# The Financial Management Behavior Scale: Development and Validation

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*Although research on financial management behavior is common, few financial management behavior scales exist that are simultaneously multi-dimensional, psychometrically validated, and validated using nationally representative data. Using data from a nationally representative sample of adults, this study developed and examined the psychometric properties of a new scale of financial management behaviors. The Financial Management Behavior Scale (FMBS) displayed adequate reliability (alpha = .81). The FMBS was highly associated with other measures of financial management behaviors and was predictive of participants' actual levels of savings and consumer debt. These findings suggest that the full FMBS is a reliable and valid measure of financial management behaviors, though the subscales need refinement.*

*Key Words: financial behavior, measurement, psychometrics*

## Introduction

Individuals in the U.S. engage in financial behaviors nearly every day and these behaviors influence their financial well-being. For example, the more consumer credit households assume, the more likely they are to default on their loans and the less likely they are to have established an individual retirement account (IRA) (Bernstein, 2004; Sullivan, 1987). Thus, of necessity, personal finance researchers and financial planners and counselors measure financial management behaviors.

Unfortunately, few validated financial management behavior scales exist. Researchers typically use proxies of financial management behavior such as actual levels of consumer debt (e.g., Bernstein, 2004; Sullivan, 1987) rather than assessing the behaviors themselves. Although some scales do exist, most lack one (or more) of the following three characteristics: assessment of multiple domains of financial management behavior (Xiao, 2008), psychometric validation, and validation using a nationally representative sample of adults. In other words, many scales measure only one or two dimensions of financial management behavior; few have been subjected to tests of validity that examine whether they measure what they purport to measure, and those that have been validated have used non-representative samples.

A comprehensive and psychometrically strong measure of financial management behaviors could assist researchers and practitioners in many fields. For example, in addition to the obvious financial benefits, sound financial management behaviors have both personal and interpersonal consequences. Consumer debt levels are positively related to anxiety (Drentea, 2000). Further, assets and consumer debts are associated with relationship quality among married couples (Dew, 2007). Finally, positive financial management behaviors are associated with physical health, mental health, academic success, and life satisfaction among college students (Xiao, Tang, & Shim, 2009). To address these gaps, we designed the Financial Management Behavior Scale (FMBS). The FMBS was then psychometrically validated using the Familial Response to Financial Instability Study, a nationally representative sample of adults.

### Measuring Financial Management Behaviors: Existing Scales

One of the problems with existing measures of financial management behavior is that many are not comprehensive. To construct the FMBS, we initially examined the financial measures in seven studies (Fitzsimmons, Hira, Bauer, & Hafstrom, 1993; Hilgert, Hogarth, & Beverly, 2003; Jorgensen, 2007; Kim, Garman, & Sorhaindo, 2003; Perry

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& Morris, 2005; Servon & Kaestner, 2008; Xiao, Shim, Barber, & Lyons, 2008). A deeper review of the literature resulted in eight more studies that used financial management behavior scales (Davis, 1992; Davis & Weber, 1990; Godwin & Koonce, 1992; Grable, Park, & Joo, 2009; Mugenda, Hira, & Fanslow, 1990; Prochaska-Cue, 1993; Rosen & Granbois, 1983; Scannell, 1990). Of these 15 studies, 10 used instruments that measured only one or two financial domains. Thus, only one third of the instruments found measured three or more domains of financial management behavior. Among those that measured more than two dimensions, two used single indicators to measure the dimensions.

Measuring many different domains of financial management behaviors is important because each domain can have a serious impact on family life. For example, only one measure asked questions about insurance (Jorgensen, 2007). However, families with inadequate health insurance face an increased risk of unmet health needs (Ayanian, Weissman, Schneider, Ginsburg, & Zaslavsky, 2000), shoulder the financial burden of expensive medical bills (Short & Graefe, 2003), and may be more likely to declare bankruptcy (Domowitz & Sartain, 1999). However, a lack of health insurance is not the only predictor of financial insolvency; consumer debt levels are also associated with bankruptcy (Sullivan, 1987). Thus, though each of these domains is important in and of itself, when families use sound financial management behaviors in all of these domains, their financial position becomes strong (Joo, 2008).

Another problem with current financial management behavior instruments is that few have been psychometrically validated. Psychometric validation is the process of testing the properties of the scale, usually reliability and validity. If a scale is psychometrically valid, it measures what it purports to measure and gets the same results over multiple uses (Cohen & Swerklik, 1999; Silva, 1993). Instruments that have not been psychometrically validated may produce questionable inferences (Silva, 1993).

Despite many studies of financial management behaviors, researchers have validated only two scales; the Frequency of Financial Management Scale (Fitzsimmons et al., 1993) and the Personal Financial Management Style (Prochaska-Cue, 1993). Unfortunately, these scales were either not comprehensive, or they were validated using nongeneralizable samples.

Using nationally representative samples to validate financial management behavior instruments enhances the external validity of the instrument. That is, it shows that the psychometric properties of the scale generalize to a wide population. The studies that were validated had participants that were drawn largely from the Midwest in rural (Fitzsimmons et al., 1993) or metropolitan (Prochaska-Cue, 1993) areas. Indeed, the majority of all financial behavior instruments reviewed were developed and used in Midwestern contexts. This leaves questions as to the generalizability of the results.

### Framework of the FMBS

The FMBS incorporates the idea that individuals will serially adopt good financial management behaviors. For example, a national study of consumers revealed a hierarchical pattern of financial management behaviors (Hilgert et al., 2003). About two thirds (66%) of the participants practiced cash flow management and 45% managed credit. However, only 33% used savings management and only 19% of the participants invested. This suggests a gradual uptake in financial management behavior with cash management developed first, then credit, savings, and finally investment management.

This behavioral hierarchy may arise because of the financial resource differences across individuals. For example, when families' incomes are insufficient to meet their financial obligations, they may not have the capacity to save (Garasky, Nielsen, & Fletcher, 2008). Further, certain financial management behaviors, such as paying off consumer credit, may take precedence over other types such as contributing to a retirement fund (Bernstein, 2004). Some individuals may not have insurance policies because they do not own property or may not have access to employer-provided health insurance plans (DeNavas-Walt, Proctor, & Lee, 2006).

In addition to measuring cash management, savings and investments, credit use, and insurance, the FMBS measured financial management behavior that might precede cash management – consumption management. Because virtually all individuals are consumers, if nothing else, they could engage in behaviors that would maximize their consumption benefits. Called "Shopping and Purchases" in the actual scale, we hypothesize that even more individuals will use strategies to manage their purchases than will use cash-flow management behaviors.

## Method

### Scale Construction

The first step in constructing the FMBS was to examine seven articles and reports that used or developed financial management behaviors scales. We identified the domains of financial management behaviors that these scales measured and also noted the domains that were not included in the scales. For example, cash flow management behaviors and savings behaviors were frequently measured, whereas credit management was less frequently measured.

Following the review of previous measures, five domains were selected that were important areas of sound financial management behaviors: consumption, cash flow, credit, savings and investment, and insurance. Measures related to each of these domains were then written. Every domain in the FMBS had at least three behavioral measures.

The next step was to send a draft to nine financial planning and counseling professionals and financial management scholars. These individuals reviewed the FMBS to ensure that it covered the important domains of financial management behavior (i.e., content validity) and that the FMBS appeared "on its face" to measure financial management behavior (i.e., face validity).The panelists felt that the FMBS covered the main domains of good financial management behavior. Further, the panelists felt that the measures were important aspects of each domain.

The last step was to utilize panelist suggestions to strengthen and clarify the FMBS. As a result of the input, some items were added and others were dropped. For example, an item that more directly measured investment behaviors was added. Some of the items and the scale instructions were also reworded to make them clearer. The final FMBS appears in Appendix A.

A few of the suggestions were not included. For example, some panelists noted that estate planning and taxes were missing. In spite of this suggestion, estate planning was not included because we were concerned that many young adults do not use estate planning even if they otherwise use sound financial management behavior. This would drag down the scores of some participants in spite of the fact that they were otherwise managing their finances well. Tax behavior was also not put into the measure because we faced a limit on the number of questions we could ask and we were not sure that enough individuals utilized tax minimization strategies to be a useful domain. One panelist

also suggested adding attitudinal measures. We declined to do this. We wanted to restrict the FMBS to measuring behaviors because behaviors are most proximal (i.e., directly related) to financial outcomes than are financial attitudes (Xiao, 2008) and because well-established financial attitude scales already exist (e.g., Furnham, 1984; Tang, 1995).

### Sample and Data

The sample was drawn from the Familial Response to Financial Instability Study. Initiated by the National Center for Marriage and Family Research, this project was designed to test how families were coping with the 2007 – 2009 Recession. Projects designed to create new measures of family finance and examine new areas in family finance research were solicited. The current study was one of the projects that the National Center for Marriage and Family Research accepted. The survey was conducted in August 2009 using a stratified random sample design (Dennis & McCready, 2009). Participants were initially contacted through both random-digit dialing and address-based sampling. Using these methods, the study recruited households with landlines as well as cell-phone only and households that had no phone service.

Individuals who agreed to be part of the study participated via the Internet. If participants did not have access to the Internet, they received the technology necessary to connect to it (e.g., a laptop computer and Internet access at their residence). Out of the 1,517 individuals contacted, 1,014 participated – a 67% response rate. When combined with the post-stratification weight, the sample is nationally representative of adults (Dennis & McCready, 2009). The post-stratification weights were used to generate the descriptive statistics, the factor analysis, and the regression analysis. To ensure that the findings were robust, the weighted factor analysis and regressions were compared to unweighted analyses (not shown). The weighted and unweighted analyses produced similar findings with only two exceptions. First, in the unweighted regressions the magnitudes of the coefficients were occasionally larger. This suggests that the weighted estimates were slightly more conservative. Second, the unweighted factor analysis was the same except that paying bills on time loaded more on the credit management factor than the positive cash management factor. This study presents the findings that used the post-stratification weights. The sample was composed of 1,011 participants. Three participants who failed to answer any of the study questions except the demographic items were dropped.

*Measures*

*FMBS Scale Items.* The FMBS included 17 items (see Appendix A). The instruction for the first 14 items was, "Please indicate how often you have engaged in the following activities in the past six months." The response set for these questions ranged from 1 (Never) to 5 (Always). Participants could also report that the item was not applicable. These 14 items measured participants' financial management behaviors in four domains: consumption, cash management, savings and investment, and credit management. Examples of items from each of these domains include, "comparison shopped when purchasing a product or service," "kept a written or electronic record of your monthly expenses," "bought bonds, stocks, or mutual funds," and "maxed out the limit on one or more credit cards." Items that represented poor financial management behaviors were reverse coded prior to the analysis. The instruction for the three insurance items stated, "Please rate your behavior regarding insurance within the past year on a scale of 1 – 5." These items asked about the past year because sometimes insurance behaviors occur on an annual basis. The response set was the same as the other items. The insurance items queried participants about health insurance, property insurance, and life insurance.

*Validation Measures.* The survey also collected measures that would facilitate validating the FMBS. First, five items of financial management behavior were included to make sure that the FMBS demonstrated convergent validity. These items came from a study that measured "responsible financial behaviors" (Perry & Morris, 2005, p. 304). The instruction for these items stated, "How do you grade yourself in the following areas?" The items included controlling spending, paying bills on time, planning for the financial future, providing for oneself and family, and saving money. Participants could respond from 1 (Poor) to 5 (Excellent). We chose this particular scale because Perry and Morris (2005) had a nationally representative sample.

The survey also measured participants' actual levels of savings and consumer debt. Although the survey had initially measured the exact level of these variables, the study IRB panel requested the use of scales. For the savings item and the consumer debt item there were nine categories (see Appendix B). Participants could respond that they had between 1 (None) and 9 ($100,000 or more) in savings and consumer debt. The scales had smaller increments at lower amounts so that we could distinguish among groups with fewer assets and consumer debt more easily. This decision seemed justified given that nearly 75% of the sample had under $10,000 of consumer debt.

*Demographic Characteristics.* The survey contained demographic characteristics to use as control covariates. Total household income was among these variables, and it was measured on a scale from 1 – 19, or from "Less than $5,000" to "$175,000 or more" (see Appendix B). Although the mean was 10.76 (suggesting an average of $35,000 to $39,999), the median was 11 suggesting a median income range of ($40,000 to $49,999). The median household income in 2009 in the U.S. was $50,112 (DeNavas-Walt, Proctor, & Smith, 2010). Thus, the scaled income measure may closely align with the actual U.S. median household income, or it may be nearly $10,000 off. This unfortunate lack of precision was a result of an IRB request and not a decision made by the researchers. For the purposes of examining how the scale performed among low-income individuals, we also created a sample of individuals of the lowest income quintile ($n = 210$). These individuals had to have an income score of 7 or less (i.e., $24,999 or less). The income quintile cut off for the lowest U.S. quintile in 2009 was $20,453 (U.S. Census, 2010). A score of 7 on the scale contains this amount, but also contains some individuals who were above this amount. In the present sample, 21% of individuals had an income score of 7 or less.

Additional control covariates included two dichotomous variables that assessed marital and cohabiting status (single, not cohabiting was the omitted category), age, and gender (male is the omitted category). Two dichotomous variables measured race and ethnicity (White, Non Hispanic is the omitted category), and three dichotomous variables measured obtained education (less than high school degree is the omitted category). Finally, two dichotomous variables measured employment status (not employed is the omitted category), and a continuous variable assessed the number of children in the home. Descriptive statistics for the demographic measures are found in Table 1.

*Handling "Not Applicable" Responses*

One problem was that participants were allowed to respond "not applicable" on the financial management behavior items. This was a reasonable response for some financial management behaviors. For example, it would be difficult for participants to "max out" a credit card if they did not have one. Unfortunately, some participants responded at seemingly inappropriate times. For example, 35 respondents (3.4%) reported that the item "paying bills on time" was not applicable and 45 respondents (4.4%) reported that "staying within their budget or spending plan" was not applicable. It may be that younger individuals, or individuals in a married couple with high specialization

**Table 1. Descriptive Statistics (*N* = 1,011)**

| | *M* | *SD* | % | Range |
|---|---|---|---|---|
| Responsible financial behaviors scale | 3.38 | .95 | | 1 – 5 |
| Actual amount of savings[a] | 4.23 | 2.67 | | 1 – 9 |
| Actual amount of consumer debt[a] | 3.41 | 2.35 | | 1 – 9 |
| Married[b] | | | 45 | |
| Cohabiting[b] | | | 10 | |
| Female[c] | | | 52 | |
| Black[d] | | | 11 | |
| Other race/ethnic minority[d] | | | 20 | |
| High school degree[e] | | | 31 | |
| Some college[e] | | | 28 | |
| College degree or higher[e] | | | 28 | |
| Employed full time[f] | | | 43 | |
| Employed part time[f] | | | 12 | |
| Age | 46.51 | 16.68 | | 18 – 90 |
| Income[a] | 10.76 | 4.14 | | 1 – 19 |
| Number of children in the home | .54 | 1.05 | | 0 – 8 |

*Note.* [a] See Appendix 3 for a more detailed table on these financial variables. [b] Omitted category is single not cohabiting; 45% of the sample was in the omitted category. [c] Omitted category is male; 48% of the sample was in the omitted category. [d] Omitted category is White, Non-Hispanic; 69% of the sample was in the omitted category. [e] Omitted category is less than high school; 13% of the sample was in the omitted category. [f] Omitted category is not employed; 45% of the sample was in the omitted category.

might lead to these responses (e.g., if the respondent were not in charge of these tasks). Given that over 75% of those who answered not applicable for these two variables were over the age of 23 and over two thirds were single, this seems unlikely. The average level of answering not applicable was 11%, with a range of 3% – 18%.

Participants who answered not applicable could not be included in the factor analyses or the regressions. We tried three possible solutions. First, participants with missing data were listwise deleted. A second solution was to set the "not applicable" responses to the lowest response based on the assumption if participants were choosing not applicable then they were not engaging in that behavior. Third, multiple imputation was used to generate a plausible value for the missing response. Multiple imputation uses maximum likelihood methods to generate five plausible responses for the missing response. Any statistical analy-

ses that are run are actually run five times (once for each imputed response) and then the results are synthesized (Rubin, 1987).

The results were the same no matter how we dealt with the missing responses. That is, listwise deleting participants, setting their missing responses to the lowest level, or using multiple imputation yielded the same factor solution. Although the factor loadings were slightly different, they were not different enough to influence the factor extraction. This study presents the results generated using multiple imputation because we also used multiple imputation for the participants who declined to answer questions about their demographic characteristics such as their income or age. The average level of missing data for the demographic variables was 2%, with a range of 1% – 5%. All of the results presented in this study were created using multiple imputation.

## Results

### Factor Analysis

The first analysis was an exploratory factor analysis to extract the factors among the financial management behaviors. This exploratory method accounts for as much of the total variance among the variables as possible by using latent factors. These latent factors identify commonalities among the variables. Exploratory factor analysis is a common data reduction analysis that is appropriate at the beginning of scale construction (Comrey & Lee, 1992). Following the initial factor extraction we utilized a promax rotation to simplify the factor solution. Promax is a type of oblique rotation which allowed the latent factors to correlate with each other. Because of the hypothesis that individuals would adopt financial management behaviors serially, we thought it would be most appropriate to use an oblique rotation.

Although five factors were hypothesized, we used the residual correlations and the scree test (Cattell, 1966) to decide on the proper number of factors. Because the idea behind factor analysis is to account for as much of the variance between the items as possible using latent factors (Comrey & Lee, 1992), the best models will produce the fewest residual correlations.

A four-factor solution produced the same number of residual correlations under .10 as a five-factor solution (residual correlations available on request). Thus, the residual correlation test suggested retaining four or five factors. The scree plots (available on request) also suggested the same course. Using a scree plot test, we wanted to retain the number of factors corresponding to the factor that departs from the main line of the lower factors (Comrey & Lee, 1992). This suggested a 4- or 5-factor solution because the eigenvalue for the fourth factor was clearly above the line, whereas the eigenvalue for the fifth factor was slightly above the line. We decided to use a four-factor solution for the sake of parsimony. After this decision, the promax rotation was conducted. In order for an item to "load" on a factor it had to have a loading of .6 or better.

Two problematic items surfaced during the rotation. One of the items, impulsive buying, did not load well on the factors; it never had a factor loading above .49. Further, impulsive buying was the only variable that loaded on a fifth factor when five factors were extracted. These findings suggested that impulsive buying was tapping a different construct than the other items. A second item, searching for information prior to a large purchase, was also problematic. It loaded on multiple factors equally but never at the .6 level. Further, when it was in the factor analysis, other items loaded on multiple factors equally. When information search was eliminated, all of the other items clearly loaded on one factor. Because impulsive buying and searching for information proved problematic, these items were dropped from the scale.

We evaluated whether dropping these two items altered the number of factors to extract. The residual correlation analysis did not change. A four-factor solution performed as well as a five-factor solution. The scree plot was modified somewhat and clearly showed that a four-factor solution was most appropriate. The fifth eigenvalue was part of the main line of lower factors. This was expected because the impulse buying item was the only item that loaded well on a fifth factor. Thus, after dropping these two variables we retained a four-factor solution.

The factor structure after dropping the two variables is found in Table 2a. Five savings and investment items loaded on Factor 1 with loadings of .69 to .78. Hence, we call Factor 1, "Savings and Investment Behaviors." Factor 1 explained 30% of the variance. The three insurance items loaded on Factor 2 (loadings between .74 and .85) or the "Insurance Behavior" factor. This second factor explained 12% of the variance. Items that indicated cash management, such as keeping a financial record and paying bills on time, loaded on Factor 3 with loadings between .64 and .73. We called this factor the "Cash Management" factor, and it explained 9% of the variance. Finally, three items indicating positive credit management loaded on Factor 4. The loadings ranged from .66 to .77. We called this factor "Credit Management." It explained 8% of the variance. Overall, the four factors explained 59% of the variance.

Because of the hypothesis that these different factors would all be related to the same construct – overall financial management behaviors –mean scales were created from each factor and they were then factor analyzed. The subscales loaded on only one factor (results available upon request). This supports the idea of a larger super-factor of financial management behavior. It also supports the use of the overall FMBS score as a measure of financial management behaviors. A revised version of the FMBS is found in Appendix A.

### Financial Management Behavior Hierarchy

Following the finalization of the subscales, they were examined to check whether they displayed the same hierar-

chical behavior as previous studies have shown (see Table 2b). Like other studies, savings and investment behaviors were the least frequent financial management behaviors. Unlike other studies, however, cash management and credit management behaviors were at about the same level. Insurance behaviors were the most common behavior type.

*Reliability Analysis*
Reliability was assessed using Cronbach's alpha. Cronbach's alpha is equivalent to the average of all possible split-half reliabilities for a scale. The full FMBS had a Cronbach's alpha of .81. Cronbach alpha scores were also calculated for the four subscales. The savings and investments subscale and the insurance subscale had satisfactory Cronbach alpha scores (.78 and .73, respectively). Cronbach's alpha for the cash management subscale and the credit management subscale were lower (.63 and .57, respectively) indicating that the items that made up these scales did not hang together as well as the items that made up the savings subscale and the insurance subscale. These

**Table 2a. Rotated Factor Structure (*N* = 1,011)**

|  | **Factor 1** | **Factor 2** | **Factor 3** | **Factor 4** |
|---|---|---|---|---|
| Comparison shop |  |  | .73 |  |
| Pay bills on time |  |  | .64 |  |
| Keep a financial record |  |  | .69 |  |
| Stay within budget |  |  | .66 |  |
| Pay off credit card |  |  |  | .66 [b] |
| Max out credit card [a] |  |  |  | .77 |
| Make minimum payment on loans [a] |  |  |  | .72 |
| Maintain or create an emergency fund | .73 |  |  |  |
| Save from every paycheck | .75 |  |  |  |
| Save for a long term goal other than retirement | .78 |  |  |  |
| Save for retirement | .69 |  |  |  |
| Invest money | .70 |  |  |  |
| Obtain or maintain adequate health insurance |  | .85 |  |  |
| Obtain or maintain adequate property insurance |  | .74 |  |  |
| Obtain or maintain adequate life insurance |  | .80 |  |  |
| Eigenvalues | 4.43 | 1.84 | 1.31 | 1.25 |
| % of Variance Explained by Factor (Total Variance Explained = 59%) | 30 | 12 | 9 | 8 |

*Note*. [a] Reverse coded. [b] This item loaded on the savings and investment factor (Factor 1) best among the low-income subsample of this study.

**Table 2b. FMBS Scale and Subscale Descriptive Statistics (*N* = 1,011)**

|  | *M* | *SD* | **Range** | **% Often or more frequently** |
|---|---|---|---|---|
| FMBS | 3.48 | .71 | 1.58 – 5.00 | 26.5 |
| Savings and investment subscale | 2.66 | 1.09 | 1.00 – 5.00 | 11.0 |
| Cash management subscale | 3.73 | .83 | 1.00 – 5.00 | 48.1 |
| Credit management subscale | 3.73 | .95 | 1.00 – 5.00 | 47.2 |
| Insurance subscale | 3.81 | 1.24 | 1.00 – 5.00 | 53.7 |

reliability analyses suggested that the overall FMBS scale was reliable, at least for the nationally representative sample. It also suggested that the savings and investment subscales had sufficient reliability. When using the cash flow management and positive credit behavior subscales, some caution is warranted. Though they had reasonable levels of reliability at this stage of the scale development, future work will need to improve them.

### Validity Analysis

*Face and Content Validity.* We addressed face validity and content validity through the use of an expert panel. The financial planners and financial counselors agreed that the FMBS items appeared to measure what it purported to measure (face validity). Further, they also agreed that the FMBS measured important financial management behaviors (content validity).

*Construct Validity.* Addressing construct validity necessitated demonstrating that the FMBS measured what it claimed to measure (Cohen & Swerklik, 1999; Silva, 1993). An alternative way of thinking of construct validity is that the inferences drawn from the use of the scale are sound (Silva, 1993). Construct validity was assessed by examining convergent validity. A measure demonstrates convergent validity when it is associated with other items or scales that measure the same construct (Cohen & Swerklik, 1999; Silva, 1993).

To assess convergent validity, we used weighted least squares regression to regress a scale that measured financial management behaviors (Perry & Morris, 2005) onto the FMBS, the subscales, and the control covariates. In all of the regression analyses, we obtained the FMBS score by taking the mean of the 15 items. This was also the case for the subscales. An analysis of the scale using summed scores (not shown) indicated that the regression findings were exactly the same except that the magnitude of the non-standardized FMBS and subscale coefficients and standard errors were different (though the *t*-tests of significance were exactly the same). This is to be expected because taking a mean is a simple linear transformation that does not change the distribution of the variables.

The FMBS was positively associated with the responsible financial behaviors scale ($b = .94$, $p < .001$; see Table 3, Model 1). Given that the standard deviation of the responsible financial behaviors scale was .96, this coefficient represented an effect size of nearly 1.0. Very few of the control covariates were significant and the overall model explained more than half of the variance in the responsible

financial behaviors scale. The subscales were also positively associated with the responsible financial behaviors scale (see Table 3, Model 2). Thus, the FMBS displayed remarkable convergent validity. Discriminant validity was also tested using a time-use scale. The FMBS and subscale demonstrated discriminant validity (results available upon request).

*Criterion Validity.* Measures that possess criterion validity predict variables that they would be expected to predict if they truly measured what they claimed to measure (Kaplan & Saccuzzo, 2009; Silva, 1993). Because the data were cross-sectional, the concurrent form of criterion validity was used rather than the predictive form. That is, the data could only show that the FMBS predicted criterion that were contemporary with its measure, rather than showing that the FMBS predicted the levels of a future criterion.

Criterion validity was measured by using weighted least squares regression to assess the association between actual levels of savings and consumer debt on the FMBS and subscales. If the FMBS truly measured sound financial management behaviors it should be associated with these financial measures. Table 4a shows the association between the FMBS, the subscales, and savings. For every one unit increase in the FMBS, savings increased by 1.65 ($b = 1.65$, $p < .001$, Table 4a). The FMBS coefficient represents .6 of a standard deviation for actual level of savings and the model explained 50% of the variance in savings. When the subscales were used instead of the full scale, they performed as expected. Savings behaviors and positive credit behavior were strongly associated with actual savings ($b = .70$ and .63, respectively, $p < .001$ for both). Insurance behaviors were also positively associated with savings.

We also regressed participants' reports of their consumer debt level onto the FMBS, the subscales, and the control covariates. The FMBS was negatively associated with consumer debt levels ($b = -.90$, $p < .001$; Table 4b, Model 1). This coefficient represents a .38 standard deviation effect size for consumer debt but had an $R^2$ of only .16.

The analysis of the subscales (Table 4b, Model 2) had both expected and unexpected results. As expected, the savings and investment subscale and the credit management subscale were negatively associated with participants' consumer debt ($b = -.31$ and -1.04, respectively, $p < .001$ for both). Further, the subscale model explained nearly twice the variance as the FMBS model ($R^2 = .31$).

**Table 3. WLS Regression Models of the Responsible Financial Behaviors Scale (*N* = 1,011)**

| | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | *b* | *SE* | *b* | *SE* |
| Intercept | .21 | .15 | -.03 | .16 |
| FMBS | .94*** | .03 | | |
| Savings and investment subscale | | | .29*** | .03 |
| Cash management subscale | | | .37*** | .04 |
| Credit management subscale | | | .25*** | .03 |
| Insurance subscale | | | .06* | .02 |
| Married[a] | -.02 | .05 | .03 | .05 |
| Cohabiting[a] | .03 | .09 | .08 | .07 |
| Age | .01 | .01 | .01 | .01 |
| Income | .01 | .01 | .01 | .01 |
| Female[b] | -.05 | .04 | -.03 | .04 |
| Black[c] | -.09 | .07 | -.06 | .07 |
| Other race/ethnic minority[c] | .02 | .06 | -.04 | .05 |
| High school degree[d] | -.18* | .07 | -.15* | .07 |
| Some college[d] | -.12 | .08 | -.10 | .07 |
| College degree or higher[d] | -.07 | .08 | -.09 | .07 |
| Employed full time[e] | .03 | .05 | .07 | .05 |
| Employed part time[e] | -.03 | .08 | .01 | .07 |
| Number of children in the home | -.05* | .02 | -.03 | .02 |
| *R*² | | .54 | | .59 |

*Note.* [a] Omitted category is single not cohabiting. [b] Omitted category is male. [c] Omitted category is White, Non-Hispanic. [d] Omitted category is less than high school. [e] Omitted category is not employed.
*p < .05. **p < .01. ***p < .001.

Unexpectedly, cash management was not significantly associated with consumer debt and insurance behaviors positively predicted consumer debt ($b = .33$, $p < .001$). In a regression with just cash management and the control covariates, the cash management subscale negatively predicted consumer debt ($b = -.42$, $p < .001$). This indicated that the cash management subscale shared so much variance with the other subscales that it did not explain independent variance in consumer debt when the others were included. In a regression with just the insurance subscale and the control covariates, insurance behaviors were still positively associated with consumer debt, however. This unexpected finding will be addressed in the discussion section.

Finally, given the distribution of the actual savings and actual consumer debt variable, some may question whether weighted least squares regression was the most appropriate analytic tool. To address this issue we dichotomized these variables at the top 20% – 25% mark (a score of 8 or above for savings, and a score of 6 or above for consumer debt). If participants were in the top 20% – 25%, they were scored as a 1 on the dummy variables and a 0 otherwise. We then reran the criterion analyses using logistic regression to examine whether the FMBS and the subscales were associated with being in the top 20% – 25% for savings and consumer debt. The results from the logistic regression were comparable to the results from the weighted least

**Table 4a. WLS Regression Models of Actual Amount of Savings (*N* = 1,011)**

|  | Model 1 | | Model 2 | |
|---|---|---|---|---|
|  | *b* | *SE* | *b* | *SE* |
| Intercept | -5.74*** | .48 | -5.17*** | .50 |
| FMBS | 1.65*** | .11 |  |  |
| Savings and investment subscale |  |  | .70*** | .08 |
| Cash management subscale |  |  | -.05 | .09 |
| Credit management subscale |  |  | .68*** | .08 |
| Insurance subscale |  |  | .24*** | .06 |
| Married[a] | .06 | .16 | .21 | .16 |
| Cohabiting[a] | .14 | .23 | .22 | .23 |
| Age | .04*** | .01 | .04*** | .005 |
| Income | .17*** | .02 | .16*** | .02 |
| Female[b] | -.18 | .13 | -.12 | .13 |
| Black[c] | -.93*** | .21 | -.93*** | .21 |
| Other race/ethnic minority[c] | .09 | .18 | .01 | .18 |
| High school degree[d] | .32 | .23 | .35 | .23 |
| Some college[d] | .02 | .25 | .16 | .23 |
| College degree or higher[d] | .66** | .25 | .76** | .25 |
| Employed full time[e] | .38* | .16 | .36* | .16 |
| Employed part time[e] | .43 | .22 | .35 | .22 |
| Number of children in the home | -.10 | .07 | -.07 | .07 |
| *R*² |  | .50 |  | .52 |

*Note*. [a] Omitted category is single not cohabiting. [b] Omitted category is male. [c] Omitted category is White, Non-Hispanic. [d] Omitted category is less than high school. [e] Omitted category is not employed.
*p < .05. **p < .01. ***p < .001.

squares regression (analysis not shown, results available upon request). That is, the higher a participant's FMBS score, the more likely they were to be in the top savings group and the less likely they were to be in the top consumer debt group. The subscale analyses also yielded similar results. The only difference was that the insurance subscale was not associated with the likelihood of being in the high savings group in the logistic models.

Together these findings presented evidence for criterion validity. The FMBS purports to measure sound financial management behaviors. Both the full scale and the subscales predicted financial outcomes that are associated with sound financial management behaviors.

*External Validity*. Although the nationally representative sample offered a solid context in which to test the FMBS, it also raises questions as to whether the FMBS is generalizeable to different subpopulations. For example, some of these behaviors may be difficult to implement, especially for individuals with lower levels of income. As a final test of the FMBS, we reran all of the above tests (analysis not shown) for participants whose income was in the bottom quintile of the sample (an income score of 7 or less, *n* = 212). The findings for this subsample were mostly similar to the findings from the nationally representative sample with only a few caveats. A four-factor solution was found to fit the data best for these participants. Further, the factor structure remained the same except that the item for paying off credit card debt loaded better on the savings

**Table 4b. WLS Regression Models of Actual Consumer Debt (*N* = 1,011)**

| | Model 1 | | Model 2 | |
| --- | --- | --- | --- | --- |
| | *b* | *SE* | *b* | *SE* |
| Intercept | 3.76*** | .50 | 4.49*** | .49 |
| FMBS | -.90*** | .12 | | |
| Savings and investment subscale | | | -.31*** | .07 |
| Cash management subscale | | | .01 | .09 |
| Credit management subscale | | | -1.04*** | .08 |
| Insurance subscale | | | .33*** | .06 |
| Married[a] | .80*** | .17 | .48** | .16 |
| Cohabiting[a] | .44 | .25 | .31 | .23 |
| Age | .01 | .01 | .01* | .005 |
| Income | .06** | .02 | .05* | .02 |
| Female[b] | .18 | .14 | .02 | .13 |
| Black[c] | -.31 | .23 | -.40 | .21 |
| Other race/ethnic minority[c] | -.34 | .19 | -.19 | .17 |
| High school degree[d] | .67** | .24 | .59** | .22 |
| Some college[d] | 1.34*** | .25 | 1.12*** | .22 |
| College degree or higher[d] | 1.02*** | .27 | 1.01*** | .24 |
| Employed full time[e] | .70*** | .17 | .55*** | .16 |
| Employed part time[e] | .58* | .23 | .59** | .22 |
| Number of children in the home | .20** | .08 | .13 | .07 |
| $R^2$ | .16 | | .31 | |

*Note*. [a] Omitted category is single not cohabiting. [b] Omitted category is male. [c] Omitted category is White, Non-Hispanic. [d] Omitted category is less than high school. [e] Omitted category is not employed.
*$p < .05$. **$p < .01$. ***$p < .001$.

and investment factor than the credit management factor. The tests of reliability and validity were also similar to the full sample. Overall these findings suggested that for low income individuals the FMBS and the associated subscales functioned similarly to a general population sample.

### Discussion

This study represents a first attempt to develop the Financial Management Behavior Scale (FMBS). It also explored the scale's psychometric properties using a nationally representative sample. The full scale had adequate reliability (Cronbach's alpha = .81). Further, our analyses suggested that the FMBS does measure what it purports to measure. It was strongly associated with another measure of financial management behaviors. Further, it demonstrated

concurrent criterion validity with respect to actual levels of savings and consumer debt. Specifically, as scores on the FMBS increased, participants' reported levels of savings increased and their reports of consumer debt decreased. Using an exploratory factor analysis indicated that a four-factor structure within the FMBS was the best solution. The subscales – cash management, credit management, savings and investments, and insurance – demonstrated less reliability and validity than the full scale, though for a first attempt they performed reasonably well. The subscales require further refining.

Despite these overall findings, there were some unexpected results. First, the FMBS was designed to measure five dimensions but the factor analysis suggested that a four

-factor solution was the best fitting and most parsimonious solution. Consumption management was to be the fifth dimension of the scale, but two of the consumption items were problematic and were ultimately dropped to increase the strength of the FMBS. The final consumption measure (comparison shopping) loaded on the cash management factor.

Two competing possibilities explain the consumption findings. The first is that we may simply have not written very good consumption management questions. Impulse buying was clearly not related to any of the other items in the FMBS and searching for information prior to a large purchase was also problematic. Perhaps other questions might have more suitably measured consumption management.

An alternative possibility is that consumption behaviors might simply not load well with the other financial management behaviors that we measured. Individuals may mentally treat consumption and money management as two different domains. Financial management behaviors may be relevant only to money management related activities that do not include spending behavior. Future research would need to test these speculations.

Another finding that failed to materialize was a distinct hierarchy of financial management behaviors. Although savings and investments had the lowest mean and were practiced often by the lowest number of people, the other behaviors – insurance, cash management, and credit management – were practiced at about the same level. This conflicts with findings from other studies (e.g., Hilgert et al., 2003). Part of the reason for the discrepancy might be that the data were collected during the 2007 – 2009 Recession. The recession simply may have forced more individuals to engage in cash and credit management behaviors.

Finally, the cash management and insurance subscales demonstrated some unanticipated analytic properties. The cash management subscale seemed particularly sensitive to the presence of the other subscales. For example, in two of the analyses cash management was not significant. Yet when it was run without the other subscales in the model it was significant. This suggests that cash management sometimes shares so much variance with the other subscales that it does not independently predict participants' finances. Given that the reliability for cash management was lower than savings it is not surprising that it was not as strong in the multivariate models.

Another unexpected finding from the subscale analysis concerned the insurance behavior subscale. Although the insurance behaviors positively predicted savings, it also positively predicted consumer debt. Even in the bivariate analyses, insurance behaviors were positively correlated with consumer debt. This may suggest that some participants had maintained their insurance policies through the use of consumer credit. Many consumers purchase and maintain insurance policies using credit cards. This is particularly the case with the growth of insurance websites. Consequently, even though insurance behaviors are positively associated with actual savings, they may also encourage accumulating consumer debt. These ideas are speculative though, and need to be directly tested in future research.

One of the main limitations of this study was that the data were not longitudinal. This limited our analysis to concurrent validity rather than predictive validity. That is, a stronger test would have been to show that measures of the FMBS predicted future levels of savings and consumer debt, or even changes in levels of savings and consumer debt. Further, not having longitudinal data limits what can be said about the direction of the relationship between financial management behaviors and actual levels of financial well-being.

Another limitation was that the study relied on self-reported data. Some individuals may have given socially desirable responses. For example, some participants may have overstated the frequency at which they save. To the extent that socially desirable answers were not random, this may further influence how this scale functions for different subgroups. For example, if individuals in a particular socioeconomic status were more likely to give socially desirable answers, this may skew the psychometric properties of the scale for that subgroup. The convergent and concurrent validity tests did indicate that the scale worked as it should – with higher FMBS scores being positively associated with another financial management behaviors measure and with actual amounts of savings and consumer debt. Individuals may have given socially desirable answers throughout the survey, however. Thus, the possibility for the analysis to be influenced by socially desirable answers remains. Although this study could not mitigate this issue, it exists for every study that uses self-reported data.

In addition to these study limitations, the FMBS needs additional refinement. First, the scale needs to reflect various realities of the life course. Following retirement, for ex-

ample, many individuals and families will not be "saving money from every paycheck" or "saving for a long-term goal." Although we tried to anticipate life course possibilities by including a "not applicable" response, and by not including estate planning in the scale, this solution did not fully solve the problem. Rather, our solution introduced additional problems of individuals selecting "not applicable" to applicable items.

This problem has implications for the use of this scale. That is, practitioners and researchers using this scale need to use it judiciously. For example, items 5 – 7 (the credit management subscale) might not be applicable to lower SES individuals, individuals with low credit scores, and those who do not have any lines of credit/loans. These participants may face restricted access to credit or may simply not choose to use it. Items 9 – 12, and perhaps 15, likely do not apply to the majority of retirees. If some questions are not asked of some clients or research participants, the FMBS score might need to be standardized first so that all participants are on the same scale. Further, reliability analyses particular to new samples would need to be undertaken. Future studies might be able to utilize computer technology to only give participants questions that are relevant to them based on their age or life circumstances. An alternative possibility might be to develop different versions of the FMBS that reflect "sound financial management behaviors" at different periods in the life course.

A second refinement would recognize the fact that the FMBS measures behaviors that are considered "sound" by middle and upper-middle class individuals. For example, although the share of individuals with money in the stock market has greatly increased over the past three decades, lower SES individuals are still more reluctant to put their money into assets that carry market risk (Garasky et al., 2008). Further, some of the behaviors that the FMBS measures may be difficult for working class and lower SES individuals to implement, even if they desire to do so. For example, it may be much easier for middle and upper-middle class individuals to maintain health and life insurance policies because they have more access to employer sponsored plans. Although the FMBS does seem to work for low-income participants in this sample, additional work with a new sample could replicate this finding. Further, this study was unable to test the psychometric properties of race/ethnic minority individuals due to sample size limitations.

This issue also has implications for the use of the scale. Researchers should remember the structural difficulties that some groups face with regard to economic opportunity when studying race or class differences using the FMBS. We do not intend to offer the FMBS as some sort of checklist to which all individuals should aspire. Rather, the FMBS is intended as a brief scale that may help researchers easily measure financial management behaviors and practitioners to quickly assess their clients' financial habits. This may also have implications for the psychometric properties of the scale. Although the scale demonstrates reliability and validity in a national sample, this might not be the case for certain subgroups. In future work we plan to examine the FMBS more closely with respect to race/ethnicity.

These needed refinements speak to more fundamental issues in the consumer finance and financial planning fields. These fields have a strong stance on what "sound" financial management entails. The reasoning behind promoting these behaviors is that they facilitate clients reaching their goals. Research has also shown that these behaviors promote better physical, emotional, and relationship health (Dew & Xiao, 2010, Drentea, 2000). Thus, the financial counseling and planning fields have good reason to label these behaviors as "sound."

In spite of this, however, group differences related to financial behavior do exist. For example, even after accounting for various demographic characteristics and financial behaviors, African-Americans and Hispanic-Americans have a harder time obtaining credit which may suggest continued race/ethnicity discrimination (Hanna & Lindamood, 2007). Other studies have demonstrated cultural differences in financial attitudes and beliefs based on race/ethnic, class, and even religious lines (Marks, Dollahite, & Dew, 2009; Grable et al., 2009). Thus, financial counseling and planning as well as consumer finance and economics fields may benefit as they continue the nascent dialogue on cultural competence. Understanding why individuals and groups may not always adopt "sound" financial management behaviors may help practitioners working with diverse groups.

Although this study has limitations and the FMBS needs more refinement, it makes a contribution to the financial planning and counseling literature – a multi-dimensional scale of financial management behavior validated using nationally representative data. The FMBS covers many dimensions of financial management behaviors and possesses desirable psychometric properties. The full scale offers researchers and practitioners a reliable and valid tool to measure financial management behavior, though some

work needs to be done to ensure that it is reliable and valid among different subgroups. The subscales – though some needing more work – measure different dimensions of financial management behaviors in more detail. Depending on the needs of researchers and practitioners, either the whole scale or subscales can be used in research and counseling projects. Researchers and practitioners may freely use the revised FMBS as long as this study is cited when it is used.

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## Appendix A. FMBS as used in the Family Response to Financial Instability Study

### Initial FMBS

Please indicate how often you have engaged in the following activities in the past six months:

1 = never, 2 = seldom, 3 = sometimes, 4 = often,
5 = always (*Also could say "Not Applicable (N/A)"*)

1. Comparison shopped when purchasing a product or service

2. Bought something on impulse

3. Searched for information about a big-ticket item before purchasing it

4. Paid all your bills on time

5. Kept a written or electronic record of your monthly expenses

6. Stayed within your budget or spending plan

7. Paid off credit card balance in full each month

8. Maxed out the limit on one or more credit cards

9. Made only minimum payments on a loan

10. Began or maintained an emergency savings fund

11. Saved money from every paycheck

12. Saved for a long term goal such as a car, education, home, etc.

13. Contributed money to a retirement account

14. Bought bonds, stocks, or mutual funds


Please rate your behavior regarding insurance within the past year on a scale of 1 – 5.

1 = Never, 2 = seldom, 3 = sometimes 4 = often, 5 = always

15. Maintained or purchased an adequate health insurance policy

16. Maintained or purchased adequate property insurance like auto or homeowners insurance

17. Maintained or purchased adequate life insurance

### Revised FMBS

Please indicate how often you have engaged in the following activities in the past six months:

1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always

1. Comparison shopped when purchasing a product or service

2. Paid all your bills on time

3. Kept a written or electronic record of your monthly expenses

4. Stayed within your budget or spending plan

5. Paid off credit card balance in full each month

6. Maxed out the limit on one or more credit cards

7. Made only minimum payments on a loan

8. Began or maintained an emergency savings fund

9. Saved money from every paycheck

10. Saved for a long term goal such as a car, education, home, etc.

11. Contributed money to a retirement account

12. Bought bonds, stocks, or mutual funds


Please rate your behavior regarding insurance within the past year on a scale of 1 – 5:

1 = Never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always.

13. Maintained or purchased an adequate health insurance policy

14. Maintained or purchased adequate property insurance like auto or homeowners insurance

15. Maintained or purchased adequate life insurance

## Appendix B. Detailed Income, Asset, and Debt Tables

| | Scale values | % |
|---|---|---|
| Income | 1 – Less than $5,000 | 1.5 |
| | 2 – $5,000 to $7,499 | 2.1 |
| | 3 – $7,500 to $9,999 | 1.8 |
| | 4 – $10,000 to $12,499 | 3.7 |
| | 5 – $12,500 to $14,999 | 2.0 |
| | 6 – $15,000 to $19,999 | 4.3 |
| | 7 – $20,000 to $24,999 | 5.6 |
| | 8 – $25,000 to $29,999 | 5.7 |
| | 9 – $30,000 to $34,999 | 6.1 |
| | 10 – $35,000 to $39,999 | 6.8 |
| | 11 – $40,000 to $49,999 | 9.1 |
| | 12 – $50,000 to $59,999 | 11.3 |
| | 13 – $60,000 to $74,999 | 13.2 |
| | 14 – $75,000 to $84,999 | 7.1 |
| | 15 – $85,000 to $99,999 | 6.4 |
| | 16 – $100,000 to $124,999 | 7.3 |
| | 17 – $125,000 to $149,999 | 3.0 |
| | 18 – $150,000 to $174,999 | 1.8 |
| | 19 – $175,000 or more | 1.3 |
| | | |
| Actual amount of savings | 1 – None | 20.5 |
| | 2 – $1 to under $1,500 | 16.9 |
| | 3 – $1,500 to under $3000 | 7.6 |
| | 4 – $3,000 to under $5,000 | 6.7 |
| | 5 – $5,000 to under $10,000 | 8.9 |
| | 6 – $10,000 to under $20,000 | 9.6 |
| | 7 – $20,000 to under $50,000 | 10.9 |
| | 8 – $50,000 to under $100,000 | 7.0 |
| | 9 – $100,000 or more. | 11.9 |
| | | |
| Actual amount of consumer debt | 1 – None | 30.3 |
| | 2 – $1 to under $1,500 | 16.9 |
| | 3 – $1,500 to under $3000 | 9.1 |
| | 4 – $3,000 to under $5,000 | 7.4 |
| | 5 – $5,000 to under $10,000 | 10.5 |
| | 6 – $10,000 to under $20,000 | 12.3 |
| | 7 – $20,000 to under $50,000 | 8.9 |
| | 8 – $50,000 to under $100,000 | 2.9 |
| | 9 – $100,000 or more. | 1.8 |

*Note*. Not all values sum to 100% due to rounding.