



SHIFTING PREDICTORS OF FINANCIAL WELL-BEING: A MULTI-WAVE TRI-COMPONENT ANALYSIS OF U.S. FINANCIAL CAPABILITY DATAⁱ

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Abstract:

This study examines how the predictive power of three financial literacy components, financial knowledge (FK), financial behavior (FB), and financial attitude (FA), on financial well-being (FWB) shifts across four waves of the FINRA National Financial Capability Study (2015, 2018, 2021, and 2024). Four independent ordinary least squares (OLS) regressions are estimated on 107,312 respondents spanning three macroeconomic phases: pre-pandemic stability, the COVID-19 shock, and post-pandemic disinflation. For each wave, additive composites are built for the outcome and the three predictors; the coefficients are standardized to a common scale, and multicollinearity is checked with variance inflation factors (VIF). The findings show that FA is the strongest predictor of FWB in every wave, with its standardized coefficient rising from 0.458 in 2015 to 0.548 in 2024. FB is a steady second predictor (Std. B around 0.29 to 0.36), while FK stays the weakest throughout (Std. B = 0.075 to 0.089), and the gap between FA and FK widens from 0.369 to 0.470 standardized units. R-squared rises from 0.526 to 0.601 over the period. After analyzing the scholarly conversation, to the author's knowledge, this is among the first multi-wave OLS analyses to examine the predictive structure of financial literacy across economic cycles while separating its three components. The hierarchy (FA>FB>FK) holds across all three economic environments, which suggests FA's lead is a structural feature of how financial literacy relates to well-being. That pattern supports extending the established knowledge-action gap into a knowledge-attitude-action gap, in which FA serves as the primary psychological bridge connecting knowledge to well-being. The findings are aimed at directing financial education, workplace programs, and public policy toward attitudinal and behavioral factors rather than purely factual financial knowledge alone.

JEL: G53, G50, D14, D91, C21

ⁱ PREDITTORI MUTEVOLI DEL BENESSERE FINANZIARIO: UN'ANALISI A TRE COMPONENTI SU PIÙ ONDATE DEI DATI STATUNITENSILI SULLA CAPACITÀ FINANZIARIA

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Keywords: finance, personal finance, financial literacy, financial well-being, financial attitude

1. Introduction

Financial literacy is widely treated as a form of human capital investment, with returns that show up across income levels, demographic groups, and national contexts (Lusardi & Mitchell, 2014; Rehman & Mia, 2024; Kwabena et al., 2024). The Consumer Financial Protection Bureau defines financial well-being (FWB) as a state in which a person has control over day-to-day finances, the capacity to absorb a financial shock, and the freedom to make choices that let them enjoy life (CFPB, 2015). A growing body of work shows that financial literacy (FL) predicts FWB through several channels at once: what people know, how they behave, and how they feel about money (Lusardi & Streeter, 2023; Xiao & Porto, 2017; Goyal et al., 2021).

Two gaps in this literature motivate my study. The first is a longitudinal gap. Most studies of the FL-FWB relationship rely on single-wave, cross-sectional designs that capture one economic moment, so we learn little about how the relationship holds up as conditions change (Lusardi & Streeter, 2023; Angrisani et al., 2023). The second is a component gap. Multi-wave analyses tend to treat FL as a single composite score rather than separating the contributions of financial knowledge (FK), financial behavior (FB), and financial attitude (FA) (Angrisani et al., 2023; Valdes et al., 2024). Collapsing FL into one number hides which parts actually drive FWB, and whether their influence shifts as the macroeconomy moves.

This study addresses both gaps with four ordinary least squares (OLS) regressions across the 2015, 2018, 2021, and 2024 waves of the FINRA National Financial Capability Study (NFCS), spanning 107,312 respondents and three distinct macroeconomic environments. The research question is: to what extent has the predictive power of FK, FB, and FA on FWB shifted across these four NFCS waves? Following the tri-modal framework validated by Atkinson and Messy (2012) and Das and Mahapatra (2023), FL is decomposed into its three components. Standardized (same-scale) beta coefficients are then compared across waves to make direct cross-predictor and cross-wave comparisons, which fills the longitudinal gap.

Across all four waves, FA turns out to be the strongest predictor of FWB, and its standardized coefficient climbs steadily over the nine years. FK is the weakest in every wave. That pattern motivates extending the familiar knowledge-action gap into a knowledge-attitude-action gap, with FA, read through Bandura's self-efficacy framework, acting as the psychological link between what people know and how well they actually do.

2. Literature Review

2.1 Financial Literacy and Financial Well-being

FL is usually defined as the knowledge, skills, and attitudes a person needs to make financial decisions (Lusardi & Mitchell, 2014; Atkinson & Messy, 2012). That definition matters because real financial decisions pull on all three at once: cognition, behavior, and disposition (Goyal et al., 2021). The OECD International Network on Financial Education tested this idea across 14 countries and found that FL includes measurable behavioral patterns and psychological attitudes, not just objective knowledge (Atkinson & Messy, 2012).

FWB, the outcome in this study, is the state of having financial security and being free from financial stress (CFPB, 2015). It covers control over daily finances, the ability to absorb a shock, staying on track toward financial goals, and the freedom to make choices a person can enjoy (CFPB, 2015; CFPB, 2017). Systematic reviews confirm that FL predicts FWB across income levels, demographic groups, and countries (Rehman & Mia, 2024; Kwabena et al., 2024; Potrich et al., 2016; Philippas & Avdoulas, 2020), and that the relationship runs through knowledge, behavior, and perception in both financial-capability (Xiao et al., 2014) and financial-distress frameworks (Prawitz et al., 2006).

2.2 The Tri-component Framework

FL breaks down into three components. FK is the objective understanding of concepts like compound interest, inflation, and risk diversification. Lusardi and Mitchell (2014) showed through longitudinal work that FK feeds long-term outcomes such as retirement planning and household stability. Yet FK is low almost everywhere: a study of 143 countries found consistently weak scores, with economic development alone not enough to produce high literacy (Kozol, 2025), a pattern the S&P Global FinLit Survey of more than 150,000 adults across 140 countries confirmed (Klapper et al., 2015). Debt-literacy research sharpens the point. People who do not understand compounding borrow at a higher cost and feel more burdened by debt (Lusardi & Tufano, 2015), which suggests that knowledge on its own does not buy well-being.

FB covers financial actions: budgeting, saving, paying bills on time. It predicts FWB on its own, separate from FK (Hasler et al., 2018), and Henager and Cude (2016) found that its mediating role varies by age group. Kaiser et al. (2022) pooled 76 randomized controlled trials with more than 160,000 participants and found that financial education moved knowledge by about 0.2 SD but behavior by only 0.09 SD. So, knowledge seems necessary for behavior change without being enough to cause it.

FA is the psychological side of money: confidence, satisfaction, and anxiety (Hossain, 2023; Abrantes-Braga & Veludo-de-Oliveira, 2019). Das and Mahapatra (2023) treated FA as its own variable in a regression and factor analysis and found that it works as a channel through which FK and FB become effective, with all three components predicting FWB independently. Their sample was small, though, and they cautioned that the results might not generalize, which is part of why this study works across four NFCS

waves and more than 107,000 respondents. She et al. (2022) reached a similar conclusion with structural equation modeling: psychological beliefs, including financial self-efficacy, mediate the FL-FWB link by way of financial behavior.

2.3 Theoretical Foundation

FA's predictive role is grounded in established theories of self-efficacy and behavior. Bandura's social cognitive theory of self-efficacy (Bandura, 1977) holds that believing you can reach a goal predicts outcomes better than objective knowledge or skill by itself (Bandura, 2006). Applied to finance, financial self-efficacy is the belief that you can manage money well, and it predicts planning, saving, and well-being more strongly than objective literacy scores do (Netemeyer et al., 2018; Lown, 2011; Farrell et al., 2016). Lind et al. (2020) showed that financial self-efficacy still explains financial behavior after controlling for objective competence, which underlines the gap between knowing and believing.

The theory of planned behavior (Ajzen, 1991) introduces a new perspective: attitudes, subjective norms, and perceived control together shape behavioral intentions. In a financial setting, that means positive attitudes turn into intentions and then into action (Shim et al., 2009). Both theories predict that FA should mediate the link between FK and outcomes, and there is evidence for it. People with more positive financial attitudes read risk differently even at the same level of knowledge (Nguyen et al., 2019), and end up behaving differently.

2.4 The Knowledge-action Gap

One lasting finding in this field is the knowledge-action gap: high FK often fails to become good behavior or better outcomes (Angrisani et al., 2023). Fernandes et al. (2014) ran a meta-analysis of 168 papers covering 201 studies and found that financial-literacy interventions explain only about 0.1% of the variance in financial behavior, with the effect fading over time. Merter and Balcioglu (2025) tied the gap mostly to overconfidence bias. Together, these points to FK being a weak lever for FWB on its own.

This framing may be incomplete without considering the role of attitude. If FA is what carries knowledge into well-being, as self-efficacy theory and the tri-component evidence imply, then part of the gap is simply the absence of any attitudinal intervention. The fading behavioral effects of knowledge-focused programs (Fernandes et al., 2014) fit that reading: those programs give a short motivational, attitudinal bump as a side effect, and it fades because no one was aiming at it. On this view, FA sits inside the gap, not outside it.

2.5 Research Gaps and Hypotheses

Together, these gaps provide the basis for the present analysis. On the longitudinal side, no study has run a multi-wave regression comparing how the predictive weights of FK, FB, and FA move across different economic cycles. Valdes et al. (2024) tracked falling literacy levels over 12 years of NFCS data but never decomposed the predictive weights,

and Lusardi and Streeter (2023) ran an OLS regression on a single wave during a severe inflationary period without testing whether the component structure changes with conditions. On the component side, Angrisani et al. (2023) and Valdes et al. (2024) both keep FL as a composite and never isolate FA. Given the theory and the prior evidence, the study tests three hypotheses:

H1: FA is a stronger predictor of FWB than FK and FB across all NFCS waves.

H2: The standardized predictive coefficient of FA increases across successive NFCS waves relative to FK and FB.

H3: FK is the weakest predictor of FWB in every wave, consistent with the knowledge-action gap.

3. Material and Methods

3.1 Research Design

The design is comparative cross-sectional: an independent OLS regression is fit for each of the four NFCS waves, and the coefficients are then compared across waves. OLS fits here because the dependent variable (the FWB composite) is continuous and the question is about the size of each predictor's contribution (Lusardi & Streeter, 2023). The OLS setup follows Lusardi and Streeter (2023), and the three-part variable structure follows Das and Mahapatra (2023).

3.2 Data

The FINRA Investor Education Foundation funds the NFCS and has run it roughly every three years since 2009. Respondents come from established online panels under non-probability quota sampling, with quotas set to approximate each state's census distribution of age, gender, ethnicity, education, and income (FINRA Investor Education Foundation, 2021). Each state contributes about 500 respondents. The four waves give $N = 27,564$ (2015), $27,091$ (2018), $27,118$ (2021), and $25,539$ (2024), for $107,312$ in total. FINRA held the methodology steady across waves, which lowers the chance that shifts in the coefficients come from compositional change rather than something substantive. The datasets and documentation are public, so the analysis can be reproduced from the original data.

The waves also span three macroeconomic settings. The pre-COVID-19 period (2015 and 2018) had inflation near 3% (Lusardi & Streeter, 2023), though financial fragility was already common (Hasler et al., 2018; Clark et al., 2021). The 2021 wave landed after CPI had jumped 7% from the end of 2020 (Lusardi & Streeter, 2023), and the 2024 wave caught the disinflation that followed, with CPI up 2.9% year over year (U.S. Bureau of Labor Statistics, 2025). Through all of this, the 2023 P-Fin Index put U.S. financial literacy flat at roughly 50% of questions answered correctly (Yakoboski et al., 2023).

3.3 Variables

Each model uses FWB as the dependent variable and FK, FB, and FA as predictors. FWB is an additive composite of emergency-fund availability (J5), bill-paying difficulty (J20), savings regularity (J4), and perceived debt burden (G23) on a 0-4 scale. FK comes from items testing objective knowledge of interest rates, inflation, bond pricing, mortgage rates, and risk diversification (Lusardi & Mitchell, 2014), scored 0-6 in 2015 and 2018 and 0-7 in 2021 and 2024 once question M50 is added. FB is built from budgeting, retirement saving, comparison shopping, timely bill payment, and spending discipline on a 0-5 scale in every wave. FA is an index of financial satisfaction (J1), self-assessed confidence (M1_1), and financial anxiety (reverse-coded), normalized to 0-10. Responses coded 98 (don't know) or 99 (prefer not to answer) are dropped from all composites. Table 1 gives the full operationalization.

Table 1: Composite scoring formulas by construct and wave.
FWB and FB use identical items and scoring in all four waves,
while the FK and FA item sets change between 2015-2018 and later waves

Construct	Survey items	Scoring rule	Scale	Waves
FWB (DV)	J5, J20, J4, G23	Sum of binary indicators: J5=1, J20 in [1,2], J4=3, G23 in [1,2,3]	0-4	All
FK (6-item)	M6-M10, M31	Correct answers: M6=1, M7=3, M8=2, M9=1, M10=2, M31=2	0-6	2015, 2018
FK (7-item)	M6-M10, M31, M50	As above plus M50=1	0-7	2021, 2024
FB	J3, J8, C5_2012, F2_1, B4	Binary: J3=1, J8=1, C5_2012=1, F2_1=1, B4=2	0-5	All
FA (4-item)	J1, M1_1, J43, J33_40	Normalized average: each item rescaled 0-10; J33_40 reverse-coded	0-10	2018-2024
FA (3-item)	J1, M1_1, J33_1	As above with J33_1 reverse-coded; 3-item average	0-10	2015

Note: Responses coded 98 (don't know) or 99 (prefer not to say) are excluded from all composites. Reverse-coded items are transformed so higher values indicate more positive financial attitudes.

One caveat about comparability: the 2015 FA composite uses three items (J1, M1_1, and J33_1 reverse-coded) because FINRA did not add J43 and J33_40 until the 2018 questionnaire. The 2018, 2021, and 2024 waves use four FA items. So, the 2015 FA magnitudes need a careful read, even though the direction holds. FWB and FB use the same items and scoring in all four waves.

3.4 Analytical Procedure

The study estimates four OLS regressions, one per wave, using the model:

$$FWB = b_0 + b_1(FK) + b_2(FB) + b_3(FA) + e$$

Here, FWB is the dependent variable, FK, FB, and FA are the predictors, the b terms are slope coefficients, and e is the error term. The four models are treated as

independent cross-sections rather than a single longitudinal panel because each wave surveys different respondents. Standardized beta coefficients are computed as:

$$\text{Std. } B = B \times (\text{SD}_{\text{predictor}} / \text{SD}_{\text{outcome}})$$

where B is the unstandardized coefficient and the standard deviations come from the raw composite scores in each wave. Standardization is necessary because FK, FB, and FA use different measurement scales. Without it, a larger unstandardized coefficient could reflect scale variance rather than a stronger relationship with FWB.

The NFCS survey weights, which exist for producing nationally representative estimates, are not applied. The analysis compares relative coefficient magnitudes within cross-sections rather than generalizing to the U.S. population, and the quota-sampled composition is consistent across waves, so the unweighted OLS approach gives valid, comparable estimates (Angrisan et al., 2023). Demographic controls (age, income, education, gender) are left out because the focus is on relative predictive weights among the three components, a choice noted here as a limitation. Multicollinearity is assessed with variance inflation factors (VIF). Das and Mahapatra (2023) had already validated the tri-modal framework, establishing FK, FB, and FA as independent predictors of FWB.

The composites are additive indices. FINRA built the NFCS as a financial-capability survey and did not develop its items through the scale-development procedures behind purpose-built instruments like the CFPB Financial Well-Being Scale (CFPB, 2017) or the InCharge Financial Distress Scale (Prawitz et al., 2006). These additive composites follow prior NFCS-based research (Lusardi & Streeter, 2023; Valdes et al., 2024; Lin et al., 2022), which keeps them directly comparable with that literature at the cost of not capturing the full dimensionality of each construct.

4. Results and Discussion

4.1 Descriptive Statistics and Correlations

Table 2 gives means, standard deviations, and Pearson correlations for every composite across the four waves. Mean FWB ran from 1.99 (2024) to 2.24 (2021); mean FK from 3.12 (2018) to 3.38 (2024), with the later two waves using seven items instead of six; mean FB stayed flat (2.10 to 2.24); and mean FA ran from 5.49 (2024) to 5.99 (2018).

FA had the strongest bivariate correlation with FWB in every wave ($r = 0.629$ to 0.722), then FB ($r = 0.582$ to 0.610), then FK ($r = 0.314$ to 0.355). Among the predictors, correlations were moderate, the largest being FB with FA ($r = 0.420$ to 0.523); FK correlated weakest with both FB ($r = 0.337$ to 0.378) and FA ($r = 0.228$ to 0.302). The FA-FWB correlation climbs from 0.629 to 0.722 , and the FA-FB correlation from 0.420 to 0.523 , tracking the multivariate result that FA's standardized coefficient rises over the same span. The steady, weak FK-FWB correlations hint at how little FK will add once the predictors compete.

Table 2: Descriptive statistics and correlations by NFCS wave.
FA shows the strongest correlation with FWB in every wave

Wave	Variable	M	SD	FWB	FK	FB	FA	N
2015	FWB	2.051	1.478	1.000	.317	.582	.629	27,564
	FK	3.294	1.667		1.000	.344	.228	
	FB	2.237	1.381			1.000	.420	
	FA	5.702	2.084				1.000	
2018	FWB	2.141	1.490	1.000	.355	.595	.705	27,091
	FK	3.116	1.687		1.000	.364	.302	
	FB	2.217	1.407			1.000	.515	
	FA	5.993	2.257				1.000	
2021	FWB	2.239	1.494	1.000	.335	.594	.701	27,118
	FK	3.344	1.916		1.000	.378	.282	
	FB	2.216	1.388			1.000	.514	
	FA	5.921	2.219				1.000	
2024	FWB	1.992	1.516	1.000	.314	.610	.722	25,539
	FK	3.378	1.879		1.000	.337	.249	
	FB	2.097	1.390			1.000	.523	
	FA	5.485	2.293				1.000	

Note: M = mean; SD = standard deviation. Cells to the right of SD show Pearson correlations between variables. All correlations are significant at $p < .001$. FK scale is 0-6 for 2015/2018 and 0-7 for 2021/2024. FA composite uses three items in 2015 and four items in 2018-2024.

4.2 Multicollinearity Diagnostics

Variance inflation factors (VIF) were computed for each predictor in all four models. VIF values ranged from 3.97 (FK, 2024) to 6.47 (FA, 2018), all below the commonly applied threshold of 10 (Table 3). FA consistently had the highest VIF, which reflects its moderate correlations with both FK and FB. So, multicollinearity does not undermine the stability of the coefficients.

Table 3: Variance inflation factors by predictor and wave.
All values fall below the commonly applied threshold of 10.

Predictor	2015	2018	2021	2024
FK	4.714	4.554	4.257	3.969
FB	4.770	5.074	5.248	4.809
FA	5.891	6.475	6.163	5.814

4.3 OLS Regression Results

Table 4 gives the unstandardized coefficients (B), standard errors, and standardized beta coefficients for each predictor across the four waves. All predictors were significant at $p < .001$ in every model. Figure 1 shows the standardized coefficients by wave, and Figure 2 shows the same coefficients as a heatmap.

Table 4: OLS regression results for FK, FB, and FA predicting FWB across four NFCS waves. FA holds the largest standardized coefficient in every wave.

Predictor	B	SE	Std. B	p
2015 (N = 27,564), R² = .526				
FK	0.079	0.004	0.089	< .001
FB	0.385	0.005	0.360	< .001
FA	0.325	0.003	0.458	< .001
2018 (N = 27,091), R² = .577				
FK	0.079	0.004	0.089	< .001
FB	0.307	0.005	0.290	< .001
FA	0.349	0.003	0.529	< .001
2021 (N = 27,118), R² = .570				
FK	0.059	0.003	0.075	< .001
FB	0.316	0.005	0.294	< .001
FA	0.356	0.003	0.528	< .001
2024 (N = 25,539), R² = .601				
FK	0.063	0.003	0.078	< .001
FB	0.324	0.005	0.297	< .001
FA	0.362	0.003	0.548	< .001

Note: B = unstandardized coefficient; SE = standard error; Std. B = standardized beta coefficient, computed as $B \times (SD \text{ predictor} / SD \text{ outcome})$. All $p < .001$. Std. B is the metric used for cross-wave comparison. The 2015 FA composite uses three items instead of four, so comparisons for that wave require caution, though directional patterns remain valid.

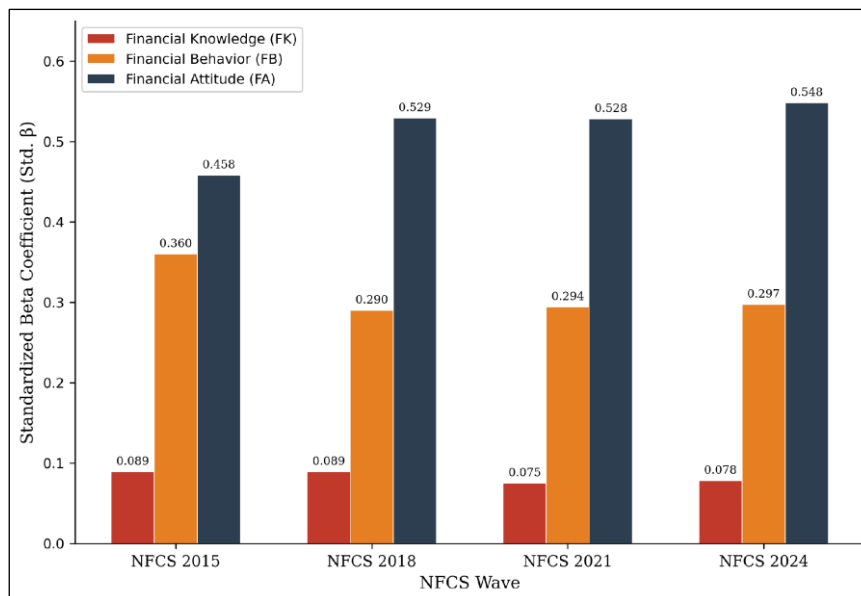


Figure 1: Standardized beta coefficients for FK, FB, and FA predicting FWB across the four NFCS waves. FA is the tallest bar in every wave, rising from 0.458 in 2015 to 0.548 in 2024, while FK stays below 0.09 throughout.

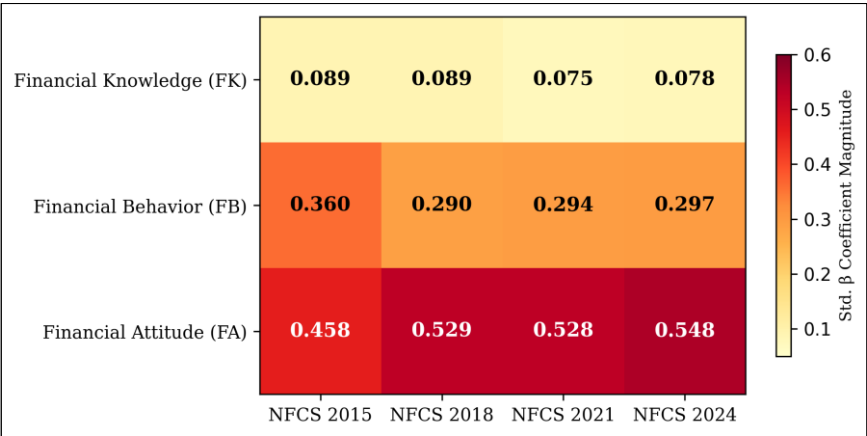


Figure 2: Heatmap of standardized regression coefficients for FK, FB, and FA predicting FWB across four NFCS waves. The FA row holds the highest value in every wave, which confirms FA as the dominant predictor.

4.4 Predictor Hierarchy and Trajectories

The standardized coefficients show the same ranking in all four waves, FA > FB > FK (Figure 1). FA led every wave; its Std. B rising from 0.458 in 2015 to 0.548 in 2024, a gain of 0.090. Against Cohen's benchmarks for effect size (0.10 small, 0.30 medium, 0.50 large), read here as standardized coefficients (Cohen, 1988), A has the largest standardized coefficient in every wave from 2018 onward and close to it in 2015. In plain terms, a one standard deviation rise in FA went with more than half a standard deviation of FWB.

FK stayed weakest throughout (Figure 2), with Std. B at 0.089 in both pre-pandemic waves, dipping to 0.075 in 2021 and edging back to 0.078 in 2024, a small effect by Cohen's standards every time. The distance between FA and FK grew from 0.369 in 2015 to 0.470 in 2024, so FA pulls further ahead of FK as the economic backdrop changes. FB fell from 0.360 in 2015 to 0.290 in 2018, then settled around 0.294 (2021) and 0.297 (2024), a medium effect and the second-strongest predictor across the nine years. R-squared rose from 0.526 (2015) to 0.601 (2024), so the three-component model accounts for more of FWB over time. The results are consistent with all three hypotheses: FA is the strongest predictor in every wave (H1), its standardized coefficient increases across waves (H2), and FK is the weakest, remaining below 0.09 (H3). However, the study does not formally test whether the increase in FA's coefficient across waves is statistically significant.

4.5 Financial Attitude as the Dominant Predictor

The central finding is that FA has the strongest predictive relationship with FWB across all four waves and three macroeconomic environments. Its standardized coefficient moved from pre-pandemic stability (0.458) through the pandemic shock (0.528) to post-pandemic disinflation (0.548), a path the COVID-19 disruption did not bend. That fits Bandura's claim that self-efficacy beliefs beat objective ability, and Netemeyer et al.'s (2018) finding that financial self-efficacy predicts well-being more strongly than objective literacy.

This extends Das and Mahapatra (2023), who argued from a single wave that FA is the channel that makes FK and FB effective; this study adds longitudinal evidence across four independent cross-sections and three economic environments. It also builds on Xiao and Porto (2017), whose 2012 NFCS analysis found financial-capability variables mediating the education-satisfaction link, by showing that the mediation holds and grows across later waves. Structural equation work in other populations (She et al., 2022; Alsuwaidi et al., 2024) and among young employees (Sabri & Zakaria, 2015) reaches similar conclusions, which suggests the pattern is not an artifact of one method or sample.

4.6 From the Knowledge-action Gap to the Knowledge-attitude-action Gap

FK stayed below 0.09 in every wave while the FA-FK gap widened from 0.369 to 0.470. This is longitudinal support for the knowledge-action gap that Angrisani et al. (2023) described, and Fernandes et al. (2014) quantified when they found FL explaining only 0.1% of behavioral variance. The contribution here is to separate which component carries the weight and to follow how that weight moves with the macroeconomy.

The standard framing, which Merter and Balcioglu (2025) tie to overconfidence, blames the gap on knowledge not converting into behavior. These results point to FA as the missing piece. Across waves, its 2024 standardized coefficient is roughly seven times FK's and nearly double FB's. That is why this study proposes widening the knowledge-action gap into a knowledge-attitude-action gap: knowledge fails to produce FWB because psychological orientation and self-efficacy seem to mediate and outweigh it. The idea rests on Bandura's self-efficacy theory (Bandura, 1977) and Ajzen's theory of planned behavior (Ajzen, 1991), and it lines up with Netemeyer et al. (2018) on perceived well-being mattering more than objective knowledge, and with Kaiser et al.'s (2022) finding that education moves knowledge about twice as much as it moves behavior.

4.7 Financial Behavior: Decline and Stabilization

FB follows a different trajectory across the four waves. Its coefficient dropped from 0.360 (2015) to 0.290 (2018), then held near 0.294 (2021) and 0.297 (2024). That early drop tracks FA's rise from 0.458 to 0.529, which raises the question of whether FA absorbed variance once credited to FB. The FB-FA correlation grew from 0.420 to 0.515 over the same years (Table 2), so as attitude and behavior became more tightly linked, the model handed more of their shared variance to FA.

4.8 Stability Across Economic Environments

The FA > FB > FK order held under stable inflation near 3%, under the high inflation after a 7% CPI jump, and under the disinflation that slowed CPI growth to 2.9%. Because the ranking did not budge with the pandemic, FA's lead appears robust across the economic environments examined. The rising R-squared (0.526 to 0.601) supports that and matches Das and Mahapatra's (2023) case for decomposing FL to model FWB well. Earlier cross-sectional studies also found uneven predictive weights across components (Taft et al.,

2013; Kamakia et al., 2017), and my multi-wave results show those were not quirks of single samples.

4.9 Alternative Explanations

Several alternative explanations may also account for these patterns. One, the high R-squared (0.526 to 0.601) may partly reflect overlap between FWB and FA items: the FWB composite includes perceived debt burden, which could share method variance with FA's satisfaction and anxiety items rather than reflect real causation, and confirmatory factor or bifactor modeling could separate the two. Two, cohort effects could play a role, since within-quota shifts across waves, say in educational attainment, could move the FL-FWB relationship on their own. Three, rising financial anxiety during and after the pandemic could have inflated the variance in FA and so its statistical tie to FWB; the lower mean FA in 2024 (5.49) versus 2018 (5.99) and the rise in FA's SD from 2.08 to 2.29 fit that story. Even so, the unstandardized FA coefficients rose steadily from 0.325 to 0.362, so the trend is not just a distributional artifact.

4.10 Limitations

Several limitations should be considered when interpreting these findings. The data are repeated cross-sections with different respondents each wave, so the changes observed are population-level, not within-person; a panel like the Understanding America Study (Angrisani et al., 2023) could test whether the same holds for individuals. The 2015 FA composite has three items instead of four, so its magnitude is not directly comparable to later waves, though the direction matches. The NFCS is self-reported, which invites social-desirability bias, especially for FB, where nothing is checked against records; its non-probability quota sampling also lacks the inference properties of true probability sampling. Finally, the models include no demographic controls, so some of the coefficients may carry demographic variation correlated with both the predictors and FWB.

5. Recommendations

5.1 Practical and Policy Recommendations

FK's weakness next to FA is a problem for the assumption that knowledge-based curricula are enough on their own. In 2024, FK's standardized effect (0.078) was about a seventh of FA's (0.548). Programs that build attitude, financial self-efficacy training (Lown, 2011; Farrell et al., 2016), habit formation aimed at FB, and confidence-building work may do more for FWB than lessons focused on facts. Kaiser et al.'s (2022) 0.2 SD knowledge effect against a 0.09 SD behavioral effect, and the modest results of state-mandated financial-education policies (Urban et al., 2020), both fit how weak FK is in every wave.

For institutions and policymakers (Financial Literacy and Education Commission, 2020), education built around facts will do little for FWB unless it also grows confidence

and lowers anxiety. Banks, credit unions, and fintech platforms could fold self-efficacy checks into counseling and design tools that reinforce a positive financial identity through personal progress tracking. States that now require a personal finance course to graduate high school may see only small FWB gains if the course is all content; adding self-efficacy work, goal-setting, and simulated decisions could carry more of that learning into long-term FWB. The argument is not against financial education, yet it argues for building knowledge around the psychological side the data points to.

5.2 Future Research

Future work could add age, income, education, and gender as controls to test whether the $FA > FB > FK$ hierarchy survives. The high R-squared values may reflect construct overlap between FWB and predictor items, which confirmatory factor analysis could check. Because the NFCS samples at the state level, the data also invite geographic disaggregation, and structural equation modeling could test FA's proposed mediating role between FK and FWB directly, which would strengthen the knowledge-attitude-action gap framework proposed here.

6. Conclusion

This study analyzed 107,312 respondents across four independent OLS regressions covering nine years and three macroeconomic environments. FA is the strongest and most stable predictor of FWB in every wave, and its standardized effect rises steadily from 0.458 to 0.548. FK is the weakest throughout, never above 0.089, and the FA-FK gap widened from 0.369 to 0.470 over the nine years.

To the author's knowledge this is the first multi-wave, tri-component regression of how the predictive structure of FL behaves across different macroeconomic environments, which fills both the longitudinal and the component gap. That evidence supports widening the knowledge-action gap into a knowledge-attitude-action gap, with FA as a potential psychological mechanism linking knowledge and well-being that explains why knowledge alone does not produce well-being. How people feel about their money, their confidence, self-efficacy, and anxiety, matters more for their well-being than what they know.

Financial-education programs, workplace wellness efforts, and policy mandates built only around facts are working the weakest of the three available levers. Across all four waves the data point the same way: attitudinal and behavioral interventions may warrant greater emphasis in financial-education investment. The knowledge-attitude-action gap gives both an explanation for why knowledge-based programs keep underdelivering and a direction for redesigning them.

Acknowledgements

During the preparation of this work, I used Claude (Anthropic) to help write the Python plotting code that renders Figures 1 and 2 from my own regression results. After using

this tool, I reviewed and edited the output, and I take full responsibility for the content of this publication.

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Conflict of Interest Statement

The author declares no conflicts of interest.

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References

- Abrantes-Braga F D, Veludo-de-Oliveira T, 2019. Development and Validation of Financial Well-Being Related Scales. *International Journal of Bank Marketing* 37(1): 253-279. <https://doi.org/10.1108/IJBM-03-2018-0074>
- Ajzen I, 1991. The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes* 50 (2): 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Alsuwaidi R, Ahmad S Z, Khalid K, 2024. Determinants of Financial Well-Being for Emerging Adults. *International Journal of Social Economics* 51(8): 976-990. <https://doi.org/10.1108/IJSE-08-2023-0668>
- Angrisani M, Burke J, Lusardi A, Mottola G, 2023. The Evolution of Financial Literacy over Time and Its Predictive Power for Financial Outcomes: Evidence from Longitudinal Data. *Journal of Pension Economics and Finance* 22(4): 640-657. <https://doi.org/10.1017/S1474747222000154>
- Atkinson A, Messy F, 2012. Measuring Financial Literacy: Results of the OECD/International Network on Financial Education (INFE) Pilot Study. OECD Working Papers on Finance, Insurance and Private Pensions No. 15, OECD Publishing, Paris. <https://doi.org/10.1787/5k9csfs90fr4-en>
- Bandura A, 1977. Self-Efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review* 84 (2): 191-215. <https://doi.org/10.1037/0033-295X.84.2.191>

- Bandura A, 2006. Guide for Constructing Self-Efficacy Scales. In: Pajares F, Urdan T (Eds.), *Self-Efficacy Beliefs of Adolescents*. Information Age Publishing, Greenwich, CT, USA, pp 307-337. [https://books.google.ro/books/about/Self efficacy Beliefs of Adolescents.html?id=KMzUU9aTdY0C&redir_esc=y](https://books.google.ro/books/about/Self+efficacy+Beliefs+of+Adolescents.html?id=KMzUU9aTdY0C&redir_esc=y)
- Clark R L, Lusardi A, Mitchell O S, 2021. Financial Fragility during the COVID-19 Pandemic. *AEA Papers and Proceedings* 111: 292-296. <https://doi.org/10.1257/pandp.20211000>
- Cohen J, 1988. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Lawrence Erlbaum Associates, Hillsdale, NJ, USA.
- Consumer Financial Protection Bureau, 2015. *Financial Well-Being: The Goal of Financial Education*. CFPB, Washington, DC. https://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf. Accessed July 2026.
- Consumer Financial Protection Bureau, 2017. *CFPB Financial Well-Being Scale: Scale Development Technical Report*. CFPB, Washington, DC. https://files.consumerfinance.gov/f/documents/201705_cfpb_financial-well-being-scale-technical-report.pdf. Accessed July 2026.
- Das S, Mahapatra S K, 2023. The Big Three of Financial Literacy: Analyzing Its Influences on Financial Well-Being. *FWU Journal of Social Sciences* 17(2): 1-23. <https://doi.org/10.51709/19951272/Summer2023/1>
- Farrell L, Fry T R L, Risse L, 2016. The Significance of Financial Self-Efficacy in Explaining Women's Personal Finance Behaviour. *Journal of Economic Psychology* 54: 85-99. <https://doi.org/10.1016/j.joep.2015.07.001>
- Fernandes D, Lynch J G Jr, Netemeyer R G, 2014. Financial Literacy, Financial Education, and Downstream Financial Behaviors. *Management Science* 60(8): 1861-1883. <https://doi.org/10.1287/mnsc.2013.1849>
- Financial Literacy and Education Commission, 2020. *Best Practices for Financial Literacy and Education at Institutions of Higher Education*. U.S. Department of the Treasury, Washington, DC. <https://www.luminafoundation.org/resource/best-practices-for-financial-literacy-and-education-at-institutions-of-higher-education/>
- FINRA Investor Education Foundation, 2021. *National Financial Capability Study: State-by-State Survey Methodology*. FINRA Investor Education Foundation. <https://finrafoundation.org/sites/finrafoundation/files/NFCS-2021-State-by-State-Methodology.pdf>. Accessed July 2026.
- Goyal K, Kumar S, Xiao J J, 2021. Antecedents and Consequences of Personal Financial Management Behavior: A Systematic Literature Review and Future Research Agenda. *International Journal of Bank Marketing* 39(7): 1166-1207. <https://doi.org/10.1108/IJBM-12-2020-0612>
- Hasler A, Lusardi A, Oggero N, 2018. *Financial Fragility in the US: Evidence and Implications*. Global Financial Literacy Excellence Center, Washington, DC.

- <https://gflec.org/wp-content/uploads/2018/04/Financial-Fragility-Research-Paper-04-16-2018-Final.pdf>. Accessed July 2026.
- Henager R, Cude B J, 2016. Financial Literacy and Long- and Short-Term Financial Behavior in Different Age Groups. *Journal of Financial Counseling and Planning* 27(1): 3-19. <https://doi.org/10.1891/1052-3073.27.1.3>
- Hossain M, 2023. Financial Attitude: A Systematic Review of Measurement Approaches. *Journal of Emerging Technologies and Innovative Research* 10(3). <https://www.jetir.org/papers/JETIR2303799.pdf>. Accessed July 2026.
- Kaiser T, Lusardi A, Menkhoff L, Urban C, 2022. Financial Education Affects Financial Knowledge and Downstream Behaviors. *Journal of Financial Economics* 145(2B): 255-272. <https://doi.org/10.1016/j.jfineco.2021.09.022>
- Kamakia M G, Mwangi C I, Mwangi M, 2017. Financial Literacy and Financial Well-Being of Public Sector Employees. *European Scientific Journal* 13(16): 233-249. <https://doi.org/10.19044/esj.2017.v13n16p233>
- Klapper L, Lusardi A, van Oudheusden P, 2015. Financial Literacy around the World: Insights from the S&P Global FinLit Survey. World Bank, Washington, DC. https://gflec.org/wp-content/uploads/2015/11/Finlit_paper_16_F2_singles.pdf. Accessed July 2026.
- Kozol E, 2025. A Cross-Country Analysis of Determinants of Financial Literacy: Evidence from 143 Countries. *Borsa Istanbul Review*. <https://doi.org/10.1016/j.bir.2025.07.009>
- Kwabena P, Addai B, Duah E, Kubi M T, 2024. The Impact of Financial Literacy on Financial Well-Being: A Systematic Literature Review. *Research Square* (Preprint). <https://doi.org/10.21203/rs.3.rs-5187088/v2>
- Lin J, Bumcrot C, Mottola G, Valdes O, Ganem R, Kieffer C, Walsh G, Lusardi A, 2022. Financial Capability in the United States. FINRA Investor Education Foundation. <https://finrafoundation.org/sites/finrafoundation/files/NFCS-Report-Fifth-Edition-July-2022.pdf>. Accessed July 2026.
- Lind T, Ahmed A, Skagerlund K, Stromback C, Vastfjall D, Tinghog G, 2020. Competence, Confidence, and Gender: The Role of Objective and Subjective Financial Knowledge in Household Finance. *Journal of Family and Economic Issues* 41: 626-638. <https://doi.org/10.1007/s10834-020-09678-9>
- Lown J M, 2011. Development and Validation of a Financial Self-Efficacy Scale. *Journal of Financial Counseling and Planning* 22(2): 54-63. Retrieved from https://www.researchgate.net/publication/228293306_Development_and_Validation_of_a_Financial_Self-Efficacy_Scale
- Lusardi A, Mitchell O S, 2014. The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature* 52(1): 5-44. <https://doi.org/10.1257/jel.52.1.5>
- Lusardi A, Streeter J L, 2023. Financial Literacy and Financial Well-Being: Evidence from the US. *Journal of Financial Literacy and Wellbeing* 1(2): 1-30. <https://doi.org/10.1017/flw.2023.13>

- Lusardi A, Tufano P, 2015. Debt Literacy, Financial Experiences, and Overindebtedness. *Journal of Pension Economics and Finance* 14(4): 332-368. <https://doi.org/10.1017/S1474747215000232>
- Merter A K, Balcioglu Y S, 2025. Financial Literacy and Decision-Making: The Impact of Knowledge Gaps on Financial Outcomes. *Borsa Istanbul Review*. <https://doi.org/10.1016/j.bir.2025.07.010>
- Netemeyer R G, Warmath D, Fernandes D, Lynch J G Jr, 2018. How Am I Doing? Perceived Financial Well-Being, Its Potential Antecedents, and Its Relation to Overall Well-Being. *Journal of Consumer Research* 45(1): 68-89. <https://doi.org/10.1093/jcr/ucx109>
- Nguyen L, Gallery G, Newton C, 2019. The Joint Influence of Financial Risk Perception and Risk Tolerance on Individual Investment Decision-Making. *Accounting and Finance* 59: 747-771. <https://doi.org/10.1111/acfi.12295>
- Philippas N D, Avdoulas C, 2020. Financial Literacy and Financial Well-Being among Generation-Z University Students. *European Journal of Finance* 26(4-5): 360-381. <https://doi.org/10.1080/1351847X.2019.1701512>
- Potrich A C G, Vieira K M, Mendes-Da-Silva W, 2016. Development of a Financial Literacy Model for University Students. *Management Research Review* 39(3): 356-376. <https://doi.org/10.1108/MRR-06-2014-0143>
- Prawitz A, Garman E T, Sorhaindo B, O'Neill B, Kim J, Drentea P, 2006. InCharge Financial Distress/Financial Well-Being Scale: Development, Administration, and Score Interpretation. *Journal of Financial Counseling and Planning* 17(1). <https://doi.org/10.1037/t60365-000>
- Rehman K, Mia M A, 2024. Determinants of Financial Literacy: A Systematic Review and Future Research Directions. *Future Business Journal* 10(1). <https://doi.org/10.1186/s43093-024-00365-x>
- Sabri M F, Zakaria N F, 2015. The Influence of Financial Literacy, Money Attitude, Financial Strain and Financial Capability on Young Employees' Financial Well-Being. *Pertanika Journal of Social Sciences and Humanities* 23(4): 827-848. https://www.researchgate.net/publication/284738423_The_influence_of_financial_literacy_money_attitude_financial_strain_and_financial_capability_on_young_employees'_financial_well-being
- She L, Rasiah R, Turner J J, Guptan V, Sharif Nia H, 2022. Psychological Beliefs and Financial Well-Being among Working Adults: The Mediating Role of Financial Behaviour. *International Journal of Social Economics* 49(2): 190-209. <https://doi.org/10.1108/IJSE-07-2021-0389>
- Shim S, Xiao J J, Barber B L, Lyons A C, 2009. Pathways to Life Success: A Conceptual Model of Financial Well-Being for Young Adults. *Journal of Applied Developmental Psychology* 30(6): 708-723. <https://doi.org/10.1016/j.appdev.2009.02.003>

- Stromback C, Lind T, Skagerlund K, Vastfjall D, Tinghog G, 2017. Does Self-Control Predict Financial Behavior and Financial Well-Being? *Journal of Behavioral and Experimental Finance* 14: 30-38. <https://doi.org/10.1016/j.jbef.2017.04.002>
- Taft M K, Hosein Z Z, Mehrizi S M T, Roshan A, 2013. The Relation between Financial Literacy, Financial Wellbeing and Financial Concerns. *International Journal of Business and Management* 8(11): 63-75. <https://doi.org/10.5539/ijbm.v8n11p63>
- Urban C, Schmeiser M, Collins J M, Brown A, 2020. The Effects of High School Personal Financial Education Policies on Financial Behavior. *Economics of Education Review* 78: 101786. <https://doi.org/10.1016/j.econedurev.2018.03.006>
- U.S. Bureau of Labor Statistics, 2025. Consumer Price Index: December 2024. U.S. Department of Labor. <https://www.bls.gov/news.release/cpi.nr0.htm>. Accessed July 2026.
- Valdes O M, Mottola G R, Lin J T, Bumcrot C, 2024. The FINRA Foundation's National Financial Capability Study: Unpacking 12 Years of Data on U.S. Financial Capability. *Journal of Financial Literacy and Wellbeing* 2(1): 79-90. <https://doi.org/10.1017/flw.2024.22>
- Xiao J J, Chen C, Chen F, 2014. Consumer Financial Capability and Financial Satisfaction. *Social Indicators Research* 118(1): 415-432. <https://doi.org/10.1007/s11205-013-0414-8>
- Xiao J J, Porto N, 2017. Financial Education and Financial Satisfaction: Financial Literacy, Behavior, and Capability as Mediators. *International Journal of Bank Marketing* 35(5): 805-817. <https://doi.org/10.1108/IJBM-01-2016-0009>
- Yakoboski P J, Lusardi A, Hasler A, 2023. The 2023 TIAA Institute-GFLEC Personal Finance Index. TIAA Institute, New York. <https://gflec.org/wp-content/uploads/2023/04/2023-P-Fin-Index-report-TIAA-Inst-and-GFLEC-Apr-2023.pdf>. Accessed July 2026.