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*Research article*

## **Perceived financial freedom among older adults: Relationships with financial preparation for retirement and risky indebtedness**

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**Abstract:** Population aging has intensified concerns regarding financial vulnerability and well-being in later life, particularly in emerging economies where pension systems face structural constraints and older adults increasingly rely on individual financial decision-making to maintain autonomy and quality of life. In this context, perceived financial freedom represents a key dimension of financial well-being, reflecting the capacity to make autonomous financial decisions and sustain living standards. This study aimed to examine perceived financial freedom among older adults and analyze its relationships with financial preparation for retirement and risky indebtedness behavior. A survey was conducted with 1010 Brazilian older adults. Descriptive statistics, structural equation modeling (SEM), and multigroup invariance analysis were employed. Although the study draws on a large sample, the use of a non-probabilistic sampling strategy limits its representativeness and constrains the generalizability of its findings. The results indicate that most participants reported a high or very high level of perceived financial freedom, while financial preparation for retirement remains limited. All proposed hypotheses were supported. The structural model revealed a positive relationship between financial preparation for retirement and perceived financial freedom, and negative relationships between risky indebtedness behavior and both perceived financial freedom and retirement preparation. The estimations further demonstrated that the proposed framework is invariant across gender, race, education, and income groups. In Brazil, as in other developing economies facing pension system

pressures, these findings highlight the relevance of policies and educational initiatives aimed at strengthening retirement preparation, financial planning, and responsible credit management to promote financial freedom in later life.

**Keywords:** elderly; financial freedom; retirement planning; indebtedness; behavioral finance

**JEL Codes:** C83, D14, I30, J14

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**Abbreviations:** Structural equation modeling (SEM), Consumer Financial Protection Bureau (CFPB), Confirmatory factor analysis (CFA), Root Mean Square Residual (RMR), Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), Research Ethics Committee (CAAE), Informed Consent Form (ICF).

## 1. Introduction

Population aging is a global phenomenon. In Brazil, as in many other countries, the number of individuals aged sixty or older has been increasing (Vieira et al., 2025), creating challenges for the pension system as well as for the financial, economic, and social security of this demographic (Papageorgiou et al., 2025). In this context, the transition from active working life to retirement represents a period of financial vulnerability, as advancing age often leads to a decline in health and functional status, affecting both physical and cognitive abilities, and consequently, the management of personal finances (Joshi and Chalise, 2021). Faced with these challenges, ensuring the financial well-being of older adults becomes increasingly relevant, contributing significantly to their quality of life (Riitsalu et al., 2024; Yang and Li, 2025).

To mitigate the effects of financial vulnerability among the elderly, the establishment of sound personal financial management practices is essential (Fong et al., 2021), particularly the development of a culture of financial planning. Financial planning refers to the evaluation of one's current and future financial situation and is considered a multidimensional task that encompasses various activities, including preparation for retirement (Kumar et al., 2019). As such, financial planning is a process through which individuals can pursue personal goals by managing their resources effectively, enabling them to achieve financial well-being and satisfaction (Patel, 2017).

In this regard, adopting financial planning throughout one's life may lead to a greater perception of financial freedom, as it enables individuals to make more informed and appropriate decisions (Vieira et al., 2025). Financial freedom is often associated with an individual's autonomy to make financial decisions without being constrained by excessive obligations or dependency on others (Vieira et al., 2024). Therefore, it is considered one of the core dimensions of financial well-being (Brüggen et al., 2017).

It is worth noting that, as individuals age, the meaning of financial well-being and its underlying dimensions evolves—from concerns about security to a desire for autonomy and freedom in monetary decision-making (Riitsalu et al., 2024; Salignac et al., 2020). In this sense, the perception of financial freedom may vary according to factors such as gender, age, education level, and degree of indebtedness (Vieira et al., 2024). Beyond individual characteristics, the social and political environment also plays

a role in shaping elderly individuals' perception of financial freedom. For instance, governmental actions can have a significant impact on financial well-being, particularly through the development of public policies that promote the economic security of older adults (Yang and Li, 2025).

The perception of financial freedom is closely linked to retirement planning and its financial sustainability (Hirono and Mino, 2021). Older adults who engage in financial preparation are more likely to enjoy greater financial freedom, as they will have accumulated sufficient resources throughout their lives to meet their needs (Lee and Law, 2004) and are more likely to experience higher levels of financial well-being (Liu et al., 2022; Lusardi and Mitchell, 2011; Vieira et al., 2023).

However, the accumulation of financial resources into old age depends on a variety of factors. Knowledge of personal finance is essential for fostering financial empowerment (Mansur et al., 2024; Nam, 2023). Older adults with higher levels of financial literacy tend to engage in more long-term planning and demonstrate greater preparedness for retirement (Lusardi and Mitchell, 2011). Consequently, effective long-term financial planning reduces the likelihood of experiencing issues such as anxiety and stress during old age, often caused by the lack of a retirement plan (Liu et al., 2022).

On the other hand, limitations in financial management hinder individual decision-making and can lead to indebtedness (Lusardi and Tufano, 2015), including among older adults (Fong et al., 2021). Incurring debt constitutes indebtedness, and the accumulation of debts can compromise one's ability to meet financial obligations, resulting in consequences that may lead to over-indebtedness (Lusardi and Tufano, 2015). Excessive debt may jeopardize the financial health of older individuals, undermine their ability to manage their finances effectively, and negatively influence their perception of financial freedom (Vieira et al., 2024; Vieira, Matheis, Bressan, et al., 2023).

The consequences of over-indebtedness among the elderly extend beyond immediate financial hardship, impacting both physical and mental health. The stress of managing debt may lead to anxiety and depression (Liu et al., 2022), thereby diminishing their perceived financial well-being (Abrantes-Braga and Veludo-de-Oliveira, 2019, 2020) and sense of financial freedom. In many cases, high levels of indebtedness stem from behavioral issues. This introduces the concept of risky indebtedness behavior, understood as a behavioral tendency to take on dangerously high levels of debt—an early stage of over-indebtedness (Abrantes-Braga and Veludo-de-Oliveira, 2019, 2020). Debt risk has become an increasingly pressing concern, especially in contexts where credit is easily accessible (Lusardi and Tufano, 2015; Yu et al., 2021). In particular, the debt levels among the elderly are now higher than in previous decades, contributing to a decline in perceived well-being and financial freedom (Lusardi et al., 2020).

Therefore, financial preparation for retirement and risky indebtedness behavior emerge as key factors associated with perceived financial freedom. However, despite the growing relevance of these topics, particularly in the context of population aging and persistent pension deficits, a gap remains in the literature regarding their relationships with perceived financial freedom among older adults. Accordingly, this study aims to examine perceived financial freedom among older adults and to analyze its associations with financial preparation for retirement and risky indebtedness behavior.

This study contributes to the literature in three primary ways. First, it examines both constructs within a unified analytical framework. Structural equation modeling (SEM) was employed to estimate the structural relationships among financial preparation for retirement, risky indebtedness behavior, and perceived financial freedom. Second, the study analyzes a large sample of elderly individuals in Brazil, an emerging country where the population exhibits low levels of financial planning, high indebtedness (Oberrauch and Lusardi, 2024), insufficient retirement preparation (Vieira et al., 2022),

and limited saving behavior (França and Hershey, 2018). Third, the unit of analysis is the perception of financial freedom itself, which may offer valuable insights for the development of public policies and educational programs that are more effective and better aligned with the needs and characteristics of older adults (Yang and Li, 2025).

Analyzing the perception of financial freedom among older adults in Brazil is justified by both theoretical and practical relevance, given the context of financial vulnerability faced by this population in the country (Vieira et al., 2025). The results of this study may assist policymakers in designing more effective actions to promote equitable access to financial and technological resources, thereby reducing structural barriers.

The remainder of the article is structured as follows: Section 2 presents the development of the theoretical model, highlighting the key concepts related to financial freedom, risky indebtedness behavior, and financial preparation for retirement. In addition to contextualizing these themes, this section outlines the research hypotheses that guided the proposed model. Section 3 describes the materials and methods employed. Section 4 presents the analysis of the relationships between financial preparation for retirement, risky indebtedness behavior, and perceived financial freedom, based on the results of the structural equation modeling. Finally, the concluding section offers final considerations, identifies research gaps, and proposes directions for future studies.

## 2. Literature review

Financial freedom is central to discussions surrounding financial control (Mansur et al., 2024). Although there is no universally accepted definition, financial freedom is generally understood as having sufficient financial resources to live life according to one's own desires (Chow, 2023). The topic has received increasing attention in the literature in recent years and is considered one of the key dimensions of financial well-being, according to the classification proposed by the Consumer Financial Protection Bureau (CFPB, 2015).

To understand financial freedom, the Consumer Financial Protection Bureau (CFPB, 2015) outlines two main approaches: objective and subjective. The objective approach measures financial freedom through tangible indicators such as income level, debt, and accumulated wealth, commonly used in economic and financial studies (Vieira et al., 2022). The subjective approach, on the other hand, considers an individual's personal perception of their financial security, peace of mind regarding the future, and ability to make economic choices without being constrained by financial hardship.

In this regard, the perception of financial freedom can be understood through three key dimensions, as proposed by Vieira et al. (2024). The first is financial autonomy, referring to an individual's ability to make financial decisions independently, without interference from others, thus maintaining full control over their own resources. The second is financial security, related to a sense of stability about one's financial future, especially concerning retirement and the capacity to handle unforeseen events. Finally, the third dimension is consumption and investment capacity, which encompasses the ability to make investments and purchase goods or services without compromising one's financial stability.

Many older adults fear becoming a financial burden on their families during old age (Riitsalu et al., 2024). In this context, it is crucial to retire with the ability to settle all outstanding debts (Selvadurai et al., 2018). Financial freedom is therefore essential for both men and women as they approach retirement (Chow, 2023).

However, achieving the desired level of financial freedom depends on several key factors. For older individuals, better financial preparation for retirement can offer the freedom to choose how to earn and spend money (Brüggen et al., 2017). According to Yeung and Zhou (2017) retirement planning is a goal-oriented behavior in which individuals make deliberate efforts to prepare for life after work. This preparation increases retirees' overall resources—including tangible, cognitive, and social assets—resulting in improved psychological and physical well-being. Thus, financial preparation for retirement becomes a crucial element that places greater responsibility on individuals to plan, save, invest, and accumulate the assets necessary for a satisfactory retirement (Lusardi et al., 2017).

Therefore, financial preparation becomes a critical factor, as many individuals—regardless of age—do not engage in planning, saving, or investing to ensure their future financial well-being (Riitsalu et al., 2024). In the United States, evidence shows that only a minority of households develop a retirement plan or feel financially confident, underscoring the difficulty of creating a financial plan that aligns with one's personal reality (Lusardi and Mitchell, 2011). Consequently, adequate savings levels are necessary to provide financial support during retirement (Selvadurai et al., 2018), ultimately contributing to financial freedom (Boon et al., 2011). Financial planning for retirement can foster a more optimistic attitude toward one's financial situation, increasing the likelihood of improved financial well-being and more effective saving and consumption decisions (Xue et al., 2020). Based on this, the following research hypothesis was formulated:

*H1: Financial preparation for retirement has a positive effect on perceived financial freedom.*

From the perspective of financial preparation for retirement, many older adults rely on financial support from their families to maintain their standard of living and make decisions, which can affect their perception of financial autonomy (Vieira et al., 2024). Thus, the perception of financial freedom may be undermined not only by a lack of resources but also by the way those resources are managed and distributed within the family unit (Chow, 2023; Riitsalu et al., 2024; Yang and Li, 2025). As people age, they increasingly depend on family members and public services for care and support (Joshi and Chalise, 2021; Yang and Li, 2025). Accordingly, the relationship between financial dependency and debt risk may shift, since the older adult's sense of financial autonomy is affected when the family assumes control over financial resources and debts (Riitsalu et al., 2024).

In the context of debt management, risky indebtedness behavior is understood as the frequent use of various types of debt and credit lines, often leading to delinquency (Abrantes-Braga and Veludo-de-Oliveira, 2019, 2020). Among older adults, this risk may stem from several causes. It may result from financial decisions made earlier in life, such as long-term mortgage loans that extend into retirement. It may also arise from taking on credit to supplement income due to the income reduction that accompanies retirement. Additionally, it can result from borrowing to support other family members, such as adult children. Another common factor is the widespread use of targeted credit products, such as payroll-deductible loans. These loans are often contracted at high interest rates, further complicating financial management, especially when older individuals do not fully understand the financial terms of the contracts (Lusardi et al., 2020).

Thus, risky indebtedness behavior may serve as a short-term mechanism to increase consumption but also represents a long-term economic vulnerability, particularly when older adults lack sufficient financial knowledge to assess the risks involved (Joshi and Chalise, 2021). Its effects extend beyond the economic domain and impact the mental and emotional health of the elderly. High

levels of indebtedness are associated with increased financial stress, anxiety, and depression among older adults, reducing their perception of both financial well-being (Blomgren et al., 2016; Marshall et al., 2021; Richardson et al., 2013) and financial freedom. Based on this, the following research hypothesis was proposed:

*H2: Risky indebtedness behavior has a negative effect on perceived financial freedom.*

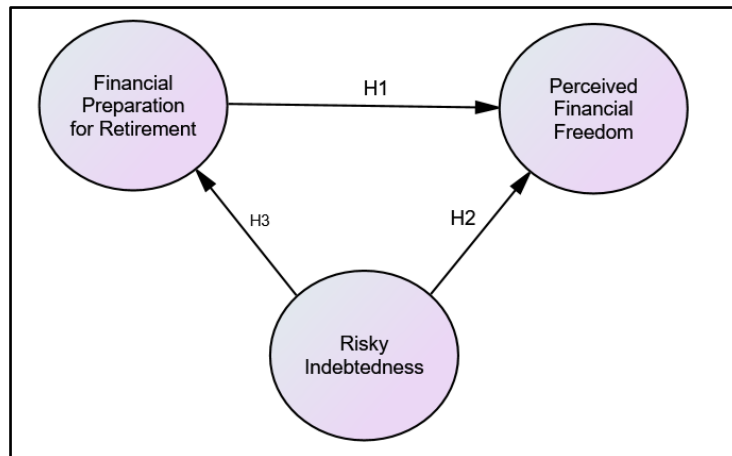
In a broader context, excessive indebtedness or over-indebtedness is a global phenomenon (Abrantes-Braga and Veludo-de-Oliveira, 2019, 2020), stemming from consumer-driven incentives and the expansion of capitalism, disproportionately affecting more vulnerable groups, such as older adults (Fong et al., 2021). In Canada, for instance, data revealed a significant increase in personal indebtedness among older individuals between 1999 and 2016 (Zhou, 2021), highlighting the financial fragility of this population. In Brazil, to mitigate the effects of excessive indebtedness, Law No. 14,181/2021 was enacted to provide mechanisms of protection and support for over-indebted individuals.

Individuals who become indebted often struggle with financial management and are unlikely to accumulate sufficient savings to meet consumption needs during retirement (Kumar et al., 2019; Lusardi et al., 2017; Tomar et al., 2021). Higher levels of debt increase older adults' sensitivity to interest rate fluctuations, requiring retirees to allocate a greater portion of their income toward debt repayment (Lusardi et al., 2020). Conversely, effective debt control facilitates decision-making and future financial planning (Abrantes-Braga and Veludo-de-Oliveira, 2020). Based on this, the following research hypothesis was proposed:

*H3: Risky indebtedness behavior has a negative effect on financial preparation for retirement.*

Thus, within the context of multidimensional vulnerabilities faced by older adults, it is essential to examine the interplay between key financial factors and perceived financial freedom, particularly given the challenges associated with the transition to retirement, structural limitations of pension systems, and the need for policies that promote financial education and economic protection (Yu et al., 2021). Accordingly, the relationships among financial preparation for retirement, risky indebtedness behavior, and perceived financial freedom should be analyzed in an integrated framework. Furthermore, effective social security and welfare policies may function as enabling mechanisms of financial freedom in later life, potentially reducing reliance on debt and economic dependence on family members or third parties (Yang and Li, 2025).

Figure 1 presents the theoretical model proposed in this study. The central construct, perceived financial freedom, is conceptualized as a subjective experience encompassing decision-making autonomy, economic security, and consumption and investment capacity. This construct is examined in relation to financial and behavioral factors, represented by financial preparation for retirement and risky indebtedness behavior.



**Figure 1.** Proposed theoretical model and research hypotheses.

Figure 1 presents the proposed hypotheses and their structural relationships. The model posits that higher levels of financial preparation for retirement (H1) are positively associated with perceived financial freedom, whereas higher levels of risky indebtedness behavior (H2) are negatively associated with perceived financial freedom among older adults. Additionally, the model hypothesizes a negative relationship between risky indebtedness behavior and financial preparation for retirement (H3). Indebtedness may constrain individuals' financial capacity, as debt repayment obligations absorb a substantial share of income, thereby limiting the ability to save and invest for retirement (Abrantes-Braga and Veludo-de-Oliveira, 2020). The ellipses represent latent constructs corresponding to perceived financial freedom, financial preparation for retirement, and risky indebtedness behavior. The following section outlines the methodological procedures employed in this study.

### 3. Materials and methods

This study adopts a descriptive, quantitative research design. The target population consisted of Brazilian older adults, defined as individuals aged 60 years or older. According to the Brazilian Institute of Geography and Statistics (IBGE, 2023), Brazil has approximately 32.1 million older adults, accounting for 15.8% of the total population. A convenience sampling approach was employed. Ten field researchers, previously trained by the authors, administered the survey in public spaces across multiple cities and regions. At the conclusion of the data collection period, 1010 valid responses were retained for analysis.

For data collection, questionnaires were applied, assessing both the demographic profile of the elderly respondents and the constructs outlined in the theoretical model (Figure 1). The constructs of perceived financial freedom and financial preparation for retirement were measured using five-point Likert-type scales: 1 – Never, 2 – Rarely, 3 – Sometimes, 4 – Frequently, and 5 – Always. The construct of risky indebtedness behavior was measured using a five-point agreement scale, ranging from 1 – Strongly Disagree to 5 – Strongly Agree.

Perceived financial freedom was measured using the Financial Freedom Perception Scale developed by Vieira et al. (2024), which comprises nine items. Higher scores on the scale indicate a greater level of perceived financial freedom. To assess financial preparation for retirement, the study employed the scale developed and validated by Vieira et al. (2022), consisting of 13 items divided into

three dimensions: future expectations, financial planning, and saving behavior. Higher scores on this scale reflect better financial preparation for retirement.

Risky indebtedness behavior was measured using the scale developed by Abrantes-Braga and Veludo-de-Oliveira (2019, 2020), which comprises five items designed to capture risk-prone behaviors associated with indebtedness. Higher scores indicate a greater propensity toward such behavior. The full set of items for the perceived financial freedom, financial preparation for retirement, and risky indebtedness behavior scales is provided in Table A.1 (Appendix A). All three scales were originally developed in Brazilian Portuguese and validated using general Brazilian samples; therefore, no translation procedures were required. The items were designed to be culturally appropriate and comprehensible to Brazilian respondents, thereby reducing the likelihood of measurement non-invariance in the present study.

Data analysis included descriptive statistics, confirmatory factor analysis (CFA), and structural equation modeling (SEM). Descriptive statistics were used to characterize the sample and summarize respondents' perceptions. CFA was conducted to assess construct validity, while SEM was employed to evaluate the adequacy of the proposed theoretical model.

The models were estimated using the variance-covariance matrix and maximum likelihood estimation (MLE). Convergent validity was evaluated based on the magnitude and statistical significance of the standardized factor loadings. Model fit was assessed using absolute fit indices, including the chi-square statistic ( $\chi^2$ ), root mean square residual (RMR), root mean square error of approximation (RMSEA), and the Goodness-of-Fit Index (GFI), as well as comparative fit indices such as the Comparative Fit Index (CFI), Normed Fit Index (NFI), and Tucker–Lewis Index (TLI).

As reference thresholds, a chi-square/degrees of freedom ratio below 5 is generally considered acceptable. For the CFI, GFI, NFI, and TLI, values above 0.95 are recommended. For the RMR and RMSEA, values below 0.08 and 0.06, respectively, indicate acceptable model fit (Byrne, 2013; Hair et al., 2019; Hooper et al., 2008; Kline, 2015). Unidimensionality was assessed based on standardized residuals, with constructs considered unidimensional when residuals were below 2.58 (Hair et al., 2019).

After validating the measurement model, a multigroup invariance analysis was conducted to examine whether the factor structure was equivalent across groups defined by gender (male vs. female), race (White vs. non-White), education (higher education or above vs. lower levels), and income (up to R\$2,200.00; R\$2,200.01–R\$4,400.00; above R\$4,400.00). Measurement invariance was assessed through a sequence of nested models, starting with an unconstrained baseline model and progressively imposing equality constraints. A change in the Comparative Fit Index ( $\Delta$ CFI) of less than 0.01 was considered indicative of measurement invariance across groups (Cheung and Rensvold, 2002).

Subsequently, the classification procedures proposed by Vieira et al. (2022, 2024) were applied to categorize financial preparation for retirement and perceived financial freedom into four levels: very low, low, high, and very high. For risky indebtedness behavior, the mean score across the scale items was calculated and used to construct the histogram.

The study was approved by the Research Ethics Committee (CAAE: 52480021.0.0000.5346), and all participants signed an Informed Consent Form (ICF) prior to their participation.

#### **4. Results and discussion**

The study sample consisted of 1010 older adults, whose profiles were characterized based on sociodemographic and economic variables (Table 1).

**Table 1.** Respondents' profiles by gender, age, marital status, race, education level, personal income, and household income.

Variables	Alternatives	Frequency	Percentage
Gender	Male	465	46.80%
	Female	526	53.00%
	Prefer not to answer	2	0.20%
Age	60–64	335	33.20%
	65–69	257	25.40%
	70–74	178	17.60%
	75–79	100	9.90%
	80–84	53	5.20%
	85–89	9	0.90%
	90–99	78	7.70%
	Marital status	Single	143
Married		511	51.00%
Separated		128	12.80%
Widowed		217	21.70%
Other		3	0.30%
Race/ethnicity	White	782	79.70%
	Black	80	8.20%
	Mixed-race	106	10.80%
	Asian	6	0.60%
	Indigenous	7	0.70%
Education level	Incomplete primary education	382	38.40%
	Primary education	91	9.10%
	Technical course	41	4.10%
	High school	173	17.40%
	Higher education	167	16.60%
	Postgraduate or MBA	59	5.90%
	Master's or PhD	82	8.20%
Gross personal Monthly income	Up to R\$1,100.00	142	14.30%
	R\$1,100.01–R\$2,200	239	24.10%
	R\$2,200.01–R\$3,300	197	19.90%
	R\$3,300.01–R\$4,400	104	10.50%
	R\$4,400.01–R\$5,500	86	8.70%
	R\$5,500.01–R\$8,800	72	7.30%
	R\$8,800.01–R\$11,000	57	5.80%
	R\$11,000.01–R\$22,000	65	6.60%
	Above R\$22,000	28	2.80%
Gross household monthly income	Up to R\$1,100.00	54	5.70%
	R\$1,100.01–R\$2,200	175	18.40%
	R\$2,220.01–R\$3,300	181	19.90%
	R\$3,300.01–R\$4,400	119	12.50%

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Variables	Alternatives	Frequency	Percentage
	R\$4,400.01–R\$5,500	125	12.50%
	R\$5,500.01–R\$8,800	120	12.00%
	R\$8,800.01–R\$11,000	74	7.80%
	R\$11,000.01–R\$22,000	97	10.20%
	Above R\$22,000	46	4.80%

Source: Research results (2025).

The results regarding respondents' profiles indicate that the majority were female (53%), with most falling within the 60–64 age range (33.2%). It is noteworthy that the cumulative percentage for the age group between 60 and 74 years accounts for 76.2%, representing the largest portion of the elderly population. Most respondents reported being married (51%) and identified as white (79.7%). Regarding education level, a substantial portion (38.4%) had not completed primary education. Other notable educational levels included high school (17.4%) and higher education (16.8%).

In terms of economic variables, most respondents reported gross personal monthly incomes in the lower ranges, particularly between R\$1,100.01 and R\$2,200.00 (24.10%) and between R\$2,220.01 and R\$3,300.00 (19.90%), totaling 44% of the participants. Regarding gross monthly household income, the highest frequencies were also found in the lower income brackets, totaling 37.5% of the sample.

Additionally, 65.8% of the elderly respondents stated that they do not depend on financial support from others. However, 53.3% indicated that at least one other person relies on their income, suggesting that many elderly individuals provide financial support to family members.

Following the characterization of the respondents, the study sought to gather validity evidence for the construct of perceived financial freedom and to analyze its incidence among older adults. Table 2 presents the results of the confirmatory factor analysis using the nine items of the scale.

**Table 2.** Initial and final fit indices of the perceived financial freedom scale.

Index	Thresholds <sup>1</sup>	Perceived financial freedom scale	
		Initial model	Final model
$\chi^2$ (value)	-	445.786	122.535
$\chi^2$ (probability)	>0.050	0.000	0.000
$\chi^2$ / degrees of freedom	<5.000	16.511	4.901
GFI (Goodness of Fit Index)	>0.950	0.911	0.974
CFI (Comparative Fit Index)	>0.950	0.928	0.983
NFI (Normed Fit Index)	>0.950	0.924	0.979
RMSR (root mean square residual)	<0.080	0.091	0.043
RMSEA (root mean square error of approximation)	<0.060	0.124	0.062
Cronbach's Alpha	>0.700	-	0.929
Composite reliability	>0.700	-	0.927
Average variance extracted (AVE)	>0.500	-	0.586

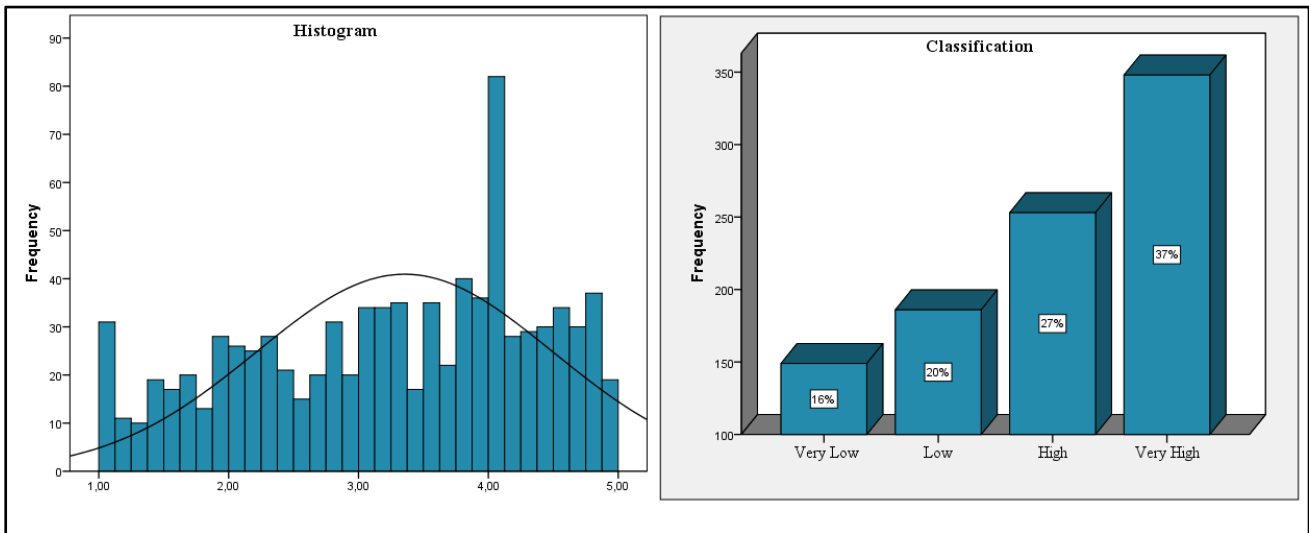
Note: <sup>1</sup>Adjustment limit values defined based on Hu and Bentler (1999) and Hooper et al. (2008).

Source: Research data (2025).

The validation results for the perceived financial freedom scale indicated that the final model achieved acceptable fit indices according to established thresholds in the literature (Hooper et al., 2008;

Hu and Bentler, 1999). To improve model fit, two error covariances were specified between items 2 and 3 and between items 6 and 7 when theoretically justified. No items were removed, and all nine originally proposed indicators were retained in the final model.

Following confirmatory validation, the construct of perceived financial freedom was formed using the procedures suggested by Vieira et al. (2024). After the construct formation, a frequency distribution was examined through a histogram (Figure 2), which allowed for the visual identification and classification of perceived financial freedom among older adults.



**Figure 2.** Histogram and classification of perceived financial freedom. Note: Classification performed according to the parameters proposed by Vieira et al. (2024). Source: Research results (2025).

The perception of financial freedom presented a mean score of 3.36 and a standard deviation of 1.14. The two items with the highest average scores were: “*My money is sufficient to meet my daily needs*” (mean = 3.89) and “*My financial situation allows me to live comfortably*” (mean = 3.62). Conversely, the items with the lowest average scores were: “*I am able to cover the expenses of a vacation trip*” (mean = 2.84) and “*I feel financially secure*” (mean = 3.18).

The second image in Figure 2 displays the classification of perceived financial freedom. For most older adults, this perception was classified as high (27%) or very high (37%), indicating that the respondents perceive themselves as having financial freedom (Vieira et al., 2025). However, for approximately one-third of the participants, the perception of financial freedom was still considered low or very low.

After examining older adults’ perceived financial freedom, financial preparation for retirement and risky indebtedness behavior were analyzed. To this end, measurement models were first specified. Four confirmatory factor analyses (CFA) were conducted: three for the dimensions of financial preparation for retirement (*future expectations*, *financial planning*, and *saving behavior*), and one for the construct of *risky indebtedness behavior*. Once the measurement models were established, descriptive statistics for the constructs were calculated.

Table 3 presents the first part of this analysis, detailing the initial and final fit indices for each construct. In cases where the initial models indicated a need for adjustments, model refinement

strategies were applied. These included the removal of items with low factor loadings (below 0.50) and the insertion of correlations between error terms when theoretically justified, as recommended by Hair et al. (2019).

**Table 3.** Initial and final adjustment indices of the constructs of financial preparation for retirement scale and risky indebtedness behavior.

Index	Thresholds <sup>1</sup>	Future expectation		Financial planning	Savings behavior		Risky indebtedness behavior	
		Initial	Final	Initial	Initial	Final	Initial	Final
$\chi^2$ (value)	-	81.36	0.468	0.152	62.109	1.083	59.782	12.327
$\chi^2$ (probability)	>0.050	0.000	0.494	0.696	0.000	0.298	0.000	0.006
$\chi^2$ / degrees of freedom	<5.000	16.272	0.468	0.152	12.422	1.083	11.956	4.109
GFI (Goodness of Fit)	>0.950	0.968	1.000	1.000	0.974	0.999	0.978	0.995
CFI (Comparative Fit Index)	>0.950	0.943	1.000	1.000	0.983	1.000	0.986	0.998
NFI (Normed Fit Index)	>0.950	0.940	1.000	1.000	0.982	1.000	0.985	0.997
RMSR (root mean square residual)	<0.080	0.129	0.009	0.006	0.052	0.006	0.031	0.017
RMSEA (RMS error of approximation)	<0.060	0.123	0.000	0.000	0.106	0.009	0.104	0.056
Cronbach's Alpha	>0.700							
Composite reliability	>0.700		0.798	0.827		0.915		0.924
Average variance extracted (AVE)	>0.500		0.504	0.615		0.732		0.708

Note: <sup>1</sup>Threshold values based on Hu and Bentler (1999) and Hooper et al. (2008).

Source: Research results (2025).

The initial results indicated the need for model refinement strategies for three of the four constructs. To adjust the financial preparation for retirement, updates were made to the *future expectations* and *saving behavior* dimensions. In the future expectations construct, item 14 (loading = 0.301) was removed, and a correlation was added between the error terms of items 10 and 13. For the adjustment of the saving behavior construct, item 18 (loading = 0.272) was excluded, and a correlation was added between the error terms of items 21 and 22. As a result, all three constructs related to financial preparation for retirement reached the fit indices recommended in the literature. For the risky indebtedness behavior construct, two correlations were added: one between the error terms of items 23 and 24 and another between items 24 and 25.

Following the validation of the measurement models, descriptive statistics for the constructs were computed. Table 4 and Figures 3 and 4 present the results for financial preparation for retirement and

risky indebtedness behavior. Table 4 reports the means and standard deviations. The statistics for the dimensions of financial preparation for retirement and the overall retirement preparation scale were calculated using the methodology proposed by Vieira et al. (2022). For the risky indebtedness behavior construct, the mean score across the scale items was calculated.

**Table 4.** Descriptive statistics of the constructs: financial preparation for retirement and risky indebtedness behavior.

Dimensions	Mean	Standard deviation
Future expectation	2.856	1.309
Financial planning	2.784	1.342
Saving behavior	2.558	1.390
Financial preparation for retirement scale <sup>1</sup>	2.727	1.071
Risky indebtedness behavior	1.979	1.212

Note: <sup>1</sup> Calculated based on the methodology proposed by Vieira et al. (2022).

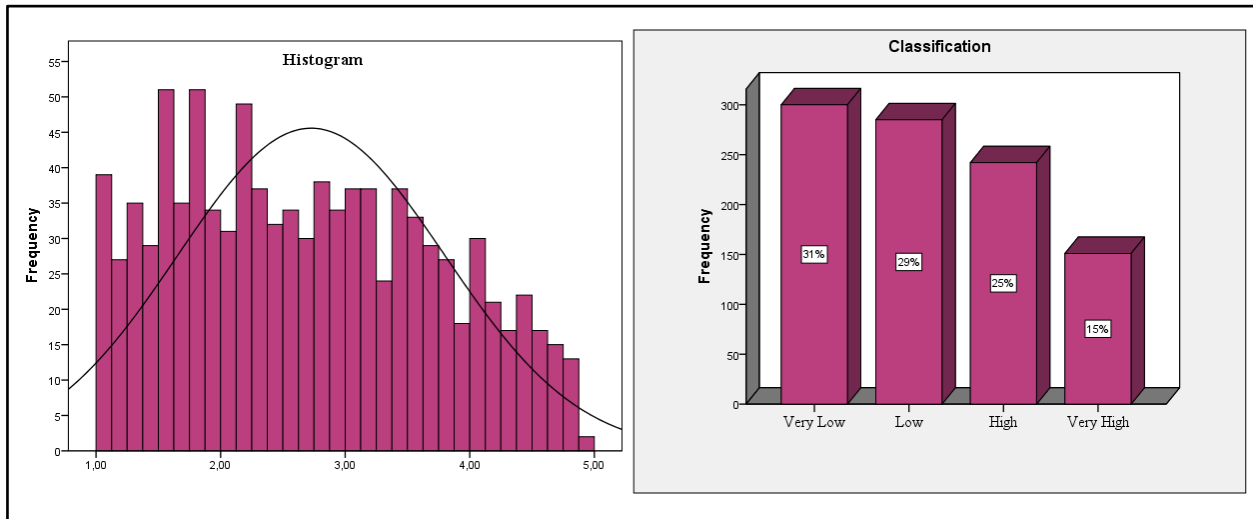
Source: Research results (2025).

The financial preparation for retirement scale is a second-order measure composed of three dimensions: *future expectations*, *financial planning*, and *saving behavior*. As shown in Table 4, both the scale as a whole and its individual dimensions presented mean values slightly below three, indicating that, on average, older adults only occasionally exhibit the behaviors assessed by the scale items.

The future expectations dimension aims to identify an individual's perception of their financial future—that is, how they believe their financial situation will evolve over time (Vieira et al., 2022). Results show that older adults only occasionally think about their financial future (mean = 3.07), and the majority (54.8%) report that they never or rarely believe they are saving enough to maintain their desired standard of living in retirement.

The second dimension, financial planning, seeks to assess one's ability to manage financial resources appropriately (Vieira et al., 2022), enabling sound decision-making to meet consumption needs during retirement (Kumar et al., 2019). Again, the mean score (2.78) indicates low engagement in this behavior. More than one-third of the respondents stated that they never discuss financial matters with their family. This highlights the importance of promoting financial education for older adults, as individuals with greater financial skills tend to make better financial decisions (Fong et al., 2021; Lusardi and Mitchell, 2011; Yu et al., 2021).

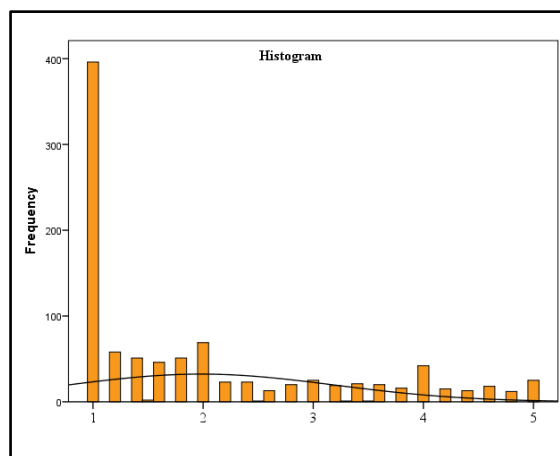
The saving behavior dimension captures perceived saving adequacy, that is, the extent to which individuals believe they are accumulating sufficient resources to ensure a comfortable and financially secure retirement (Tomar et al., 2021). This dimension exhibited the lowest mean score among the three components of financial preparation for retirement ( $M = 2.55$ ), suggesting limited engagement in saving-related behaviors. Most older adults reported “never” or “rarely” engaging in practices such as setting aside money, saving a portion of their monthly income, or increasing savings following income gains. Figure 3 presents the overall results of the financial preparation for retirement scale, integrating all three dimensions.



**Figure 3.** Histogram and classification of the financial preparation for retirement scale. Note: Classification performed according to the parameters proposed by Vieira et al. (2022). Source: Research results (2025).

Overall, Figure 3 indicates that the largest proportion of older adults classified their financial preparation for retirement as very low or low (60%). These findings align with prior research documenting the widespread prevalence of insufficient retirement preparedness. The distribution further reinforces this pattern, with frequencies concentrated at the lower end of the scale, suggesting limited engagement in retirement preparation behaviors within this population.

Regarding the second construct, risky indebtedness behavior, the average reported in Table 4 is also low (1.97). However, this result suggests that the elderly participants have relatively low financial exposure to debt, as they disagreed with the statements in the scale that indicated a tendency toward indebtedness. Approximately two-thirds of respondents selected “disagree” or “strongly disagree” for all five items in the scale, indicating that they do not pay debts with interest or delay, do not borrow money to pay off other debts, and do not believe they are more indebted than they can afford. These findings are further supported by the histogram shown in Figure 4.



**Figure 4.** Histogram of risky indebtedness behavior. Source: Research results (2025).

The graphical representation in Figure 4 indicates a high frequency around the value of one, meaning that a large portion of older adults reported low levels of risky indebtedness behavior. Furthermore, the analysis of the construct statistics shows low perceived financial preparation for retirement and low perceived risky indebtedness behavior.

In the contemporary context, individuals are increasingly required to assume responsibility for their financial preparation throughout a substantial portion of the life course (Lusardi et al., 2017; Sharpe, 2021). The absence of adequate retirement preparation may compel individuals to remain in the labor market to preserve their standard of living in later life (Hirono and Mino, 2021). In Brazil, this challenge is further exacerbated by the fact that a significant share of working-age adults does not regularly contribute to the public pension system, raising concerns regarding financial sustainability in old age. Structural barriers to pension participation, such as budgetary constraints and a historical legacy of high inflation, have fostered a short-term financial orientation, limiting the development of long-term retirement planning behaviors (França and Hershey, 2018).

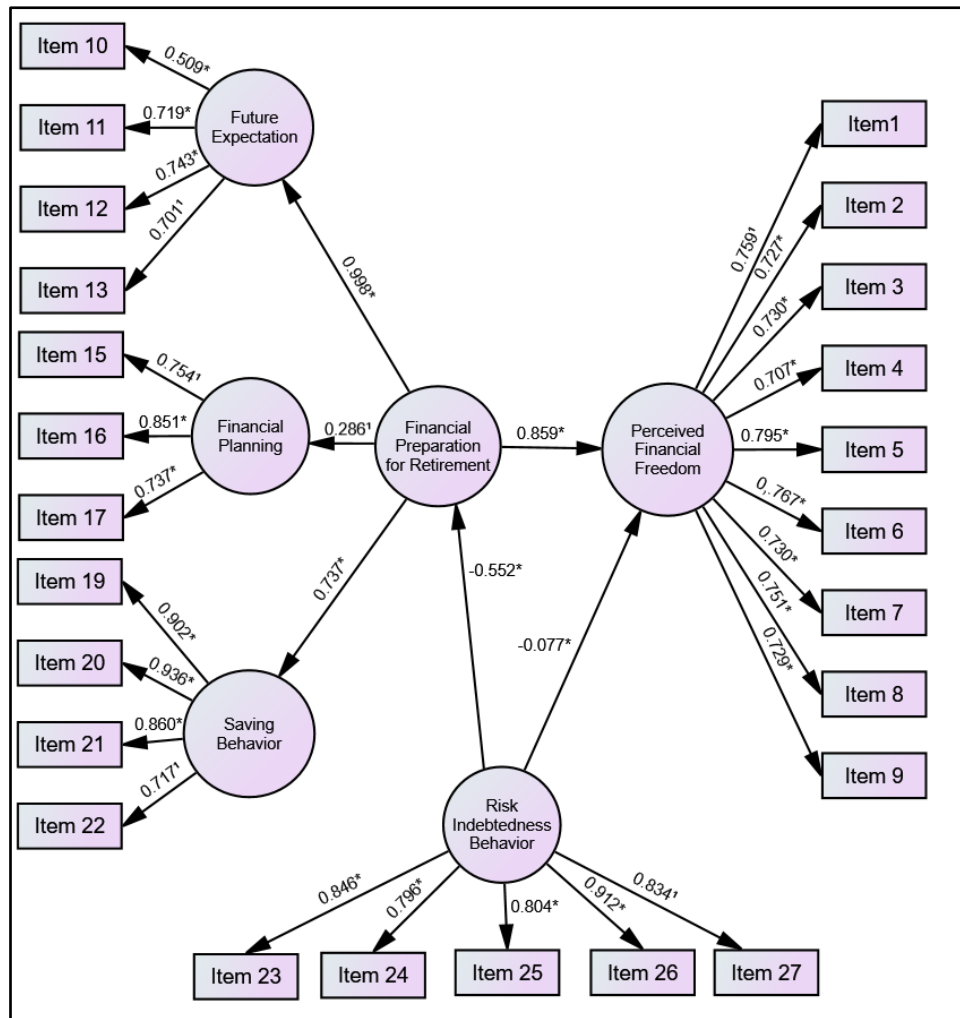
Subsequently, after examining the levels of perceived financial freedom and evaluating financial preparation for retirement and risky indebtedness behavior, the constructs were integrated to test the proposed theoretical model. The results of the structural equation modeling (SEM) are presented in Table 5 and Figure 5. Table 5 presents the model fit indices obtained through maximum likelihood estimation using the direct method.

**Table 5.** Fit indices of the integrated model.

Index	Thresholds	Integrated model
$\chi^2$ (value)	–	1010.703
$\chi^2$ (probability)	>0.050	0.000
$\chi^2$ / degrees of freedom	<5.00	3.917
GFI (Goodness of Fit)	>0.950	0.957
CFI (Comparative Fit Index)	>0.950	0.925
NFI (Normed Fit Index)	>0.950	0.943
RMSR (root mean square residual)	<0.080	0.104
RMSEA (root mean square error of approximation)	<0.060	0.054

Source: Research data (2025).

Although some fit indices for the integrated model (CFI = 0.925; NFI = 0.943; RMSR = 0.104) fell slightly below the more stringent thresholds specified in the methodology, the overall pattern of results indicated an acceptable level of model fit. The  $\chi^2$ /df ratio (3.917), GFI (0.957), and RMSEA (0.054) met recommended criteria, supporting the adequacy of the integrated model when evaluated holistically. Moreover, incremental fit indices above 0.90 are commonly regarded as acceptable in complex structural models, and strict cutoff values should not be applied mechanically (Hu and Bentler, 1999), particularly considering the sample size and model complexity. Given the theoretical coherence of the framework and the statistical significance and interpretability of the estimated parameters, no additional model modifications were pursued. Figure 5 illustrates the structure of the model along with the respective standardized coefficients.



**Figure 5.** Integrated model with standardized coefficients. Note: \* $p < 0.001$ ; <sup>1</sup>Z parameter not estimated, fixed at 1 due to model constraints. Correlated errors omitted from the figure include the following pairs: e10 and e13; e21 and e22; e23 and e24; e24 and e25.

According to Figure 5, all three research hypotheses were supported. The first hypothesis (H1) revealed a positive relationship between financial preparation for retirement and perceived financial freedom ( $\beta = 0.859$ ). The second hypothesis (H2) demonstrated a negative relationship between risky indebtedness behavior and perceived financial freedom ( $\beta = -0.077$ ). The third hypothesis (H3) confirmed a negative relationship between risky indebtedness behavior and financial preparation for retirement ( $\beta = -0.552$ ). Among the estimated structural paths, the strongest coefficient corresponded to the association between financial preparation for retirement and perceived financial freedom, highlighting the central role of this construct within the proposed structural model.

The confirmation of H1 supports the idea that older adults with higher levels of *future expectations*, *financial planning*, and *saving behavior* tend to report higher perceptions of financial freedom. The strong coefficient between retirement preparation and financial freedom perception (0.859) suggests a substantial relationship, indicating that the ability to plan financially for the future plays a decisive role in the financial autonomy of older adults (Riitsalu et al., 2024).

These findings indicate that the relationship between financial preparation for retirement and perceived financial freedom extends beyond a purely statistical association, reflecting a substantive conceptual linkage. Adequate retirement planning influences financial, social, and psychological dimensions, thereby fostering greater retirement confidence and life satisfaction (Liu et al., 2022). Rather than being confined to asset accumulation, financial preparation for retirement enhances autonomy and security in later life (Lusardi et al., 2017). Accordingly, the observed effect suggests that greater financial knowledge and long-term planning may strengthen older adults' financial empowerment (Mansur et al., 2024), reduce financial vulnerability (Joshi and Chalise, 2021; Lee and Law, 2004; Lusardi et al., 2020), and enhance overall financial well-being (Boon et al., 2011; Xue et al., 2020).

Regarding H2, a negative association between risky indebtedness behavior and perceived financial freedom highlights the potential constraints that debt-related behaviors impose on older adults' autonomy. Financial management difficulties may increase the likelihood of debt accumulation, particularly in the Brazilian context, where easy access to credit for older adults and persistent limitations in financial education remain salient concerns (França and Hershey, 2018).

Excessive indebtedness can impair financial decision-making (Lusardi and Tufano, 2015), negatively affecting financial well-being and, consequently, lowering the perception of financial freedom among older individuals (Vieira, Matheis, Bressan, et al., 2023).

Hypothesis H3 revealed a negative relationship between risky indebtedness behavior and financial preparation for retirement. This finding aligns with prior research indicating that older adults with greater exposure to debt often rely on multiple forms of borrowing (Abrantes-Braga and Veludo-de-Oliveira, 2019, 2020), a pattern associated with lower levels of retirement preparedness and heightened financial vulnerability (Liu et al., 2022). The results further suggest an indirect structural pathway linking risky indebtedness behavior to perceived financial freedom through financial preparation for retirement.

Overall, although smaller in magnitude, these negative structural associations involving risky indebtedness behavior carry meaningful implications. The direct association with perceived financial freedom ( $\beta = -0.077$ ) and the stronger association with retirement preparation ( $\beta = -0.552$ ) indicate that higher levels of risky indebtedness behavior are systematically linked to lower levels of financial organization and perceived well-being.

In this context, the results reinforce the interconnection between financial preparation for retirement and risky indebtedness behavior, as well as their structural associations with perceived financial freedom among older adults. The findings underscore the importance of lifelong financial planning and responsible debt management practices in fostering higher levels of financial freedom and well-being in later life.

**Table 6.** Invariance tests for gender, race, education, and income.

Model	Gender		Race		Education		Income	
	CFI	$\Delta$ CFI	CFI	$\Delta$ CFI	CFI	$\Delta$ CFI	CFI	$\Delta$ CFI
Unconstrained	0.968		0.962		0.957		0.956	
Measurement weights	0.967	-0.001	0.962	0.000	0.957	0.000	0.955	-0.001
Structural weights	0.967	-0.001	0.961	-0.001	0.956	-0.001	0.952	-0.004
Structural residuals	0.967	-0.001	0.961	-0.001	0.953	-0.004	0.951	-0.005

Source: Research data (2025).

Finally, multigroup invariance tests were conducted to assess the robustness of the model across key sociodemographic variables. Table 6 reports the fit indices and CFI differences for models estimated across gender, race, education, and income groups.

The  $\Delta$ CFI values indicate that measurement invariance was supported, as all values were below the 0.01 threshold proposed by Cheung and Rensvold (2002). Accordingly, the structural model presented in Figure 5 can be considered robust across different profiles of older adults.

## 5. Conclusions

In light of population aging and the growing centrality of financial decision-making across the life course, this study examined perceived financial freedom among older adults and analyzed its structural relationships with financial preparation for retirement and risky indebtedness behavior. Based on data collected from Brazilian older adults and analyzed through structural equation modeling, the findings reveal a strong positive association between financial preparation for retirement and perceived financial freedom, alongside negative associations between risky indebtedness behavior and both perceived financial freedom and retirement preparation. Together, these results advance understanding of the behavioral and financial mechanisms underlying financial freedom in later life, contributing to the intersection of behavioral finance and aging research.

From a theoretical perspective, this research advances the conceptualization of perceived financial freedom among Brazilian older adults as a central dimension of financial well-being in later life. The findings extend existing literature by empirically demonstrating the structural interrelationships between retirement preparation, risky indebtedness behavior, and perceived financial freedom. By integrating behavioral and psychosocial dimensions within a unified analytical framework, this study provides a more comprehensive understanding of financial decision-making processes in older adulthood.

From a practical perspective, the findings underscore the need for targeted, evidence-based interventions aimed at strengthening retirement preparedness and mitigating risky indebtedness among older adults. Given the strong association between financial preparation for retirement and perceived financial freedom, policymakers may consider promoting simplified retirement planning mechanisms, including accessible digital simulation tools, automatic enrollment features for voluntary retirement savings schemes, and structured financial guidance integrated into public health and aging policies. Financial institutions could complement these efforts by offering retirement-oriented products tailored to older adults, such as low-complexity savings instruments, personalized retirement counseling, and transparent credit evaluation practices designed to minimize exposure to risky borrowing. In addition, community organizations and universities may play a pivotal role in fostering peer-based financial education initiatives and group-oriented interventions that encourage proactive and sustainable financial management behaviors.

Considering that a significant proportion of older adults provide financial support to family members, interventions should also address intergenerational financial dynamics. Family-oriented financial education initiatives may assist older adults in establishing appropriate financial boundaries, planning shared economic responsibilities, and navigating family-based decision-making processes. Programs involving both older adults and their relatives may enhance financial communication and reduce pressures that contribute to risky borrowing behaviors.

The low levels of retirement preparation identified in this study further underscore the urgency of expanding access to structured planning resources. In the Brazilian context, where a significant share of workers remains outside formal social security systems, and many individuals underestimate future financial needs (Ye et al., 2025; Vieira et al., 2023), policy responses may include national awareness campaigns, simplified pension information platforms, and targeted outreach initiatives directed at informal workers and low-income older adults.

Furthermore, the findings indicate that financial strategies should be integrated with psychosocial support mechanisms. Programs aimed at strengthening financial self-efficacy, self-control, and confidence may be particularly effective in promoting more sustainable financial behaviors (Fernández-López et al., 2024; Mpaata et al., 2023). Financial empowerment initiatives that combine behavioral education with practical decision-making tools may also enhance perceived financial freedom (Nam, 2023; Riitsalu et al., 2024).

In this regard, the theoretical and practical contributions of this study may inform the development of targeted public policies, stakeholder-specific financial interventions, and future research addressing the complex financial realities of older adults, who often face financial management challenges (Fong et al., 2021) and rely on family members in financial decision-making processes (Yang and Li, 2025).

### *5.1. Limitations and future research*

Several limitations should be acknowledged when interpreting the present findings. First, despite the relatively broad sample, its demographic composition may not fully capture the heterogeneity of Brazil's aging population, thereby limiting external validity and the broader generalizability of the results. Accordingly, the conclusions should be interpreted with caution, particularly when extrapolating to different socioeconomic and demographic contexts.

Second, the cross-sectional survey design precludes inferences regarding causality or temporal sequencing among the variables examined. The observed associations reflect relationships measured at a single point in time and therefore do not permit conclusions about directionality or developmental trajectories. Future research should prioritize longitudinal designs capable of tracking changes in financial behavior over time, clarifying causal pathways, and examining the dynamic evolution of financial challenges throughout later life.

Third, the consistently low scores observed on the risky indebtedness scale warrant cautious interpretation. Although these findings may reflect genuinely low engagement in financially risky behaviors, an alternative explanation involves potential social desirability bias, whereby participants may underreport behaviors perceived as socially undesirable or financially irresponsible. Future studies should consider incorporating methodological safeguards to mitigate response bias, such as indirect questioning strategies, multi-method research designs, or the inclusion of behavioral and administrative indicators when feasible.

Finally, although the proposed model advances understanding of financial freedom among older adults, further research is necessary to examine its robustness and boundary conditions across more diverse samples and different stages of the life course. Such efforts would contribute to the stability and broader applicability of the framework in varied demographic and institutional contexts.

## Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

## Author contributions

Conceptualization: Vieira, K.M., Flores, S.A.M., Santos, C.D.A., Matheis, T.K., Frade, C.C.F., Pereira, B.A.D., Methodology: Vieira, K.M., Flores, S.A.M., Matheis, T.K., Investigation: Vieira, K.M., Flores, S.A.M., Matheis, T.K., Pereira, B.A.D., Data Curation: Vieira, K.M., Matheis, T.K., Formal Analysis: Vieira, K.M., Flores, S.A.M., Santos, C.D.A., Matheis, T.K., Writing – Original Draft: Vieira, K.M., Flores, S.A.M., Santos, C.D.A., Matheis, T.K., Frade, C.C.F., Pereira, B.A.D., Writing – Review & Editing: Vieira, K.M., Flores, S.A.M., Santos, C.D.A., Matheis, T.K., Frade, C.C.F., Pereira, B.A.D., Supervision: Vieira, K.M. All authors approved the final version of the manuscript.

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## Conflict of interest

All authors declare no conflicts of interest in this paper.

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