

FINANCIAL WELL-BEING BEYOND INCOME: CROSS-CULTURAL VALIDATION OF A SUBJECTIVE FINANCIAL HEALTH SCALE USING GRADED RES- PONSE MODELS IN COLOMBIA AND MEXICO

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Abstract

This study aimed to adapt and validate a multidimensional subjective financial health scale in Colombia and Mexico by examining its internal structure, cross-country measurement invariance, and item parameters using item response theory. A CAWI survey was administered to 1,200 adults (600 per country). Content validity was supported by high interjudge agreement (weighted $\kappa = .81$). Exploratory factor analyses yielded interpretable subdimensions within each domain. Multigroup confirmatory factor analysis supported strict invariance across countries for all subscales. Items were calibrated using Samejima's graded response model, showing adequate discrimination and ordered thresholds. A three-level hierarchical CFA supported a general financial health factor integrating anxiety, subjective well-being, financial literacy, and financial behaviors, with satisfactory convergent validity and composite reliability. The instrument is suitable for cross-national research and applied assessment of subjective financial health in Latin American middle-class contexts.

Keywords: Cross Cultural Test Adaptation; Measurement Invariance; Differential Item Functioning; Item Response Theory; Financial Well-Being

INTRODUCTION

Financial health can be understood as a state in which individuals manage everyday finances effectively, can respond to emergencies, and sustain confidence in their economic future (Netemeyer et al., 2018). This construct encompasses, on the one hand, observable indicators such as income, expenses, savings, and debt; on the other hand, it includes subjective appraisals related to perceived control, security, and financial satisfaction (Joo & Grable, 2004; Gerrans et al., 2014). Recent evidence suggests that subjective measures—such as perceived ability to cover expenses or stress responses to debt—often capture daily financial experience more precisely than purely objective metrics (Delafruez & Paim, 2011; Diener et al., 2008). This has clear implications for applied psychological measurement: credit allocation for individuals without formal credit history increasingly depends on the sensitivity and specificity of psychosocial instruments capable of estimating default risk and repayment outcomes across the life cycle of debt (van Thiel et al., 2024).

In Latin America, research on financial well-being has primarily focused on vulnerable populations (Sweet et al., 2013), university students (van Thiel et al., 2024), low-income individuals (Sabri & Zakaria, 2015), and participants in social programs or microfinance initiatives (Sabri & Juen, 2014). This emphasis may limit understanding of the middle class' challenges in relation to the financial system, debt, saving, retirement planning, and financial satisfaction (Kim et al., 2003). It is also plausible that developers of financial products and payment technologies have relied on this evidence base—or imported models from other industries—without quantifying downstream externalities or behavioral frictions that emerge in middle-income segments (Joo, 2008).

There is comparatively little research on subjective financial health among middle- and upper-middle socioeconomic groups in Latin America; therefore, available instruments may lack adequate contextual calibration. A measurement framework proposed by Prakash and Hawaldar (2023) posits four interrelated domains: (1) financial anxiety/stress, (2) financial literacy, (3) financial behaviors, and (4) subjective financial well-being. Under this framework, the present study designed and calibrated a culturally neutral instrument to assess subjective financial health in Colombia and Mexico. Psychometric calibration using item response theory and cross-country invariance testing—providing evidence of cultural neutrality—were the central aims of the study (Chen, 2007; Meitinger, 2017).

METHOD

Design

The study used an instrumental, cross-sectional design without a retest component, consistent with recommended practices for scale development and validation in behavioral and health research (Boateng et al., 2018).

Participants

A total of 1,200 young adults participated (600 in Mexico and 600 in Colombia). The sample included economically active adults, predominantly from middle and upper-middle socioeconomic strata, with ages ranging from 18 to 40 years. Table 1 summarizes demographic characteristics.

TABLE 1 Sample characteristics

Characteristic	Colombia	Mexico
Gender: Men	39%	33%
Gender: Women	61%	67%
Age: 18–29	42%	42%
Age: 30–40	59%	58%
City: Bogotá	28%	—
City: Medellín	27%	—
City: Cali	25%	—
City: Barranquilla	20%	—
City: Mexico City	—	67%
City: Guadalajara	—	33%
SES: Low	37%	29%
SES: Middle	50%	51%
SES: High	13%	20%
<i>Note.</i> Percentages may not sum to 100 due to rounding.		

Measure: Subjective Financial Health Scale

An initial pool of 53 culturally adapted items was developed from the conceptual framework of Prakash and Hawaldar (2023), covering four domains: financial stress/anxiety, subjective financial well-being, financial literacy, and financial behavior. Items were rated on a 5-point Likert agreement scale (1 = Strongly disagree; 5 = Strongly agree). During data collection, a nonresponse option was allowed and coded as missing. Content validity was examined via expert agreement. Five independent judges classified items into the intended theoretical domains; weighted kappa was .81, indicating high agreement (Landis & Koch, 1977). The final calibrated solution reported here retained 49 items after psychometric screening.

Measure: Subjective Financial Health Scale

Data were collected via a CAWI (Computer-Assisted Web Interview) survey. Completion time averaged 15–17 minutes. Records with substantial missingness (>5% unanswered items) were removed. Response quality checks included minimum completion time and detection of invariant or random response patterns. No extreme outliers were removed after inspecting distributions and multivariate distances.

Data Analysis

Analyses followed a staged framework. First, exploratory factor analyses (EFA) were conducted separately by country to identify preliminary latent structures within each domain. Second, MG-CFA tested measurement invariance between Colombia and Mexico (configural, metric, scalar, and strict). Because items are ordinal, models used a robust categorical estimator; invariance decisions followed Chen's (2007) guidelines using changes in CFI and RMSEA.

Third, internal consistency was estimated via McDonald's omega (ω) (McDonald, 1999). Finally, IRT graded response models (Samejima, 1969) estimated item discrimination and category thresholds. Item-level fit was evaluated using residual-based indices. Latent trait scores were obtained using MAP and EAP estimates; for interpretability, θ estimates were transformed to T-scores ($M = 50$, $SD = 10$) for cross-group comparison (Embretson & Reise, 2000). This IRT approach follows established measurement guidance for psychological constructs (Baker & Kim, 2017; De Ayala, 2022). Additionally to examine structural validity at multiple levels, a three-level hierarchical CFA was conducted (De Ayala, 2022). Items loaded on specific subfactors (e.g., somatization, spending control), which formed second-order domains (financial anxiety, subjective well-being, financial literacy, financial behavior), which in turn loaded on a third-order general factor labeled subjective financial health. Estimation used WLSMV due to ordinal items (Brown, 2015). Convergent validity was evaluated using average variance extracted ($AVE \geq .50$), and composite reliability ($CR \geq .70$) was used for internal consistency at each level (Fornell & Larcker, 1981; Hair et al., 2019).

RESULTS

Dimensionality and Measurement Invariance

Financial stress and anxiety subscale

Across both countries, EFAs supported a three-factor structure: somatization, worry about future crises, and anxiety about loss of capacities. MG-CFA supported strict invariance between Colombia and Mexico (Table 2), indicating that item meanings, loadings, thresholds, and residuals are comparable across countries (Chen, 2007). GRM calibration yielded adequate discrimination and ordered thresholds; item-fit indices supported appropriate functioning of items across the latent continuum.

Subjective financial well-being subscale

EFA results suggested a two-factor structure: planning/saving/foresight and perceived current solvency. MG-CFA again supported strict invariance across countries (Table 2). Item discrimination values were generally moderate-to-high, supporting the use of the scale for individual differences in perceived financial well-being.

Financial literacy subscale

Financial literacy showed a two-factor structure: technical financial knowledge and practical financial knowledge. Strict invariance across countries was supported (Table 2). Item functioning indicated that technical knowledge items tend to differentiate more strongly at moderate-to-higher levels of the trait, whereas practical knowledge items cover a broader range of financial capability in daily contexts.

Financial behavior subscale

Financial behavior exhibited a three-factor structure: credit and payments management, financial planning, and spending control. Strict invariance was supported across Colombia and Mexico (Table 2). GRM results indicated that certain basic behaviors (e.g., paying obligations on time) are relatively common even among lower-scoring individuals, whereas advanced practices (e.g., actively optimizing payment structures and fees) characterize higher financial sophistication.

Hierarchical CFA: three-level subjective financial health model

The hierarchical CFA supported the proposed three-level structure. At the first-order level, AVE ranged from .51 to .80, with CR between .76 and .93, indicating acceptable internal consistency even for dimensions with more heterogeneous loadings (e.g., financial planning). At the second-order level, convergent validity was strong (domain-level AVE: financial anxiety = .65; subjective well-being = .95; financial literacy = .90; financial behavior = .84) and CR exceeded recommended thresholds (CR range: .84–.98). At the third-order level, the general subjective financial health factor showed AVE = .65 and CR = .80, supporting both the meaningfulness of a global construct and the robustness of internal consistency (Fornell & Larcker, 1981; Hair et al., 2019).

TABLE 2 Measurement invariance summary across Colombia and Mexico

Domain	Configural (CFI/RMSEA/SRMR)	Strict (CFI/RMSEA/SRMR)	Max CFI decrease	Max RMSEA increase
Financial stress/anxiety	.99 / .02 / .02	.99 / .02 / .02	.0002	.0009
Subjective financial well-being	.98 / .15 / .07	.98 / .12 / .08	.0020	.0010
Financial literacy	.99 / .06 / .04	.99 / .05 / .04	.0006	.0012
Financial behavior	.98 / .07 / .05	.98 / .06 / .06	.0010	.0010
<i>Note.</i> Invariance decisions followed Chen's (2007) criteria using changes in fit between nested models.				

IRT Calibration and Reliability

Across domains, graded response model estimates indicated adequate-to-high discrimination and ordered thresholds spanning low-to-high levels of the latent traits. Reliability estimates were consistently strong across subdimensions. Table 3 provides a condensed summary of discrimination ranges, threshold coverage, and ω coefficients.

A hierarchical model supported the interpretation of a general financial health factor explaining the four second-order domains through coherent first-order subdimensions. Convergent validity and reliability indices were acceptable across levels, supporting both domain-level scoring and an overall composite interpretation.

TABLE 3 IRT and reliability summary by subdimension (final calibrated solution)

Domain	Subdimension	Items (n)	ω (McDonald)	Discrimination a (range)	Threshold coverage (approx. min–max)	Item-fit RMSEA (range)
Financial stress/anxiety	Somatization	4	.88	2.52–3.31	–0.59 to 2.15	.028–.036
	Future worry	5	.86	2.01–2.59	–0.74 to 2.56	.022–.033
	Capacity-loss anxiety	2	.83	2.42–4.97	–0.87 to 2.32	.026–.032
Subjective financial well-being	Planning/saving	7	.86	1.80–3.36	–2.16 to 1.61	.031–.042
	Perceived solvency	6	.79	1.84–2.95	–1.87 to 1.71	.030–.042
Financial literacy	Technical knowledge	5	.85	2.08–3.33	–2.32 to 1.28	.042–.047
	Practical knowledge	6	.80	1.70–2.40	–2.87 to 1.39	.033–.043
Financial behavior	Credit & payments	7	.86	1.10–2.72	–3.40 to 1.59	.028–.038
	Financial planning	3	.73	1.21–2.72	–2.38 to 1.83	.029–.043
	Spending control	4	.74	1.27–2.61	–3.31 to 1.30	.033–.039
<i>Note.</i> Threshold coverage summarizes the approximate minimum and maximum category thresholds across items within each subdimension.						

DISCUSSION

This study aimed to adapt and validate a multidimensional subjective financial health scale in two Latin American countries, providing evidence for its internal structure, cultural equivalence, and psychometric performance. Overall, findings support the utility of the instrument for assessing subjective components of financial health, while also highlighting conceptual nuances and areas for refinement (Boateng et al., 2018). Regarding dimensionality, results reinforce that financial well-being is multifaceted. The financial stress subscale separated into somatization, worry about future crises, and anxiety about loss of capacities—consistent with psychological perspectives distinguishing immediate versus anticipatory financial anxiety (Sabri & Juen, 2014; Shim et al., 2009). Anxiety about loss of capacities plausibly reflects concerns about future autonomy and vulnerability, aligning with loss aversion mechanisms emphasized in prospect theory (Kahneman & Tversky, 1979). Subjective financial well-being split into planning/saving/foresight versus present solvency, converging with definitions that differentiate current security from future-oriented expectations (CFPB, 2017; Netemeyer et al., 2018). This supports measuring immediate satisfaction separately from longer-term expectations, as these may reflect distinct psychological processes (Brüggen et al., 2017).

Financial literacy emerged as a dual construct: technical knowledge and practical knowledge. This distinction is consistent with evidence that understanding financial concepts does not necessarily translate into effective everyday decisions (Fernandes et al., 2014), and it aligns with findings that financial education can improve knowledge and behaviors, albeit with variable downstream effects depending on context and implementation (Kaiser et al., 2022). For financial behavior, the observed three-factor structure—credit management, planning, and responsible consumption—is consistent with prior behavioral classifications used to understand financial capability and well-being (Xiao & Porto, 2021). In IRT terms, some “baseline” behaviors may be common even among lower-performing individuals, whereas advanced practices mark higher levels of financial sophistication (Baker & Kim, 2017; De Ayala, 2022).

A key contribution is that strict invariance was achieved between Mexico and Colombia across all subscales. This implies that items retain comparable meaning and relative difficulty across the two countries, supporting cross-cultural validity in Latin American contexts with similar socioeconomic profiles (Chen, 2007). Nonetheless, assessing stability in more culturally diverse populations remains a priority. In that direction, complementary approaches such as online probing can strengthen invariance interpretations when standard fit criteria alone are insufficient (Meitinger, 2017).

General psychometric properties were satisfactory: reliability indices were consistently strong (ω typically between .73 and .88 across subdimensions; McDonald, 1999), and GRM parameters showed that most items contribute meaningful information along the latent trait continuum (Samejima, 1969). Although some global fit indices were less favorable for subjective well-being and literacy, item-level fit supported internal validity, suggesting that simple factor models may not fully capture construct complexity in similar evaluations (Baker & Kim, 2017; Brown, 2015).

From a behavioral science perspective, the results support interpretations grounded in behavioral economics (Tversky & Kahneman, 1974). The relationship between present solvency and future planning suggests an internal financial locus of control associated with stronger economic discipline (Cobb-Clark et al., 2016; Strömbäck et al., 2020). The gap between technical knowledge and practical application echoes the well-documented intention–action distance in financial behaviors (Fernandes et al., 2014; Lusardi & Mitchell, 2014). Moreover, the association between impulsive consumption tendencies and higher financial stress is consistent with evidence linking self-control problems to reduced economic well-being (Spinella et al., 2015) and aligns with applied personal finance perspectives emphasizing habits and budgeting discipline (Garman & Forgue, 2014). In settings where household debt and financial strain also predict adverse mental and physical health outcomes, a robust subjective financial health measure can be valuable for prevention and intervention programs (Sweet et al., 2013), particularly for vulnerable consumers (Xiao & Porto, 2021).

Limitations include convenience sampling, which restricts generalizability; the cross-sectional design, which precludes causal inference; and the need to examine the scale in additional cultural environments. Potential conceptual redundancies in some subscales were also identified and could be addressed in future refinements. In sum, the model supports a view of financial well-being as an integration of cognitive, emotional, and behavioral domains. Reducing financial anxiety and promoting practical management habits appear to carry greater predictive weight than isolated conceptual knowledge (Lusardi & Mitchell, 2014; Netemeyer et al., 2018). This instrument may therefore support both research and applied “behavioral technology” development for financial health in Latin American middle-class populations (Prakash & Hawaldar, 2023; van Thiel et al., 2024).

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APPENDIX A

Subjective Financial Health Scale (English version)

Response scale: 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree.

Financial Stress / Anxiety

1. I have trouble paying my bills on time.
2. I wonder how I could pay medical expenses in case of illness.
3. I find it difficult to cover all my family's needs.
4. I am shocked whenever the people who depend on me ask for things that require spending money.
5. I cannot save for my future needs.
6. I have trouble sleeping because I worry about my financial situation.

7. I often experience high blood pressure when I think about making the household budget last.
8. Excessive worry about my financial situation affects my concentration at work.
9. My paycheck is never enough to cover my family's needs until the next payday.
10. I worry about losing my mental abilities because without them I will not be able to work or cover expenses.
11. I worry about losing my ability to work because without it I will not be able to cover my expenses.

Items assessed in the initial pool but not retained in the final calibrated solution:

6. I have an unresolved issue with a debt collection agency.
50. I worry about old age: people are living longer, and in old age I will receive less money or be able to work less.

Subjective Financial Well-Being

11. I am satisfied with my current personal financial situation.
12. I feel secure about my retirement savings.
13. What I earn is enough to sustain me until the next payday.
14. I can cover all my regular monthly bills (children's education, utilities, etc.).
15. I have set aside an emergency fund or savings that would cover my expenses for at least three months in case of illness, job loss, an economic crisis, or other emergencies.
16. I have other sources of income besides my salary.
17. I can provide for my family and cover my other basic personal needs.
18. I can regularly pay my credit card debt, mortgage, and other financial commitments.
19. I earn more than I spend.
20. I can buy what I choose.
21. I have begun to plan more seriously for saving for old age/retirement.
22. I frequently review my pension fund statements to stay informed.
23. I have started saving a bit more in anticipation of old age and its challenges.

Financial Literacy

21. I am able to keep track of my money.
22. I can make it to the end of the month.
23. I compare prices to choose the best financial product, such as loans or insurance.
24. I stay informed about financial topics.
25. I know the benefits and protections of different types of insurance.
26. I understand the importance of saving and how much should be allocated to emergency savings.
27. I create basic budgets for my personal finances.
28. I can read and interpret my bank statements and what they mean.
29. I am knowledgeable about different investments, such as term investments, the money market, and the stock market.
30. I have a good understanding of what interest rates and the cost of money mean.
31. I understand what inflation/the cost of living means and plan my spending using this information.

Item assessed in the initial pool but not retained in the final calibrated solution:

61. I understand that money loses value over time; therefore, saving one million a year ago is not the same as saving one million today.

Financial Behavior

31. I pay my bills/loans on time.
32. I maintain a bank account or digital wallet that I review/update each month.
33. I pay cash for food and other basic necessities rather than using a credit card.
34. I make sure to pay the full balance on my credit cards when it is due.
35. I carefully review the details of my bank/credit card statements.
36. I compare options before taking out loans or using credit cards.
37. I consult my partner about financial matters and seek advice from others when needed.
38. I involve my children/family in financial discussions.
39. I consider my financial situation before deciding to buy something.
40. I am very careful about how much I can save when choosing items to buy.
41. I know what my credit cards charge for purchases abroad or in foreign currency.
42. I avoid "small leaks" spending (small, unnoticed, recurring expenses such as app subscriptions, magazines, coffee, snacks, etc.).
43. I ask for discounts whenever I can.
44. I put most credit card purchases into a single installment to earn benefits without paying interest.

Item assessed in the initial pool but not retained in the final calibrated solution:

73. I have written financial goals and have developed a plan to achieve them.