theory scoring framework (CFPB, 2017a). In the study sample, scores ranged from 14.00 to 95.00 (*M* =

54.25, *SD* = 13.74). The items that compose the measure are presented in Exhibit 2.2 (descriptive statistics presented in Appendix A, Exhibit A.2).

Exhibit 2.2: Financial well-being scale items

Survey Item	Description
Financial well-being 1	*I could handle a major unexpected expense.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 2	*I am securing my financial future.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 3	*Because of my money situation, I feel like I will never have things I want in life.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 4	*I can enjoy life because of the way I'm managing my money.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 5	*I am just getting by financially.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 6	*I am concerned that the money I have or will save won't last.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial well-being 7	*Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month.* Coded on a 5-point scale from 1=never to 5=always.
Financial well-being 8	*I have money left over at the end of the month.* Coded on a 5-point scale from 1=never to 5=always.
Financial well-being 9	*I am behind with my finances.* Coded on a 5-point scale from 1=never to 5=always.
Financial well-being 10	*My finances control my life.* Coded on a 5-point scale from 1=never to 5=always.

SOURCE: National Financial Well-Being Survey.

2.3.2 Objective Financial Situation

An aim of the present study is understanding the relation between financial well-being and standard objective markers of financial situation typically used in research and practice (e.g., net worth, assets, debts, credit standing). The National Financial Well-Being Survey included a variety of self-report items reflecting key aspects of objective financial situation. To develop a measure of objective financial situation from the available survey items, we used a multi-stage process involving exploratory factor analysis and confirmatory factor analysis to distill the available data into a single measure. This process, detailed in Appendix C, involved using exploratory factor analysis to identify the key dimensions of objective financial situation in the data. These were financial resources, material hardship, difficulty making ends meet, and low credit standing. We then used confirmatory factor analysis to create first-order factors to represent these key dimensions, and finally used the first-order factor scores to create a second-order latent factor for objective financial situation (via confirmatory factor analysis). In the study sample, values for the resulting latent objective financial situation measure ranged from -1.58 to 1.63 (*M* = 0.00, *SD* = 0.63), with higher values representing better objective financial situation. The items that composed this measure are presented in Exhibit 2.3 (descriptive statistics presented in Appendix A, Exhibit A.3).

Exhibit 2.3: Items used to measure objective financial situation

Survey Item	Description
Difficulty making ends meet	*In a typical month, how difficult is it for you to cover your expenses and pay all your bills?* Coded on a 3-point scale from 1=not at all difficult to 3=very difficult.
Liquid savings	Self-reported savings balance (in cash, checking, and savings accounts) – set to the midpoint of each survey response range: $0; $1-49; $50-99; $100-249; $250-499; $500-999; $1,000-1,999; $2,000-4,999; $5,000-9,999; $10,000-19,999; $20,000-49,999; $50,000-74,999; $75,000 or more. Missing values imputed using a simple stochastic imputation (see Appendix B).
Ability to absorb a negative financial shock	*How confident are you that you could come up with $2,000 in 30 days if an unexpected need arose within the next month?* Coded on a 4-point scale from 1= I am certain I could not to 4= I am certain I could.
Number of financial products	Count of traditional financial products owned (e.g., checking/savings account, retirement account, non-retirement investments)
Material hardship 1	*In the past 12 months, I worried whether our food would run out before I got money to buy more.* Coded on a 3-point scale from 1=never true to 3=often true.
Material hardship 2	*In the past 12 months, the food that I bought just didn't last and I didn't have money to get more.* Coded on a 3-point scale from 1=never true to 3=often true.
Material hardship 3	*In the past 12 months, I couldn't afford a place to live.* Coded on a 3-point scale from 1=never true to 3=often true.
Material hardship 4	*In the past 12 months, I or someone in my household needed to see a doctor or go to the hospital but did not go because we couldn't afford it.* Coded on a 3-point scale from 1=never true to 3=often true.
Material hardship 5	*In the past 12 months, I or someone in my household stopped taking a medication or took less than directed due to the costs.* Coded on a 3-point scale from 1=never true to 3=often true.
Material hardship 6	*In the past 12 months, one or more of my utilities was shut off due to non-payment.* Coded on a 3-point scale from 1=never true to 3=often true.
Debt collection experience	Binary variable indicating whether the respondent had been contacted in the past year by a person or company trying to collect a past-due debt. Coded 1=yes, 0=no.
Credit rejection experience	Binary variable indicating whether the respondent had applied for credit and been turned down in the past year. Coded 1=yes, 0=no.
Credit rejection concerns	Binary variable indicating whether the respondent had decided not to apply for credit in the past year due to concerns about getting turned down. Coded 1=yes, 0=no.

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

2.3.3 Financial Behavior

As described in Section 1, the Bureau's earlier qualitative research suggested the importance of an activity-based perspective on financial behavior as opposed to the more traditional domain-based perspective (CFPB, 2015). The National Financial Well-Being Survey included a variety of questions about behaviors related to financial management, information seeking, goal setting, and follow-through activities. To develop a measure of financial behavior from the available items, we used a multi-stage process to distill the available data into a single measure. This process, detailed in Appendix C, involved using exploratory factor analysis to identify the key dimensions of financial behavior in the data. These were management, planning, and saving habits. (The management dimension included survey items related to both managing money and following through on financial commitments.) We then used confirmatory factor analysis to create first-order factors to represent the key dimensions identified, and finally used these first-order factor scores to create a single second-

order latent factor for financial behavior (via confirmatory factor analysis). In the study sample, values for the resulting latent financial behavior measure ranged from -3.49 to 1.296 (M = 0.00, SD = 0.77), with higher values representing more positive financial behavior. The items that composed this measure of financial behavior are presented in Exhibit 2.4 (descriptive statistics presented in Appendix A, Exhibit A.4).

Exhibit 2.4: Items used to measure financial behavior

Survey Item	Description
Money management 1	*Paid all your bills on time.* Coded on a 5-point scale from 1=not applicable or never to 5=always.
Money management 2	*Stayed within your budget or spending plan.* Coded on a 5-point scale from 1=not applicable or never to 5=always.
Money management 3	*Paid off credit card balance in full each month.* Coded on a 5-point scale from 1=not applicable or never to 5=always.
Money management 4	*Checked your statements, bills and receipts to make sure there were no errors.* Coded on a 5-point scale from 1=not applicable or never to 5=always.
Follow-through 1	*I follow-through on my financial commitments to others.* Coded on a 5-point scale from 1=not at all to 5=completely.
Follow-through 2	*I follow-through on financial goals I set for myself.* Coded on a 5-point scale from 1=not at all to 5=completely.
Propensity to plan 1	*I consult my budget to see how much money I have left.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.
Propensity to plan 2	*I actively consider the steps I need to take to stick to my budget.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.
Propensity to plan 3	*I set financial goals for what I want to achieve with my money.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.
Propensity to plan 4	*I prepare a clear plan of action w/ detailed steps to achieve my financial goals.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.
Saving habit	*Putting money into savings is a habit for me.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

2.3.4 Financial Knowledge

We used two existing measures of financial knowledge in this report. The first of was developed by Lusardi and Mitchell (2008) and has been used in numerous national surveys.[16] The scale uses five items to assess explicit knowledge of the core financial concepts of compound interest, rate of return, and risk diversification. The National Financial Well-Being Survey included three of the five items. Findings using the Lusardi and Mitchell scale to examine financial knowledge in relation to financial behavior have been mixed. Some research underscores its importance to financial behavior (Bernheim, Garrett, & Maki, 2001; Lusardi, 2003; Nicolini, Cude, & Chatterjee, 2013; Xiao & O'Neill, 2016), whereas other research finds little association with financial behavior (Willis, 2011; West, 2012; Fernandes, Lynch & Netemeyer, 2014). As an alternative, Houts and Knoll developed

[16] For example, the National Institute on Aging's 2004 Health and Retirement Study and FINRA's 2009 National Financial Capabilities Study.

and validated a 10-item item response theory-based scale measuring financial knowledge (Houts & Knoll, in preparation; Knoll & Houts, 2012).

In our sample, the abbreviated 3-item version of the Lusardi and Mitchell scale scores range from 0.00 to 3.00 (M = 2.43; SD = 0.80), and Houts and Knoll scale scores range from -2.05 to 1.27 (M = -0.18; SD = 0.81). For both scales, higher scores indicate greater knowledge. The items that compose these measures are presented in Exhibit 2.5 (descriptive statistics presented in Appendix A, Exhibit A.5).

Exhibit 2.5: Items used to measure financial knowledge

Survey Item	Description
Lusardi and Mitchell Scale	
Lusardi-Mitchell 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?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Lusardi-Mitchell 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?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Lusardi-Mitchell 3	*Do you think the following statement is true or false? "Buying a single company's stock usually provides a safer return than a stock mutual fund."* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts and Knoll Scale	
Houts-Knoll 1	*Considering a long time period (for example 10 or 20 years), which asset described below normally gives the highest return?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 2	*Normally, which asset described below displays the highest fluctuations over time?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 3	*When an investor spreads his or her money among different assets, does the risk of losing a lot of money increase, decrease or stay the same?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 4	*Do you think the following statement is true or false? "If you were to invest $1,000 in a stock mutual fund, it would be possible to have less than $1,000 when you withdraw your money."* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 5	*Do you think the following statement is true or false? "'Whole life' insurance has a savings feature while 'term' insurance does not."* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 6	*Do you think the following statement is true or false? "Housing prices in the US can never go down."* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 7	*Suppose you owe $3,000 on your credit card. You pay a minimum payment of $30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 8	*If interest rates rise, what will typically happen to bond prices?* Correct responses coded as 1 incorrect responses and refusals coded as 0.
Houts-Knoll 9	*Do you think the following statement is true or false? A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.* Correct responses coded as 1 incorrect responses and refusals coded as 0.

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

2.3.5 Financial Skill

We measured financial skill using the Bureau's validated 10-item financial skill scale.[17] This self-report battery measures financial skill along the three dimensions that, based on the Bureau's prior research, reflect financial skill relevant to financial well-being (CFPB, 2015). The three dimensions are: (1) gaining reliable information to facilitate financial decisions, (2) processing information to make sensible financial decisions, (3) executing financial decisions and adapting as necessary to ensure goal attainment. As discussed in Section 1, these reflect the skill or "know-how" dimension of financial literacy. Participants responded to such questions as *"I know where to find the advice I need to make decisions involving money"* and *"I know how to make myself save"* on a 5-point Likert scale from *Not at all* to *Completely* or from *Never* to *Always*, depending on the item. Scale scores, which have a possible range from 0 to 100, were calculated using a software-based item-response theory scoring framework. In the study sample, scores ranged from 5.00 to 85.00 (M = 49.92; SD = 12.80). Higher scores represent better financial skill. The items that compose this measure are presented in Exhibit 2.6 (descriptive statistics presented in Appendix A, Exhibit A.6).

Exhibit 2.6: Measures of financial skill

Survey Item	Description
Financial skill 1	*I know how to get myself to follow through on my financial intentions.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 2	*I know where to find the advice I need to make decisions involving money.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 3	*I know how to make complex financial decisions.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 4	*I am able to make good financial decisions that are new to me.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 5	*I am able to recognize a good financial investment.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 6	*I know how to keep myself from spending too much.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 7	*I know how to make myself save.* Coded on a 5-point scale from 1=not at all to 5=completely.
Financial skill 8	*I know when I do not have enough information to make a good decision involving my money.* Coded on a 5-point scale from 1=never to 5=always.
Financial skill 9	*I know when I need advice about my money.* Coded on a 5-point scale from 1=never to 5=always.
Financial skill 10	*I struggle to understand financial information.* Coded on a 5-point scale from 1=never to 5=always.

SOURCE: National Financial Well-Being Survey.

2.3.6 Controls

Prior analysis using the National Financial Well-Being Survey data conducted by our team (CFPB, 2017b) alongside the Bureau's earlier qualitative work (CFPB, 2015) suggested that a number of

[17] For details on the scale, see the CFPB's National Financial Well-Being Survey Public Use File User Guide, available at https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/.

factors apart from financial knowledge, financial skill, financial behavior, and objective financial situation have strong associations with perceived financial well-being and might therefore influence the relations being tested in this study. Although not central to our conceptual model nor of primary interest in this study, we anticipated that *personal traits* (e.g., demographic characteristics, perceived economic mobility, financial self-efficacy), *current opportunities* (e.g., income, employment status, employer benefits), and *financial socialization* (e.g., family financial social experiences in childhood) could confound the focal relations being investigated.[18] Therefore, in order to statistically reduce their potentially confounding influence on the relations of primary interest and improve the precision of our estimates, we selected control variables, or covariates, from among those three domains to include in our analysis. From among the dozens of items in the National Financial Well-Being Survey that could plausibly be associated with the study's core constructs and serve as controls, we identified a set of six control variables for use in our main analytic models and a set of 20 for use in sensitivity tests. These are presented in Exhibit 2.4 and the multi-stage process used to select them is described in Appendix D. (See Appendix A, Exhibit A.10 for descriptive statistics.)

Exhibit 2.4: Measures of variables used as controls

Survey Item	Description	In Main Models	In Sensitivity Tests
Personal Traits			
Age	Continuous variable indicating age in years at the time of the survey.		Yes
Self-control	Mean response on three statements related to self-control (*I often act without thinking through the alternatives; I am good at resisting temptation; I am able to work diligently toward long-term goals*). Each item was coded on a 4-point scale from 1=not at all to 4=completely well. The first item was reverse-coded before being averaged with the other two.	Yes	Yes
Perceived economic mobility	Everyone has a fair chance at moving up the economic ladder. Coded on a 7-point scale from 1=strongly disagree to 7=strongly agree.	Yes	Yes
Financial self-efficacy	Confidence in ability to meet personal financial goals. Coded on a 4-point scale from 1=not at all confident to 4=very confident.	Yes	Yes
Frugality	*If I can re-use an item I already have, there's no sense in buying something new.* Coded on a 6-point scale from 1=strongly disagree to 6=strongly agree.	Yes	Yes
Race/ethnicity	A set of binary indicators of race and Hispanic ethnicity: White non-Hispanic Black non-Hispanic, other race non-Hispanic, multiracial non-Hispanic, and Hispanic. Coded 1=yes, 0=no.		Yes
Sex	Binary indicator of being female. Coded 1=yes, 0=no.		Yes
Education level	Binary indicator of having a bachelors' degree or higher education. Coded 1=yes, 0=no.		Yes
Discount/time preference	*If you had a choice, would you rather receive…?* Coded 0=$816 now, 1=$860 in three months.		Yes
Current Opportunities			

[18] A confounding variable or "confound" is one that is associated with both the predictor (X) and outcome (Y) being modeled and therefore influences the relation between them. If not partialed out or controlled when estimating the relation between X and Y, this third variable obscures or confounds the relation of primary interest.

Survey Item	Description	In Main Models	In Sensitivity Tests
Household income	Self-reported annual household income set to the midpoint of each survey response range: Less than $5,000; $5,000-7,499; $7,500-9,999; $10,000-12,499; $12,500-14,999; $15,000-19,999; $20,000-24,999; $25,000-29,999; $30,000-34,999; $35,000-39,999; $40,000-49,999; $50,000-59,999; $60,000-74,999; $75,000-84,999; $85,000-99,999; $100,000-124,999; $125,000-149,999; $150,000-174,999; $175,000-199,999; $200,000-249,999; $250,000 or more.	Yes	Yes
Retired	Binary indicator of being retired (and not otherwise employed, laid off, or unable to work). Coded 1=yes, 0=no.	Yes	Yes
Employed	Binary indicator of being employed (includes self-employment and full or part-time employment for an employer or the military). Coded 1=yes, 0=no.		Yes
Employer benefits	Count of employer benefits offered		Yes
Marital status	Married. Coded 1=yes, 0=no.		Yes
Financially support children	Count of children supported financially		Yes
Professional financial advice	Seek financial advice from a financial institution or professional advisor, planner, or counselor/coach. Coded 1=yes, 0=no.		Yes
Financial Socialization			
Family financial socialization	Respondent had one or more financial socialization experiences while growing up. Coded 1=yes, 0=no.		Yes

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

2.4 Structural Equation Model Estimation

In the present study, we fit structural equation models to estimate the relations among financial well-being and its hypothesized correlates (financial knowledge, financial skill, financial behavior, and objective financial situation) as designated in our research questions. We ran our models (including confirmatory factor analysis models) in Mplus Version 8 (Muthén & Muthén, 1998-2017), a specialized software designed for covariance structure analysis. Mplus provides a platform for estimating latent constructs and modeling simultaneous equations. It also accommodates complex survey data structures and the use of study weights as is needed for the analysis of the National Financial Well-Being Survey data. It also allows the user to address missing data via full information maximum likelihood (FIML) estimation. (See Section 2.4.1 for further details on weighting and missing data.) We used the MLR estimator, which provides maximum likelihood parameter estimates and robust standard errors, calculated using a sandwich estimator (Muthén & Muthén, 1998 – 2017).[19]

[19] There is one exception to this. The weighted least squares with missing values (WLSMV) estimator was used to properly estimate relations in the first-order measurement model for objective financial situation as required by the inclusion of categorical variables as factor indicators (dependent variables).

In covariance structure analysis, the overall fit of the model to the data is judged using several indices, as follows (Hoyle, 1995; Kline, 2005).

- Model chi-square is a "badness of fit" index that statistically compares an over-identified model and a just-identified version of it. Smaller values indicate better fit (though the value is heavily influenced by sample size).
- Stieger-Lind root mean square error of approximation (RMSEA) gauges the inaccuracy in parameter estimation per degree of freedom contingent on sample size. Values of less than .10 indicate adequate fit (values of .05 or less preferred).
- Bentler comparative fit index (CFI) is an incremental fit index that compares the hypothesized model to a null model in which the covariances among the observed indicators are zero. Values of .90 or greater indicate adequate fit (values of .95 or greater preferred).
- Tucker-Lewis index (TLI), also known as the non-normed fit index (NNFI), is an incremental fit index like the CFI that corrects for model complexity. Values of .90 or greater indicate adequate fit (values of .95 or greater preferred).
- Standardized root mean square residual (SRMR) indexes the difference between the observed and predicted correlation residuals (i.e., the mean absolute correlation residual). Values of less than .10 indicate adequate fit (values of .05 or less preferred).[20]

We used all of these fit indices, which are reported along with our findings, and their recommended thresholds to assess the soundness of our findings.

We applied the following rules of thumb to judge the adequacy of model fit (Hoyle, 1995; Kline, 2005):

- Model chi-square with smaller values indicate better fit (though the value is heavily influenced by sample size);
- RMSEA of less than .10 (values of.05 or less preferred);
- CFI and TLI of .90 or greater (values of .95 or greater preferred);
- SRMR of less than .10 (values of .05 or less preferred).

Through our four research questions, we took an incremental approach to understanding the relations depicted in the conceptual model (Exhibit 1.1)—building from simple to more complex models. To answer our first research question (*What is the relation between financial well-being and objective financial situation?),* we examined the relation between financial well-being and objective financial situation first without and then with a set of covariates to control for the influence of personal traits, current opportunities, and financial socialization. The estimated model is presented in Equation 1, where FWB_i (financial well-being) is the outcome of interest for the i^{th} participant; OFS_i is objective financial situation for the i^{th} participant; X_{ki} is the k^{th} covariate; and ε is the error term. [21]

[20] When categorical dependent variables (including factor indicators) are included in a measurement model or a structural equation model, the SRMR is replaced by the weighted root mean square residual (WRMR), for which values less than 1 are desirable (Muthén & Muthén, 1998 – 2017).

[21] We first ran the model without controls to observe the simple relation between financial well-being and objective financial situation. We then added the controls in order to explore what factors may explain differences between financial well-being and objective financial situation.

(1) $$FWB_i = \beta_0 + \beta_1 OFS_i + \sum_{k=2}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

In answer to our second research question (*Is financial behavior related to financial well-being?*), we estimated the relation between financial well-being and financial behavior first without and then with a set of covariates to control for the influence of personal traits, current opportunities, and financial socialization. The model estimated is presented in Equation 2, where FWB_i (financial well-being) is the outcome of interest for the i^{th} participant; FB_i is financial behavior for the i^{th} participant; X_{ki} is the k^{th} covariate; and ε is the error term.

(2) $$FWB_i = \beta_0 + \beta_1 FB_i + \sum_{k=2}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

To aid in building up to the full model addressed in research question 4, we also examined the relative associations of financial behavior and objective financial situation to financial well-being by regressing financial well-being on both objective financial situation and financial behavior and at the same time estimating the relation between objective financial situation and financial behavior. That is, we estimated Equations 1 and 2 (above) and Equation 3 (below) simultaneously. In Equation 3, the outcome of interest, OFS_i, is objective financial situation for the i^{th} participant; FB_i is financial behavior for the i^{th} participant; X_{ki} is the k^{th} covariate; and ε is the error term.

(3) $$OFS_i = \beta_0 + \beta_1 FB_i + \sum_{k=2}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

To address our third research question (*What are the relative associations of financial knowledge and financial skill with financial behavior?*), we examined the relative associations of financial knowledge and financial skill to financial behavior. The model estimated is presented in Equation 4, where FB_i (financial behavior) is the outcome of interest for the i^{th} participant; FS_i is financial skill for the i^{th} participant; FK_i is financial knowledge for the i^{th} participant; X_{ki} is the k^{th} covariate; and ε is the error term.

(4) $$FB_i = \beta_0 + \beta_1 FS_i + \beta_2 FK_i + \sum_{k=3}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

As discussed in Section 2.3.4, the National Financial Well-Being Survey data offered two measures of financial knowledge: the Houts and Knoll (in preparation) scale and the Lusardi and Mitchell (2008) scale. To address the related sub-question about the scale with which financial knowledge is measured (*Do different measures of financial knowledge change the findings in meaningful ways?*), we ran the model once with the Houts and Knoll measure and then a second time with the Lusardi and Mitchell measure, comparing the results both in terms of the model fit and regression coefficients.

In answering our fourth and final research question (*What are the relative associations of financial knowledge, financial skill, financial behavior, and objective financial situation with financial well-being?*), we examined the following relations simultaneously:

- Financial well-being to objective financial situation (Equation 1),
- Financial well-being and objective financial situation to financial behavior (Equations 2 and 3), and
- Financial behavior to financial skill and financial knowledge (Equation 4).

We also tested whether financial skill and financial knowledge were directly related to financial well-being and objective financial situation by running the models presented in Equations 5 and 6 concurrently with those in Equations 1 through 4.

(5) $$FWB_i = \beta_0 + \beta_1 FS_i + \beta_2 FK_i + \sum_{k=3}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

(6) $$OFS_i = \beta_0 + \beta_1 FS_i + \beta_2 FK_i + \sum_{k=3}^{K+1} \beta_k X_{ki} + \varepsilon_i$$

2.4.1 Addressing Representativeness and Missing Data

As described in Section 2.2, the sampling strategy for the National Financial Well-Being Survey was designed to match the U.S. population on key geographic and demographic variables. In our analysis, we used the study weights to account for differential sampling and differential non-response rates and achieve broad representation of the U.S. adult population on such variables as sex, age, race/ethnicity, education, household income, poverty status, Census region, and urbanicity.[22]

Coverage of key model variables was high. As shown in Appendix A, Exhibit A.11, no more than 0.7 percent of the full sample of 6,394 respondents was missing data for the core measures in our model: financial well-being, financial skill, financial knowledge, and the first-order factors for financial behavior and objective financial situation. In addition, there were no statistically significant differences on key demographic variables (age, sex, race/ethnicity, education level, or marital status) between the full sample of survey respondents and the subsamples of survey respondents not missing data on the core measures. These results suggest that there is little threat of bias from missing data (Graham, 2009; Little, 1988). In this study, missing data were addressed using full information maximum likelihood estimation in Mplus. The software fits a covariance structure model for each available observation based on the observed data, which enables the inclusion of all available cases in analyses (Muthén & Muthén, 1998 - 2017).

2.4.2 A Note on Causality

In the next section, we present the study's findings. To help the reader appropriately frame and interpret the findings, we first highlight the key strengths and limitations of our analytic strategy. (A more extensive discussion of limitations appears in Section 4.1.)

As previously described, the relations set forth in our conceptual model (Exhibit 1.1) and research questions were tested within an SEM framework. SEM is a powerful tool for understanding multidimensional constructs (e.g., financial behavior) and complex processes with multiple determinants and outcomes (e.g., those leading to financial well-being). However, without longitudinal, experimental, or quasi-experimental data, SEM does not provide insight into cause and effect. Thus, caution must be taken to avoid over-interpreting the results or reaching beyond the data when drawing implications.

[22] See the Public Use File User Guide for additional information on development of the study weights; https://www.consumerfinance.gov/data-research/financial-well-being-survey-data/. Note that issues with coverage or nonresponse may have given rise to differences between the National Financial Well-Being Survey sample and the U.S. population for which study weights do not fully correct (CFPB, 2017b, p. 11).

Our analysis provides one of the most comprehensive pictures to date of financial well-being and its correlates. It is an important—yet exploratory—first step in understanding the pathways to financial well-being with great potential to yield insights that may inform policy and practice. Many of the observed relations among financial behavior, objective financial situation, and financial well-being were statistically significant. In reporting them, we describe *relations* or *associations* among constructs and do not describe one variable as causing or affecting another.

3. Findings

3.1 What is the relation between Objective Financial Situation and Financial Well-Being?

With our first research question, we aimed to understand how individuals' self-assessments of financial well-being relate to more traditional measures of their objective financial situation. To examine this, we regressed financial well-being on the second-order latent factor for objective financial situation (see Section 2.3 and Appendix C for details on factor development). The first model estimated included only the two core constructs of interest (financial well-being and objective financial situation). It demonstrated good fit: χ^2 (df) = 116.721 (5); RMSEA = 0.059; CFI = 0.983; TLI = 0.966; SRMR = 0.021. A significant relation was observed between financial well-being and objective financial situation. Results indicate that objective financial situation explains 67 percent of the variance in financial well-being, and a one standard deviation increase in objective financial situation is associated with 82-percent of a standard deviation increase in financial well-being (β = 0.816, $p < .001$; $R^2 = 0.67$). This suggests that an individual's subjective sense of their financial well-being is closely aligned with the objective facts of their financial situation. In other words, most adults in the U.S. do a fairly good job of assessing their finances. Yet about one-third of the variance in financial well-being is *not* accounted for by this model. Thus, the two concepts are not identical, and it appears that subjective insight into financial well-being can add value when considering the totality of individuals' financial circumstances. The question remains, what might explain the other third of the variance?

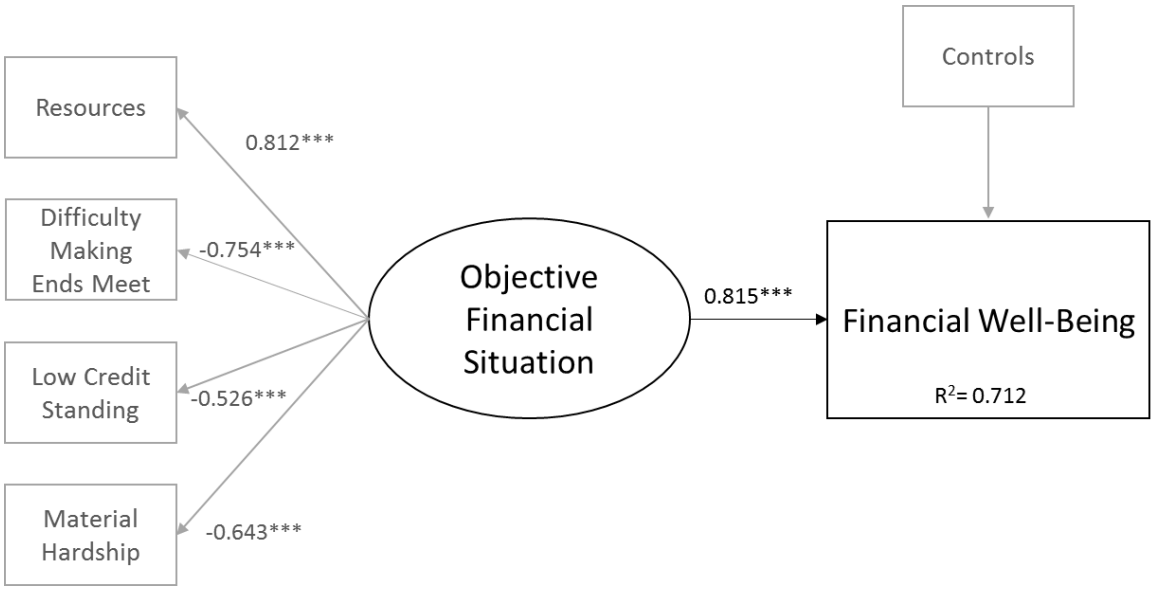
To understand the extent to which other variables may account for the remaining variance and to control for the potential confounding influence of other variables related to both financial well-being and objective financial situation, we then included the following controls in our model: financial self-efficacy, frugality, perceived economic mobility, self-control, household income, and being retired (see Appendix D for details on selection of controls). The model, shown in Exhibit 3.7, exhibited similarly good fit: χ^2 (df) = 436.667 (21), $p < .001$; RMSEA = 0.056; CFI = 0.960, TLI = 0.923, SRMR = 0.021. With the addition of controls, the model accounted for an additional 4 percent of the variance in financial well-being, and the relation between financial well-being and objective financial situation was unchanged (β = 0.815, $p < .001$; $R^2 = 0.71$). (Coefficients for all variables modeled, including controls, are presented in Appendix E, Exhibit E.1.)

Our findings suggest that although most of these financially-relevant attitudes and circumstances are significantly associated with financial well-being, the relation between financial well-being and objective financial situation is largely robust to their influence. One curious finding was the negative relation between income and financial well-being, net of the other variables in the model (see Appendix E, Exhibit E.1). There are several possible explanations. First, as a reminder, this negative relationship only exists when objective financial situation—i.e. material hardship, resources and credit standing—is held constant. Obviously, income is highly correlated with these factors. Perhaps given similar objective financial situations, individuals with higher incomes believe they could or should have more resources and fewer financial challenges, or compare themselves to others who are even better off and, therefore, are less satisfied with their finances and report lower financial well-being than their lower-income counterparts. Alternatively, it is possible that, for individuals with

similar objective situations, those with higher levels of financial well-being (that is, who have a greater sense of choice and security) decide to work less, leading to lower incomes. Because SEM does not allow us to detect the direction of causal relationships, we cannot identify the exact reason for the negative association between income and financial well-being, controlling for objective financial situation.

The bottom line from this analysis is that objective financial situation (as measured by a number of common indicators) and financial well-being are strongly—but not perfectly—correlated, and none of the controls we examined explained much of the variance in financial well-being beyond what was already explained by objective financial situation. In the sections that follow, we report on our examination of other potential correlates of financial well-being—namely, financial behavior, financial skill, and financial knowledge—and the extent to which they may be directly or indirectly associated with objective financial situation and financial well-being.

Exhibit 3.7 Relation between objective financial situation and financial well-being



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relation between financial well-being and objective financial situation. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

3.2 Is Financial Behavior Related to Financial Well-Being?

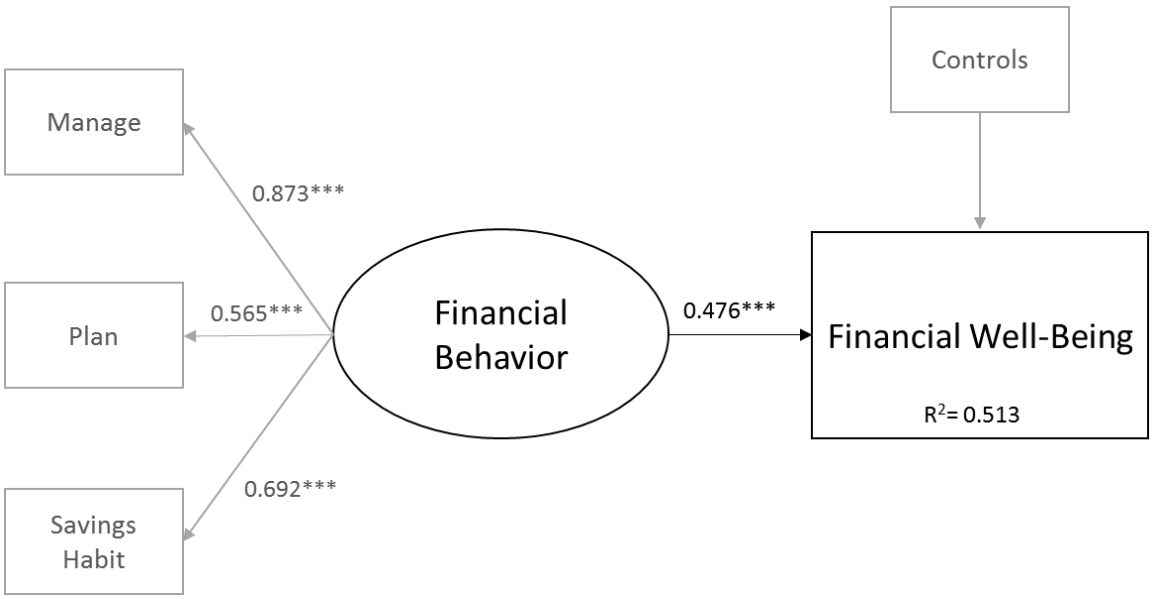
To examine our second research question about the association of perceived financial well-being with financial behavior, we regressed financial well-being on the second-order latent factor for financial behavior (see Section 2.3 and Appendix C for details on factor development). The first model we estimated included only the two core constructs of interest (financial well-being and financial behavior). It demonstrated adequate fit based on the CFI and SRMR: χ^2 (df) = 425.154 (2); RMSEA = 0.182; CFI = 0.902; TLI = 0.706; SRMR = 0.047. A significant relation was observed between financial well-being and financial behavior. Results indicate that financial behavior explains 41 percent of the variance in financial well-being, and a one standard deviation increase in financial

behavior was associated with 64-percent of a standard deviation increase in financial well-being (β = 0.638, $p < .001$; $R^2 = 0.41$).

We then regressed financial well-being on financial behavior and the following controls: financial self-efficacy, frugality, perceived economic mobility, self-control, household income, and being retired (see Appendix D for details on selection of controls). The model, shown in Exhibit 3.8, exhibited good fit: χ^2 (df) = 724.970 (14); RMSEA = 0.089; CFI = 0.919, TLI = 0.826, SRMR = 0.035. With the addition of the control variables, model fit improved, the model accounted for an additional 10 percent of the variance in financial well-being, and the strength of the relation between financial well-being and financial behavior decreased but remained strong (β = 0.476, $p < .001$; R^2 = 0.51). (Coefficients for all variables modeled, including controls, are presented in Appendix E, Exhibit E.2.)

Our findings suggest that individuals' perceived financial well-being is strongly associated with their financial behaviors. This relation was fairly robust to the contributions of financially-relevant personality traits and measures of current opportunities—namely, financial self-efficacy, frugality, perceived economic mobility, self-control, annual household income, and being retired. Although the relation between financial behavior and financial well-being was reduced by 16 percent of a standard deviation upon addition of the controls, it remained substantial by conventional standards at nearly half a standard deviation increase in financial well-being per standard deviation increase in financial behavior. With the addition of the controls, the model accounted for another 10 percent of the variance in financial well-being. Still, the model explained just half the variance in financial well-being.

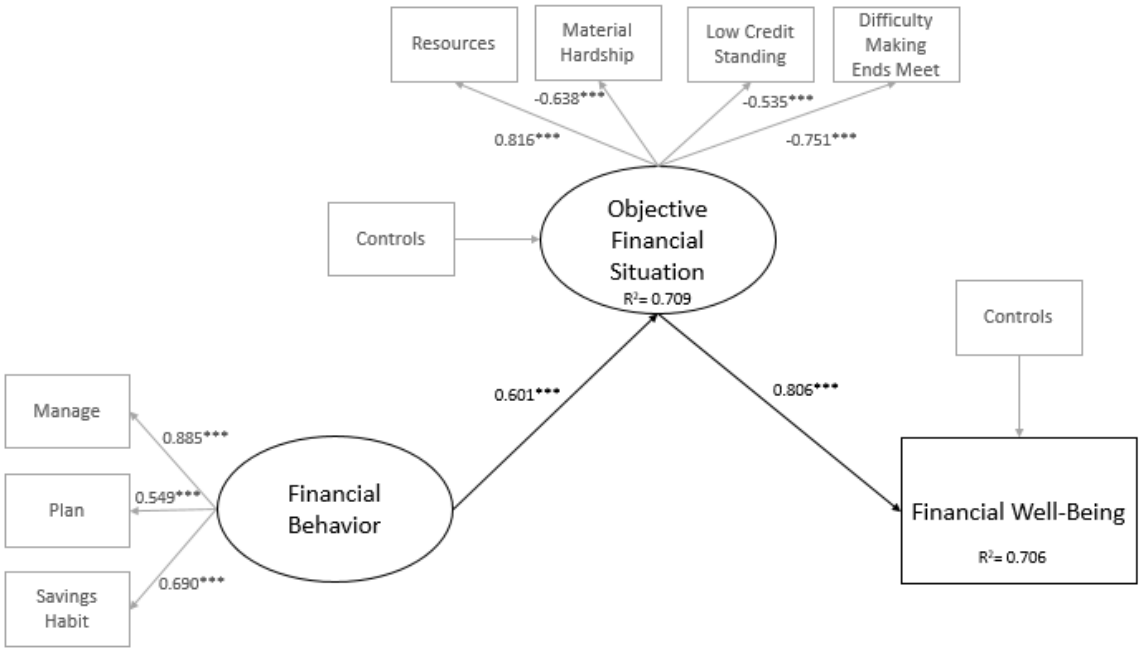
Exhibit 3.8 Relation between financial well-being and financial behavior



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relation between financial well-being and financial behavior. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

To examine the extent to which financial behavior and objective financial situation might together explain the variance in perceived financial well-being, we regressed financial well-being on both constructs and, simultaneously, regressed objective financial situation on financial behavior. To both regressions we added the following controls: financial self-efficacy, frugality, perceived economic mobility, self-control, annual household income, and being retired (see Appendix D for details on selection of controls). The model demonstrated acceptable fit: χ^2 (df) = 1406.201 (46); RMSEA = 0.068; CFI = 0.922; TLI = 0.871; SRMR = 0.044. Significant relations were observed between financial well-being and objective financial situation and objective financial situation and financial behavior—but not directly between financial well-being and financial behavior (coefficients presented in Appendix E, Exhibit E.3.) Thereafter, we tested whether the fit or coefficients changed upon removing the direct path between financial well-being and financial behavior. The model, shown in Exhibit 3.9, demonstrated similar fit: χ^2 (df) = 1407.840 (47); RMSEA = 0.067; CFI = 0.922; TLI = 0.873; SRMR = 0.044. The relations between financial behavior and objective financial situation and between objective financial situation and financial well-being were largely unchanged.

Exhibit 3.9 Relations among financial behavior, objective financial situation, and financial well-being



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relation between financial well-being, objective financial situation, and financial behavior. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

These findings suggest three insights. First and foremost, financial well-being and financial behavior appear to be indirectly related through objective financial situation. In other words, financial behavior may influence objective financial situation which, in turn, may influence perceived financial well-being. This is a question in need of future investigation with longitudinal data. Second, a model that includes both objective financial situation and financial behavior explains an additional 20 percent of

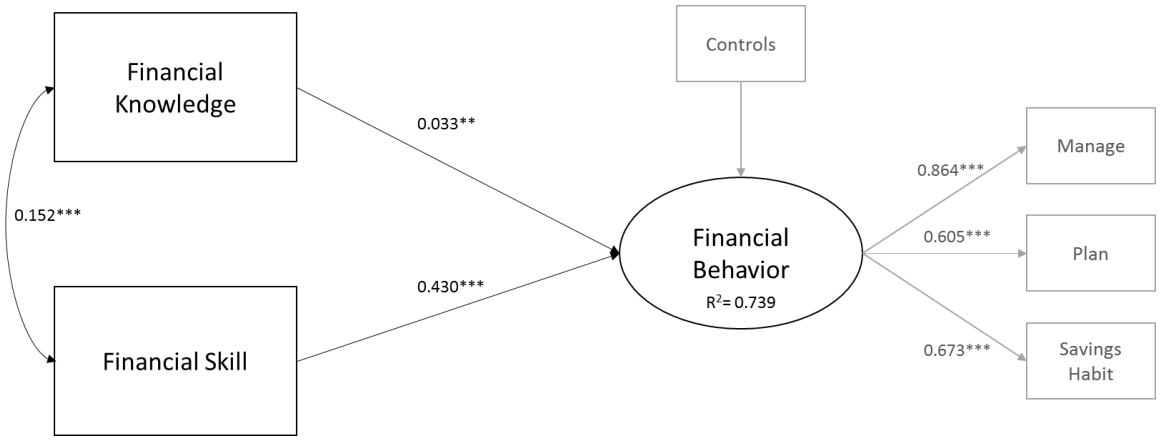
the variance in financial well-being over and above a model with only financial behavior. Thus, both may be important elements in processes leading to perceptions of financial well-being. Third, the relations among these three constructs (financial behavior, objective financial situation, and financial well-being) are robust to the influence of financially-relevant attitudes and circumstances represented by our control variables.

In practical terms, the findings suggest the possibility that individuals' financial behaviors may be important to their perceived financial well-being when those behaviors are also associated with individuals' objective financial situations. If the goal is to increase financial well-being, one lever may be to support financial behaviors most likely to promote a more favorable objective financial standing (given the personal and situational constraints and opportunities facing a particular individual). The present study did not examine which of the managing, planning, saving, and follow-through behaviors that composed our measure of financial behavior are most financially beneficial. This would be an important question for future research.

3.3 What are the Relative Associations of Financial Knowledge and Financial Skill with Financial Behavior?

To examine our third research question about the relative associations of fact-based financial knowledge and activity-based financial skill to individuals' financial behavior, we regressed financial behavior on the Houts and Knoll (in preparation) ten-item financial knowledge scale, CFPB's ten-item financial skill scale, and the following controls: financial self-efficacy, frugality, perceived economic mobility, self-control, annual household income, and being retired. (See Appendix D for details on selection of controls.) The model, shown in Exhibit 3.10, exhibited adequate fit: χ^2 (df) = 648.703 (16); RMSEA = 0.079; CFI = 0.910, TLI = 0.849, SRMR = 0.034. Overall, the model accounted for 74 percent of the variance in financial behavior. Financial skill was strongly and significantly related to financial behavior ($\beta = 0.430$, $p < .001$). Though statistically significant, the relation of financial knowledge to financial behavior was much smaller ($\beta = 0.033$, $p = .009$) and, based on its size, not meaningful in comparison to financial skill. This suggests that explicit financial knowledge may not be a key contributor to financial behavior once financial skill and financially-relevant personal traits and current opportunities are taken into account. (Coefficients for all variables modeled, including controls, are presented in Appendix E, Exhibit E.4.)

Exhibit 3.10 Relations among financial behavior, skill, and knowledge



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relation between financial behavior, financial skill, and financial knowledge. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

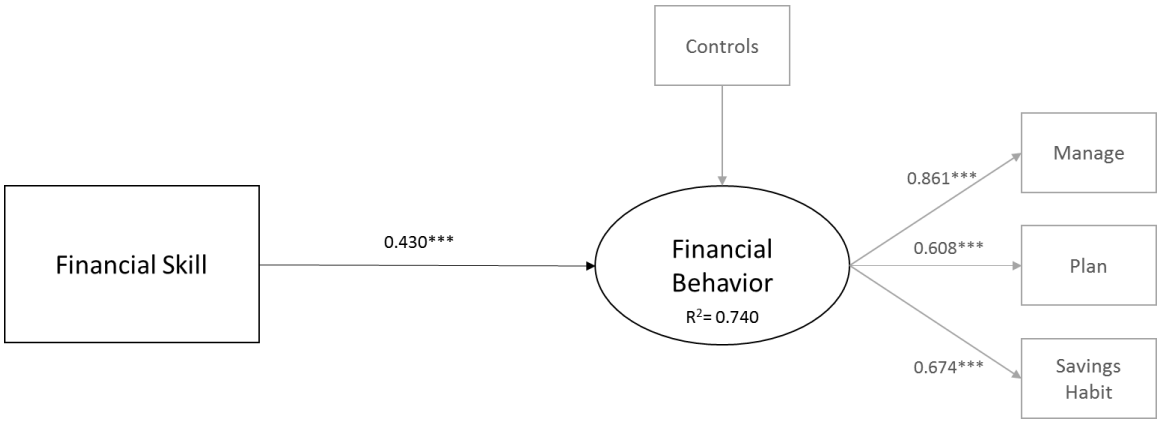
3.3.1 Do Different Measures of Financial Knowledge Change the Findings in Meaningful Ways?

To assess the robustness of this finding to an alternative specification of financial knowledge, we substituted Lusardi and Mitchell's (2008) three-item scale for the Houts and Knoll (in preparation) scale in the controlled model described above. The competing model yielded good fit: χ^2 (df) = 568.568 (16); RMSEA = 0.073; CFI = 0.920, TLI = 0.865, SRMR = 0.030. The results of the "Lusardi and Mitchell" model were similar to the "Houts and Knoll" model: financial behavior was significantly related with financial skill but not meaningfully related to financial knowledge (see Appendix E, Exhibit E.4). The size and significance of the regression coefficients were similar across the two models, and both explained the same amount of variance in financial behavior (74 percent). However, the observed difference of 578.53 in the Bayesian information criterion (BIC) suggested that the Houts and Knoll scale provided a better fit to the data than that the Lusardi and Mitchell scale (BICs of 248,238.953 and 248,817.486, respectively).[23] The better fit could be because the 10-item Houts and Knoll scale provides a more sensitive or nuanced representation of participants knowledge. However, it should be acknowledged that only three of the five items in the full Lusardi and Mitchell scale were present in these data. Thus, this finding does not necessarily portend to the relative value of either scale.

[23] Note that because the competing structural equation models run to compare the Lusardi and Mitchell scale to the Houts and Knoll scale are considered "nonnested" ("nonhierarchical"), meaning the relations estimated in one is not a mere subset of the relations estimated in the other (as would be in a nested or hierarchical model). As such, they cannot be compared using the usual suite of fit statistics. Instead, we use the difference in their BICs to compare model fit. Among nonnested models, those with smaller BICs are considered better fitting (Kline, 2005). A BIC difference of greater than 10 provides very strong evidence of superior fit for the model with the smaller BIC (Rafferty, 1995).

Given the evidence that financial knowledge did not have a meaningful association with financial behavior independent of financial skill, we examined a model in which we excluded it and regressed financial behavior on financial skill and the aforementioned control variables. The model, shown in Exhibit 3.11, had good fit: χ^2 (df) = 484.111 (14); RMSEA = 0.072; CFI = 0.931, TLI = 0.881, SRMR = 0.029. The coefficient on financial skill and proportion of variance explained were practically unchanged from models including financial knowledge ($\beta = 0.430$, $p < .001$; $R^2 = 0.74$). These findings suggested to us that financial knowledge need not be included as a correlate of financial behavior in the more complex model examined when addressing our fourth research question.

Exhibit 3.11 Relation between financial behavior and financial skill



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relation between financial behavior and financial skill. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

Overall, our findings suggest that building financial skill rather than stores of general financial knowledge has the potential to support positive financial behavior. This finding is robust to the measure of financial knowledge used. This finding lends support to the finding from the Bureau's earlier qualitative research that individuals value knowing *how* to manage their financial successfully and learn about finances experientially (CFPB, 2015). In the personal financial narratives, the Bureau found that participants expressed the belief that they gained financial knowledge from their financial behavior and highlighted the importance of skills such as (1) the ability to recognize when information and advice is needed to help make a financial decision, (2) knowing where to find a trusted source of information, and (3) the ability to act on information gained. In the absence of these skills, participants described learning the hard way from a range of unsuccessful financial outcomes.

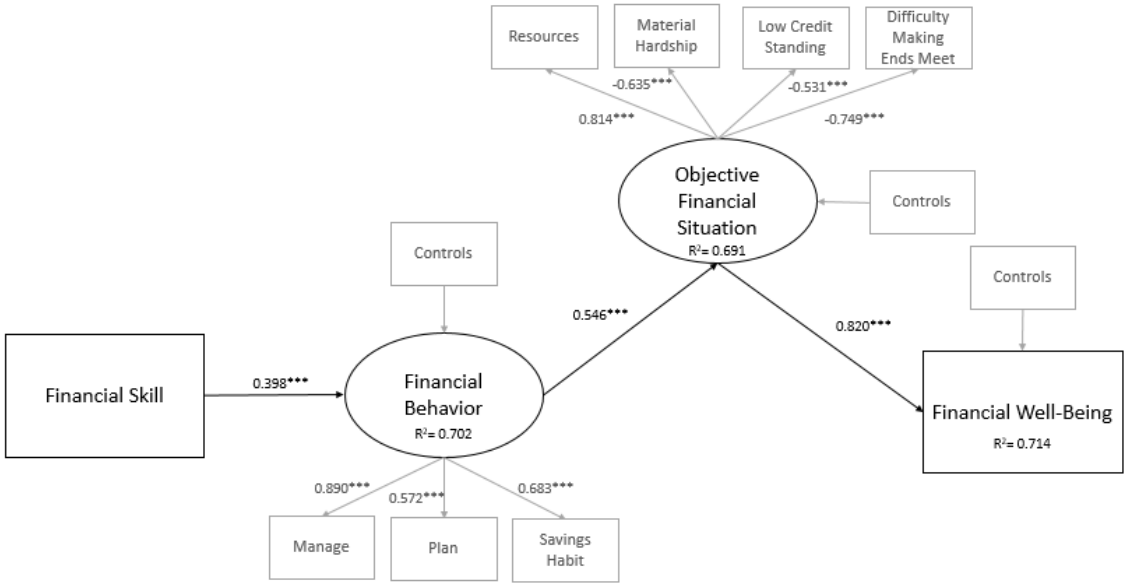
3.4 What are the Relative Associations of Financial Knowledge, Financial Skill, Financial Behavior, and Objective Financial Situation with Financial Well-Being?

The study culminated in a fourth and final research question that examines the full conceptual model (Exhibit 1.1), whereas in earlier research questions, we examined portions of that model. Thus, in answering this research question, we drew on learnings from the prior analyses. We estimated three structural models simultaneously.

- We regressed financial well-being on the second-order objective financial situation factor;
- We regressed objective financial situation on the second-order financial behavior factor; and
- We regressed financial behavior on financial skill.

In each, we included the following controls: financial self-efficacy, income, self-control, perceived economic mobility, retired, and frugality. The overall fit for the model (presented in Exhibit 3.14) was adequate: χ^2 (df) = 1666.253 (54); RMSEA = 0.068; CFI = 0.911, TLI = 0.862, SRMR = 0.045. The observed relation between financial well-being and objective financial situation was strong (β = 0.820, $p < .001$) as was the relation between objective financial situation and financial behavior (β = 0.546, $p < .001$). Financial behavior was, in turn, strongly associated with financial skill (β = 0.398, $p < .001$). (Coefficients for all variables modeled, including controls, are presented in Appendix E, Exhibit E.5.) The nature of these associations were as anticipated given findings from prior models. Overall, the model accounted for 71 percent of the variance in financial well-being, 69 percent of the variance in objective financial situation, and 70 percent of the variance in financial behavior.

Exhibit 3.12 Relations among financial well-being, objective financial situation, financial behavior, and financial skill



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients for the model of the relations among financial well-being, objective financial situation, financial behavior, and financial skill. Only significant paths shown. * p < .05. ** p < .01. *** p < .001.

Although the control variables are not a primary focus of our analysis but included in models to remove possible bias from our estimates, there are nonetheless some intriguing findings with regard to financial self-efficacy and income worthy of mention here and further investigation by the research community. As shown in Appendix E, Exhibit E.5, among the controls, financial self-efficacy (confidence in one's ability to achieve personal financial goals) was strongly related to financial behavior ($\beta = 0.324$, $p < .001$). The coefficient for this relation was nearly as large as that for financial skill, suggesting that an individual's confidence in his or her abilities may be an important complement to actual financial skill. Given the seemingly close connection between financial skill, self-efficacy, and behavior, it may well be that positive or negative feedback loops exist among these three factors—an intriguing line of inquiry for a future longitudinal analysis.

Perhaps not surprisingly, relative to all the controls, annual household income was most strongly associated with objective financial situation ($\beta = 0.400$, $p < .001$). The coefficient for this relation was closer in size to financial behavior than it was to any of the other controls. In this study income was intentionally distinguished from objective financial situation because, although income certainly is a determinant of one's objective financial situation, it does not necessarily characterize it, particularly given geographic differences in costs of living and personal financial choice. For example, two individuals with identical incomes may experience those incomes in very different ways, given where they live, their family compositions, etc. The finding that income and behavior are both strong predictors of objective financial situation suggests that, holding all else constant, both income and financial behavior are important tools for improving one's financial circumstances. It is possible that they work synergistically over time, along with objective financial situation, financial skill, and financial self-efficacy, to build financial well-being. This is another area for future longitudinal research.

Overall, in addressing our fourth research question, we provide some additional insight into potential pathways to financial well-being. *Although the data are cross-sectional and, therefore, do not support causal inferences,* the findings are consistent with a model of financial well-being in which:

- Building financial skill supports more positive financial behaviors;
- Positive financial behaviors yield a more favorable objective financial situation (given parameters of individual circumstances); and
- A more favorable objective financial situation positively affects financial well-being.

These possibilities warrant further exploration—in particular, examination using longitudinal data to assess change over time, to provide more rigorous evidence for directional pathways, and allow for tests of indirect effects (e.g., mediation). In the meantime, these findings support particular approaches to financial education interventions, such as targeting financial skill enhancement , beginning to develop rules of thumb about which behaviors may support more favorable objective financial situations, and helping adults to consider multiple facets of their objective financial situation when assessing their financial well-being.

4. Discussion, Implications, and Directions for Future Research

Results from this quantitative analysis of data from more than 6,000 U.S. adults largely support our conceptual model of the potential pathways to financial well-being. We found that people's financial skill was related to their financial behavior. These financial behaviors, in turn, were related to people's objective financial situations, as measured by traditional markers such as financial resources, credit standing, and cash flow sufficiency. And finally, individuals' objective financial situations were associated with their financial well-being.

The strong and significant association we observed between objective financial situation and financial well-being suggests that individuals' assessments of their financial well-being are largely grounded in the reality of their self-reported financial circumstances. It also confirms the CFPB's (2017b) descriptive analysis indicating that if consumers are having difficulty making ends meet or are experiencing material hardships, they are likely to have lower levels of financial well-being than those without such experiences. These findings may allay potential concerns that a subjective measure of well-being would not relate to the typical objective markers of financial status. However, the correlation between the two constructs is not perfect: objective financial situation explains about seventy percent of the variance in financial well-being. This suggests that financial well-being captures additional information beyond traditional financial markers, or at least how we have measured objective financial situation in this study. While our results do not identify the additional factors that explain the additional variance in financial well-being, there are many other variables not examined in this study that may (e.g., goals, priorities, preferences, expectations). We hope that future research will explore their roles.

Second, findings from our analysis did not support a direct relationship between financial behavior and financial well-being. Instead our results indicate that financial behavior and financial well-being appear to be related *indirectly* through the objective outcomes of those financial behaviors as measured in objective financial situation. This finding suggests that making better decisions and engaging in more positive financial behaviors could increase financial well-being—but perhaps only to the extent that these behaviors increase individuals' financial resources, help them make ends meet, avoid material hardships, and ease credit issues. Additional research using longitudinal data to establish the temporal precedence of financial behavior relative to objective financial situation and financial well-being is needed to validate the indirect associations we observed.

To some readers, our findings related to financial knowledge and financial skill will perhaps be the most striking. As the CFPB (2015) found in its earlier qualitative research, stores of general financial knowledge did not seem strongly related to financial behaviors. Instead, financial *skill* (i.e., knowing when and how to find reliable information to make a financial decision; knowing how to process financial information to make sound financial decisions; and knowing how to execute financial decisions, adapting as necessary to stay on track) appears to be a much stronger correlate of financial behavior. Our measures of behavior included daily money management, following through on commitments, having a high propensity for financial planning, and having good savings habits. Thus, although knowledge is important, it may be that developing critical skills—i.e. learning how and when to learn, decide and follow through—is a more potent target of financial education than a primary focus on factual knowledge of financial concepts as measured by the current financial literacy tests.

4.1 Limitations

As with any study, this one has limitations. Below we briefly discuss these limitations and their implications.

4.1.1 Causal inference

The data for this study are cross-sectional and therefore only allow for correlational analysis. No claims of causality can be made. The findings might be different if the criteria for causality were satisfied (e.g., with experimental, quasi-experimental, or longitudinal data).

As previously described, the relations set forth in our conceptual model (Exhibit 1.1) and research questions were tested within an SEM framework. As hypothesized and tested, these relations were largely directional in nature. For example, in answer to the question, W*hat is the relation between financial well-being and objective financial situation?,* we regressed financial well-being on objective financial situation. As such, objective financial situation functioned in our models as a predictor of financial well-being. However, given that both objective financial situation and financial well-being were measured at the same point in time, we could not establish the temporal precedence necessary to argue that objective financial situation predicts financial well-being. Thus, our ability to infer a path from one variable to a second and that second variable, in turn, to a third is inhibited, and we cannot be certain how the phenomena we examined might unfold across time. This means that although many of the relations among financial behavior, objective financial situation, and financial well-being are statistically significant, they are not necessarily causal. Variables such as objective financial situation may affect how individuals understand their financial security and freedom to make financial choices, but it is possible that the reverse relationship exists—that financial well-being affects these variables. Likewise, we did not have the longitudinal data necessary to assess indirect effects (mediation) and whether, for example, financial behavior influences financial well-being by way of its influence on objective financial situation or whether across time the two or more constructs exert bidirectional influences on one another (e.g., whether time-one objective financial situation influences time-two financial well-being, which then influences time-three objective financial situation). Questions of directionality and indirect effects remain important topics for future research.

Finally, despite the breadth of observed and latent variables incorporated in the SEM models (as core constructs or controls), there may be unobserved factors correlated with financial well-being and also financial skill, financial behavior, and objective financial situation that confound the estimated relationships. As a result, there is the risk of causal indeterminacy and bias due to unobserved variables.

All of that said, a great strength of this analysis is that it provides the most comprehensive picture yet of the potential pathways to financial well-being. It has great potential to yield never-before-possible insights that may inform policy and practice in consumer financial education and related arenas.

4.1.2 Data and Measurement Limitations

The study also faces limitations related to data and measurement. First, we did not have the optimal measures for all constructs. For example, we were not able to measure objective financial situation using administrative data (e.g., actual credit score) or by gathering the details necessary to calculate net worth or debt-to-income ratio. Rather, we estimated objective financial situation based on a limited selection of self-reported data. It could be that the relation between financial well-being and

objective financial situation would have been different (either stronger or weaker) if we had administrative data or different measures of objective financial situation.

There are also limitations regarding our financial knowledge metrics. Because the scales we used were designed to reflect generic financial knowledge, our finding of no significant connection between financial knowledge and financial behavior is limited by the available measure. Over the last few years, the field of financial education has started moving toward "just-in-time" financial education, which aims to transfer specific types of relevant, actionable knowledge at the time that consumers need to apply it. This study does not address the potential role of this more targeted type of financial knowledge transfer in the pathways to financial behavior and, ultimately, financial well-being.

In addition, while we think the activity-based view of financial behavior used in this study (i.e., manage, plan,) is preferable to a more traditional, domain-based view (e.g., save, invest, budget) given Bureau's qualitative research, it is possible that if we had defined financial behavior using a domain-based view, the pattern, size or significance of relations we observed might have been different. This is an empirical question that can be explored in future research.

Finally, a brief word on the external validity of this study. As discussed in Section 2.2, all data for this study was derived from the National Financial Well-Being Survey, which is comprised of survey data of U.S adults. Therefore, findings in this report may not be relevant beyond this population.

4.2 Implications

This study is a quantitative assessment of key research questions that emerged from the Bureau's prior qualitative work on financial well-being. Financial practitioners, policymakers and other stakeholders have also sought the answers to these same questions to help them design and provide effective financial literacy and policy. This study is a significant step in beginning to understand the relationship between financial knowledge, skill, behavior, objective situation and financial well-being. The findings are intended to inspire additional research in the promising areas identified. As an exploratory study, a chief aim was to point to potential pathways leading to financial well-being and to highlight opportunities for future research. In this vein, SEM is a powerful tool for exploration and hypothesis generation. Moreover, by using SEM we were able to efficiently model multidimensional constructs like financial behavior and objective financial situation as latent factors thereby reducing measurement error. In addition, SEM allowed modeling of multiple relations simultaneously, which again has the potential to provide a clearer sense of how complex processes with multiple determinants and outcomes, such as those leading to financial well-being, may operate in the real world.

Several extensions of this research warrant further exploration—in particular, examination using longitudinal data to assess change over time, provide more rigorous evidence for directional pathways, and allow for tests of indirect effects (e.g., mediation). Future research should examine how the consumer assesses their objective financial situation and arrives at a sense of financial well-being. The findings presented here demonstrate that financial well-being is an important outcome highly correlated with more traditional objective markers of financial standing. Yet financial well-being captures something beyond an assessment of the consumer's balance sheet. Exploring this process in greater detail may reveal new avenues for improving consumer financial decision-making.

This study also has important practical implications. To date, financial education has focused largely on the transmission of explicit financial knowledge. Our work suggests that financial education programs should explore ways to help consumers build financial skill. New approaches may consider experiential learning or similar methods that build a consumer's skill to recognize when information is needed, find trustworthy sources, and use what they are able to learn to make effective financial decisions. The greatest benefit may come from finding ways to develop the skill to apply such a method across a number of financial domains while also building the consumer's confidence that they could execute such a method successfully.

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Appendix A: Descriptive Statistics

Appendix Exhibit A.1: Descriptive statistics and correlations for measures used in analysis

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Financial well-being	54.25	13.74	1.00									
2. Resources	0.00	0.85	0.64	1.00								
3. Low credit standing	0.00	0.84	-0.44	-0.44	1.00							
4. Material hardship	0.00	0.95	-0.54	-0.54	0.48	1.00						
5. Difficulty making ends meet	1.52	0.65	-0.67	-0.59	0.44	0.57	1.00					
6. Financial management behavior	0.00	0.90	0.58	0.55	-0.40	-0.42	-0.51	1.00				
7. Financial planning behavior	0.00	0.93	0.20	0.12	-0.11	-0.09	-0.16	0.51	1.00			
8. Saving habit	4.30	1.49	0.50	0.46	-0.33	-0.31	-0.43	0.59	0.41	1.00		
9. Financial knowledge (LM)	2.43	0.80	0.21	0.36	-0.18	-0.31	-0.21	0.19	-0.02[a]	0.11	1.00	
10. Financial knowledge (HK)	-0.18	0.81	0.30	0.52	-0.22	-0.35	-0.29	0.27	-0.03	0.17	0.61	1.00
11. Financial skill	49.92	12.80	0.47	0.36	-0.21	-0.24	-0.34	0.64	0.52	0.49	0.08	0.15
12. Financial self-efficacy	3.17	0.75	0.55	0.45	-0.28	-0.34	-0.47	0.59	0.39	0.49	0.13	0.21
13. Income (in thousands of dollars)	80.85	61.28	0.35	0.51	-0.22	-0.30	-0.34	0.24	0.01[a]	0.26	0.25	0.38
14. Self-control	2.97	0.53	0.36	0.29	-0.19	-0.25	-0.29	0.48	0.39	0.38	0.12	0.17
15. Perceived economic mobility	4.70	1.66	0.23	0.14	-0.12	-0.18	-0.17	0.19	0.17	0.18	-0.04	-0.03
16. Retired	0.21	0.41	0.22	0.22	-0.13	-0.16	-0.12	0.20	0.03	0.04	0.08	0.12
17. Frugality	5.18	0.91	0.09	0.14	-0.06	-0.12	-0.08	0.33	0.25	0.24	0.14	0.16

(continued)

Variable	11	12	13	14	15	16	17
11. Financial skill	1.00						
12. Financial self-efficacy	0.55	1.00					
13. Income (in thousands of dollars)	0.22	0.26	1.00				
14. Self-control	0.53	0.43	0.17	1.00			
15. Perceived economic mobility	0.20	0.20	0.06	0.14	1.00		
16. Retired	0.04	0.07	-0.13	0.04	0.03	1.00	
17. Frugality	0.25	0.18	0.01a	0.25	0.03	0.07	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.
[a] $p \geq 0.05$.

Appendix Exhibit A.2: Descriptive statistics and correlations for financial well-being score items

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Financial well-being scale score	54.25	13.74	1.00										
2. Financial well-being 1	2.92	1.23	0.68	1.00									
3. Financial well-being 2	3.10	1.11	0.63	0.67	1.00								
4. Financial well-being 3	2.64	1.21	-0.79	-0.48	-0.47	1.00							
5. Financial well-being 4	3.20	1.05	0.65	0.67	0.69	-0.48	1.00						
6. Financial well-being 5	2.86	1.24	-0.67	-0.43	-0.36	0.53	-0.36	1.00					
7. Financial well-being 6	3.18	1.16	-0.71	-0.44	-0.44	0.60	-0.43	0.47	1.00				
8. Financial well-being 7	2.47	1.20	-0.85	-0.58	-0.51	0.59	-0.52	0.50	0.50	1.00			
9. Financial well-being 8	3.28	1.26	0.72	0.65	0.60	-0.50	0.61	-0.43	-0.45	-0.63	1.00		
10. Financial well-being 9	2.15	1.13	-0.75	-0.49	-0.42	0.51	-0.47	0.42	0.41	0.63	-0.55	1.00	
11. Financial well-being 10	2.77	1.14	-0.75	-0.45	-0.40	0.54	-0.44	0.44	0.49	0.61	-0.48	0.54	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.
[a] $p \geq 0.05$.

Appendix Exhibit A.3: Descriptive statistics and correlations for items used to measure objective financial situation

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Difficulty making ends meet	1.52	0.65	1.00												
2. Liquid savings (in thousands of dollars)	16.85	24.62	-0.42	1.00											
3. Ability to absorb a negative financial shock	3.15	1.13	-0.62	0.47	1.00										
4. Number of financial products	3.02	1.72	-0.39	0.45	0.50	1.00									
5. Material hardship 1	1.27	0.56	0.56	-0.29	-0.55	-0.39	1.00								
6. Material hardship 2	1.24	0.53	0.51	-0.27	-0.53	-0.38	0.81	1.00							
7. Material hardship 3	1.15	0.44	0.34	-0.18	-0.35	-0.32	0.51	0.53	1.00						
8. Material hardship 4	1.24	0.52	0.41	-0.23	-0.39	-0.32	0.55	0.53	0.46	1.00					
9. Material hardship 5	1.21	0.48	0.37	-0.20	-0.33	-0.28	0.52	0.51	0.45	0.65	1.00				
10. Material hardship 6	1.10	0.36	0.31	-0.16	-0.27	-0.30	0.50	0.52	0.53	0.47	0.49	1.00			
11. Debt collection experience	0.16	0.36	0.39	-0.22	-0.41	-0.21	0.39	0.35	0.24	0.31	0.27	0.23	1.00		
12. Credit rejection experience	0.12	0.32	0.29	-0.20	-0.32	-0.20	0.32	0.30	0.22	0.27	0.25	0.25	0.36	1.00	
13. Credit rejection concerns	0.14	0.35	0.38	-0.23	-0.44	-0.26	0.39	0.37	0.26	0.31	0.26	0.20	0.44	0.47	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.
[a] $p \geq 0.05$.

Appendix Exhibit A.4: Descriptive statistics and correlations for items used to measure financial behavior

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Money management 1	4.45	0.97	1.00										
2. Money management 2	3.74	1.09	0.47	1.00									
3. Money management 3	3.37	1.60	0.45	0.43	1.00								
4. Money management 4	4.13	1.09	0.45	0.43	0.33	1.00							
5. Follow-through 1	4.16	0.88	0.46	0.38	0.33	0.29	1.00						
6. Follow-through 2	3.55	0.92	0.37	0.53	0.44	0.34	0.53	1.00					
7. Propensity to plan 1	3.69	1.03	0.18	0.36	0.06	0.30	0.20	0.28	1.00				
8. Propensity to plan 2	3.62	0.95	0.24	0.45	0.16	0.34	0.24	0.41	0.63	1.00			
9. Propensity to plan 3	3.66	0.92	0.27	0.43	0.26	0.31	0.33	0.51	0.49	0.61	1.00		
10. Propensity to plan 4	3.25	1.03	0.22	0.41	0.22	0.32	0.21	0.47	0.52	0.66	0.65	1.00	
11. Saving habit	4.30	1.49	0.37	0.45	0.49	0.31	0.35	0.53	0.22	0.33	0.43	0.39	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.5: Descriptive statistics and correlations for items used to measure financial knowledge

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Financial knowledge (Lusardi-Mitchell scale score)	2.43	0.80	1.00													
2. Lusardi-Mitchell 1	0.84	0.36	0.62	1.00												
3. Lusardi-Mitchell 2	0.73	0.44	0.76	0.20	1.00											
4. Lusardi-Mitchell 3	0.85	0.36	0.66	0.13	0.27	1.00										
5. Financial knowledge (Houts-Knoll scale score)	-0.18	0.81	0.61	0.30	0.60	0.31	1.00									
6. Houts-Knoll 1	0.56	0.50	0.29	0.16	0.27	0.16	0.56	1.00								
7. Houts-Knoll 2	0.82	0.39	0.40	0.24	0.34	0.24	0.50	0.17	1.00							
8. Houts-Knoll 3	0.63	0.48	0.38	0.18	0.34	0.24	0.60	0.26	0.24	1.00						
9. Houts-Knoll 4	0.80	0.40	0.26	0.18	0.22	0.12	0.48	0.16	0.24	0.19	1.00					
10. Houts-Knoll 5	0.71	0.45	0.16	0.11	0.15	0.06	0.43	0.14	0.14	0.12	0.15	1.00				
11. Houts-Knoll 6	0.90	0.30	0.29	0.18	0.22	0.21	0.39	0.16	0.29	0.17	0.15	0.11	1.00			
12. Houts-Knoll 7	0.40	0.49	0.26	0.12	0.24	0.15	0.52	0.17	0.17	0.21	0.14	0.09	0.14	1.00		
13. Houts-Knoll 8	0.32	0.47	0.11	0.05	0.09	0.07	0.43	0.16	0.04	0.16	0.13	0.07	0.04	0.08	1.00	
14. Houts-Knoll 9	0.88	0.32	0.26	0.19	0.22	0.12	0.43	0.17	0.24	0.20	0.24	0.17	0.19	0.11	0.07	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.6: Descriptive statistics and correlations for items used to measure financial skill

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Financial skill scale score	49.92	12.80	1.00										
2. Financial skill 1	3.55	0.95	0.87	1.00									
3. Financial skill 2	3.47	1.07	0.70	0.55	1.00								
4. Financial skill 3	3.18	1.04	0.76	0.61	0.53	1.00							
5. Financial skill 4	3.27	0.98	0.83	0.65	0.57	0.71	1.00						
6. Financial skill 5	3.01	1.04	0.73	0.55	0.54	0.66	0.67	1.00					
7. Financial skill 6	3.70	0.96	0.73	0.65	0.46	0.48	0.54	0.44	1.00				
8. Financial skill 7	3.63	1.02	0.78	0.70	0.51	0.52	0.57	0.49	0.69	1.00			
9. Financial skill 8	3.71	0.88	0.54	0.37	0.34	0.29	0.33	0.30	0.37	0.34	1.00		
10. Financial skill 9	3.60	0.94	0.51	0.34	0.42	0.28	0.30	0.28	0.31	0.32	0.60	1.00	
11. Financial skill 10	2.74	0.93	-0.41	-0.32	-0.27	-0.41	-0.36	-0.36	-0.22	-0.24	-0.07	0.01[a]	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.7: Descriptive statistics and correlations for personal traits measures

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Financial well-being	54.25	13.74	1.00										
2. Resources	0.00	0.85	0.64	1.00									
3. Low credit standing	0.00	0.84	-0.44	-0.44	1.00								
4. Material hardship	0.00	0.95	-0.54	-0.54	0.48	1.00							
5. Difficulty making ends meet	1.52	0.65	-0.67	-0.59	0.44	0.57	1.00						
6. Financial management behavior	0.00	0.90	0.58	0.55	-0.40	-0.42	-0.51	1.00					
7. Financial planning behavior	0.00	0.93	0.20	0.12	-0.11	-0.09	-0.16	0.51	1.00				
8. Saving habit	4.30	1.49	0.50	0.46	-0.33	-0.31	-0.43	0.59	0.41	1.00			
9. Financial skill	49.92	12.80	0.47	0.36	-0.21	-0.24	-0.34	0.64	0.52	0.49	1.00		
10. Financial knowledge (Lusardi-Mitchell scale)	2.43	0.80	0.21	0.36	-0.18	-0.31	-0.21	0.19	-0.02[a]	0.11	0.08	1.00	
11. Financial knowledge (Houts-Knoll scale)	-0.18	0.81	0.30	0.52	-0.22	-0.35	-0.29	0.27	-0.03	0.17	0.15	0.61	1.00
12. Age	47.49	17.81	0.23	0.33	-0.14	-0.20	-0.12	0.23	0.01[a]	0.05	0.02[a]	0.16	0.21
13. Self-control	2.97	0.53	0.36	0.29	-0.19	-0.25	-0.29	0.48	0.39	0.38	0.53	0.12	0.17
14. Perceived economic mobility	4.70	1.66	0.23	0.14	-0.12	-0.18	-0.17	0.19	0.17	0.18	0.20	-0.04	-0.03
15. Financial self-efficacy	3.17	0.75	0.55	0.45	-0.28	-0.34	-0.47	0.59	0.39	0.49	0.55	0.13	0.21
16. Frugality	5.18	0.91	0.09	0.14	-0.06	-0.12	-0.08	0.33	0.25	0.24	0.25	0.14	0.16
17. White, non-Hispanic	0.64	0.48	0.14	0.30	-0.14	-0.18	-0.15	0.15	-0.10	0.02[a]	0.04	0.22	0.31
18. Black, non-Hispanic	0.12	0.32	-0.06	-0.15	0.17	0.14	0.08	-0.14	0.05	-0.04	0.02[a]	-0.20	-0.21
19. Other race, non-Hispanic	0.04	0.20	-0.01[a]	0.03	-0.02	0.00[a]	-0.00[a]	0.01[a]	-0.00[a]	0.05	-0.01[a]	0.01[a]	-0.00[a]
20. Multiracial, non-Hispanic	0.04	0.19	-0.03	-0.05	0.01[a]	0.03	0.01[a]	-0.03	0.01[a]	-0.02[a]	-0.00[a]	-0.01[a]	0.01[a]
21. Hispanic	0.16	0.36	-0.10	-0.25	0.04	0.10	0.12	-0.06	0.09	-0.01[a]	-0.07	-0.11	-0.22
22. Female	0.52	0.50	-0.01[a]	-0.02[a]	0.01[a]	0.00[a]	0.02[a]	0.03	0.02[a]	0.01[a]	-0.02[a]	-0.09	-0.14
23. Education level	0.31	0.46	0.24	0.41	-0.17	-0.22	-0.22	0.20	0.01[a]	0.21	0.17	0.25	0.37
24. Discount/time preference	0.57	0.49	0.27	0.32	-0.19	-0.24	-0.28	0.26	0.05	0.24	0.16	0.17	0.25

(continued)

Variable	12	13	14	15	16	17	18	19	20	21	22	23	24
11. Financial knowledge (Houts-Knoll scale)													
12. Age	1.00												
13. Self-control	0.06	1.00											
14. Perceived economic mobility	0.05	0.14	1.00										
15. Financial self-efficacy	0.04	0.43	0.20	1.00									
16. Frugality	0.12	0.25	0.03	0.18	1.00								
17. White, non-Hispanic	0.17	0.02[a]	0.02[a]	0.09	0.08	1.00							
18. Black, non-Hispanic	-0.05	0.03	-0.10	0.00[a]	-0.08	-0.49	1.00						
19. Other race, non-Hispanic	-0.06	-0.01[a]	-0.02[a]	-0.04	-0.02[a]	-0.29	-0.08	1.00					
20. Multiracial, non-Hispanic	-0.03	-0.03	-0.06	-0.03	0.01[a]	-0.26	-0.07	-0.04	1.00				
21. Hispanic	-0.14	-0.04	0.10	-0.08	-0.02[a]	-0.58	-0.16	-0.09	-0.08	1.00			
22. Female	0.04	0.02[a]	-0.05	-0.01[a]	0.03	-0.01[a]	0.05	0.01[a]	-0.02[a]	-0.03	1.00		
23. Education level	0.01[a]	0.17	-0.05	0.20	0.06	0.09	-0.03	0.09	-0.01[a]	-0.14	0.01[a]	1.00	
24. Discount/time preference	0.04	0.16	0.01[a]	0.24	0.08	0.16	-0.13	0.03	0.01[a]	-0.11	-0.01[a]	0.18	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.8: Descriptive statistics and correlations for current opportunities measures

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Financial well-being	54.25	13.74	1.00									
2. Resources	0.00	0.85	0.64	1.00								
3. Low credit standing	0.00	0.84	-0.44	-0.44	1.00							
4. Material hardship	0.00	0.95	-0.54	-0.54	0.48	1.00						
5. Difficulty making ends meet	1.52	0.65	-0.67	-0.59	0.44	0.57	1.00					
6. Financial management behavior	0.00	0.90	0.58	0.55	-0.40	-0.42	-0.51	1.00				
7. Financial planning behavior	0.00	0.93	0.20	0.12	-0.11	-0.09	-0.16	0.51	1.00			
8. Saving habit	4.30	1.49	0.50	0.46	-0.33	-0.31	-0.43	0.59	0.41	1.00		
9. Financial skill	49.92	12.80	0.47	0.36	-0.21	-0.24	-0.34	0.64	0.52	0.49	1.00	
10. Financial knowledge (Lusardi-Mitchell scale)	2.43	0.80	0.21	0.36	-0.18	-0.31	-0.21	0.19	-0.02[a]	0.11	0.08	1.00
11. Financial knowledge (Houts-Knoll scale)	-0.18	0.81	0.30	0.52	-0.22	-0.35	-0.29	0.27	-0.03	0.17	0.15	0.61
12. Income (in thousands of dollars)	80.85	61.28	0.35	0.51	-0.22	-0.30	-0.34	0.24	0.01[a]	0.26	0.22	0.25
13. Retired	0.21	0.41	0.22	0.22	-0.13	-0.16	-0.12	0.20	0.03	0.04	0.04	0.08
14. Employed	0.57	0.49	-0.01[a]	0.09	0.00[a]	-0.06	-0.05	-0.00[a]	0.03	0.08	0.05	0.05
15. Employer benefits	2.13	1.63	0.24	0.46	-0.14	-0.24	-0.26	0.20	0.08	0.24	0.17	0.19
16. Marital status	0.55	0.50	0.22	0.33	-0.16	-0.19	-0.15	0.21	0.06	0.14	0.12	0.16
17. Financially supported children	0.74	1.19	-0.08	-0.03	0.08	0.06	0.09	-0.06	0.01[a]	-0.04	-0.00[a]	-0.00[a]
18. Professional financial advice	0.32	0.47	0.25	0.39	-0.17	-0.20	-0.22	0.26	0.12	0.23	0.19	0.20

(continued)

Variable	11	12	13	14	15	16	17	18
11. Financial knowledge (Houts-Knoll scale)	1.00							
12. Income (in thousands of dollars)	0.38	1.00						
13. Retired	0.12	-0.13	1.00					
14. Employed	0.06	0.25	-0.60	1.00				
15. Employer benefits	0.27	0.41	-0.17	0.37	1.00			
16. Marital status	0.20	0.23	0.08	0.03	0.25	1.00		
17. Financially supported children	-0.00[a]	0.07	-0.21	0.14	0.10	0.27	1.00	
18. Professional financial advice	0.28	0.20	0.14	0.03	0.21	0.15	-0.01[a]	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.9: Descriptive statistics and correlations for financial socialization measures

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Financial well-being	54.25	13.74	1.00											
2. Resources	0.00	0.85	0.64	1.00										
3. Low credit standing	0.00	0.84	-0.44	-0.44	1.00									
4. Material hardship	0.00	0.95	-0.54	-0.54	0.48	1.00								
5. Difficulty making ends meet	1.52	0.65	-0.67	-0.59	0.44	0.57	1.00							
6. Financial management behavior	0.00	0.90	0.58	0.55	-0.40	-0.42	-0.51	1.00						
7. Financial planning behavior	0.00	0.93	0.20	0.12	-0.11	-0.09	-0.16	0.51	1.00					
8. Saving habit	4.30	1.49	0.50	0.46	-0.33	-0.31	-0.43	0.59	0.41	1.00				
9. Financial skill	49.92	12.80	0.47	0.36	-0.21	-0.24	-0.34	0.64	0.52	0.49	1.00			
10. Financial knowledge (Lusardi-Mitchell scale)	2.43	0.80	0.21	0.36	-0.18	-0.31	-0.21	0.19	-0.02[a]	0.11	0.08	1.00		
11. Financial knowledge (Houts-Knoll scale)	-0.18	0.81	0.30	0.52	-0.22	-0.35	-0.29	0.27	-0.03	0.17	0.15	0.61	1.00	
12. Family financial socialization	0.86	0.34	0.15	0.19	-0.09	-0.15	-0.14	0.18	0.11	0.15	0.15	0.12	0.16	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.10: Descriptive statistics and correlations for the controls used in main models and sensitivity tests

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Financial well-being	54.25	13.74	1.00									
2. Resources	0.00	0.85	0.64	1.00								
3. Low credit standing	0.00	0.84	-0.44	-0.44	1.00							
4. Material hardship	0.00	0.95	-0.54	-0.54	0.48	1.00						
5. Difficulty making ends meet	1.52	0.65	-0.67	-0.59	0.44	0.57	1.00					
6. Financial management behavior	0.00	0.90	0.58	0.55	-0.40	-0.42	-0.51	1.00				
7. Financial planning behavior	0.00	0.93	0.20	0.12	-0.11	-0.09	-0.16	0.51	1.00			
8. Saving habit	4.30	1.49	0.50	0.46	-0.33	-0.31	-0.43	0.59	0.41	1.00		
9. Financial skill	49.92	12.80	0.47	0.36	-0.21	-0.24	-0.34	0.64	0.52	0.49	1.00	
10. Financial knowledge (Lusardi-Mitchell scale)	2.43	0.80	0.21	0.36	-0.18	-0.31	-0.21	0.19	-0.02[a]	0.11	0.08	1.00
11. Financial knowledge (Houts-Knoll scale)	-0.18	0.81	0.30	0.52	-0.22	-0.35	-0.29	0.27	-0.03	0.17	0.15	0.61
12. Age	47.49	17.81	0.23	0.33	-0.14	-0.20	-0.12	0.23	0.01[a]	0.05	0.02[a]	0.16
13. Self-control	2.97	0.53	0.36	0.29	-0.19	-0.25	-0.29	0.48	0.39	0.38	0.53	0.12
14. Perceived economic mobility	4.70	1.66	0.23	0.14	-0.12	-0.18	-0.17	0.19	0.17	0.18	0.20	-0.04
15. Financial self-efficacy	3.17	0.75	0.55	0.45	-0.28	-0.34	-0.47	0.59	0.39	0.49	0.55	0.13
16. Frugality	5.18	0.91	0.09	0.14	-0.06	-0.12	-0.08	0.33	0.25	0.24	0.25	0.14
17. White, non-Hispanic	0.64	0.48	0.14	0.30	-0.14	-0.18	-0.15	0.15	-0.10	0.02[a]	0.04	0.22
18. Black, non-Hispanic	0.12	0.32	-0.06	-0.15	0.17	0.14	0.08	-0.14	0.05	-0.04	0.02[a]	-0.20
19. Other race, non-Hispanic	0.04	0.20	-0.01[a]	0.03	-0.02	0.00[a]	-0.00[a]	0.01[a]	-0.00[a]	0.05	-0.01[a]	0.01[a]
20. Multi-racial, non-Hispanic	0.04	0.19	-0.03	-0.05	0.01[a]	0.03	0.01[a]	-0.03	0.01[a]	-0.02[a]	-0.00[a]	-0.01[a]
21. Hispanic	0.16	0.36	-0.10	-0.25	0.04	0.10	0.12	-0.06	0.09	-0.01[a]	-0.07	-0.11
22. Female	0.52	0.50	-0.01[a]	-0.02[a]	0.01[a]	0.00[a]	0.02[a]	0.03	0.02[a]	0.01[a]	-0.02[a]	-0.09
23. Education level	0.31	0.46	0.24	0.41	-0.17	-0.22	-0.22	0.20	0.01[a]	0.21	0.17	0.25
24. Discount/time preference	0.57	0.49	0.27	0.32	-0.19	-0.24	-0.28	0.26	0.05	0.24	0.16	0.17
25. Income (in thousands of dollars)	80.85	61.28	0.35	0.51	-0.22	-0.30	-0.34	0.24	0.01[a]	0.26	0.22	0.25
26. Retired	0.21	0.41	0.22	0.22	-0.13	-0.16	-0.12	0.20	0.03	0.04	0.04	0.08
27. Employed	0.57	0.49	-0.01[a]	0.09	0.00[a]	-0.06	-0.05	-0.00[a]	0.03	0.08	0.05	0.05
28. Employer benefits	2.13	1.63	0.24	0.46	-0.14	-0.24	-0.26	0.20	0.08	0.24	0.17	0.19
29. Marital status	0.55	0.50	0.22	0.33	-0.16	-0.19	-0.15	0.21	0.06	0.14	0.12	0.16
30. Financially supported children	0.74	1.19	-0.08	-0.03	0.08	0.06	0.09	-0.06	0.01[a]	-0.04	-0.00[a]	-0.00[a]
31. Professional financial advice	0.32	0.47	0.25	0.39	-0.17	-0.20	-0.22	0.26	0.12	0.23	0.19	0.20
32. Family financial socialization	0.86	0.34	0.15	0.19	-0.09	-0.15	-0.14	0.18	0.11	0.15	0.15	0.12

(continued)

Variable	11	12	13	14	15	16	17	18	19	20	21	22
11. Financial knowledge (Houts-Knoll scale)	1.00											
12. Age	0.21	1.00										
13. Self-control	0.17	0.06	1.00									
14. Perceived economic mobility	-0.03	0.05	0.14	1.00								
15. Financial self-efficacy	0.21	0.04	0.43	0.20	1.00							
16. Frugality	0.16	0.12	0.25	0.03	0.18	1.00						
17. White, non-Hispanic	0.31	0.17	0.02[a]	0.02[a]	0.09	0.08	1.00					
18. Black, non-Hispanic	-0.21	-0.05	0.03	-0.10	0.00[a]	-0.08	-0.49	1.00				
19. Other race, non-Hispanic	-0.00[a]	-0.06	-0.01[a]	-0.02[a]	-0.04	-0.02[a]	-0.29	-0.08	1.00			
20. Multi-racial, non-Hispanic	0.01[a]	-0.03	-0.03	-0.06	-0.03	0.01[a]	-0.26	-0.07	-0.04	1.00		
21. Hispanic	-0.22	-0.14	-0.04	0.10	-0.08	-0.02[a]	-0.58	-0.16	-0.09	-0.08	1.00	
22. Female	-0.14	0.04	0.02[a]	-0.05	-0.01[a]	0.03	-0.01[a]	0.05	0.01[a]	-0.02[a]	-0.03	1.00
23. Education level	0.37	0.01[a]	0.17	-0.05	0.20	0.06	0.09	-0.03	0.09	-0.01[a]	-0.14	0.01[a]
24. Discount/time preference	0.25	0.04	0.16	0.01[a]	0.24	0.08	0.16	-0.13	0.03	0.01[a]	-0.11	-0.01[a]
25. Income (in thousands of dollars)	0.38	-0.09	0.17	0.06	0.26	0.01[a]	0.17	-0.11	0.10	-0.01[a]	-0.17	0.01[a]
26. Retired	0.12	0.67	0.04	0.03	0.07	0.07	0.13	-0.04	-0.03	-0.00[a]	-0.11	0.03
27. Employed	0.06	-0.35	0.07	0.05	0.07	-0.02[a]	-0.02[a]	0.01[a]	0.02[a]	-0.02[a]	0.03	-0.11
28. Employer benefits	0.27	-0.07	0.16	0.05	0.21	0.05	0.12	-0.02[a]	0.02[a]	-0.01[a]	-0.15	-0.01[a]
29. Marital status	0.20	0.24	0.13	0.11	0.14	0.12	0.14	-0.15	-0.04	-0.06	-0.01[a]	-0.02[a]
30. Financially supported children	-0.00[a]	-0.14	0.02[a]	0.08	-0.03	0.05	-0.05	0.01[a]	-0.04	-0.05	0.11	0.03
31. Professional financial advice	0.28	0.20	0.15	0.04	0.21	0.10	0.11	-0.02[a]	0.02[a]	-0.04	-0.11	0.02[a]
32. Family financial socialization	0.16	-0.03	0.14	0.08	0.15	0.10	0.05	-0.04	0.02[a]	0.01[a]	-0.05	0.01[a]

(continued)

Variable	23	24	25	26	27	28	29	30	31	32
23. Education level	1.00									
24. Discount/time preference	0.18	1.00								
25. Income (in thousands of dollars)	0.47	0.22	1.00							
26. Retired	-0.03	0.03	-0.13	1.00						
27. Employed	0.19	0.03	0.25	-0.60	1.00					
28. Employer benefits	0.30	0.16	0.41	-0.17	0.37	1.00				
29. Marital status	0.16	0.07	0.23	0.08	0.03	0.25	1.00			
30. Financially supported children	0.03	-0.07	0.07	-0.21	0.14	0.10	0.27	1.00		
31. Professional financial advice	0.23	0.16	0.20	0.14	0.03	0.21	0.15	-0.01[a]	1.00	
32. Family financial socialization	0.15	0.11	0.16	-0.02[a]	0.04	0.15	0.02[a]	-0.06	0.12	1.00

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Correlations are statistically significant at $p < .05$ unless otherwise noted.

[a] $p \geq 0.05$.

Appendix Exhibit A.11: Demographics for missing subsamples on core measures

	Full Sample	Financial Knowledge (LM)[a]	Financial Knowledge (HK)[b]	Financial Skill	Manage	Plan	Saving Habit	Resources	Low Credit Standing	Material Hardship	Difficulty Making Ends Meet	Financial Well-Being
Sample size of non-missing values	n = 6394	n = 6394	n = 6394	n = 6386	n = 6390	n = 6384	n = 6374	n = 6394	n = 6362	n = 6369	n = 6350	n = 6389
Sample size as percentage of full sample	100.0%	100.0%	100.0%	99.9%	99.9%	99.8%	99.7%	100.0%	99.5%	99.6%	99.3%	99.9%
Demographic Characteristic	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**
Age	47.49	47.49	47.49	47.51	47.50	47.52	47.55	47.49	47.59	47.58	47.51	47.50
Female	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Black non-Hispanic	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Multiracial non-Hispanic	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Other race non-Hispanic	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Hispanic	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
BA or higher education	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Married	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTES: Differences between subsample and full sample means on demographic characteristics were assessed using a one-sample t-test.

* p < .05. ** p < .01. *** p < .001

a Lusardi and Mitchell (2008) measure of financial knowledge.

b Houts and Knoll (in preparation) measure of financial knowledge.

Appendix B: Stochastic Imputation of Savings

Nearly 20 percent of the respondents to the CFPB's National Financial Well-Being Survey did not report the amount of money they had in liquid savings, even as a range. Because liquid savings are a key component of objective financial situation (OFS), we used stochastic imputation to estimate savings for respondents missing this data. First, we examined the bivariate correlations between savings range and the other OFS variables. Variables with correlations greater than 0.40 were entered into a generalized linear model (GLM) as predictors of savings range, with three demographic variables (race, age, and education) as additional covariates. Non-significant predictors were removed stepwise by backward elimination until all remaining predictors were significant ($p < .10$). The final prediction model contained the three demographic variables and seven OFS variables: difficulty making ends meet, household income, home value, have a retirement savings account, have a non-retirement savings account, credit rejection concerns, and ability to absorb a financial shock. A separate GLM was fit using the subset of respondents who had each pattern of seven or more of the predictor variables non-missing.[24] Each missing savings range value was imputed using parameter estimates from the model with the matching pattern of non-missing predictors. After the missing values of savings range were imputed, the imputed variable was rounded to the nearest integer to align with the range options presented in the survey.

[24] Respondents missing values for savings range and four or more of the 10 predictors did not have a value of savings range imputed because the GLM model using six or fewer of the predictors would not have been sufficiently accurate.

Appendix C: Construct Development

In this appendix, we describe the development of latent constructs representing objective financial situation and financial behavior. As discussed in Section 2 of this report, the National Financial Well-Being Survey included a large number of variables in the domains of objective financial situation and financial behavior—too many to model efficiently. Therefore, we examined whether the measures in each domain could be distilled into a smaller set of measures that reflect the domain's key dimensions while preserving much of the explanatory power of the full set of variables. To do so, we used two factor analytic techniques: principal components analysis (PCA) for data reduction purposes followed by confirmatory factor analysis (CFA) to validate the latent constructs that emerged from PCA.

Data Reduction via PCA

PCA is a variance-based data reduction procedure that, much like exploratory factor analysis, is designed to help reveal which variables from a larger set tend to "hang together" as factors. It allows for an exploration of the structure of the data and, when coupled with theory, can help formulate hypotheses about latent constructs that may exist in the data (Bandalos & Finney, 2010; O'Rourke & Hatcher, 2013).

In the data reduction stage, we conducted PCA to identify the key components of objective financial situation and (separately) of financial behavior from among the available variables (listed in Exhibits 2.2 and 2.3). This analysis was conducted in SAS Version 9.4 using iterated principal axis factor extraction with promax rotation.[25] We selected promax rotation, an oblique rotation scheme, to allow the factors that emerged to be intercorrelated. In deciding which factors to retain, we used the Kaiser criterion ("K1 rule"), a mathematically-based method that retains those factors with an eigenvalue greater than one.[26] In evaluating the number of factors extracted and the soundness of the factor solution, we also considered the factors' face-validity, interpretability, and meaningfulness; the proportion of variance for which they accounted; and their internal consistency reliability (Cronbach's alpha).

To arrive at the final factor solution, we used an iterative process whereby all potential items in a given domain (objective financial situation and, separately, financial behavior) were entered into the first PCA model. In subsequent runs, the indicators with the weakest factor loading or that cross-loaded onto multiple factors (suggesting high multidimensionality) were eliminated one at a time until all remaining indicators loaded strongly (defined by coefficients of at least 0.40) onto a only one of the factors extracted. Items that were eliminated during PCA but demonstrated high correlations with

[25] Principal axis factor extraction minimizes the residuals between the correlation matrix being analyzed and the factor pattern coefficients and factor correlations, providing a "least-squares-type" solution (Bandalos & Finney, 2010).

[26] The rationale behind the K1 rule is that a factor with an eigenvalue greater than 1 explains more variance than any single observed variable and thereby helps to reduce the observed variables into a smaller number of factors (O'Rourke & Hatcher, 2013).

financial well-being were still considered candidates for inclusion during the subsequent construct validation process.

Construct Validation via CFA

CFA is a covariance-based method that is used to test hypotheses about unobserved latent factors that may underlie measured variables. It thereby enhances understanding of data structures and can result in one or more latent factors whose relations to other variables can be estimated via structural equation modeling. In performing CFA, the researcher specifies the observed variables believed to reflect one or more latent factors then examines how well the specified structure fits the data. (Bandalos & Finney, 2010; Kline, 2005; O'Rourke & Hatcher, 2013)

To validate the factors that emerged from the PCA for objective financial situation and, separately, financial behavior and to confirm adequate fit to the data, we conducted confirmatory factor analysis in Mplus Version 8 (Muthén & Muthén, 1998 – 2017). We applied the study weights, used maximum likelihood estimation with robust standard errors, and invoked full information maximum likelihood estimation to address missing data. We evaluated model fit using the multiple indices and their thresholds as specified above, taking into consideration the strength of factor loadings (sufficient loadings defined as standardized coefficients of at least 0.40) and the variance explained.

We used a two-stage (higher-order) approach to CFA, which is appropriate given the notion that constructs such as objective financial situation and financial behavior are superordinate to and subsume multiple lower-order factors (e.g., financial resources and credit standing in the case of objective financial situation) that are reflected in observed variables (Bollen, 1989; Evans, 1999). In the first stage, we first estimated latent factors corresponding to the dimensions that emerged from PCA. The resulting first stage or "first-order" latent factors each represented a distinct aspect of the domain to which they belonged (i.e., objective financial situation or financial behavior). For each first order factor, we then calculated factor scores as weighted linear combination of the individual factor indicators where weights were proportional to the factor loadings.

In the second stage, we assessed whether the data supported a single "second order" latent factor for objective financial situation and, separately, financial behavior. Using the same confirmatory factor analytic procedures described above, we estimated these from the first-order factor scores as well as selected observed variables that did not load onto first-order factors but were highly correlated with and we deemed conceptually central to the construct. The second-order latent factors that emerged from this analysis were used in our structural equation models when estimating the associations of objective financial situation or financial behavior with financial well-being, financial skill, and financial knowledge.

Findings

Objective Financial Situation

The National Financial Well-Being Survey included 18 measures, presented in Exhibit C.1, that were related to objective financial situation. We used the PCA method described above to help identify which of these hung together to form latent factors.

Exhibit C.1: Measures of objective financial situation

Survey Item	Description	Included in Ultimate Latent Measure
Difficulty making ends meet	*In a typical month, how difficult is it for you to cover your expenses and pay all your bills?* Coded on a 3-point scale from 1=not at all difficult to 3=very difficult.	Yes
Liquid savings	Self-reported savings balance (in cash, checking, and savings accounts) – set to the midpoint of each survey response range: $0; $1-49; $50-99; $100-249; $250-499; $500-999; $1,000-1,999; $2,000-4,999; $5,000-9,999; $10,000-19,999; $20,000-49,999; $50,000-74,999; $75,000 or more. Missing values imputed using a simple stochastic imputation (see Appendix B).	Yes
Ability to absorb a negative financial shock	*How confident are you that you could come up with $2,000 in 30 days if an unexpected need arose within the next month?* Coded on a 4-point scale from 1= I am certain I could not to 4= I am certain I could.	Yes
Number of financial products	Count of traditional financial products owned (e.g., checking/savings account, retirement account, non-retirement investments)	Yes
Material hardship 1	*In the past 12 months, I worried whether our food would run out before I got money to buy more.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Material hardship 2	*In the past 12 months, the food that I bought just didn't last and I didn't have money to get more.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Material hardship 3	*In the past 12 months, I couldn't afford a place to live.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Material hardship 4	*In the past 12 months, I or someone in my household needed to see a doctor or go to the hospital but did not go because we couldn't afford it.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Material hardship 5	*In the past 12 months, I or someone in my household stopped taking a medication or took less than directed due to the costs.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Material hardship 6	*In the past 12 months, one or more of my utilities was shut off due to non-payment.* Coded on a 3-point scale from 1=never true to 3=often true.	Yes
Debt collection experience	Binary variable indicating whether the respondent had been contacted in the past year by a person or company trying to collect a past-due debt. Coded 1=yes, 0=no.	Yes
Credit rejection experience	Binary variable indicating whether the respondent had applied for credit and been turned down in the past year. Coded 1=yes, 0=no.	Yes
Credit rejection concerns	Binary variable indicating whether the respondent had decided not to apply for credit in the past year due to concerns about getting turned down. Coded 1=yes, 0=no.	Yes
Income volatility	*Which of the following best describes how your household's income changes from month to month, if at all?* Coded on a 3-point scale where 1= Roughly the same each month; 2= Roughly the same most months, but some unusually high or low months during the year; 3= Often varies quite a bit from one month to the next.	No
Number of alternative financial products used	Count of non-bank, short-term credit or non-bank transaction products used in the past year (e.g., payday loan, pawn loan, reloadable debit card not linked to a bank account, check cashing products or services)	No
Household SNAP participation	Binary variable indicating whether any household member has received benefits from the Supplemental Nutrition Assistance Program (SNAP) in the past year. Coded 1=yes, 0=no.	No
Home ownership	Binary variable indicating whether the respondent owns their home. Coded 1=yes, 0=no.	No

Survey Item	Description	Included in Ultimate Latent Measure
Housing cost	Monthly housing cost – set to the midpoint of each survey response range: Less than $300; $300-499; $500-749; $750-999; $1,000-1,499; $1,500-1,999; $2,000-2,999; $3,000-4,999; $5,000 or more	No

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

Principal Components Analysis

PCA resulted in a three-factor solution for objective financial situation, which is presented in Exhibit C.2. The first principal component was a measure of material hardship onto which all six material hardship variables loaded. The second was a measure of financial resources onto which the following items loaded: financial products, home ownership, liquid savings, and ability to absorb a negative financial shock. The third principal component was a measure of low credit standing onto which two variables related to credit rejection and one about debt collection loaded. Overall, the factors demonstrated acceptable reliability, and they accounted for between 25 and 46 percent of the variance in the data. Bivariate correlations among the resulting factors were all strong and statistically significant, ranging from -0.56 to 0.59 ($p < .001$).

Exhibit C.2: PCA-derived factor solution for objective financial situation

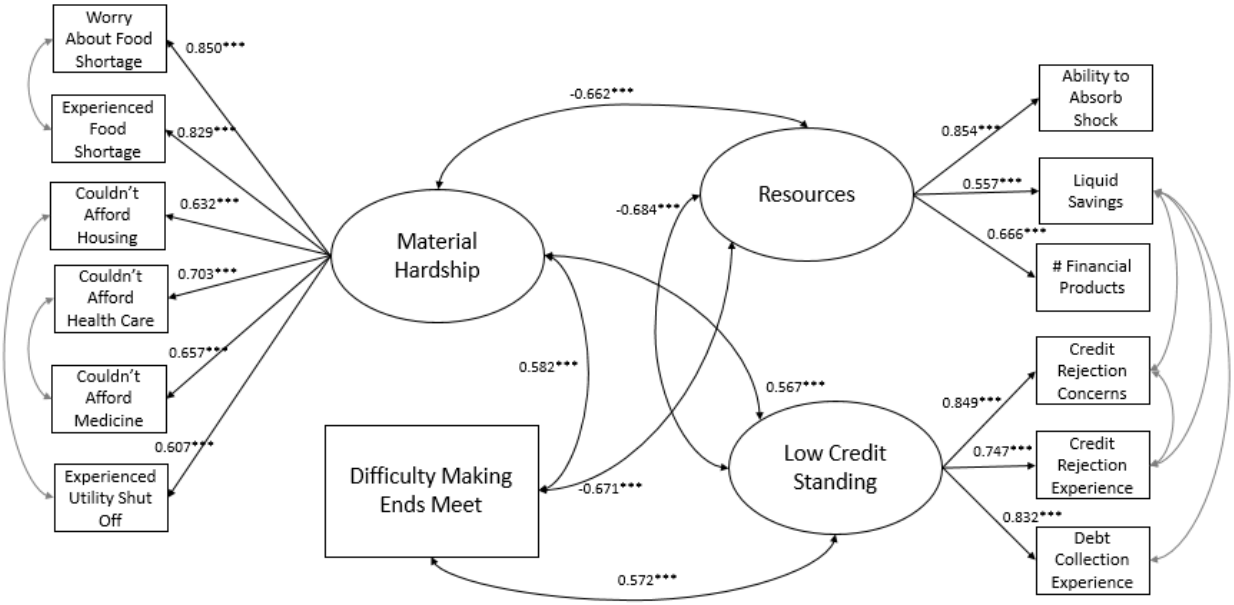
Item	Factor Loading		
	Factor 1 (Material Hardship)	Factor 2 (Resources)	Factor 3 (Low Credit Standing)
Material hardship 2 (food didn't last and couldn't afford more)	0.72	-0.09	0.07
Material hardship 5 (stopped/took less medication due to the costs)	0.70	0.10	0.04
Material hardship 4 (needed to go to doctor/ hospital but couldn't afford to)	0.69	0.04	0.06
Material hardship 1 (worried about food running out before having for more)	0.68	-0.11	0.11
Material hardship 6 (one or more utilities shut off due to non-payment)	0.67	0.03	-0.05
Material hardship 3 (couldn't afford a place to live)	0.66	-0.06	-0.08
Number of financial products owned	-0.05	0.76	0.10
Home ownership	0.01	0.59	0.01
Liquid savings	0.08	0.59	-0.06
Ability to absorb a financial shock (raise $2,000 in 30 days)	-0.10	0.55	-0.23
Credit rejection concerns (did not apply for credit for fear of being turned down)	-0.02	0.01	0.80
Credit rejection experience (applied for credit and was turned down)	0.00	0.00	0.62
Debt collection experience (contacted by debt collector)	0.11	-0.04	0.49
Variance Explained:	46%	29%	25%
Cronbach's Alpha:	0.87	0.69	0.75

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTES: N = 5,739. Factor loadings are presented as standardized regression coefficients. All variables standardized prior to analysis.

Confirmatory Factor Analysis

CFA validated the first-order factor solution for objective financial situation presented in Exhibit C.3. It consisted of a material hardship factor, a low credit standing factor, a resources factor, and a measure of difficulty making ends meet.[27] This result was consistent with findings from the PCA. The principal distinction was that relative to all other items, homeownership did not load strongly onto the resources factor and diminished the strength of the inter-factor correlations. As a result, homeownership was excluded from the model. As shown, the proposed items loaded strongly onto their designated factors, and all three factors were strongly correlated with each other and the making ends meet item. The measurement model demonstrated good fit: χ^2 (df) = 518.164 (53); RMSEA = 0.037; CFI = 0.962; TLI = 0.945; WRMR = 1.404.

Exhibit C.3: First-order measurement model for objective financial situation



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.

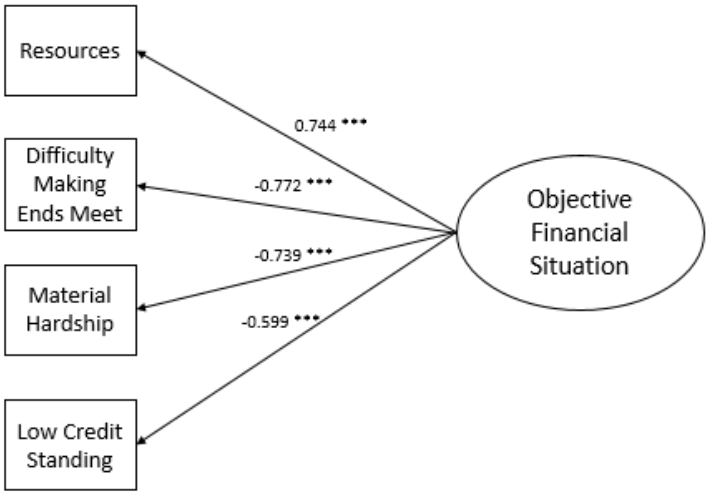
We then used CFA to examine whether a second-order objective financial situation factor subsumed the first-order factors for material hardship, low credit standing, and resources together with the difficulty making ends meet item. As shown in Exhibit C.4, the factor scores for the first-order factors and the making ends meet item all loaded strongly onto a single latent factor.[28] Resources had a positively-valenced factor loading, whereas material hardship, low credit standing, and difficulty making ends meet had negatively-valenced factor loadings. The measurement model demonstrated

[27] Although difficulty making ends meet did not load onto any of the factors derived from PCA, we tested it as an indicator of objective financial situation due to its high correlation with financial well-(r = 0.67, p < .001) and conceptual value for understanding objective financial situation.

[28] The use of factor scores for the first-order factors renders them "observed variables," and thus they are displayed as rectangles in our diagrams.

good fit: χ^2 (df) = 24.936 (2); RMSEA = 0.042; CFI = 0.994; TLI = 0.981; SRMR = 0.013. We used this measurement model in subsequent analyses involving objective financial situation.

Exhibit C.4: Second-order measurement model for objective financial situation



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,394. Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.

In summary, our analysis suggested that financial resources, difficulty making ends meet, material hardship, and low credit standing are multiple dimensions of a single higher-order latent construct, objective financial situation. This factor represented "positive" objective financial situation characterized by relatively high levels of resources (liquid savings, financial products, and ability to absorb financial shocks), low levels of difficulty making ends meet, low incidence of material hardship (low-levels of housing, medical, and food hardships), and low credit standing (as indicated by avoiding debt collection and experiencing credit rejection.)

Financial Behavior

The National Financial Well-Being Survey included 18 measures, presented in Exhibit C.5, that were related to financial behavior. We used the PCA method described above to help identify which of these hung together to form latent factors.

Exhibit C.5: Measures of financial behavior

Survey Item	Description	Included in Ultimate Latent Measure
Money management 1	*Paid all your bills on time.* Coded on a 5-point scale from 1=not applicable or never to 5=always.	Yes
Money management 2	*Stayed within your budget or spending plan.* Coded on a 5-point scale from 1=not applicable or never to 5=always.	Yes
Money management 3	*Paid off credit card balance in full each month.* Coded on a 5-point scale from 1=not applicable or never to 5=always.	Yes
Money management 4	*Checked your statements, bills and receipts to make sure there were no errors.* Coded on a 5-point scale from 1=not applicable or never to 5=always.	Yes

Survey Item	Description	Included in Ultimate Latent Measure
Follow-through 1	*I follow-through on my financial commitments to others.* Coded on a 5-point scale from 1=not at all to 5=completely.	Yes
Follow-through 2	*I follow-through on financial goals I set for myself.* Coded on a 5-point scale from 1=not at all to 5=completely.	Yes
Propensity to plan 1	*I consult my budget to see how much money I have left.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.	Yes
Propensity to plan 2	*I actively consider the steps I need to take to stick to my budget.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.	Yes
Propensity to plan 3	*I set financial goals for what I want to achieve with my money.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.	Yes
Propensity to plan 4	*I prepare a clear plan of action w/ detailed steps to achieve my financial goals.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.	Yes
Saving habit	*Putting money into savings is a habit for me.* Coded on a 5-point scale from 1=strongly disagree to 5=strongly agree.	Yes
Automated savings	Binary variable indicating automated deposits into a retirement or non-retirement savings account. Coded 1=yes, 0=no.	No
Cover costs	Set of binary variables indicating response to income not covering living costs (using savings, cutting back, earning more, and borrowing). Coded 1=yes, 0=no.	No
Role in household finances	Binary variable indicating role in household money management. Coded 1=someone else, 0=myself or myself and someone else.	No
Paid help	Binary variable indicating Paid help in money management. Coded 1=yes, 0=no.	No
Conducting research 1	*I do my own research before making decisions involving money.* Coded on a 5-point scale from 1= never to 5=always.	No
Conducting research 2	*I ask other people their opinions before making decisions involving money*. Coded on a 5-point scale from 1= never to 5=always.	No
Financial goals	Binary variable indicating having financial goals. Coded 1=yes, 0=no.	No

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

Principal Components Analysis

PCA resulted in a two-factor solution for financial behavior, which is presented in Exhibit C.6. The first principal component was a measure of financial planning behaviors onto which all four propensity to plan scale items loaded. The second principal component was a measure of financial management behaviors onto which all four financial management scale items loaded as well as two items measuring follow-through on financial commitments and goals. The factors demonstrated good reliability, and they each accounted for about half of the variance in the data. They were moderately correlated ($r = 0.47$, $p < .001$).

Exhibit C.6: PCA-derived factor solution for financial behavior

Item	Factor Loading	
	Factor 1 (Plan)	Factor 2 (Manage)
Propensity to plan 2 (actively considers steps needed to stick to budget)	0.86	-0.04
Propensity to plan 4 (prepares a clear plan of action for achieving financial goals)	0.77	0.03
Propensity to plan 1 (consults budget to see how much money left)	0.73	-0.10
Propensity to plan 3 (sets financial goals)	0.69	0.14
Money management 1 (pays all bills on time)	-0.10	0.73
Money management 3 (pays off credit card balance fully each month)	-0.13	0.70
Follow-through 1 (follows through on financial commitments to others)	0.01	0.61
Follow-through 2 (follows through on financial goals set for self)	0.23	0.59
Money management 2 (stays within budget)	0.24	0.56
Money management 4 (checks statements, bills and receipts for errors)	0.16	0.46
Variance Explained:	52%	48%
Cronbach's Alpha:	0.85	0.81

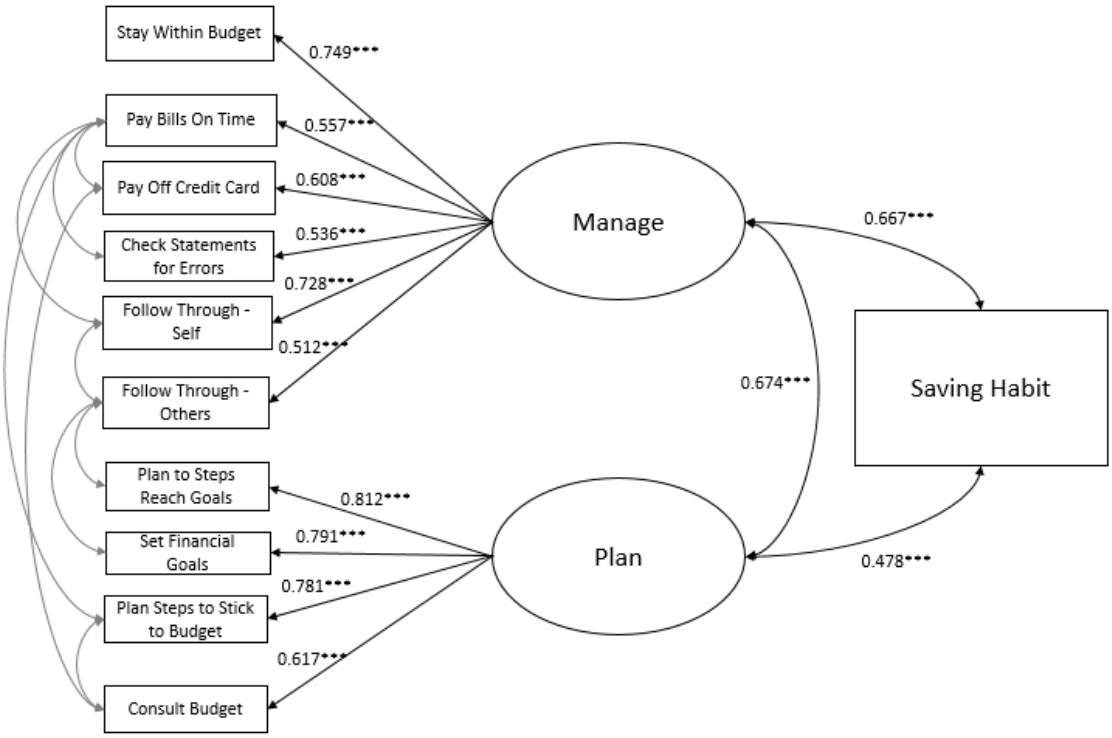
SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,356. Factor loadings are presented as standardized regression coefficients. All variables standardized prior to analysis.

Confirmatory Factor Analysis

CFA validated the first-order factor solution for financial behavior presented in Exhibit C.7. It consisted of a planning factor and a management factor, both identical to those derived from the PCA, as well as a measuring saving habits.[29] As shown, the proposed items loaded strongly onto their designated factors. The "manage" and "plan" factors were strongly correlated with each other and the savings habit item. The measurement model demonstrated good fit: χ^2 (df) = 671.858 (33); RMSEA = 0.055; CFI = 0.959; TLI = 0.931; SRMR = 0.037.

[29] Although savings habits did not load onto either of the factors derived from PCA, we tested it as an indicator of financial behavior due to its high correlation with financial well-being ($r = 0.50$, $p < .001$) and conceptual value for understanding financial behavior.

Exhibit C.7: First-order measurement model for financial behavior



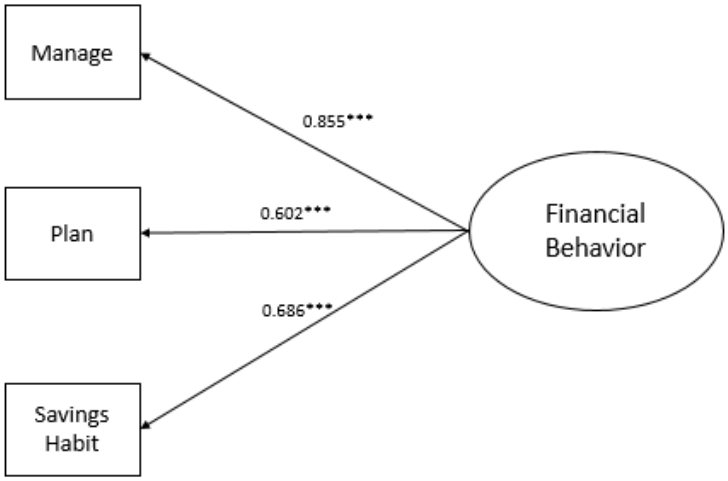
SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,390. Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.

We then used CFA to examine whether a second-order financial behavior factor subsumed the first-order factors for planning and management factor together with the savings habit item. As shown in Exhibit C.8, the factor scores for the first-order factors and the savings habit item all loaded strongly onto a single latent factor.[30] Management, planning, and savings habit all had a positively-valenced factor loadings. The measurement model demonstrated good fit: χ^2 (df) = 0.000 (0); RMSEA =0.000; CFI =1.000; TLI = 1.000; SRMR = 0.000. We used this measurement model in subsequent analyses involving financial behavior.

In summary, our analysis suggested that financial management, financial planning, and savings habits are multiple dimensions of a single higher-order construct, financial behavior. This factor represented "positive" financial behaviors indicative of high levels of money management tactics (attending to the details of budget and day-today financial affairs and following through on financial commitments), a propensity to plan around finances (charting a course to reach one's goals and stay on budget), and a tendency toward saving money.

[30] The use of factor scores for the first-order factors renders them observed variables, and thus they are displayed as rectangles in our diagrams.

Exhibit C.8: Second-order measurement model for financial behavior



SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 6,390. Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.

Appendix D: Selection of Controls

The National Financial Well-Being Survey included dozens of questions that could plausibly be associated with the study's core constructs and serve as controls. We used a multi-stage process to arrive at a parsimonious set with strong conceptual and statistical relations to our outcomes of interest. We identified a set of six control variables for use in our main analytic models and a set of 20 for use in sensitivity tests. (These were entered individually into our models as individual covariates, as opposed to being combined into latent variables). They are presented in Exhibit D.1 and the multi-stage process used to select them is described below.

First, we examined the bivariate correlations among financial well-being and all available variables in the personal traits, current opportunities, and financial socialization domains (see Appendix A, Exhibits A.7 – A.9). From among the possible variables, we selected key demographic characteristics (e.g., age, marital status, race/ethnicity), variables demonstrating moderate to strong correlations with financial well-being and the other core financial measures in our models (e.g., financial self-efficacy, self-control, perceived economic mobility), and variables we believed would strengthen our models given common-sense assumptions about their potential role in financial circumstances and/or Bureau's prior qualitative work (e.g., frugality, employer benefits, having a professional source of financial advice). To avoid potential issues with multicollinearity, where multiple candidates were conceptually related, we limited our selection to just one or two variables. For example, among the variables *age, retired, life expectancy, memory loss,* and *connectedness to future self,* we include only the first two. This resulted in a list of all 20 of the variables displayed in Exhibit D.1. (See Appendix A, Exhibit A.10 for descriptive statistics.)

The next step in selecting controls was to examine their performance in the structural equation models used to address our research questions. Note that due to the analytic demands of estimating multiple relations simultaneously, SEM and the software packages used in analysis tends to perform better with parsimonious models. In addition, many of the statistical indices used evaluate model fit penalize complexity over parsimony. Thus, it is generally advantageous to select controls judiciously to avoid problems with model convergence or fit. Our goal was to retain as many as possible without sacrificing model performance or fit.

We first fit models without any controls. We then ran our models with the full set of controls and examined the model fit. When all controls were included, our models generally demonstrated suboptimal fit on at least one of the standard model fit indices (fit indices and their thresholds are described in Section 2.4). Finally, we ran models with a reduced set of covariates designed to achieve optimal model fit. Membership in this reduced set is indicated in Exhibit 2.4 by the column labeled "in main models." Selection of the reduced set was based largely on the strength of associations with financial well-being and other key financial outcomes in the conceptual model. (See Appendix A, Exhibit A.1 for descriptive statistics.) We found that although the model fit was worse when the full set of controls was included, the pattern of relations among variables was robust to alternative specifications for the controls. Thus, we report results from models with the reduced set of covariates and also provide results from the models with the full set of covariates in Appendix F, designating them as sensitivity tests.

Exhibit D.1: Measures of personal traits, current opportunities, and financial socialization

Survey Item	Description	In Main Models	In Sensitivity Tests
Personal Traits			
Financial self-efficacy	Confidence in ability to meet personal financial goals. Coded on a 4-point scale from 1=not at all confident to 4=very confident.	Yes	Yes
Frugality	*If I can re-use an item I already have, there's no sense in buying something new.* Coded on a 6-point scale from 1=strongly disagree to 6=strongly agree.	Yes	Yes
Perceived economic mobility	Everyone has a fair chance at moving up the economic ladder. Coded on a 7-point scale from 1=strongly disagree to 7=strongly agree.	Yes	Yes
Self-control	Mean response on three statements related to self-control (*I often act without thinking through the alternatives; I am good at resisting temptation; I am able to work diligently toward long-term goals*). Each item was coded on a 4-point scale from 1=not at all to 4=completely well. The first item was reverse-coded before being averaged with the other two.	Yes	Yes
Age	Continuous variable indicating age in years at the time of the survey.		Yes
Discount/time preference	*If you had a choice, would you rather receive…?* Coded 0=$816 now, 1=$860 in three months.		Yes
Education level	Binary indicator of having a bachelors' degree or higher education. Coded 1=yes, 0=no.		Yes
Race/ethnicity	A set of binary indicators of race and Hispanic ethnicity: White non-Hispanic Black non-Hispanic, other race non-Hispanic, multiracial non-Hispanic, and Hispanic. Coded 1=yes, 0=no.		Yes
Sex	Binary indicator of being female. Coded 1=yes, 0=no.		Yes
Current Opportunities			
Income	Self-reported annual household income set to the midpoint of each survey response range: Less than $5,000; $5,000-7,499; $7,500-9,999; $10,000-12,499; $12,500-14,999; $15,000-19,999; $20,000-24,999; $25,000-29,999; $30,000-34,999; $35,000-39,999; $40,000-49,999; $50,000-59,999; $60,000-74,999; $75,000-84,999; $85,000-99,999; $100,000-124,999; $125,000-149,999; $150,000-174,999; $175,000-199,999; $200,000-249,999; $250,000 or more.	Yes	Yes
Retired	Binary indicator of being retired (and not otherwise employed, laid off, or unable to work). Coded 1=yes, 0=no.	Yes	Yes
Employed	Binary indicator of being employed (includes self-employment and full or part-time employment for an employer or the military). Coded 1=yes, 0=no.		Yes
Employer benefits	Count of employer benefits offered		Yes
Financially support children	Count of children supported financially		Yes
Marital status	Married. Coded 1=yes, 0=no.		Yes
Professional financial advice	Seek financial advice from a financial institution or professional advisor, planner, or counselor/coach. Coded 1=yes, 0=no.		Yes

Survey Item	Description	In Main Models	In Sensitivity Tests
Financial Socialization			
Family financial socialization	Respondent had one or more financial socialization experiences while growing up. Coded 1=yes, 0=no.		Yes

SOURCE: National Financial Well-Being Survey and Abt Associates analysis thereof.

Appendix E: Model Coefficients

Exhibit E.1: Coefficients for the model estimating the relation between financial well-being and objective financial situation

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.815	***	< 0.001	0.019
	Financial self-efficacy	0.096	***	< 0.001	0.015
	Frugality	-0.065	***	< 0.001	0.011
	Perceived economic mobility	0.048	***	< 0.001	0.011
	Self-control	0.052	***	< 0.001	0.013
	Income	-0.119	***	< 0.001	0.016
	Retired	0.012		0.290	0.011

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 436.667 (21); RMSEA = 0.056; CFI = 0.960, TLI = 0.923, SRMR = 0.021.

Exhibit E.2: Coefficients for the model estimating the relation between financial behavior and financial well-being

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Financial behavior	0.476	***	< 0.001	0.027
	Financial self-efficacy	0.170	***	< 0.001	0.019
	Frugality	-0.141	***	< 0.001	0.015
	Perceived economic mobility	0.073	***	< 0.001	0.012
	Self-control	0.004		0.809	0.016
	Income	0.201	***	< 0.001	0.013
	Retired	0.166	***	< 0.001	0.011

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 724.970 (14); RMSEA = 0.089; CFI = 0.919, TLI = 0.826, SRMR = 0.035.

Exhibit E.3: Coefficients for the model estimating the relations among financial behavior, objective financial situation, and financial well-being

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.806	***	< 0.001	0.017
	Financial self-efficacy	0.100	***	< 0.001	0.014
	Frugality	-0.064	***	< 0.001	0.011
	Perceived economic mobility	0.050	***	< 0.001	0.011
	Self-control	0.054	***	< 0.001	0.013
	Income	-0.115	***	< 0.001	0.016
	Retired	0.014		0.209	0.011
Objective financial situation					
	Financial behavior	0.601	***	< 0.001	0.029
	Financial self-efficacy	0.085	***	< 0.001	0.020
	Frugality	-0.097	***	< 0.001	0.016
	Perceived economic mobility	0.030	*	0.024	0.013
	Self-control	-0.063	***	< 0.001	0.017
	Income	0.390	***	< 0.001	0.016
	Retired	0.185	***	< 0.001	0.012

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 1407.840 (47); RMSEA = 0.067; CFI = 0.922; TLI = 0.873; SRMR = 0.044.

Exhibit E.4: Coefficients for the model estimating the relations among financial skill, financial knowledge, and financial behavior for the Houts and Knoll model and for the Lusardi and Mitchell model

Houts & Knoll Model						Lusardi & Mitchell Model					
Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error	Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial behavior						**Financial behavior**					
	Financial skill	0.430	***	< 0.001	0.018		**Financial skill**	0.431	***	< 0.001	0.018
	Financial knowledge	0.033	**	0.009	0.013		**Financial knowledge**	0.030	*	0.016	0.012
	Financial self-efficacy	0.318	***	< 0.001	0.017		Financial self-efficacy	0.319	***	< 0.001	0.017
	Frugality	0.163	***	< 0.001	0.015		Frugality	0.164	***	< 0.001	0.015
	Perceived economic mobility	0.057	***	< 0.001	0.012		Perceived economic mobility	0.057	***	< 0.001	0.012
	Self-control	0.136	***	< 0.001	0.015		Self-control	0.136	***	< 0.001	0.015
	Income	0.063	***	< 0.001	0.013		Income	0.067	***	< 0.001	0.012
	Retired	0.115	***	< 0.001	0.010		Retired	0.117	***	< 0.001	0.010

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
HOUTS & KNOLL MODEL FIT: $\chi 2$ (df) = 648.703 (16); RMSEA = 0.079; CFI = 0.910, TLI = 0.849, SRMR = 0.034.
LUSARDI & MITCHELL MODEL FIT: $\chi 2$ (df) = 568.568 (16); RMSEA = 0.073; CFI = 0.920, TLI = 0.865, SRMR = 0.030.

Exhibit E.5: Coefficients for the model estimating the relations among financial skill, financial behavior, objective financial situation, and financial well-being

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.820	***	< 0.001	0.018
	Financial self-efficacy	0.093	***	< 0.001	0.014
	Frugality	-0.065	***	< 0.001	0.011
	Perceived economic mobility	0.048	***	< 0.001	0.011
	Self-control	0.053	***	< 0.001	0.013
	Income	-0.123	***	< 0.001	0.016
	Retired	0.009		0.413	0.012
Objective financial situation					
	Financial behavior	0.546	***	< 0.001	0.027
	Financial self-efficacy	0.114	***	< 0.001	0.019
	Frugality	-0.085	***	< 0.001	0.016
	Perceived economic mobility	0.035	**	0.008	0.013
	Self-control	-0.049	**	0.002	0.016
	Income	0.400	***	< 0.001	0.016
	Retired	0.194	***	< 0.001	0.012
Financial behavior					
	Financial skill	0.398	***	< 0.001	0.018
	Financial self-efficacy	0.324	***	< 0.001	0.016
	Frugality	0.166	***	< 0.001	0.014
	Perceived economic mobility	0.051	***	< 0.001	0.012
	Self-control	0.139	***	< 0.001	0.014
	Income	0.083	***	< 0.001	0.012
	Retired	0.130	***	< 0.001	0.010

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 1666.253 (54); RMSEA = 0.068; CFI = 0.911, TLI = 0.862, SRMR = 0.045.

Appendix F: Sensitivity Tests with the Full Set of Controls

Exhibit F.1: Coefficients for the model estimating the relation between financial well-being and objective financial situation, including the full set of covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.996	***	< 0.001	0.033
	Financial self-efficacy	0.086	***	< 0.001	0.017
	Frugality	-0.051	***	< 0.001	0.012
	Perceived economic mobility	0.044	***	< 0.001	0.012
	Self-control	0.058	***	< 0.001	0.013
	Income	-0.079	***	< 0.001	0.017
	Retired	-0.001		0.939	0.018
	Age	-0.100	***	< 0.001	0.017
	Discount/time preference	-0.034	**	0.006	0.012
	Education level (Bachelor's)	-0.065	***	< 0.001	0.012
	Black, non-Hispanic	0.100	***	< 0.001	0.012
	Hispanic	0.094	***	< 0.001	0.012
	Multi-racial, non-Hispanic	0.025		0.065	0.014
	Other race, non-Hispanic	-0.003		0.825	0.013
	Female	0.008		0.474	0.011
	Employed	-0.056	***	< 0.001	0.015
	Employer benefits	-0.144	***	< 0.001	0.015
	Financially supported children	-0.009		0.474	0.013
	Married	-0.014		0.270	0.013
	Professional financial advice	-0.069	***	0.000	0.011
	Family financial socialization	-0.015		0.192	0.011

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 1037.236 (63); RMSEA = 0.049; CFI = 0.922, TLI = 0.864, SRMR = 0.021.

Exhibit F.2: Coefficients for the model estimating the relation between financial behavior and financial well-being, including the full set of covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Financial behavior	0.439	***	< 0.001	0.028
	Financial self-efficacy	0.167	***	< 0.001	0.018
	Frugality	-0.140	***	< 0.001	0.014
	Perceived economic mobility	0.083	***	< 0.001	0.012
	Self-control	0.005		0.744	0.016
	Income	0.169	***	< 0.001	0.015
	Retired	0.100	***	< 0.001	0.018
	Age	0.076	***	< 0.001	0.016
	Discount/time preference	0.062	***	< 0.001	0.012
	Education level (Bachelor's)	0.023	*	0.041	0.011
	Black, non-Hispanic	0.022		0.074	0.012
	Hispanic	-0.011		0.415	0.013
	Multi-racial, non-Hispanic	-0.004		0.757	0.013
	Other race, non-Hispanic	-0.030	*	0.030	0.014

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
	Female	-0.024	*	0.023	0.011
	Employed	-0.009		0.570	0.017
	Employer benefits	0.034	*	0.011	0.014
	Financially supported children	-0.041	**	0.002	0.013
	Married	0.037	**	0.003	0.013
	Professional financial advice	0.009		0.416	0.011
	Family financial socialization	-0.001		0.923	0.012

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 1098.603 (42); RMSEA = 0.063; CFI = 0.894, TLI = 0.783, SRMR = 0.024.

Exhibit F.3: Coefficients for the model estimating the relations among financial behavior, objective financial situation, and financial well-being, including the full set of covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.977	***	< 0.001	0.027
	Financial self-efficacy	0.091	***	< 0.001	0.015
	Frugality	-0.050	***	< 0.001	0.012
	Perceived economic mobility	0.046	***	< 0.001	0.012
	Self-control	0.060	***	< 0.001	0.013
	Income	-0.074	***	< 0.001	0.016
	Retired	0.001		0.945	0.018
	Age	-0.096	***	< 0.001	0.016
	Discount/time preference	-0.031	**	0.009	0.012
	Education level (Bachelor's)	-0.064	***	< 0.001	0.012
	Black, non-Hispanic	0.098	***	< 0.001	0.012
	Hispanic	0.093	***	< 0.001	0.012
	Multi-racial, non-Hispanic	0.024		0.069	0.013
	Other race, non-Hispanic	-0.003		0.807	0.013
	Female	0.007		0.487	0.010
	Employed	-0.055	***	< 0.001	0.015
	Employer benefits	-0.140	***	< 0.001	0.014
	Financially supported children	-0.011		0.414	0.013
	Married	-0.013		0.300	0.012
	Professional financial advice	-0.067	***	< 0.001	0.011
	Family financial socialization	-0.014		0.215	0.011
Objective financial situation					
	Financial behavior	0.461	***	< 0.001	0.026
	Financial self-efficacy	0.074	***	< 0.001	0.017
	Frugality	-0.094	***	< 0.001	0.012
	Perceived economic mobility	0.038	**	0.001	0.011
	Self-control	-0.059	***	< 0.001	0.014
	Income	0.248	***	< 0.001	0.015
	Retired	0.101	***	< 0.001	0.017
	Age	0.173	***	< 0.001	0.015
	Discount/time preference	0.094	***	< 0.001	0.012
	Education level (Bachelor's)	0.088	***	< 0.001	0.011
	Black, non-Hispanic	-0.076	***	< 0.001	0.011
	Hispanic	-0.106	***	< 0.001	0.012
	Multi-racial, non-Hispanic	-0.028		0.073	0.016

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
	Other race, non-Hispanic	-0.027		0.063	0.015
	Female	-0.033	**	0.001	0.010
	Employed	0.046	**	0.003	0.015
	Employer benefits	0.177	***	< 0.001	0.013
	Financially supported children	-0.030	**	0.007	0.011
	Married	0.051	***	< 0.001	0.012
	Professional financial advice	0.077	***	< 0.001	0.010
	Family financial socialization	0.013		0.265	0.011

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
MODEL FIT: $\chi 2$ (df) = 2289.596 (117); RMSEA = 0.054; CFI = 0.893; TLI = 0.828; SRMR = 0.032.

Exhibit F.4: Coefficients for the model estimating the relations among financial skill, financial knowledge, and financial behavior for the Houts and Knoll model and for the Lusardi and Mitchell model, including the full set of covariates

Houts & Knoll Model						Lusardi & Mitchell Model					
Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error	Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial behavior						Financial behavior					
	Financial skill	0.432	***	< 0.001	0.017		**Financial skill**	0.432	***	< 0.001	0.017
	Financial knowledge	-0.011		0.424	0.014		**Financial knowledge**	-0.010		0.435	0.012
	Financial self-efficacy	0.300	***	< 0.001	0.016		Financial self-efficacy	0.299	***	< 0.001	0.016
	Frugality	0.144	***	< 0.001	0.015		Frugality	0.144	***	< 0.001	0.015
	Perceived economic mobility	0.038	**	0.002	0.012		Perceived economic mobility	0.038	**	0.002	0.012
	Self-control	0.123	***	< 0.001	0.014		Self-control	0.123	***	< 0.001	0.014
	Income	0.022		0.127	0.014		Income	0.021		0.145	0.014
	Retired	0.045	**	0.004	0.016		Retired	0.045	**	0.004	0.016
	Age	0.112	***	< 0.001	0.015		Age	0.112	***	< 0.001	0.015
	Discount/time preference	0.076	***	< 0.001	0.011		Discount/time preference	0.076	***	< 0.001	0.011
	Education level (Bachelor's)	0.003		0.747	0.011		Education level (Bachelor's)	0.003		0.799	0.011
	Black, non-Hispanic	-0.071	***	< 0.001	0.013		Black, non-Hispanic	-0.070	***	< 0.001	0.012
	Hispanic	0.071	***	< 0.001	0.013		Hispanic	0.071	***	< 0.001	0.013
	Multi-racial, non-Hispanic	-0.006		0.648	0.013		Multi-racial, non-Hispanic	-0.006		0.643	0.013
	Other race, non-Hispanic	0.037	**	0.005	0.013		Other race, non-Hispanic	0.037	**	0.005	0.013
	Female	0.045	***	< 0.001	0.010		Female	0.046	***	< 0.001	0.010
	Employed	0.018		0.254	0.016		Employed	0.018		0.251	0.016
	Employer benefits	0.056	***	< 0.001	0.013		Employer benefits	0.056	***	< 0.001	0.013
	Financially supported children	-0.057	***	< 0.001	0.012		Financially supported children	-0.057	***	< 0.001	0.012
	Married	0.032	**	0.005	0.011		Married	0.032	**	0.005	0.011
	Professional financial advice	0.054	***	< 0.001	0.010		Professional financial advice	0.054	***	< 0.001	0.010
	Family financial socialization	0.036	**	0.002	0.012		Family financial socialization	0.036	**	0.002	0.012

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.

NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.
HOUTS & KNOLL MODEL FIT: $\chi 2$ (df) = 963.902 (44); RMSEA = 0.057; CFI = 0.885, TLI = 0.819, SRMR = 0.024.
LUSARDI & MITCHELL MODEL FIT: $\chi 2$ (df) = 931.980 (44); RMSEA = 0.056; CFI = 0.888, TLI = 0.824, SRMR = 0.023.

Exhibit F.5: Coefficients for the model estimating the relations among financial skill, financial behavior, objective financial situation, and financial well-being, including the full set of covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	1.006	***	< 0.001	0.029
	Financial self-efficacy	0.081	***	< 0.001	0.016
	Frugality	-0.050	***	< 0.001	0.012
	Perceived economic mobility	0.044	***	< 0.001	0.012
	Self-control	0.058	***	< 0.001	0.013
	Income	-0.083	***	< 0.001	0.017
	Retired	-0.003		0.877	0.018
	Age	-0.102	***	< 0.001	0.017
	Discount/time preference	-0.035	**	0.004	0.012
	Education level (Bachelor's)	-0.066	***	< 0.001	0.012
	Black, non-Hispanic	0.102	***	< 0.001	0.013
	Hispanic	0.095	***	< 0.001	0.012
	Multi-racial, non-Hispanic	0.025		0.066	0.014
	Other race, non-Hispanic	-0.003		0.829	0.013
	Female	0.008		0.465	0.011
	Employed	-0.056	***	< 0.001	0.015
	Employer benefits	-0.146	***	< 0.001	0.015
	Financially supported children	-0.008		0.517	0.013
	Married	-0.015		0.244	0.013
	Professional financial advice	-0.070	***	< 0.001	0.011
	Family financial socialization	-0.015		0.191	0.011
Objective financial situation					
	Financial behavior	0.417	***	< 0.001	0.016
	Financial self-efficacy	0.096	***	< 0.001	0.012
	Frugality	-0.085	***	< 0.001	0.015
	Perceived economic mobility	0.042	***	< 0.001	0.011
	Self-control	-0.047	***	< 0.001	0.015
	Income	0.251	***	< 0.001	0.011
	Retired	0.103	***	< 0.001	0.011
	Age	0.177	***	< 0.001	0.017
	Discount/time preference	0.099	***	< 0.001	0.013
	Education level (Bachelor's)	0.089	***	< 0.001	0.015
	Black, non-Hispanic	-0.078	***	< 0.001	0.015
	Hispanic	-0.102	***	< 0.001	0.016
	Multi-racial, non-Hispanic	-0.028		0.070	0.012
	Other race, non-Hispanic	-0.025		0.083	0.016
	Female	-0.031	**	0.002	0.011
	Employed	0.047	**	0.002	0.011
	Employer benefits	0.181	***	< 0.001	0.014
	Financially supported children	-0.034	**	0.002	0.010
	Married	0.052	***	< 0.001	0.011
	Professional financial advice	0.081	***	< 0.001	0.012
	Family financial socialization	0.015		0.197	0.010
Financial behavior					
	Financial skill	0.412	***	< 0.001	0.017
	Financial self-efficacy	0.301	***	< 0.001	0.016
	Frugality	0.141	***	< 0.001	0.014
	Perceived economic mobility	0.037	**	0.002	0.012
	Self-control	0.123	***	< 0.001	0.013

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
	Income	0.023		0.102	0.014
	Retired	0.047	**	0.002	0.015
	Age	0.114	***	< 0.001	0.015
	Discount/time preference	0.076	***	< 0.001	0.011
	Education level (Bachelor's)	0.004		0.703	0.010
	Black, non-Hispanic	-0.074	***	< 0.001	0.012
	Hispanic	0.066	***	< 0.001	0.012
	Multi-racial, non-Hispanic	-0.008		0.530	0.013
	Other race, non-Hispanic	0.036	**	0.006	0.013
	Female	0.046	***	< 0.001	0.010
	Employed	0.018		0.267	0.016
	Employer benefits	0.054	***	< 0.001	0.013
	Financially supported children	-0.057	***	< 0.001	0.012
	Married	0.032	**	0.005	0.011
	Professional financial advice	0.052	***	< 0.001	0.010
	Family financial socialization	0.035	**	0.003	0.012

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: Standardized coefficients presented. * p < .05. ** p < .01. *** p < .001.

Appendix G: Pathways to Financial Well-Being Among Older Adults

In this appendix, we present an analysis of the potential pathways to financial well-being among older adults (ages 62 and older) in the U.S. Specifically, the analysis seeks to understand whether the pathways observed among the U.S. adult population, presented in Section 3 of this report, hold true for the older adult subpopulation. Among the overall adult population, financial skill is positively related to financial behavior; financial behavior, in turn, is positively related to objective financial situation; and objective financial situation, in turn, is positively related to financial well-being. We wondered, *do the pathways to financial well-being observed in the U.S. adult population fit the older adult subpopulation?* To address the question, we used structural equation modeling techniques to obtain estimates for the older adult subpopulation and compared the model fit and path coefficients to those for the overall U.S. adult population.

We used the same analytic method described in Section 2.4 to estimate three structural models simultaneously.

- We regressed financial well-being on the second-order objective financial situation factor;
- We regressed objective financial situation on the second-order financial behavior factor; and
- We regressed financial behavior on financial skill.

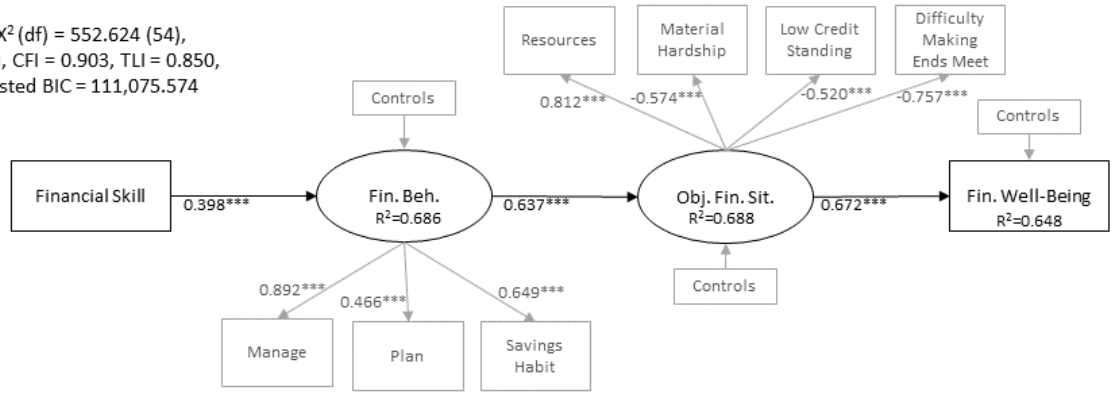
In each regression model, we included the same six covariates used when modeling pathways for the overall adult population (see Sections 2.3.6 and 3.4). Namely, we controlled for financial self-efficacy, frugality, perceived economic mobility, self-control, income, and retired.

Findings are presented in Exhibit G.1. The overall fit for the model was adequate: $\chi 2$ (df) = 552.624 (54); RMSEA = 0.064; CFI = 0.903, TLI = 0.850, SRMR = 0.044. The observed relation between financial well-being and objective financial situation was strong ($\beta = 0.672$, $p < .001$) as was the relation between objective financial situation and financial behavior ($\beta = 0.688$, $p < .001$) and the relation between financial behavior and financial skill ($\beta = 0.398$, $p < .001$). (Coefficients for all variables modeled, including controls, are presented in Exhibit G.2.) Overall, the model accounted for 65 percent of the variance in financial well-being, 69 percent of the variance in objective financial situation, and 69 percent of the variance in financial behavior. These results are consistent with a model for the older adult subpopulation where the pathway to financial well-being may begin with good financial skills, which are related to more positive financial behaviors, which in turn, are associated with a better objective financial situation, which then is related to higher levels of financial well-being.

Exhibit G.1 Pathways to financial well-being for older adults, compared to the U.S. adult population

Older Adults

Model Fit Statistics: Model N = 2,253, X^2 (df) = 552.624 (54), RMSEA (90% CI) = 0.064 (0.059 - 0.069), CFI = 0.903, TLI = 0.850, SRMR = 0.044, AIC = 110,869.603, adjusted BIC = 111,075.574



All U.S. Adults

Model Fit Statistics: Model N =6,394 , X^2 (df) = 1666.253 (54), RMSEA (90% CI) = 0.068 (0.066 - 0.071), CFI = 0.911, TLI = 0.862, SRMR = 0.045, AIC = 328,944.520, adjusted BIC = 329,492.332

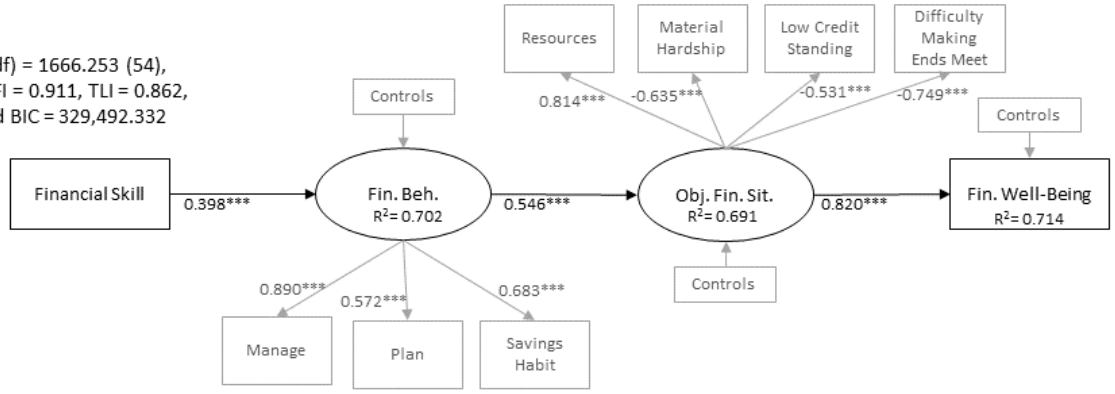


Exhibit G.2: Coefficients for the pathway to financial well-being among older adults

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.672	***	< 0.001	0.032
	Financial self-efficacy	0.129	***	< 0.001	0.024
	Frugality	-0.048	*	0.018	0.020
	Perceived economic mobility	0.042	*	0.026	0.019
	Self-control	0.083	***	< 0.001	0.021
	Income	0.021		0.395	0.025
	Retired	0.007		0.727	0.019
Objective financial situation					
	Financial behavior	0.637	***	< 0.001	0.051
	Financial self-efficacy	0.074		0.092	0.044
	Frugality	-0.079	***	< 0.001	0.022
	Perceived economic mobility	-0.017		0.433	0.022
	Self-control	-0.056	*	0.039	0.027
	Income	0.336	***	< 0.001	0.025
	Retired	0.081	***	< 0.001	0.023
Financial behavior					
	Financial skill	0.398	***	< 0.001	0.028
	Financial self-efficacy	0.381	***	< 0.001	0.028
	Frugality	0.104	***	< 0.001	0.025
	Perceived economic mobility	0.029		0.167	0.021
	Self-control	0.119	***	< 0.001	0.025
	Income	0.078	***	< 0.001	0.017
	Retired	0.087	***	< 0.001	0.019

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 2,253. Standardized coefficients presented. * $p < .05$. ** $p < .01$. *** $p < .001$.
MODEL FIT: χ^2 (df) = 552.624 (54); RMSEA = 0.064; CFI = 0.903, TLI = 0.850, SRMR = 0.044.

To check the sensitivity of results to alternative specifications, we ran the model using two alternate sets of control variables. In the first sensitivity test, as was done for the overall U.S. adult population (see Appendix F), we expanded the set of covariates to control for the following background characteristics: race/ethnicity, sex (female), age, marital status (married), education level (Bachelor's degree), employment, employer benefits, discount/time preference, financially supporting children, having a professional source of financial advice, and family financial socialization. These additional covariates were selected based on the strength of their associations with the core variables among the overall U.S. adult population. They were included in models alongside the six covariates used in the main analysis (i.e., financial self-efficacy, annual household income, self-control, perceived economic mobility, retired, and frugality). Results for this sensitivity test are presented in Exhibit G.3.

The second sensitivity test incorporated a set of covariates selected specifically for the older adults analysis based on the strength of their associations with the core variables among the subset of older adults in our sample. They were: financial self-efficacy, annual household income, life stress, positive life outlook, employment, housing satisfaction, subjective numeracy (being good with percentages), positive outlook on work opportunities, frugality, materialism (success dimension), having friends or coworkers as a source of financial advice, race/ethnicity (white non-Hispanic), perceived economic mobility, having a financial planning horizon of at least five years, region of residence at age 17 (northeastern U.S.), and belief that financial capability is fixed (not changeable). Results are presented in Exhibit G.4.

For both sensitivity tests, the quality of model fit and the pattern of relationships among the core variables are similar to those observed among the U.S. adult population. Comparing the results for the older adult subpopulation to those for the U.S. adult population, we find that patterns of associations among financial skill, financial behavior, objective financial situation, and financial well-being for older adults is generally consistent with that for adults of all ages. In both sensitivity tests, we observe a strong association between financial skill and financial behavior. Similarly, both suggest a strong association between financial behavior and objective financial situation. Finally, in both, we also observe a strong association between financial well-being and objective financial situation, although the association appears to be stronger in the broader U.S. adult population. We conclude that the pattern and strength of the associations observed among the core variables are robust to alternative specifications of the covariates.

In summary, we tested whether the pathway to financial well-being observed in the U.S. adult population fits the older adult subpopulation. Overall, the results suggest it does so reasonably well. Additional exploration of any pathways specific to older adult and reasons for the potential differences in the strengths of the association between objective financial situation and financial well-being are worthy targets for future studies.

Exhibit G.3: Coefficients from sensitivity test with the expanded set of covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.827	***	< 0.001	0.043
	Financial self-efficacy	0.121	***	< 0.001	0.025
	Frugality	-0.037		0.066	0.020
	Perceived economic mobility	0.034		0.057	0.018
	Self-control	0.083	***	< 0.001	0.021
	Income	0.056	*	0.028	0.026
	Retired	-0.088	*	0.014	0.036
	Age	-0.005		0.805	0.022
	Discount/time preference	-0.037		0.057	0.020
	Education level (Bachelor's degree)	-0.026		0.134	0.017
	Black, non-Hispanic	0.114	***	< 0.001	0.022
	Hispanic	0.122	***	< 0.001	0.024
	Multi-racial, non-Hispanic	0.019		0.265	0.017
	Other race, non-Hispanic	-0.018		0.325	0.018
	Female	-0.024		0.184	0.018
	Employed	-0.118	***	< 0.001	0.032
	Employer benefits	-0.084	***	< 0.001	0.021
	Financially support children	0.000		0.994	0.020
	Married	-0.031		0.103	0.019
	Professional financial advice	-0.082	***	< 0.001	0.019
	Family financial socialization	-0.008		0.683	0.020
Objective financial situation					
	Financial behavior	0.527	***	< 0.001	0.050
	Financial self-efficacy	0.057		0.135	0.038
	Frugality	-0.074	***	< 0.001	0.020
	Perceived economic mobility	-0.003		0.867	0.020
	Self-control	-0.048		0.058	0.025
	Income	0.206	***	< 0.001	0.022

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
	Retired	0.129	**	0.001	0.037
	Age	0.053	*	0.024	0.023
	Discount/time preference	0.072	**	0.001	0.022
	Education level (Bachelor's degree)	0.051	**	0.002	0.016
	Black, non-Hispanic	-0.090	***	< 0.001	0.021
	Hispanic	-0.146	***	< 0.001	0.030
	Multi-racial, non-Hispanic	-0.060	**	0.006	0.022
	Other race, non-Hispanic	-0.009		0.729	0.025
	Female	-0.003		0.866	0.019
	Employed	0.095	**	0.005	0.034
	Employer benefits	0.140	***	< 0.001	0.021
	Financially support children	0.012		0.495	0.018
	Married	0.064	**	0.002	0.021
	Professional financial advice	0.097	***	< 0.001	0.021
	Family financial socialization	0.010		0.627	0.021
Financial behavior					
	Financial skill	0.416	***	< 0.001	0.027
	Financial self-efficacy	0.336	***	< 0.001	0.027
	Frugality	0.092	***	< 0.001	0.024
	Perceived economic mobility	0.017		0.391	0.020
	Self-control	0.106	***	< 0.001	0.024
	Income	0.015		0.413	0.018
	Retired	0.023		0.484	0.033
	Age	0.099	***	< 0.001	0.022
	Discount/time preference	0.051	**	0.004	0.018
	Education level (Bachelor's degree)	0.000		0.988	0.015
	Black, non-Hispanic	-0.106	***	< 0.001	0.022
	Hispanic	-0.022		0.435	0.028
	Multi-racial, non-Hispanic	-0.028		0.068	0.016
	Other race, non-Hispanic	-0.007		0.772	0.023
	Female	0.049	**	0.006	0.018
	Employed	-0.022		0.476	0.031
	Employer benefits	0.063	***	< 0.001	0.018
	Financially support children	-0.070	*	0.017	0.029
	Married	0.066	**	0.001	0.019
	Professional financial advice	0.079	***	< 0.001	0.017
	Family financial socialization	0.029		0.205	0.023

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 2,253. Standardized coefficients presented. * $p < .05$. ** $p < .01$. *** $p < .001$.
MODEL FIT: χ^2 (df) = 819.878 (124); RMSEA = 0.050; CFI = 0.886, TLI = 0.820, SRMR = 0.030.

Exhibit G.4: Coefficients from sensitivity test with older adult-specific covariates

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
Financial well-being					
	Objective financial situation	0.664	***	< 0.001	0.034
	Financial self-efficacy	0.102	***	< 0.001	0.023
	Frugality	-0.031		0.111	0.019
	Perceived economic mobility	0.013		0.484	0.018
	Income	0.028		0.215	0.023
	White, non-Hispanic	-0.107	***	< 0.001	0.021
	Employed	-0.057	***	< 0.001	0.015
	Life stress	-0.086	***	< 0.001	0.020
	Positive life outlook	0.100	***	< 0.001	0.024
	Housing satisfaction	0.035		0.075	0.020
	Subjective numeracy	-0.005		0.788	0.018
	Positive outlook on work opportunities	0.052	**	0.007	0.019
	Materialism (success dimension)	-0.004		0.800	0.018
	Financial advice from friends/coworkers	0.031		0.086	0.018
	Financial planning horizon (5+ years)	-0.015		0.373	0.017
	Resided in northeastern U.S. at age 17	-0.005		0.787	0.018
	Believe financial capability is fixed	-0.026		0.163	0.019
Objective financial situation					
	Financial behavior	0.540	***	< 0.001	0.047
	Financial self-efficacy	0.063		0.111	0.040
	Frugality	-0.087	***	< 0.001	0.022
	Perceived economic mobility	-0.030		0.149	0.021
	Income	0.288	***	< 0.001	0.022
	White, non-Hispanic	0.155	***	< 0.001	0.026
	Employed	0.015		0.421	0.018
	Life stress	-0.056	*	0.015	0.023
	Positive life outlook	0.025		0.353	0.026
	Housing satisfaction	0.059	*	0.030	0.027
	Subjective numeracy	-0.025		0.298	0.024
	Positive outlook on work opportunities	0.004		0.863	0.024
	Materialism (success dimension)	-0.021		0.376	0.024
	Financial advice from friends/coworkers	-0.004		0.828	0.020
	Financial planning horizon (5+ years)	-0.101	***	< 0.001	0.019
	Resided in northeastern U.S. at age 17	0.004		0.835	0.020
	Believe financial capability is fixed	-0.048	*	0.018	0.020
Financial behavior					
	Financial skill	0.399	***	< 0.001	0.026
	Financial self-efficacy	0.366	***	< 0.001	0.028
	Frugality	0.109	***	< 0.001	0.024
	Perceived economic mobility	0.002		0.915	0.021
	Income	0.049	**	0.006	0.018
	White, non-Hispanic	0.109	***	< 0.001	0.022
	Employed	-0.044	*	0.010	0.017
	Life stress	-0.028		0.170	0.020
	Positive life outlook	0.054		0.085	0.032
	Housing satisfaction	0.069	**	0.003	0.023
	Subjective numeracy	0.055	*	0.021	0.024

Dependent Variable	Independent Variable	Coefficient	Stars	*p* Value	Standard Error
	Positive outlook on work opportunities	-0.033		0.110	0.021
	Materialism (success dimension)	0.011		0.581	0.020
	Financial advice from friends/coworkers	-0.029		0.146	0.020
	Financial planning horizon (5+ years)	-0.036	*	0.032	0.017
	Resided in northeastern U.S. at age 17	0.019		0.342	0.020
	Believe financial capability is fixed	0.054	**	0.004	0.019

SOURCE: Abt Associates calculations based on National Financial Well-Being Survey data.
NOTE: N = 2,253. Standardized coefficients presented. * $p < .05$. ** $p < .01$. *** $p < .001$.
MODEL FIT: χ^2 (df) = 763.508 (104); RMSEA = 0.053; CFI = 0.892, TLI = 0.829, SRMR = 0.033.