Assessing Financial Wellness Via Computer-Assisted Telephone Interviews

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The current study reports on the first use of the Personal Financial Wellness Scale™ in random-digit-dial computer-assisted telephone interviews. The scale was modified for telephone interviews, fielded in a survey of 515 married adults, then assessed using alternative methods that accounted for missing data common in telephone interviews. Confirmatory factor models verified that the scale was robust as both a single and two-construct measure of subjective and objective financial wellness. The modified scale produced low levels of missing data, was not affected by location in the instrument, and exhibited excellent internal reliability under varied assumptions. Recommendations for the use of the scale in telephone interviews, including scale modification, subscale possibilities, and the utility of multiple imputation of missing items, are offered.

Key Words: computer-assisted telephone interviews, financial well-being, personal financial wellness

Introduction

The Personal Finance Employee Education Foundation's Personal Financial Wellness Scale™ (Prawitz et al., 2006) is an increasingly used measure of financial wellness administered by practitioners who provide financial education, as well as researchers who investigate financial wellness.[1] According to the Personal Finance Employee Education Foundation (PFEEF), more than 200 practitioners and researchers are authorized to use the Personal Financial Wellness Scale™ (PFW) in business, counseling, financial literacy, and academic research settings (PFEEF, 2010).

Though in existence only a few years, a growing concern about consumers' financial wellness has heightened the need for a robust measure of financial wellness. The academic community seems poised to address the research needs associated with financial wellness (Burns, 2008; Joo, 2008). The PFW Scale™ has been used as a paper and pencil assessment of a workplace financial literacy program (Holland, Goodman, & Stich, 2008) and as a component of a mailed survey of debt management program clients (O'Neil, Prawitz, Sorhaindo, Kim, & Garman, 2006). In addition, variations of the PFW Scale™ that use one or more items inspired by the PFW have been developed by individual researchers for use in mailed surveys that investigated the relationship between financial practices

and relationship satisfaction (Britt, Grable, Goff, & White, 2008) and the role that financial satisfaction plays in subsequent divorce (Grable, Britt, & Cantrell, 2007). As noted by Burns (2008), greater use of the PFW Scale™ among financial practitioners should provide practitioners with information necessary to offer better service. In an economic environment where record numbers of consumers are financially distressed, it is crucial that assessments be conducted with appropriate attention to the methods used and with procedures that allow one to reach the intended respondents.

Despite the ongoing effort to improve assessments of financial wellness in settings that allow for paper and pencil or online data collection, the author is unaware of any effort to use the PFW Scale™ to assess the financial wellness of a random sample of married adults via computer-assisted telephone interview (CATI). This paper offers such an assessment and progresses as follows. First, the methods used to collect the sample and the measures included in the interview are reported. Second, the reliability of the measure is evaluated using alternative methods often employed to account for missing data common to telephone interviews. Third, confirmatory factor models assess the quality of the original PFW single factor solution and an alternative 2-factor model of financial wellness. Finally,

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recommendations for the use of the PFW Scale™ in telephone interviews, including specific CATI scale modification suggestions, estimation methods under which the use of subscales would be appropriate, placement of the PFW Scale™ items in the larger CATI survey instrument, and the utility of multiple imputation of missing PFW Scale™ data are offered.

Methods

Sample

Between June 11 and August 10, 2007, a telephone survey of married adults in a state of approximately 9 million people was conducted by a major university's survey research center. A CATI instrument was developed to assess respondents' interpersonal relationship behaviors, financial behaviors and well-being, and demographic characteristics. To obtain a state-representative sample of currently married adults, the study required at least 500 telephone interviews from a random-digit dialed sample that was screened to assure that potential respondents were 18 years or older, currently married, and were sharing a residence with their spouse. To equalize the number of male and female respondents, a random selection procedure determined whether the male or female partner completed the interview. Further, because of the possibility of differential sensitivity to questions about respondents' marital relationship and/or financial practices, two forms of the CATI instrument were used. The first instrument asked a series of interpersonal and marital relationship items, followed by the financial wellness items. The second instrument reversed the order and asked the financial wellness items first, followed by the marital relationship items. Respondents were randomly assigned to one of these otherwise identical CATI instruments that took, on average, approximately 20 minutes to complete.

To assure that a probability sample was obtained, sampling procedures ensured that all adult residents in the sample had an equal probability of selection. For the current study, three of the 518 cases were dropped due to missing nearly 100% of the data. The remaining cases (515) were retained with varying levels of missing data. Throughout this study, parallel analyses showed the results of alternative missing data strategies, including listwise deletion and multiple imputation of missing data via a 9-implicate repeated imputation inference (RII) (Rubin, 1987). These procedures resulted in sample sizes of 320 when using listwise deletion for the entire set of relevant demographic, relationship, and finance variables, 486 when using listwise deletion for the eight PFW analytic variables, and 515 for the multiple-imputed data.

Measures

The data used by social science researchers often include missing values. To the extent that missing values exist, analysis of those data may result in misleading conclusions. As a result, researchers employ a number of alternatives to account for the loss of precision that results from missing data. Because this was the first formal analysis of PFW data collected via CATI, the effect of missing data on the measure was not known. Therefore, the data were analyzed under the commonly employed listwise deletion strategy and with the use of repeated inference multiple imputation. Multiple imputation typically provides more robust estimates of the variance associated with a point estimate than other missing data analysis methods (Acock, 2005; Fox-Wasylyshyn & El-Masri, 2005; Little & Rubin, 2002). To allow for comparisons, all analyses included estimates from an all-valid-cases strategy, a listwise deletion strategy, and a 9-implicate RII procedure (Royston, 2004, 2005; Rubin, 1987).

Demographics. Demographic characteristics of the respondent were collected. As shown in Table 1 for the full sample ($N = 515$), approximately 41% of respondents were male and the modal educational level was a high school education; 40% had a bachelor's degree, some graduate work, or an advanced degree. On average, respondents were 50 years of age and had been married 22 years. Approximately 80% of respondents were White and 17% were African American. Among the 354 who reported annual household income, approximately 30% were between $10,000-$49,000, 29% were between $50,000-$79,000, and 41% were $80,000 or more.

Financial Management Behaviors. Researchers interested in financial wellness are often interested in financial management behaviors and the topical goals of this study required the collection of financial behaviors. Therefore, two financial management measures were collected and are reported (see Table 2). First, the Money Management Systems Assessment (Kenney, 2006) provided information on whether money was pooled, who controlled the money, the amount left over at the end of the month, and satisfaction with the arrangements. Next, the 4-item Frequency of Financial Management Scale (Fitzsimmons, Hira, Bauer, & Hafstrom, 1993) assessed the frequency with which the husband and wife a) planned how to use money, b) wrote a budget, c) evaluated spending, and d) used a written budget. Again, although not used directly in this PFW assessment, these items were part of the overarching research and were reported for completeness.

Table 1. Demographic Variable Summary

Variable	Missing *n*	Missing %	Valid case value (*SE*)[a]	Listwise deletion value (*SE*)[b]	Multiple imputed value (*SE*)[c]
Mean age	6	1.2	50.5 (0.68)	47.6 *** (0.82)	50.5 ††† (0.68)
Education	6	1.2			
0-8 years			1.6%	0.6%	1.6%
9-11 years			4.1%	3.1%	4.1%
High school or GED			28.3%	28.1%	28.5%
Some college/tech school, no degree			16.7%	17.8%	16.6%
2-year degree			8.8%	8.8%	8.9%
Bachelor degree			20.4%	22.8%	20.3%
Some graduate work, no degree			4.7%	4.4%	4.7%
Advanced/professional degree			15.3%	14.4%	15.2%
Family income	161	31.3			
$0 - 19,999			3.7%	3.4%	3.5%
$20,000 - 29,999			6.2%	5.9%	6.3%
$30,000 - 39,999			9.3%	9.4%	8.7%
$40,000 - 49,999			10.7%	10.6%	10.6%
$50,000 - 59,999			11.0%	10.6%	11.4%
$60,000 - 69,999			9.0%	9.1%	8.4%
$70,000 - 79,999			9.3%	10.0%	9.1%
$80,000 - 89,999			11.9%	11.9%	12.5%
$90,000 - 99,999			6.5%	6.6%	6.2%
$100,000 or more			22.3%	22.5%	23.3%
First marriage for both	1	0.2	61.6% (2.16)	58.1% (2.76)	61.9% (2.15)
Mean number of times married[d]	3	0.6	2.2 (0.05)	2.2 (0.06)	2.2% (0.05)
Mean number of years married	1	0.2	22.7 (0.72)	19.6 *** (0.83)	22.8 ††† (0.72)
Race	9	1.7			
White			80.4%	77.5%	80.4%
African American			16.8%	20.0%	16.8%
Asian			1.0%	0.9%	1.0%
Multi-racial			1.8%	1.6%	1.8%
Male	3	0.6	40.8% (2.2)	43.1% (3.0)	40.8% (2.2)

Note. ***Significantly different from valid case value at 99% confidence level. †††Significantly different from listwise deletion value at 99% confidence level.
[a]All valid (non-missing) cases. Maximum, *N* = 515. [b]Listwise deletion, *N* = 320. [c]Multiple imputation, *N* = 515. [d]Only asked of those in second or higher marriage, *n* = 143.

Table 2. Financial Behavior Descriptive Summary

	Missing n	Missing $\%$	Valid case value (SE)[a]	Listwise deletion value (SE)[b]	Multiple imputed value (SE)[c]
Money Management Systems Assessment					
Who controls money	7	1.4			
Respondent			23.6%	25.0%	23.9%
Spouse			19.1%	19.1%	19.1%
Both equally			57.3%	55.9%	57.0%
Handle money	5	1.0			
Each keep money separate			13.1%	14.1%	13.1%
Some together, some separate			20.6%	20.3%	20.6%
Pool all money together			66.3%	65.6%	66.3%
Money at end of month	9	1.7			
More than enough left over			22.5%	21.2%	22.7%
Some money left over			53.0%	55.9%	52.9%
Just enough to make ends meet			21.9%	19.7%	21.9%
Not enough to make ends meet			2.6%	3.1%	2.6%
Satisfaction with how money handled 1 = very dissatisfied; 4 = very satisfied	3	0.6	3.7 (0.03)	3.8 ** (0.03)	3.7 †† (0.03)
Frequency of Financial Management Scale					
Use written budget 1 = never; 5 = most of the time	10	1.9	2.6 (0.02)	2.7 (0.09)	2.6 (0.08)
Evaluate spending 1 = never; 5 = most of the time	14	2.7	3.5 (0.07)	3.6 (0.08)	3.5 (0.07)
Make plans for spending money 1 = never; 5 = most of the time	10	1.9	2.6 (0.08)	4.2 *** (0.06)	4.2 ††† (0.05)
Write down where money is spent 1 = never; 5 = most of the time	11	2.1	3.4 (0.08)	3.5 (0.09)	3.4 (0.08)

Note. **Significantly different from valid case value at 95% confidence level. ***Significantly different from valid case value at 99% confidence level. ††Significant different from listwise deletion value at 95% confidence level. †††Significantly different from listwise deletion value at 99% confidence level.
[a]All non-missing cases. Maximum, $N = 515$. [b]Listwise deletion, $N = 320$. [c]Multiple imputation, $N = 515$.

Personal Financial Wellness. Financial wellness was based on responses to the PFW Scale™, an 8-item scale where composite mean scores range from 1 (lowest financial wellness) to 10 (highest financial wellness). To adjust for CATI use, modifications to the original PFW Scale™ were made, including reordering of questions to take advantage of similarly scaled Likert-style response categories and reverse coding to avoid anchor shifts (see Appendix).

Analyses

To evaluate the reliability, validity, and factor properties of the PFW Scale™, the analyses proceeded as follows. First,

the eight individual items and Cronbach alpha coefficients for the full PFW Scale™ were compared across four alternative missing data strategies: using all available data from valid cases ($N = 501\text{-}511$), using listwise deletion for cases based only on PFW items ($N = 486$), using listwise deletion for cases based on all variables used in the analysis ($N = 320$), and using multiple-imputation ($N = 515$). Second, principal axis factor analyses assessed the scales' properties in a manner consistent with the original Prawitz et al. (2006) single-factor solution derived from principal component analyses. Because the PFW Scale™ contains items that specifically ascertain separate objective and subjective items, it is plausible that researchers might generate separate subscales. Indeed, there may even be good reasons for individual researchers to investigate objective and subjective wellness separately. Therefore, a 2-factor principal axis solution was forced to determine the utility of separate objective and subjective wellness solutions. Again, because this is the first assessment of the use of the scale in a telephone interview, complete listwise and multiple-imputed solutions are shown.

Third, two confirmatory factor models were specified to assess alternative measurement models: the single-construct financial wellness model and an alternative 2-factor measurement model that consisted of separate objective and subjective factors. Each was estimated with and without multiple imputation. Fourth, the convergent validity of the PFW Scale™ and the Revised Dyadic Adjustment Scale (RDAS) (Busby, Crane, Larson, & Christensen, 1995), a scale commonly used by clinicians and researchers that captures relationship quality and well-being, was examined. The RDAS was used because prior researchers found that economic pressure and financial distress are highly correlated with relationship satisfaction (Conger et al., 1990; Fox & Chancy, 1998; Kerkmann, Lee, Lown, & Allgood, 2000).

Results

The assessment began with the measurement of the eight individual PFW items and Cronbach alpha coefficients for the full 8-item scale. As shown in Table 3, this was done across alternative missing-data strategies: all valid cases, listwise deletion based on PFW items, and a 9-implicate RII multiple imputation procedure. PFW item scores and summary scores were consistent across methods, as one would expect given the very low levels of missing data. Item level missing data ranged from four cases (0.7%) for the item measuring monthly living expenses to 14 cases (2.7%) for the item measuring the ability to go out. The

Cronbach alpha score for the 8-item PFW Scale™ under alternative listwise deletion strategies or multiple imputation did not vary significantly ($\alpha = 0.887$ to 0.897).

Next, two principal axis factor analyses were conducted for confirmation of the Prawitz et al. (2006) single-factor financial distress/financial well-being solution. The first used listwise deletion based on the PFW items (see Table 4) and the second was based on the 9-implicate imputed data (see Table 5). The single-factor confirmatory model extracted a single-factor solution ($\lambda_1 = 4.529$) that accounted for 56.6% of the variance. To assess the utility of separate objective and subjective subscales, a 2-factor solution was forced. The results of the forced 2-factor solution suggested that Factor 1 identified subjective financial wellness (financial stress, satisfaction, and feelings), whereas Factor 2 identified objective financial wellness (meet monthly expenses, ability to get $1,000 for financial emergency, ability to go out, living paycheck to paycheck). The two factors provided unique solutions and, when one reviews the questions that load on each of the factors, a high degree of face validity, yet Factor 2 (objective) did not surpass the common Eigenvalue threshold of 1.0 ($\lambda_1 = 4.529$; $\lambda_2 = 0.840$). Nevertheless, because of the advantages a parsimonious scale might offer CATI researchers, who often pay hundreds of dollars for each item included in a survey, the possibility that unique parsimonious subscales could be indentified was explored further.[2]

The results of separate parsimonious principal axis factor solutions are shown in Table 6. Solution 1 was the subjective factor comprised of stress, satisfaction, and feelings indicators (referred to as the PFW-SF1).[3] When treated as a short-form scale, the single factor solution was qualitatively similar to the full PFW scale. A negligible penalty was paid in the form of the Cronbach alpha (0.887 for PFW, 0.848 for PFW-SF1) and the core PFW goal "to measure the level of stress and well-being emanating from one's personal financial condition" (Prawitz et al. 2006, p. 36) was met. Financial wellness remained a unique single-factor solution ($\lambda_1 = 2.754$; $\alpha = 0.848$) and accounted for 68.9% of the variance. The second parsimonious solution included the objective items (monthly expenses, ability to find $1,000 in an emergency, not going out due to money, living paycheck to paycheck). Based on the forced 2-factor solution (see Tables 4 and 5) and the content of the questions, it was surmised that the second parsimonious scale (PFW-SF2) should identify tangible financial hardship. Alone, the PFW-SF2 ($\lambda_1 = 2.573$; $\alpha = 0.812$) accounted for 64.3% of the variance. Both the

Table 3. Descriptive Variable Summary: PFW Scale™ Items

Personal Financial Wellness Scale™ Items	Missing n	Missing %	Valid case value (SE)[a]	Listwise deletion (SE)[b]	Multiple imputed value (SE)[c]
Level of financial stress today 1 = overwhelming stress; 10 = no stress at all	7	1.4	6.94 (0.14)	7.18 (0.12)	7.21 (0.11)
Satisfaction with present financial situation 1 = dissatisfied; 10 = satisfied	6	1.2	6.80 (0.14)	7.05 (0.12)	7.02 (0.12)
Feelings about current financial situation 1 = feel overwhelmed; 10 = feel comfortable	6	1.2	7.20 (0.14)	7.44 (0.11)	7.43 (0.11)
Worry about monthly living expenses 1 = worry all the time; 10 = never worry	4	0.8	7.79 (0.16)	7.96 (0.13)	7.94 (0.13)
Confidence regarding financial emergency 1 = no confidence; 10 = high confidence	7	1.4	8.18 (0.16)	8.30 (0.13)	8.31 (0.13)
Can't afford to go out 1 = all the time; 10 = never	14	2.7	8.00 (0.14)	8.07 (0.12)	8.05 (0.12)
Paycheck to paycheck 1 = all the time; 10 = never	7	1.4	6.96 (0.18)	7.18 (0.15)	7.15 (0.15)
Stress about finances in general 1 = overwhelming stress; 10 = no stress at all	8	1.6	7.28 (0.15)	7.61 * (0.12)	7.61 * (0.12)
PFW Scale™ Values	4 - 18	0.8 - 3.5			
PFW Scale™ Summary score[d]			7.59 (0.09)	7.60 (0.09)	7.59 (0.12)
Cronbach's Alpha			0.888	0.887	0.888

Note: *Significantly different from valid case value at 90% confidence level.
[a]All valid (non-missing) cases. Minimum $N = 501$; Maximum $N = 511$. [b]Listwise deletion of PFW variables only, $N = 486$.
[c]Multiple imputation, $N = 515$. [d]PFW scores: 1 = overwhelming distress/lowest financial well-being; 10 = no financial distress/highest financial well-being.

PFW-SF1 subjective scale and the PFW-SF2 objective scale surpassed accepted internal consistency levels (Nunnaly, 1978). By some accounts these should be preferred given that extremely high alphas (i.e., $\alpha = 0.956$) reported by Prawitz et al. (1996), signal unnecessary redundancy (Clark & Watson, 1995; DeVellis, 1991).

Confirmatory Factor Analyses
To assess whether the original PFW Scale™ performed better than a 2-factor solution, two confirmatory factor models were specified (see Figures 1 and 2). As shown in Table 7, the original Prawitz et al. (2006) single factor

solution (Models 1 and 2) and the alternative 2-factor solutions (Models 3 and 4) were specified under listwise deletion and multiple-imputation procedures.

As shown by the path coefficients in Table 7, the direction and magnitude of the specified paths were consistent with the earlier principal axis factor analyses. Specifically, path coefficients were positive and significant. However, the model fit indicators offered insights into the relative quality of the models. Most importantly, the alternative 2-factor models with separate objective and subjective items (Models 3 and 4) best fit the data. On all fit indica-

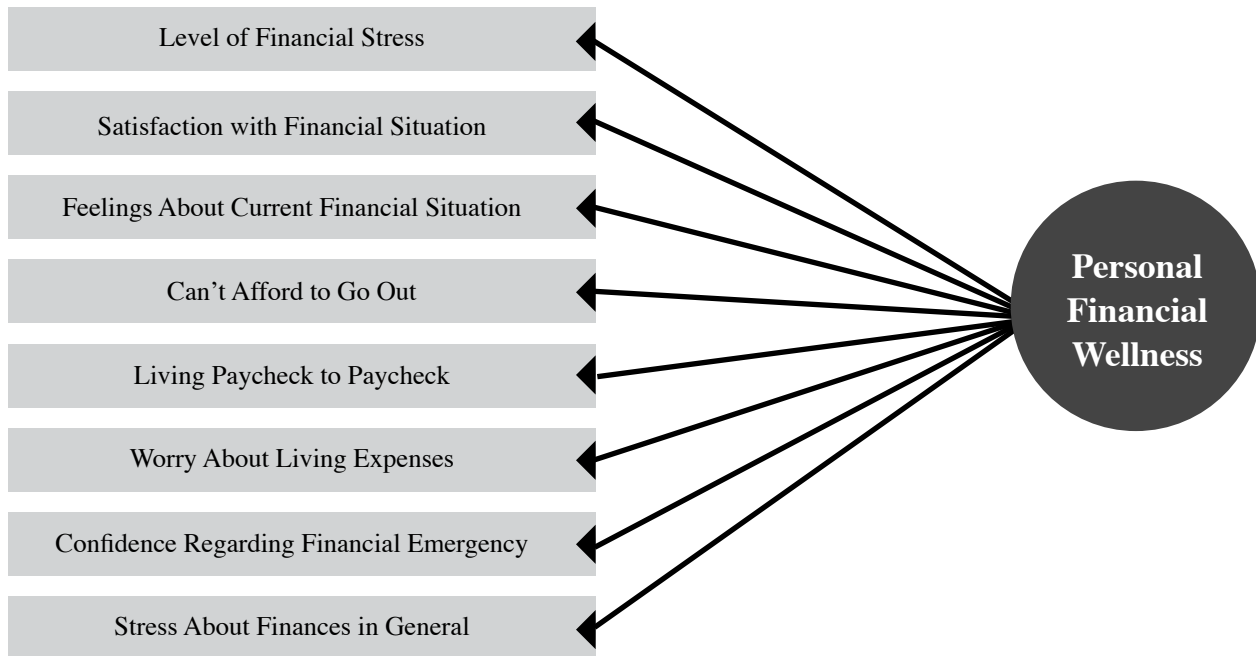**Figure 1. Original Personal Financial Wellness Measurement Model**

| Level of Financial Stress |
| Satisfaction with Financial Situation |
| Feelings About Current Financial Situation |
| Can't Afford to Go Out |
| Living Paycheck to Paycheck |
| Worry About Living Expenses |
| Confidence Regarding Financial Emergency |
| Stress About Finances in General |

Personal Financial Wellness

Figure 2. Alternative 2-Factor Personal Financial Wellness Measurement Model

| Level of Financial Stress |
| Satisfaction with Financial Situation |
| Feelings About Current Financial Situation |
| Can't Afford to Go Out |
| Living Paycheck to Paycheck |
| Worry About Living Expenses |
| Confidence Regarding Financial Emergency |
| Stress About Finances in General |

PFW-SF1 Subjective Financial Wellness
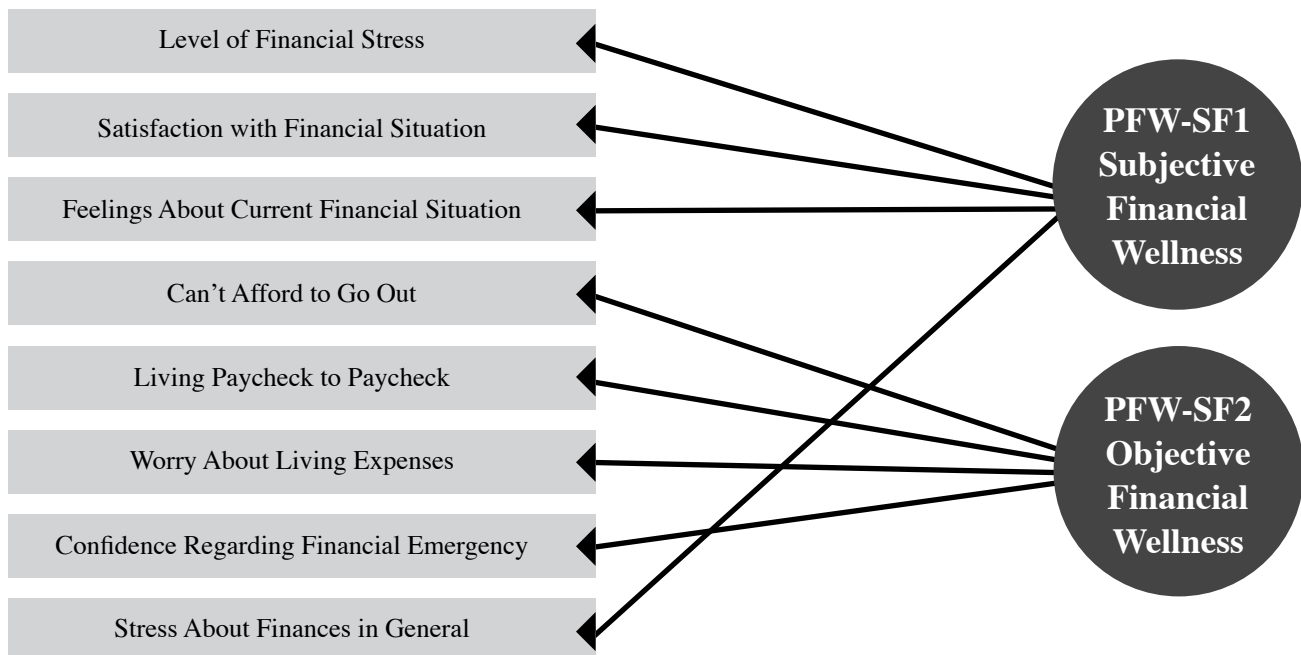
PFW-SF2 Objective Financial Wellness

Table 4. Factor Loadings for PFW Scale™ Principal Axis Factor Analysis (*N* = 486)

Item	*M*	*SD*	Single-factor solution[a]	Forced 2-factor solution[b] Factor 1	Factor 2
Level of financial stress today 1 = overwhelming stress; 10 = no stress at all	7.18	2.55	0.744	<u>0.752</u>	0.313
Satisfaction with present financial situation 1 = dissatisfied; 10 = satisfied	7.05	2.59	0.650	<u>0.585</u>	0.330
Feelings about current financial situation 1 = feel overwhelmed; 10 = feel comfortable	7.44	2.50	0.723	<u>0.661</u>	0.360
Worry about monthly living expenses 1 = worry all the time; 10 = never worry	7.96	2.64	0.795	0.418	<u>0.751</u>
Confidence regarding financial emergency 1 = no confidence; 10 = high confidence	8.30	3.34	0.577	0.294	<u>0.526</u>
Can't afford to go out 1 = all the time; 10 = never	8.07	2.86	0.624	0.267	<u>0.634</u>
Paycheck to paycheck 1 = all the time; 10 = never	7.18	2.83	0.742	0.385	<u>0.677</u>
Stress about finances in general 1 = overwhelming stress; 10 = no stress at all	7.61	2.61	0.810	<u>0.699</u>	0.442

Note. Listwise deletion based on PFW Scale™ variables resulted in *N* = 486.
[a]A single factor ($\lambda_1 = 4.529$) solution accounted for 56.6% of the variance. [b]Items with factor loadings above .50 are underlined. The first factor ($\lambda_1 = 4.529$) solution accounted for 56.6% of the variance. Factor 2 ($\lambda_2 = 0.840$) accounted for 10.5% of the variance (67.1% total).

tors the alternative 2-factor models provided a better fit of the data than the single-factor PFW Scale™. For example, the RMSEA values of .02 and .02 for Models 3 and 4, respectively, indicated a much better fit of the actual data (Bollen, 1989; Byrne, 1998) than the poorly fitting .117 and .114 for Models 1 and 2, respectively. Similar differences were found for the estimated Goodness of Fit Index ($GFI_{M1} = .93$, $GFI_{M2} = .93$, $GFI_{M3} = .99$, $GFI_{M4} = .99$) and the Adjusted Goodness of Fit Index which accounts for model complexity ($AGFI_{M1} = .87$, $AGFI_{M2} = .87$, $AGFI_{M3} = .98$, $AGFI_{M4} = .98$). In fact, the AGFI values for Models 1 and 2 were below acceptable fit thresholds (Bollen, 1989; Byrne, 1998). Finally, estimates of the adequacy of the sample sizes necessary to fit the specified models, as indicated by Hoelter's Critical *N*, indicated that Models 3 and 4 exceeded the conventional sample size adequacy indicator of a Critical *N* of 200 (Hoelter, 1983) or higher whereas

the single-factor models did not ($CN_{M1} = 148.29$, $CN_{M2} = 155.65$, $CN_{M3} = 770.38$, $CN_{M4} = 802.33$). Together, the path and model fit indicators suggest that the original PFW single-factor models resulted in a less compelling fit of these data than what was achieved with the separate subjective and objective measurement model.

A Pearson's rho was computed for each of the PFW Scale™ and the Revised Relationship Dyadic Adjustment Scale (RDAS) to assess the convergent validity of the PFW Scale™. Researchers have shown that these measures assess related constructs, (i.e., financial well-being and marital adjustment) (Conger et al., 1990; Fox & Chancy, 1998; Kerkmann, Lee, Lown, & Allgood, 2000), but the PFW and RDAS instruments do not contain overlapping content (Busby et al., 1995; Prawitz et al., 2006). As shown in Table 8, the original PFW single-factor scale

Table 5. Factor Loadings for PFW Scale™ Principal Axis Factor Analysis (*N* = 515)

Item	*M*	*SD*	Single factor solution[a]	Forced 2-factor solution[b] Factor 1	Factor 2
Level of financial stress today 1 = overwhelming stress; 10 = no stress at all	7.21	2.55	0.732	<u>0.742</u>	0.305
Satisfaction with present financial situation 1 = dissatisfied; 10 = satisfied	7.02	2.61	0.658	<u>0.586</u>	0.339
Feelings about current financial situation 1 = feel overwhelmed; 10 = feel comfortable	7.43	2.50	0.724	<u>0.655</u>	0.367
Worry about monthly living expenses 1 = worry all the time; 10 = never worry	7.94	2.89	0.801	0.432	<u>0.714</u>
Confidence regarding financial emergency 1 = no confidence; 10 = high confidence	8.31	2.83	0.576	0.305	<u>0.512</u>
Can't afford to go out 1 = all the time; 10 = never	8.05	2.65	0.617	0.258	<u>0.635</u>
Paycheck to paycheck 1 = all the time; 10 = never	7.15	3.34	0.748	0.389	<u>0.683</u>
Stress about finances in general 1 = overwhelming stress; 10 = no stress at all	7.61	2.61	0.816	<u>0.710</u>	0.441

Note. Estimates from multiple-imputed values from nine implicates.
[a]A single factor ($\lambda_1 = 4.541$) solution accounted for 56.8% of the variance. [b]Items with factor loadings above .50 are underlined. The first factor ($\lambda_1 = 4.541$) solution accounted for 56.8% of the variance. Factor 2 ($\lambda_2 = 0.830$) accounted for 10.4% of the variance (67.1% total).

and the alternative subscales were correlated with RDAS in the expected direction. To confirm that the PFW full and subscales discriminated between respondents with high (RDAS = 48 or higher; *n* = 351; range = 48 - 67) and low (RDAS = 47 or lower; *n* = 135; range = 10 - 47) marital adjustment, means across the three PFW scales were compared. The ANOVA tests distinguished between groups appropriately. That is, respondents with high marital adjustment reported higher financial wellness, $F(1, 484) = 16.358, p < .01$, higher subjective financial wellness using the PFW-SF1, $F(1, 484) = 12.986, p < .01$, and higher objective financial wellness using the PFW-SF2, $F(1, 484) = 14.592, p < .01$, than those with low marital adjustment.

Finally, the order of the relationship questions and the financial questions in the survey instrument was examined to determine whether the placement in the CATI in-

strument was associated with varying responses. Mean responses on instrument A (*n* = 231), which placed the relationship questions before the finance questions, were compared with responses on instrument B (*n* = 255), which placed the finance questions before the relationship questions. There was no significant difference on any individual item or scale.

Discussion

This assessment of the Personal Financial Wellness Scale, which to the author's knowledge was the first assessment of the use of the PFW Scale™ via computer assisted telephone interviews, offers several insights into the utility of using the PFW Scale™ to assess the financial well-being of telephone interview respondents. First, the level of missing values across nearly all finance related questions was remarkably low, suggesting that respondents found

Table 6. Parsimonious Principal Axis Factor Analysis: Listwise Deletion and Multiple Imputation Solutions

Item	Listwise deletion solution[a]		Multiple imputation solution[b]	
	PFW-SF1 (Subjective)	PFW-SF2 (Objective)	PFW-SF1 (Subjective)	PFW-SF2 (Objective)
Level of financial stress today 1 = overwhelming stress; 10 = no stress at all	0.807		0.794	
Satisfaction with present financial situation 1 = dissatisfied; 10 = satisfied	0.669		0.673	
Feelings about current financial situation 1 = feel overwhelmed; 10 = feel comfortable	0.757		0.754	
Worry about monthly living expenses 1 = worry all the time; 10 = never worry		0.838		0.840
Confidence regarding financial emergency 1 = no confidence; 10 = high confidence		0.599		0.591
Can't afford to go out 1 = all the time; 10 = never		0.679		0.675
Paycheck to paycheck 1 = all the time; 10 = never		0.780		0.789
Stress about finances in general 1 = overwhelming stress; 10 = no stress at all	0.825		0.836	
Cronbach's alpha coefficient	0.848	0.812	0.848	0.812

[a]Listwise deletion based on PFW Scale™ variables resulted in $N = 486$. The parsimonious subjective factor ($\lambda_1 = 2.754$) accounted for 68.9% of the variance. The objective parsimonious scale ($\lambda_1 = 2.573$) accounted for 64.3% of the variance.
[b]$N = 515$. Estimates from 9 implicates. The parsimonious subjective factor ($\lambda_1 = 2.752$) accounted for 68.8% of the variance. The parsimonious objective scale ($\lambda_1 = 2.572$) accounted for 64.3% of the variance.

the eight individual PFW items to be non intrusive. People are frequently unwilling to answer direct questions about objective financial information. For example, even with income split into 10 mutually exclusive categories, almost one third of this sample refused to divulge their income. However, respondents were very willing to answer all PFW Scale™ items. Missing values for the eight individual PFW items never exceeded 2.7%. Even when listwise deletion procedures were invoked on the PFW variables, the combined level of missing data remained a mere 3.5%. More importantly, as indicated in Table 4, there was no discernable pattern of missing data. For those interested in assessing financial well-being via telephone, these results are encouraging.

Second, whether the PFW Scale™ items were placed at the beginning of the interview (prior to the marital relationship items) or at the end of the interview (after the marital relationship items), the responses were not significantly different. Because researchers are often interested in these complementary topics (for example, does financial distress increase relationship conflict, or does relationship conflict increase financial distress), these results are also encouraging.

Third, alternative missing data methods appear to have little affect on PFW estimates, though these data are certainly below a level that would cause concern about missing data. This makes the decision of whether to use

Table 7. Original and Alternative Confirmatory Factor Analysis Measurement Models

	Original single factor solution		Alternative 2-factor solution			
			Listwise deletion N = 486		Multiple-imputed solution N = 515	
	Listwise deletion N = 486	Multiple-imputed N = 515	PFW-SF1 (Subjective)	PFW-SF2 (Objective)	PFW-SF1 (Subjective)	PFW-SF2 (Objective)
	Model 1	Model 2	Model 3		Model 4	
Level of financial stress today	1.92 (0.10) 18.81	1.89 (0.10) 18.99	2.02 (0.10) 19.99		1.99 (0.10) 20.14	
Satisfaction with present financial situation	1.68 (0.11) 15.44	1.72 (0.11) 16.14	1.73 (0.11) 15.81		1.76 (0.11) 16.45	
Feelings about current financial situation	1.82 (0.10) 17.91	1.82 (0.10) 18.45	1.88 (0.10) 18.62		1.88 (0.10) 19.13	
Worry about monthly living expenses	2.25 (0.11) 20.00	2.29 (0.11) 20.86		2.42 (0.11) 21.78		2.45 (0.11) 22.58
Confidence regarding financial emergency	1.61 (0.12) 13.06	1.61 (0.12) 13.49		1.68 (0.12) 13.58		1.67 (0.12) 13.89
Can't afford to go out	1.64 (0.11) 14.61	1.64 (0.11) 14.89		1.76 (0.11) 15.63		1.75 (0.11) 15.94
Paycheck to paycheck	2.46 (0.13) 18.27	2.49 (0.13) 19.08		2.62 (0.13) 19.60		2.65 (0.13) 20.40
Stress about finances in general	2.12 (0.10) 21.02	2.14 (0.10) 21.84	2.20 (0.10) 21.90		2.22 (0.10) 22.85	
Model fit indicators						
χ^2	152.11***	153.11***	22.81		23.28	
df	20.00	20.00	19.00		19.00	
χ^2/df	7.61	7.66	1.20		1.23	
Hoelter's critical *n*	148.29	155.65	770.38		802.33	
GFI	0.93	0.93	0.99		0.99	
AGFI	0.87	0.87	0.98		0.98	
RMSEA	0.117	0.114	0.02		0.02	

Note. First row is estimated coefficient, second row is standard error of the estimate, and third row is the *t*-value. All path estimates significant at greater than 99% confidence level.
*p < .10. **p < .05. ***p < .01.

Table 8. Mean (SD) and Intercorrelations for PFW Scale™, Possible PFW Subscales, and Marital Adjustment (RDAS)

	PFW	PFW-SF1	PFW-SF2	RDAS
PFW	1.000	0.913	0.929	0.270
PFW-SF1		1.000	0.697	0.269
PFW-SF2			1.000	0.231
Marital adjustment (RDAS)				1.000
Overall sample mean (SD)	7.60 (2.06)	7.32 (2.12)	7.88 (2.34)	50.99 (8.96)
Low marital adjustment Sample mean (SD)	7.00 (2.29)	6.77 (2.36)	7.23 (2.54)	39.70 (8.20)
High marital adjustment Sample mean (SD)	7.83 (1.91)	7.54 (1.99)	8.13 (2.21)	55.27 (4.30)

Note. All correlations and F-values significant at $p < .01$. Low marital adjustment (RDAS 47 or lower) sample, $n = 135$. High marital adjustment (RDAS 48 or higher) sample, $n = 351$.

multiple-imputation for missing values somewhat challenging. On one hand, with multiple imputation procedures becoming increasingly simple to estimate, it makes little sense to drop cases or introduce bias associated with mean replacement strategies (Acock, 2005). On the other hand, if researchers are faced with samples that are similar to the one reported here, the computational complexity of the multiple imputation procedure is unlikely to yield results that are different enough to warrant the time and resources. Even with the advent of simple software-based imputation, the process may not be worth the cost. Rubin (1987) and Acock (2005) provide sage advice for researchers facing this question.

Fourth, PFW internal consistency, as measured by Cronbach's alpha, was very strong at about 0.89. A relatively small price is paid when partitioning the full 8-item PFW into two, 4-item objective and subjective subscales. As calculated in this research, the PFW-SF1 was 0.85 and the PFW-SF2 was 0.81, both well within reasonable bounds for psychometric measures (Nunnally, 1978). This finding suggests that if one's goals centered on subjective or objective financial well-being/financial distress and one does not have the resources to collect all eight items, this possibility is worth considering. When compounded with a desire to minimize respondent burden or the pecuniary costs associated with CATI surveys, this option may be even more attractive.

As noted earlier, in the current economic environment where record numbers of consumers are suffering financial hardships, it is crucial that financial wellness research be conducted with appropriate attention to the methods used and with procedures that allow one to reach the intended respondents. Fortunately, the analyses reported here confirmed that the Personal Financial Wellness Scale was robust and performed well as a single latent construct and as a 2-construct measure of objective financial well-being (PFW-SF1) and subjective financial well-being (PFW-SF2), providing researchers with options for the use of the scale in computer-assisted telephone interviews. Researchers are encouraged to use the CATI adaptations reported here as greater use of the PFW Scale™ in scientifically sampled telephone interviews of different populations (i.e., samples other than cohabitating, currently-married adults) will allow for additional examinations of the reliability and validity of the scale. This suggestion for greater use of the PFW Scale™ in telephone interviews is warranted as this first attempt resulted in extremely low levels of missing data that exhibited no detectable systematic patterns of missingness, was not affected by location in the CATI instrument, provided very strong internal reliability indicators under varying assumptions of underlying latent structure, and measured both subjective and objective financial well-being. Greater use of the PFW Scale™ in additional state-representative samples will undoubtedly strengthen

our understanding of financial wellness among populations of programmatic and policy interest.

Acknowledgments

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Appendix

Personal Financial Wellness (PFW) Scale™ as Modified for CATI

> Q1 - On a scale of 1 to 10 where 1 is "no stress at all" and 10 is "overwhelming stress," what do you feel is the level of your financial stress today?[a]

> Q2 - On a scale of 1 to 10 where 1 is "dissatisfied" and 10 is "satisfied," how satisfied are you with your present financial situation?

> Q3 - On a scale of 1 to 10 where 1 is "feeling comfortable" and 10 is "overwhelmed", how do you feel about your current financial condition?[a]

> The next few questions will use a scale of 1 to 10 where 1 is "never" and 10 is "all of the time."

> Q4 - How often does this happen to you? You want to go out to eat, go to a movie, or do something else and you don't go because you can't afford it?[a]

> Q5 - How frequently do you find yourself just getting by financially and living paycheck to paycheck? [a]

> Q6 - How often do you worry about being able to meet normal monthly living expenses?[a]

> Q7 - On a scale of 1 to 10 where 1 is "no confidence" and 10 is "high confidence," how confident are you that you could find the money to pay for a financial emergency that costs about $1,000?

> Q8 - On a scale of 1 to 10 where 1 is "no stress at all" and 10 is "overwhelming stress," how stressed are you about your personal finances in general?[a]

[a] The direction of the responses on this item was reversed for this survey to reduce respondent confusion that occurs from response direction shifts. The responses were recoded to be consistent with the original scoring of the PFW Scale™.

Endnotes

[1] The scale was called the InCharge Financial Distress/Financial Well-Being (IFDFW) when Prawtiz et al. (2006) reported its development in this journal. It is now called the Personal Financial Wellness Scale (PFW Scale™).

[2] This survey was conducted by a state supported, campus-based survey research center. The per-item rates in 2010 were $500. The marginal cost per item on online and paper-and-pencil assessments are much lower.

[3] For ease, the two subscales are referred to as "short form" alternatives. Thus, the full PFWScale™ may be disaggregated to the PFW-SF1 (subjective) and PFW-SF2 (objective).