

Biopsychosocial Determinants of Financial Well-Being in Older Adults: A Structural Equation Modeling Approach

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Abstract

Financial well-being (FWB) in older adults is increasingly central to retirement security and consumer policy, yet the empirical literature has tended either to reduce FWB to traditional economic indicators or to examine psychosocial determinants in isolation. This study integrates and empirically tests Engel's (1977) Biopsychosocial (BPS) Model, long established in medicine, within a financial context, examining how Biological, Psychological, and Sociological factors jointly shape FWB. Using five biennial waves of the Health and Retirement Study (HRS; 2010–2018) plus a synthetic combined wave ($N = 99,393$ person-wave observations), structural equation modeling (SEM) with Full Information Maximum Likelihood (FIML) estimation tested direct, indirect, and total effects of BPS factors on a latent FWB construct comprising both objective (income, net worth, non-housing net worth) and subjective (financial strain, financial satisfaction) indicators. The integrated model achieved excellent fit ($RMSEA \leq 0.052$; $CFI \geq 0.939$; $TLI \geq 0.916$) and explained nearly all variance in observed FWB indicators ($CD = 0.978\text{--}0.992$). Mental Health emerged as the strongest direct determinant of FWB ($\beta = 0.715$ to 0.980 , all $p < .001$), surpassing both Physical Health and Social Connection. All three domains exerted significant indirect effects, supporting an integrative theory of consumer FWB and offering specific guidance for consumer education, integrated health-finance policy, and financial-advising practice.

Introduction

Recent surveys reveal that more than 60% of Americans report living paycheck to paycheck (PYMNTS.com, 2022) and more than 40% lack the savings to absorb a \$400 emergency expense (Board of Governors of the Federal Reserve System, 2022). For older adults, the stakes are higher still: diminished income, rising healthcare costs, caregiving demands, and chronic conditions can compound to erode financial security at the very moment recovery options narrow. Although FWB is widely recognized as a multidimensional construct encompassing both objective resources and subjective evaluations (CFPB, 2015; Joo, 2008; Netemeyer et al., 2018), no prior study has tested an integrated framework jointly modeling biological, psychological, and sociological inputs to FWB within a nationally representative aging sample.

This omission limits both theory and intervention design. Engel (1977) introduced the Biopsychosocial (BPS) Model as a corrective to reductionist biomedical thinking, positing that biological, psychological, and social systems interact dynamically to shape human functioning. The model has since been extended to chronic pain, addiction, diabetes, and mental health (Bashmi et al., 2023; Borrell-Carrió et al., 2004; Gatchel et al., 2014; Powers et al., 2017), but its translation to financial outcomes has not been formally tested. This study fills that gap and, in doing so, advances a holistic framework for understanding consumer financial health in later life.

Objectives and Hypotheses

Four objectives guided the investigation: (a) apply and empirically test the explanatory power of the BPS model in predicting FWB; (b) examine the structural relationships between latent biological, psychological, and sociological factors and FWB using SEM; (c) demonstrate the comparative superiority of the integrated BPS model relative to single-domain alternatives; and (d) identify high-impact

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intervention points to guide holistic, cross-disciplinary interventions. Five hypotheses were tested. H1: the combination of all elements (BPS) will provide better explanatory power than any individual element. H2: the BPS model will significantly explain variation in FWB. H3a–H5b: Biological (Physical Health, PH), Psychological (Mental Health, MH), and Sociological (Social Connection, SC) factors will each directly (a) and indirectly (b) predict FWB.

Method

Data were drawn from the 2010, 2012, 2014, 2016, and 2018 waves of the HRS, a nationally representative biennial panel of U.S. adults aged 50 and older sponsored by the National Institute on Aging. After cleaning and harmonization across waves, the analytic sample comprised 99,393 person-wave observations (across the five organic waves and a synthetic combined wave), with a mean age of 66.5 ($SD = 11.7$) and a majority-female composition (58.6%). All analyses were conducted in Stata 18.

The latent FWB construct was operationalized with both objective indicators, which included log-transformed household income, inverse hyperbolic sine (IHS)–transformed household net worth, and IHS-transformed non-housing net worth (Friedline et al., 2015), as well as the subjective indicators of financial strain and financial satisfaction. Physical Health (PH) was indicated by self-reported health, chronic illness count, and functional limitations. Mental Health (MH) was indicated by life satisfaction, depressive symptoms (CES-D 8), and anxiety symptoms. Social Connection (SC) was indicated by net perceived support across spouse/partner, child, other family, and friend relationships, derived from the Schuster items in the HRS Psychosocial and Lifestyle Questionnaire.

Construct validity was established through exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) for each latent variable. Modification indices guided theoretically defensible refinements (e.g., correlated residuals between depressive and anxiety symptoms; between life satisfaction and partner-relationship quality). The full structural model was estimated using FIML to retain cases with partially missing data, with Maximum Likelihood (ML) estimation used as a sensitivity check. Model fit was evaluated against Kline's (2016) thresholds: $RMSEA \leq 0.06$, $CFI \geq 0.90$, and $TLI \geq 0.90$.

Results

The final structural model achieved excellent fit across all five organic waves and the combined wave (Table 1), with Coefficients of Determination (CD) ranging from 0.978 to 0.992, indicating that the latent factors accounted for between 97.8% and 99.2% of the variance in the observed FWB indicators. The integrated BPS model substantially outperformed any single-domain specification, providing strong support for H1 and H2.

The most striking finding concerned the primacy of psychological factors. Standardized direct effects of Mental Health on FWB ranged from $\beta = 0.715$ to $\beta = 0.980$ (all $p < .001$) across waves, which was an unusually robust signal in social-science SEM that fully supports H4a. Physical Health directly predicted FWB at smaller magnitudes ($\beta = 0.073$ to 0.237) with intermittent significance, partially supporting H3a. Social Connection showed a small, often nonsignificant negative direct effect ($\beta = -0.059$ to -0.193), consistent with the financial cost of caregiving and intergenerational support obligations and partially supporting H5a.

All three domains exerted substantial indirect effects through covariation with the others, supporting H3b, H4b, and H5b. The MH–PH covariance was strongly negative (-0.625 to -0.714), the MH–SC covariance positive (0.572 to 0.675), and the PH–SC covariance modestly negative (-0.199 to -0.250). Together, these patterns indicate that physical and social resources do not merely add to

financial capacity, rather they operate substantially through psychological pathways to influence financial perception, behavior, and outcomes.

Discussion and Implications

Findings validate the BPS Model as a robust framework for consumer financial research and challenge siloed approaches to FWB. For consumer policy, the results indicate that interventions intended to reduce financial precarity in later life cannot be cleanly separated from health and mental-health policy, showing that each meaningfully shapes the other, and the dominant pathways run through psychological functioning. For consumer education, the primacy of Mental Health implies that financial literacy alone is insufficient; effective programs should incorporate stress management, coping skill-building, and intentional cultivation of supportive social networks. For financial-planning practice, the BPS framework provides the basis for an enhanced client-assessment approach in which advisors systematically screen for non-financial vulnerabilities such as depressive symptoms, functional limitations, social isolation, and tailor recommendations accordingly. Such a whole-client assessment may meaningfully improve sustained outcomes for older clients and offers a research-based foundation for cross-disciplinary practice models.

Several limitations warrant note. The pooled cross-sectional structure across waves precludes strong causal inference. Future planned cross-national replication using the Harmonized HRS, Harmonized ELSA, and Harmonized SHARE will further test generalizability across welfare-regime contexts. Self-report measurement, though pervasive in aging research, remains susceptible to recall and social-desirability bias. Finally, the older-adult focus invites parallel work in younger cohorts, where BPS pathways may operate differently across the life course.

Conclusion

This research empirically validates the Biopsychosocial Model in a financial context, demonstrating that financial well-being in older adults emerges from the dynamic interplay of physical health, mental health, and social connection, with mental health serving as the dominant proximal pathway. By rigorously testing this integrative framework with a large, nationally representative sample and advanced SEM techniques, the study provides an empirical foundation for cross-disciplinary consumer policy, education, and practice—and an extensible model for future research across populations and settings.

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Acknowledgments

This work is drawn from the author's doctoral dissertation, completed at Kansas State University under the co-advisement of Derek R. Lawson, Ph.D., CFP®, and Martin Seay, Ph.D., CFP®. The dissertation received the American Council on Consumer Interests Robert O. Herrmann Outstanding Dissertation Award for 2025. The Health and Retirement Study is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and conducted by the University of Michigan.

Table 1

Final SEM Model Fit Indices for the Biopsychosocial Model of Financial Well-Being

Wave	n	χ^2 (df=66)	RMSEA	CFI	TLI	CD
2010	8,250	1,400.38	0.050	0.951	0.933	0.992
2012	7,243	1,379.04	0.052	0.948	0.928	0.988
2014	25,521	1,581.04	0.030	0.939	0.916	0.985
2016	6,302	1,067.11	0.049	0.949	0.930	0.979
2018	18,658	969.40	0.027	0.953	0.936	0.981
Combined	99,393	4,725.13	0.027	0.978	0.970	0.978

Notes. Estimation was FIML. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; CD = coefficient of determination. All χ^2 values are significant at $p < .001$.