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Financial literacy and psychological vulnerability to financial exploitation: the roles of financial anxiety, self-confidence, and behavior

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Abstract

Background Financial exploitation constitutes a significant psychological vulnerability shaped by cognitive resources, emotional regulation, and financial decision-making behaviors. While financial literacy is widely recognized as a protective factor, limited empirical evidence disentangles the distinct psychological roles of financial knowledge, attitudes, and behaviors in reducing vulnerability to financial exploitation.

Methods This cross-sectional study analyzed survey data from 565 adults in Türkiye. Financial literacy was conceptualized as a multidimensional construct comprising financial knowledge, financial attitude, and financial behavior. Vulnerability to financial exploitation was assessed through three psychosocial indicators: self-confidence, financial anxiety, and financial satisfaction. Structural Equation Modeling (SEM) was employed to examine the relationships among cognitive, behavioral, and emotional components.

Results Financial knowledge was significantly associated with lower financial anxiety and higher financial satisfaction but showed no direct effect on self-confidence. Financial behavior emerged as the most robust protective factor, significantly enhancing self-confidence and financial satisfaction while substantially reducing financial anxiety. Financial attitude was positively related to financial satisfaction but did not significantly influence anxiety or self-confidence. Financial anxiety demonstrated a strong negative association with both self-confidence and financial satisfaction.

Conclusions Financial exploitation vulnerability is driven by interconnected psychological mechanisms rather than cognitive factors alone. The findings highlight the central role of behavior-based financial competencies and emotional regulation in strengthening financial resilience. Interventions aimed at preventing financial exploitation should prioritize behavioral skill development and psychological risk screening alongside traditional financial education approaches.

Keywords Financial literacy, Psychological vulnerability, Financial anxiety, Financial behavior, Self-confidence, Structural equation modeling

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Introduction

Financial exploitation represents a complex form of psychological vulnerability shaped by the interaction of cognitive resources, emotional regulation, and financial decision-making behaviors rather than a purely economic process [1, 2]. Vulnerability to financial exploitation emerges when individuals experience difficulties in evaluating financial risks, regulating emotional responses to uncertainty, and maintaining confidence in financial decision-making. In this sense, financial exploitation is increasingly conceptualized as a multidimensional psychological phenomenon in which cognitive, emotional, and behavioral mechanisms jointly determine susceptibility [3, 4]. Psychological consequences such as heightened anxiety, diminished self-confidence, and reduced financial satisfaction further reinforce vulnerability by impairing judgment and adaptive decision-making [5]. Financial exploitation can be conceptualized as a form of psychological vulnerability shaped by emotional regulation processes, cognitive appraisal, and behavioral competence. Recent psychological research emphasizes that emotion regulation plays a central role in psychological well-being and adaptive functioning across diverse life domains [6], suggesting that difficulties in managing emotional responses such as anxiety and uncertainty may increase susceptibility to exploitative financial situations.

Beyond individual cognitive characteristics, financial exploitation is embedded within broader psychosocial and relational contexts. Social isolation weakened monitoring mechanisms, and power asymmetries within close relationships substantially increase exposure to financial abuse [1, 7]. Empirical studies consistently show that financial exploitation often occurs within trusted social networks, amplifying its psychological impact and complicating detection and prevention efforts [8, 9]. Cultural norms, gender roles, and socioeconomic inequalities further shape individuals' perceptions of financial risk and their capacity to recognize and respond to exploitative situations [10–12].

Rapid digitalization has introduced new psychological challenges to financial decision-making environments. Online fraud, phishing schemes, and digital investment scams increasingly target individuals who experience difficulties adapting to technological change, thereby intensifying emotional stress and uncertainty in financial contexts [6, 13]. Limited digital literacy exacerbates vulnerability by reducing individuals' confidence in navigating digital financial systems and evaluating online risks. While digital literacy interventions have shown promise in mitigating these risks [14], emerging institutional safeguards such as artificial intelligence-based monitoring systems remain unevenly accessible and insufficient as standalone solutions [15]. Older adults represent one of the most vulnerable populations in

financial decision-making contexts. Age-related cognitive changes, accumulated financial assets, and increasing reliance on digital financial services collectively increase the risk of financial exploitation in later life. Empirical research consistently shows that individuals aged 50 and over are disproportionately targeted by financial fraud, scams, and manipulative financial practices [1, 15]. Recent research further confirms that financial knowledge and cognitive factors are closely associated with scam susceptibility and financial exploitation risk among older adults [16, 17]. Despite this heightened vulnerability, relatively few empirical studies have examined the psychological mechanisms through which financial literacy components influence exploitation risk among older adults. Understanding these mechanisms is particularly important in rapidly digitalizing financial environments where older individuals may face additional challenges in evaluating financial risks.

Despite the expanding literature, important gaps remain in understanding how distinct components of financial literacy shape psychological vulnerability to financial exploitation. Existing studies have primarily focused on cognitive aspects such as financial knowledge and skills, often overlooking the role of emotional and behavioral processes in shaping vulnerability. Although recent research highlights the association between financial knowledge and exploitation risk, these studies provide limited insight into how psychological factors such as financial anxiety, self-confidence, and financial satisfaction interact with financial literacy components. In particular, the mechanisms through which financial knowledge, attitudes, and behaviors translate into psychological vulnerability remain insufficiently explored. Addressing this gap is essential for developing more comprehensive and psychologically informed models of financial vulnerability. Accordingly, the present study aims to examine how the three dimensions of financial literacy—financial knowledge, financial attitude, and financial behavior shape psychological vulnerability to financial exploitation through their effects on financial anxiety, self-confidence, and financial satisfaction. By employing SEM, this study investigates the cognitive, behavioral, and emotional mechanisms underlying financial vulnerability among adults aged 50 and over.

This study makes several contributions to the literature. First, it conceptualizes vulnerability to financial exploitation as a multidimensional psychological phenomenon rather than a purely economic outcome. Second, it simultaneously examines cognitive, behavioral, and emotional components of financial literacy within a single integrative model. Third, by focusing on older adults in a rapidly digitalizing financial environment, the study provides empirical evidence on the psychological mechanisms that shape financial resilience and exploitation vulnerability.

The remainder of the paper is structured as follows. The next section presents the methodology of the study, including the research design, data collection procedures, and statistical analysis. This is followed by the presentation of the Structural Equation Modeling results. The findings are then discussed in relation to the existing literature. Finally, the paper concludes with theoretical implications, study limitations, and directions for future research.

Literature review

A substantial body of empirical research demonstrates that financial decision-making capacity is closely linked to cognitive functioning and psychological resources. Longitudinal and clinical studies indicate that impairments in executive functioning, memory-based judgment, and risk evaluation significantly weaken individuals' ability to manage financial tasks and detect fraudulent intent [18, 19]. Screening instruments such as the Lichtenberg Financial Decision Screening Scale reveal that diminished cognitive capacity is strongly associated with increased vulnerability to financial exploitation [3, 4]. However, cognitive decline alone does not fully explain exploitation risk. Psychological factors including emotional distress, uncertainty intolerance, and confidence in financial judgment play a central role in shaping financial vulnerability across the lifespan [20, 21].

Financial literacy has long been identified as a key protective resource against financial exploitation. According to the Organization for Economic Cooperation and Development (OECD) / International Network on Financial Education (INFE) framework, financial literacy is a multidimensional construct comprising financial knowledge, financial attitudes, and financial behaviors [22, 23]. Low levels of financial literacy are associated with impaired risk assessment, limited fraud detection capacity, and increased susceptibility to exploitative financial practices [24–26].

However, recent evidence suggests that financial literacy cannot be conceptualized solely as a cognitive asset. High levels of financial knowledge, when not supported by adaptive behaviors and emotional regulation, may paradoxically increase exposure to investment fraud through overconfidence effects [27]. These findings highlight the need to examine financial literacy as a psychologically embedded construct operating through behavioral and emotional pathways.

The model's theoretical basis rests on three main approaches. First, the Behavioral Life Cycle Theory posits that individuals act with bounded rationality during different periods of their lives and that, particularly in emotional mechanisms, declining cognitive capacity leads to a lack of financial knowledge and, consequently,

an increased risk of financial exploitation. It also suggests that financial attitudes and behaviors shaped throughout life increase an individual's vulnerability in late life. Second, Financial Literacy Theory argues that three components financial knowledge, financial attitudes, and financial behavior form the basis of an individual's financial defense mechanism and that higher financial literacy reduces the risk of fraud and financial exploitation [23]. Third, the Ecological Model of Elder Abuse posits that financial abuse arises from the interaction of individual characteristics, environmental conditions, and relationship dynamics; In this context, it reveals that self-confidence, anxiety, and satisfaction represent the psychosocial aspects of financial relationships, while financial knowledge, attitudes, and behavior function as protective factors at the individual level, thus explaining the effect of financial literacy on financial exploitation indirectly within the framework of an ecological approach.

Psychological variables such as financial anxiety and self-confidence can also function as mechanisms linking financial literacy to financial well-being outcomes. Individuals with higher levels of financial literacy may experience lower levels of financial anxiety because they possess greater knowledge and behavioral competence in managing financial risks [20, 28]. Reduced anxiety can, in turn, enhance individuals' confidence in financial decision-making and improve their overall perception of financial satisfaction [29]. Conversely, elevated financial anxiety may undermine confidence and increase vulnerability in financial decision contexts [30]. Therefore, financial anxiety and self-confidence may operate as psychological pathways through which financial literacy influences vulnerability to financial exploitation. Based on these theoretical perspectives, the present study proposes a structural model examining how financial knowledge, financial attitudes, and financial behavior influence psychological vulnerability through financial anxiety, self-confidence, and financial satisfaction.

Methods

Study design and sample

This study employed a quantitative, cross-sectional design to examine the relationships between financial literacy and psychological vulnerability to financial exploitation. The target population consisted of adults aged 50 years and older living in Türkiye. A non-probability convenience sampling method was used, and participation was based on voluntary informed consent. Data were collected from a total of 565 participants residing in different provinces. Given the number of observed variables and the complexity of the proposed model, the sample size was considered adequate for SEM.

Psychological vulnerability to financial exploitation was assessed using the Financial Exploitation Scale developed by Lichtenberg et al. (2021), which measures three psychosocial dimensions: self-confidence, financial anxiety, and financial satisfaction. The scale was adapted to the Turkish cultural context in 2023 [31]. Financial literacy was measured using the OECD/INFE Financial Literacy Scale (FLS), which conceptualizes financial literacy as a multidimensional construct comprising financial knowledge, financial attitudes, and financial behavior. All constructs included in the study have demonstrated strong psychometric validity in prior international research [23, 32–34].

Accordingly, the research model was structured around six core variables: three dimensions of financial literacy and three psychosocial dimensions of financial exploitation vulnerability. The theoretical framework assumes that financial literacy operates as a protective psychological resource that influences individuals' vulnerability to financial exploitation through cognitive, behavioral, and emotional pathways. Empirical evidence indicates that individuals with higher levels of financial literacy exhibit greater resilience to financial fraud and exploitation, make more informed decisions, and approach financially risky situations with greater caution [1]. In line with this framework, the study model tests the effects of financial knowledge, financial attitudes, and financial behavior on self-confidence, financial anxiety, and financial satisfaction. The research model is shown in Fig. 1.

Data collection procedure

A quantitative research design was used in this study to examine the effects of older adults' financial literacy levels on financial exploitation. A structured questionnaire was used as the data collection tool in the study. The questionnaire consists of two main scales. First, the Financial Exploitation Scale [4] was used to determine the level of financial exploitation. This scale offers an internationally valid structure that measures the risk of financial abuse among older adults. The scale was adapted for use in Turkey in 2023 [31]. Second, the FLS [22] was used to determine participants' financial literacy levels. This scale is widely used worldwide to measure financial knowledge, financial attitudes, and financial behavior dimensions. All variables used in the scales in this study are constructs with proven validity in the international literature. The financial knowledge variable has been widely employed in prior research to assess individuals' levels of financial knowledge [23, 33]. The financial attitude variable has been used to assess individuals' financial decision-making tendencies and attitudes toward money management in previous studies [32, 34]. The financial behavior variable has been widely used to measure individuals' budgeting, saving, and spending habits in previous research [28, 30, 35]. The self-confidence variable, as a dimension of financial exploitation, has been used to assess the relationship between confidence in financial decision-making and exploitation risk in previous studies [1, 36]. The anxiety variable has been used in previous studies to measure financial anxiety and risk perception [20, 21].

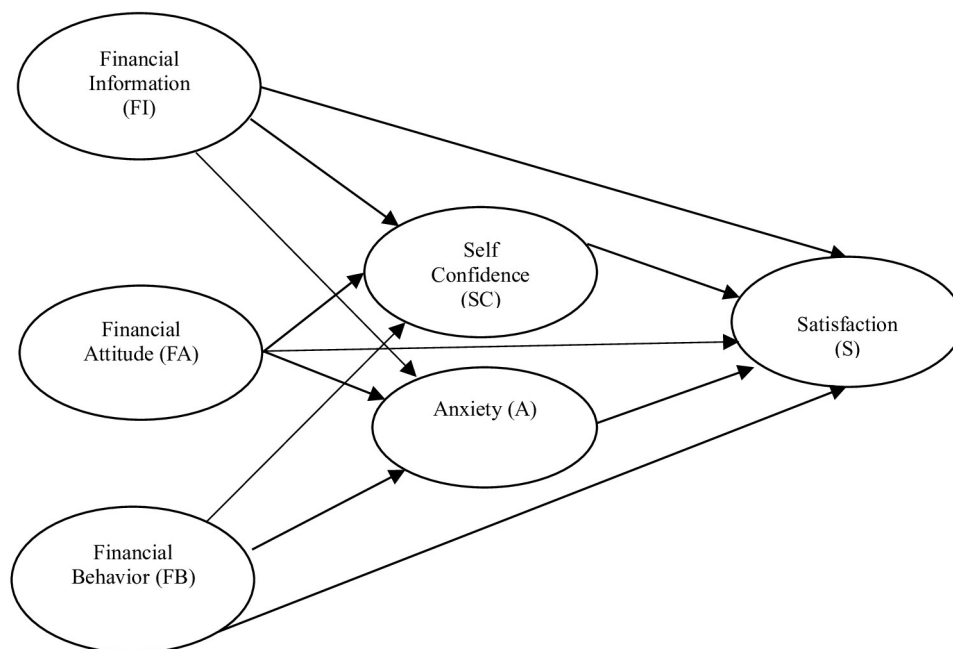


Fig. 1 Research Model

Finally, the satisfaction variable has been widely applied to assess individuals' perceptions of financial well-being in previous studies [27, 29].

The study population comprised all individuals aged 50 and over living in Turkey. In this context, a non-probability convenience sampling method was preferred, and individuals who volunteered to respond to the survey were included in the sample. The final sample of the study comprised 565 participants from different provinces. Given the number of variables in the structural model, this sample size is sufficient for multivariate analyses.

Statistical analysis

Data were analyzed using SEM. Confirmatory Factor Analysis (CFA) was initially performed to assess the construct validity of the measurement model. Model reliability was evaluated using Cronbach's alpha coefficient, with values above 0.70 indicating acceptable internal consistency.

Model fit was assessed using multiple goodness-of-fit indices commonly recommended in the SEM literature, including the chi-square to degrees of freedom ratio (χ^2/df), Root Mean Square Error of Approximation

(RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker–Lewis Index (TLI), and Root Mean Square Residual (RFI). The model demonstrated acceptable fit according to established cut-off criteria [37]. For the model to be considered valid, the majority of these goodness-of-fit indicators are expected to be at or above the specified threshold values. However, instead of relying on a single goodness-of-fit indicator, it is recommended to interpret multiple fit indices together. This is because each indicator provides information about the model's validity from different perspectives, so if a single index is insufficient, results from other indicators allow for a more reliable assessment [38, 39]. To assess the potential risk of common method bias associated with the use of self-reported survey data, Harman's single-factor test was conducted. All measurement items were entered into an exploratory factor analysis without rotation to determine whether a single factor accounted for the majority of the covariance among the variables. The results indicated that the first factor explained less than 50% of the total variance, suggesting that common method bias is unlikely to significantly influence the findings.

Ethics approval

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Gümüşhane University (Approval No: 2024/7, Date: 26 September 2024). The study did not involve any clinical trials involving humans or animals. All participants provided written informed consent prior to participation. Participants were informed about the purpose of the research, study procedures, and their right to withdraw from the study at any time without any consequences.

Results

Demographic findings

The demographic characteristics of the participants are presented in Table 1. Of the total sample, 41.9% were women and 58.1% were men. Regarding age distribution, the highest representation was observed among participants aged 50–54 years (30.4%) and 60–64 years (26.4%). In terms of educational attainment, 28.3% of participants held an associate degree and 22.3% held a bachelor's degree, while the proportion of participants with elementary-level education was relatively low (approximately 5%). With respect to employment status, 27.4% of participants reported being retired, whereas 18.9% indicated that they were not currently employed; notably, approximately 54% of the sample remained actively engaged in the workforce. An examination of income levels revealed that nearly half of the participants reported monthly

Table 1 Demographic Characteristics of Participants (565 Participants)

Demographic Questions	Variable	Frequency	Percentage
Gender	Female	237	41.9
	Male	328	58.1
Marital Status	Married	323	57.2
	Single	146	25.8
	Divorced	96	17.0
Age	50–54	172	30.4
	55–59	126	22.3
	60–64	149	26.4
	65–70	88	15.6
	70 and above	30	5.3
Education Level	Elementary	29	5.1
	Middle School	54	9.6
	High School	133	23.5
	Associate degree	160	28.3
	Bachelor's degree	126	22.3
Vocational	Master's Degree	63	11.2
	Tradesman	46	8.1
	Officer	61	10.8
	Worker	72	12.7
	Self-employed	78	13.8
	Retired	155	27.4
	Farmer	46	8.1
Income Level (\$)	I am not working	107	18.9
	480–600	262	46.4
	601–700	75	13.3
	701–800	76	13.5
	801–900	80	14.2
	901 and above	72	12.7

Table 2 Model Confirmatory Factor Analysis Fit Measures

	χ^2	χ^2/df	RMSEA	GFI	AGFI	CFI	NFI	TLI	RFI	Cronbach's Alpha
Model	229.119	2.794	0.056	0.952	0.920	0.852	0.794	0.783	0.699	0.865

Table 3 Fit measures of the research model

Fit Measure	Acceptable Fit Values	Factor's Fit Value
χ^2/df	$\chi^2/df \leq 5$	2.095
RMSEA	$0.05 < RMSEA < 0.10$	0.054
GFI	$0.90 < GFI < 0.95$	0.964
AGFI	$0.80 < AGFI < 0.90$	0.837
CFI	$0.90 < CFI < 0.95$	0.908
NFI	$0.90 \leq NFI < 0.95$	0.942
TLI	$0.90 \leq TLI < 0.95$	0.944
RFI	$0.85 < RFI < 0.90$	0.860

incomes between USD 480 and USD 600, corresponding to the national minimum wage level in Türkiye.

Reliability and validity analyses

The Cronbach alpha coefficient, frequently used to assess reliability in Likert-type scales, measures the consistency of items measuring the same characteristic. Cronbach's alpha ranges from 0 to 1, and values above 0.70 generally indicate that the scale is reliable [40, 41]. In this study, confirmatory factor analysis was applied to test the validity of the research scale. Table 2 shows the confirmatory factor analysis goodness-of-fit values and Cronbach's alpha (α) values. In the study, Cronbach's alpha was 0.865.

Looking at these values (Table 2), it can be observed that the χ^2/df ratio, RMSEA, GFI, AGFI, CFI, NFI, TLI, and RFI fit indices are within acceptable limits.

Structural equation modeling results

Various fit indices were used to assess the extent to which the factors obtained within the model corresponded to the predefined theoretical structure. Values for these widely accepted fit measures in the literature were calculated for each factor, and the results are presented in Table 3.

The model's RMSEA was 0.054, within the 0.05 to 0.10 range, indicating acceptable overall validity. The AGFI value of 0.837 and the chi-square/df ratio, calculated with the degrees of freedom at the 2.095 level, also indicate that the model meets acceptable fit criteria. The acceptable threshold values for the goodness-of-fit indices were determined based on widely accepted criteria in the structural equation modeling literature [37–39, 42]. Furthermore, all other goodness-of-fit indices, such as GFI, CFI, NFI, and TLI, were at acceptable levels; the RFI value of 0.860 also supported the model's adequate fit. A comprehensive examination of the goodness-of-fit criteria indicates that the model is acceptable mainly and even falls within ideal fit limits in some areas, thereby confirming its validity. Accordingly, the results obtained in the model can be interpreted with confidence. The AMOS output of the SEM for the study is presented in Fig. 2.

When standard and non-standard loadings are evaluated separately, it is observed that the non-standard loadings correspond to the regression weights in the linear multiple regression structure of the structural equation model. In contrast, the standard loadings correspond to

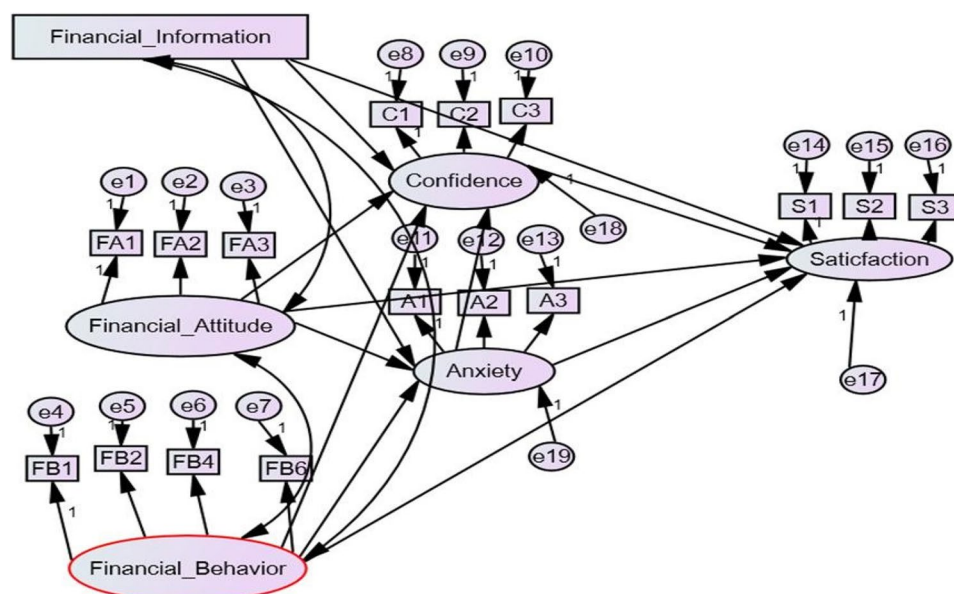
**Fig. 2** Structural Equation Model AMOS Output

Table 4 Evaluation of the Research Model's Hypotheses

Structural Relationships in the Model	Non-Standard Loadings	Standardized Loadings	Standard Error	Critical t-Ratio Values	P Values	Hypothesis Result
H1 Confidence ← Financial Information	0.057	0.087	0.047	1.219	0.223	Reject
H2 Satisfaction ← Financial Information	0.095	0.162	0.039	2.428	0.015	Accept
H3 Anxiety ← Financial Information	-0.147	-0.181	0.048	-3.065	0.002	Accept
H4 Confidence ← Attitude	-0.029	-0.045	0.062	-0.464	0.642	Reject
H5 Satisfaction ← Attitude	0.257	0.449	0.076	3.386	***	Accept
H6 Anxiety ← Attitude	-0.069	-0.086	0.063	-1.094	0.274	Reject
H7 Confidence ← Behavior	0.811	0.737	0.146	5.565	***	Accept
H8 Satisfaction ← Behavior	0.456	0.461	0.197	2.313	0.021	Accept
H9 Anxiety ← Behavior	-0.381	-0.277	0.128	-2.974	0.003	Accept
H10 Confidence ← Anxiety	-0.235	-0.294	0.083	2.830	0.005	Accept
H11 Satisfaction ← Anxiety	-0.168	-0.234	0.077	-2.193	0.028	Accept
H12 Satisfaction ← Confidence	-0.091	-0.101	0.163	-0.556	0.578	Reject

the standardized beta coefficients, indicating the effect sizes of these relationships. These values range from 0 to 1, with higher coefficients indicating a stronger relationship between variables [38, 42].

Table 4 presents the standard and non-standard loadings along with the standard error, critical ratio, and p-values to test the relationships related to the hypotheses. If the p-value is less than 0.05, the relationship is considered statistically significant, and the relevant alternative hypothesis is supported.

Upon examining Table 4, it was determined that hypotheses H₂, H₃, H₅, H₇, H₈, H₉, H₁₀, and H₁₁ were accepted because their p-values were below 0.05; while hypotheses H₁, H₄, H₆, and H₁₂ were found to be statistically insignificant due to their p-values being above 0.05 and were therefore rejected.

Discussion

This study examined how three core dimensions of financial literacy financial knowledge, financial attitude, and financial behavior shape psychological vulnerability to financial exploitation through their effects on self-confidence, financial satisfaction, and financial anxiety. The Structural Equation Modeling results largely align with established theoretical expectations while also revealing important nuances that underscore the multidimensional and psychologically embedded nature of financial vulnerability. These findings highlight that vulnerability to financial exploitation cannot be explained solely through cognitive resources but emerges from the interaction of behavioral competencies and emotional regulation mechanisms.

The finding that financial knowledge significantly influences both financial satisfaction (H₂) and financial anxiety (H₃) indicates that higher levels of financial knowledge are associated with reduced uncertainty and increased perceived financial well-being. This result is consistent with prior research demonstrating that

insufficient financial knowledge is linked to impaired decision-making, heightened risk perception uncertainty, and elevated financial anxiety [22, 23, 33]. From a psychological perspective, financial knowledge appears to function as a stabilizing cognitive resource that mitigates anxiety by enhancing individuals' sense of predictability and control in financial situations. The observed negative relationship between financial literacy and financial exploitation vulnerability further supports this interpretation [43].

However, the absence of a significant relationship between financial knowledge and self-confidence (H₁) partially contradicts earlier findings suggesting that financial knowledge strengthens self-efficacy and confidence in financial decision-making [25, 35]. This discrepancy suggests that knowledge alone may be insufficient to foster psychological confidence, particularly when individuals face challenges such as limited adaptive capacity to digital financial environments, prior negative financial experiences, or cognitive constraints. These results imply that self-confidence in financial contexts is not a direct by-product of knowledge acquisition but is more strongly shaped by experiential and behavioral reinforcement processes. One possible explanation for this finding is that greater financial knowledge may increase individuals' awareness of financial risks and uncertainties. Rather than automatically enhancing confidence, increased knowledge may lead individuals to recognize the complexity and potential pitfalls of financial decision-making. In this sense, higher knowledge may reduce overconfidence by making individuals more cautious and risk-aware. This interpretation is consistent with research suggesting that greater awareness of financial risks can sometimes temper subjective perceptions of competence in financial decision-making. This finding suggests that financial knowledge may play a more complex psychological role by promoting risk awareness rather than directly enhancing perceived financial capability [23, 30, 44].

Financial behavior emerged as the most influential component of financial literacy, exerting significant effects on self-confidence (H_7), financial satisfaction (H_8), and financial anxiety (H_9). This finding reinforces existing evidence that adaptive financial behaviors such as budgeting, saving, and debt management enhance perceived financial control, reduce emotional distress, and lower vulnerability to exploitation [28, 30]. Psychologically, financial behavior represents the translation of cognitive understanding into action, thereby strengthening self-efficacy and emotional stability. The prominence of behavioral competence in the model underscores the central role of action-oriented skills in mitigating psychological vulnerability within financial decision-making contexts.

The significant positive effect of financial attitude on financial satisfaction (H_5) further supports the view that evaluative orientations toward money management contribute to subjective financial well-being [32, 34]. Nevertheless, the lack of significant effects of financial attitude on self-confidence (H_4) and financial anxiety (H_6) suggests that attitudinal dispositions alone may be insufficient to directly influence emotional vulnerability. Instead, attitudes may operate indirectly by shaping behavioral tendencies rather than exerting immediate psychological effects. This finding highlights the distinction between abstract evaluative beliefs and concrete behavioral competencies in explaining financial vulnerability.

The interrelationships among the psychosocial components of financial exploitation vulnerability provide additional insight into the emotional dynamics underlying financial decision-making. The strong negative effects of financial anxiety on both self-confidence (H_{10}) and financial satisfaction (H_{11}) indicate that anxiety functions as a central destabilizing factor, eroding individuals' perceived competence and well-being. This interpretation is consistent with evidence indicating that socio-economic conditions and mental health-related knowledge significantly shape psychological distress and anxiety [45, 46]. In this respect, financial anxiety may reflect broader contextual vulnerabilities that interact with individual cognitive and behavioral factors in shaping exploitation risk. This finding is consistent with prior research demonstrating that financial anxiety undermines decision-making capacity and increases susceptibility to exploitation by impairing judgment and emotional regulation [20, 21]. In contrast, the absence of a significant effect of self-confidence on financial satisfaction (H_{12}) suggests that confidence alone does not guarantee positive financial well-being outcomes. Rather, satisfaction appears to be a broader construct shaped by a combination of emotional, behavioral, and contextual factors.

Overall, the findings demonstrate that financial literacy operates as a psychologically embedded construct rather than a purely cognitive resource. Behavioral competence and emotional regulation emerge as more decisive factors in shaping vulnerability to financial exploitation than attitudinal orientations alone. These findings also support the conceptual positioning of financial anxiety and self-confidence as psychological mechanisms linking financial literacy to vulnerability outcomes, highlighting the mediating role of emotional and behavioral processes in financial decision-making contexts. These results indicate that one-dimensional financial education programs focused exclusively on knowledge transmission are unlikely to be sufficient in reducing exploitation risk. Instead, comprehensive intervention strategies that integrate behavioral skill development with psychological support mechanisms are required. By simultaneously examining the cognitive, behavioral, and emotional dimensions of financial literacy within a single integrative model, this study contributes to the psychological and behavioral finance literature and offers empirically grounded insights to inform prevention strategies aimed at strengthening financial resilience.

Conclusion

This study examined how the three fundamental dimensions of financial literacy—financial knowledge, financial attitudes, and financial behavior—shape psychological vulnerability to financial exploitation through their effects on self-confidence, financial anxiety, and financial satisfaction. The Structural Equation Modeling results demonstrate that financial literacy plays a critical role in determining individuals' financial vulnerability and that this relationship operates through a multidimensional psychological mechanism rather than a purely cognitive pathway.

The findings indicate that financial knowledge exerts a significant influence on financial anxiety and financial satisfaction. As financial knowledge increases, uncertainty related to financial processes decreases, leading to lower anxiety and higher perceived financial well-being. However, the absence of a significant effect of financial knowledge on self-confidence suggests that knowledge alone is insufficient to strengthen psychological confidence in financial decision-making. This result implies that self-confidence is shaped not merely by informational resources but also by experiential, emotional, and contextual factors, including past financial experiences and challenges associated with navigating increasingly digital financial environments.

Financial behavior emerged as the most decisive component of financial literacy, significantly influencing self-confidence, financial satisfaction, and financial anxiety. Concrete behavioral competencies such as budgeting,

saving, and debt management enhance individuals' perceptions of financial control, reduce emotional distress, and increase resilience to financial exploitation. These findings underscore the importance of conceptualizing financial literacy not only as a cognitive construct but also as a form of behavioral competence that directly supports psychological resilience.

Financial attitudes were found to positively influence financial satisfaction, indicating that favorable evaluations of money management contribute to subjective financial well-being. Nevertheless, the lack of significant effects of financial attitudes on anxiety and self-confidence suggests that attitudinal orientations alone may be insufficient to reduce psychological vulnerability. This highlights the distinction between evaluative beliefs and the behavioral and emotional processes that more directly shape vulnerability to exploitation.

The relationships among the psychosocial components further emphasize the central role of emotional mechanisms in financial vulnerability. Financial anxiety emerged as a critical destabilizing factor, negatively affecting both self-confidence and financial satisfaction. In contrast, the absence of a direct effect of self-confidence on satisfaction suggests that financial well-being is a broader construct shaped by the interaction of emotional regulation, behavioral competence, and contextual conditions rather than by confidence alone.

Overall, the findings confirm that financial literacy functions as a psychologically embedded resource in preventing financial exploitation. Interventions aimed at reducing vulnerability should therefore move beyond one-dimensional knowledge-based education and adopt holistic approaches that integrate behavioral skill development, emotional risk awareness, and psychological support mechanisms. By examining the cognitive, behavioral, and emotional dimensions of financial literacy within a comprehensive model, this study contributes to the psychological and behavioral finance literature and offers empirically grounded insights for designing prevention strategies that strengthen financial resilience.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design precludes causal inference regarding the relationships between financial literacy components and vulnerability to financial exploitation. In addition, potential endogeneity concerns cannot be entirely ruled out, as reverse causality or omitted variable bias may influence some of the observed relationships among psychological variables such as financial anxiety and self-confidence. Therefore, the findings should be interpreted as associative rather than strictly causal relationships. Longitudinal research is needed to examine how cognitive, behavioral,

and emotional factors interact over time in shaping psychological vulnerability. Second, reliance on self-reported measures may have introduced potential sources of bias, including social desirability and recall biases. Because all variables were measured using self-reported survey responses, the results may also be subject to common method variance. Although procedural steps were taken to reduce such risks, future research employing multi-source data or objective behavioral measures could further strengthen the robustness of the findings. Third, the use of convenience sampling and the inclusion of adults aged 50 years and older living in Türkiye may limit the generalizability of the findings to populations operating within different cultural, economic, and institutional contexts. Finally, although key psychosocial dimensions such as financial anxiety, self-confidence, and satisfaction were assessed, other relevant psychological and contextual risk factors including objective cognitive functioning, social isolation, dependency dynamics, and prior exposure to exploitation were not directly measured. Future research employing longitudinal and mixed-method designs would provide a more comprehensive understanding of the multifaceted psychological processes underlying financial exploitation vulnerability. Future research could expand the current model by incorporating socioeconomic control variables, such as income level and education, into the structural framework. Including these variables could provide additional insights into whether the relationships between financial literacy dimensions and psychological vulnerability remain consistent across different socioeconomic backgrounds. Furthermore, future research may benefit from testing non-recursive structural models or instrumental variable approaches to better assess potential bidirectional relationships among psychological variables and to strengthen causal interpretation. Future research could also employ multigroup structural equation modeling to examine whether the relationships identified in this study differ across life stages or employment status, such as between retirees and active workers. Such analyses may provide deeper insight into how financial behavior operates as a protective factor in different socioeconomic and life-cycle contexts.

Policy implications and practical applications

The findings offer important implications for psychological practice, behavioral intervention design, and financial regulation. First, the dominant protective role of financial behavior indicates that knowledge-based financial education alone is insufficient to reduce vulnerability to financial exploitation. Interventions should prioritize behavior-focused skill development, including budgeting practices, fraud recognition, risk appraisal, and safe engagement with digital financial systems. Second,

the strong negative effects of financial anxiety on both self-confidence and financial satisfaction highlight the importance of incorporating financial anxiety screening into routine psychological, healthcare, and social service assessments. Financial anxiety may serve as an early psychological indicator of heightened vulnerability and impaired decision-making under risk.

Financial institutions also represent a critical context for prevention. The findings support the implementation of psychologically informed monitoring systems, such as transaction anomaly detection and staff training programs designed to recognize behavioral and emotional warning signs of vulnerability. Strengthened coordination between financial institutions, mental health professionals, and social support services may further enhance early detection and intervention efforts. At the policy level, the results emphasize the need for integrated prevention strategies that combine financial literacy, digital inclusion, and psychological support mechanisms. Rather than relying on isolated educational interventions, comprehensive frameworks addressing behavioral competence and emotional regulation are essential for strengthening financial resilience and reducing exploitation risk across diverse populations.

Abbreviations

AGFI	Adjusted Goodness of Fit Index
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
FLS	Financial Literacy Scale
GFI	Goodness of Fit Index
INFE	International Network on Financial Education
NFI	Normed Fit Index
OECD	Organization for Economic Cooperation and Development
RFI	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modeling
TLI	Tucker–Lewis Index

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Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by ŞŞS, AVÇ, AÖ and HÇ. The first draft of the manuscript was written by ŞŞS and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participation

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Gümüşhane University (Approval No: 2024/7, Date: 26 September 2024).

The study did not involve any clinical trials involving humans or animals. All participants provided written informed consent prior to participation. Participants were informed about the purpose of the research, study procedures, and their right to withdraw from the study at any time without any consequences.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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