

### **The main title of the paper**

The role of financial risk-taking attitude in personal finances and consumer satisfaction:

Evidence from Australia

### **A short running title of the paper**

Consumer finances and life satisfaction

### **Author names, institutional affiliations, and contact details**

Muhammad S. Tahir<sup>1</sup>

Daniel W. Richards<sup>2</sup>

Abdullahi D. Ahmed<sup>3</sup>

<sup>1</sup> Corresponding author; Dr. Muhammad S. Tahir, Lahore Business School, The University of Lahore, Lahore, Punjab, Pakistan.

<https://orcid.org/0000-0002-0207-1895>

Email: [muhammad.tahir@lbs.uol.edu.pk](mailto:muhammad.tahir@lbs.uol.edu.pk)

<sup>2</sup> Dr. Daniel W. Richards, School of Administrative Studies, York University, Toronto, Canada.

<https://orcid.org/0000-0001-7451-0060>

Email: [danwrich@yorku.ca](mailto:danwrich@yorku.ca)

<sup>3</sup> Dr Abdullahi D. Ahmed, School of Accounting, Information Systems, and Supply Chain, College of Business and Law, RMIT University, Melbourne, Australia.

<https://orcid.org/0000-0003-4472-0205>

Email: [abdullahidahir.ahmed@rmit.edu.au](mailto:abdullahidahir.ahmed@rmit.edu.au)

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# **The role of financial risk-taking attitude in personal finances and consumer satisfaction: Evidence from Australia**

## **Abstract**

**Purpose** – Financial risk-taking attitude (FRT) plays an important role in consumers' financial decisions, thereby determining consumer well-being. Motivated by the recent research on consumer well-being, this paper explores the relationships between financial literacy, a propensity to plan (PTP), a financial risk-taking attitude (FRT), financial satisfaction, and life satisfaction.

**Design/methodology/approach** – We use the Household, Income and Labour Dynamics in Australia (HILDA) survey to achieve the purpose of this paper. Furthermore, we use the variance-based Partial Least Square Structural Equation Modelling (PLS-SEM), also known as the PLS path modelling approach to test our proposed hypotheses empirically.

**Findings** – We find a strong partial mediation of FRT between financial literacy and financial satisfaction. Moreover, the analyses reveal that a high PTP combined with a high FRT results in achieving high financial satisfaction, which leads to improved life satisfaction.

**Practical implications** – Our findings show the importance of creating financial plans in accordance with risk tolerance. While increasing financial literacy is relevant, our research suggests that tools that help consumers plan and invest in appropriate risky investments will lead to better outcomes.

**Originality/value** – Though scholarly acumen of consumer well-being is rapidly developing, little remains known regarding the collective roles of financial literacy, a PTP, and FRT. We address this gap by showing that financial literacy, risk-taking attitudes, and planning propensities are all interconnected and necessary ingredients to improve financial and life satisfaction.

## **JEL Classification**

D14, G53, I31, D12, D15

## **Keywords**

financial planning; financial satisfaction; risk-taking attitudes; life satisfaction; financial literacy; propensity to plan; consumer well-being

## **Paper type**

Research paper

## **1. Introduction**

Consumers' financial risk-taking attitude (FRT) plays a major role in their financial decisions (West and Worthington, 2014b, West and Worthington, 2014a). FRT refers to a consumer's preference towards the amount of risk they undertake when investing. An individual's specific attitude can be conceived of as existing on a continuum between two endpoints: those who tolerate risk (risk-takers) and those who avoid risk (risk-averse). A general presupposition is that risk-takers will invest in riskier assets such as corporate stocks, whereas a risk-averse individual will invest in safer assets such as government treasury bonds.

Traditional finance theories (such as modern portfolio theory) argue that rational consumers are risk-averse and require higher financial rewards when accepting greater risk. Thus, a consumer's investment portfolio is created in two steps; first by considering the optimal combination of risky and risk-free assets and then by considering the consumer's FRT (Ackert, 2014). Given the importance of a consumer's FRT in their investment and financial behavior (Heo et al., 2016, Grable, 2016, Saurabh and Nandan, 2018), it is of concern to the

academic research on personal finance and the financial services industry to understand how FRT affects a consumer's financial decisions and thereby their financial satisfaction.

Consumer financial satisfaction is a complex topic with a plethora of factors being identified as associated with high financial satisfaction (Xiao and O'Neill, 2018, Tahir et al., 2020, Sahi, 2017, Nanda and Banerjee, 2021, Tharp and Parks-Stamm, 2021, Tahir et al., 2022). A traditional microeconomic perspective posits that a financially literate consumer can achieve high financial satisfaction (Lusardi and Mitchell, 2014). Empirical research supports this perspective by finding that financial literacy is positively associated with financial satisfaction (Goyal and Kumar, 2021, Xiao and O'Neill, 2018, Xiao et al., 2014). Other research contends that consumers' FRT is more relevant to financial decisions (Han et al., 2019) as it is the combination of high financial literacy and FRT which is related to financial satisfaction. An additional concept related to financial satisfaction is a consumer's propensity to plan (PTP) which refers to a consumer's tendency to set future financial goals and make efforts to achieve them (Ameriks et al., 2003). PTP plays a crucial role in consumer satisfaction (Xiao and O'Neill, 2018), and a high PTP can lead to higher financial satisfaction (Lee et al., 2020).

In this research, we contend that financial satisfaction is related to a combination of these factors. Financial literacy and FRT will both lead to financial satisfaction because it is both the knowledge of risky assets and the attitude to engage with risky assets which leads to high financial satisfaction. Also, FRT and a PTP are not mutually exclusive in their relationship with financial satisfaction. Consumers who make long-term financial plans are capable of investing in high-risk assets with high volatility in the short term but with high returns in the long term. Thus, those consumers with both a high PTP and FRT are those who are more likely to have high financial satisfaction. However, to the best of the authors' knowledge, research has not empirically determined if an interaction between PTP and FRT is connected

to high financial satisfaction. Finally, we also extend our research beyond the scope of financial satisfaction to consider a consumer's overall life. We do this to strengthen the importance of personal finance research beyond the realm of academic research on personal finance to a consumer's life.

Our research objectives are sequential. We first investigate if FRT is a mediator of the relationship between financial literacy and financial satisfaction (1). Then, we research the extent to which FRT moderates the relationship between PTP and financial satisfaction (2). As PTP is directly and indirectly associated with life satisfaction, we analyse the mediating role of financial satisfaction in this relationship (3). Finally, we ascertain if the interaction between a high PTP and a high FRT leads to achieving financial satisfaction, which, in turn, contributes to life satisfaction (4). Our proposed novel associations are summarised in Figure 1 (research objective 1) and Figure 2 (research objectives 2, 3, and 4).

This paper uses the Household, Income and Labour Dynamics in Australia (HILDA) dataset, to answer the research objectives. Our findings show that FRT strongly, yet partially, mediates the positive relationship between financial literacy and financial satisfaction. It implies that there is both a direct and an indirect association, via FRT, between financial literacy and financial satisfaction. Our further results contribute to the PTP concept of Ameriks et al. (2003) by empirically showing that a high PTP combined with a high FRT leads to higher financial satisfaction. Additionally, our research indicates that overall life satisfaction is a function of a high PTP, a high FRT, and high financial satisfaction.

Collectively, our research offers unique contributions to the recent literature on consumer finance. Previous studies have explored factors associated with financial satisfaction by using concepts, such as a PTP, FRT, and financial literacy (Xiao and O'Neill, 2018, Lee et al., 2020, Xiao and Porto, 2017, Çera et al., 2020, Aboagye and Jung, 2018, Saurabh and Nandan, 2018, Korkmaz et al., 2021). However, these aforementioned studies do not focus on

the extent of the relationship of these concepts with consumer satisfaction. A major contribution from our research, which contemplates the interconnectedness of these concepts, is that financial literacy has a minor relationship with financial and life satisfaction. High financial and life satisfaction is a combination of a propensity to make plans and a willingness to take financial risks. The practical implications of this paper are relevant to consumers and the financial services industry. The results show the importance of financial planners' practice where they integrate a client's FRT with financial information to determine an apt financial strategy and this is relevant to quality financial and life outcomes (West and Worthington, 2014b). By creating plans and taking an appropriate financial risk, financial planners can help clients achieve financial satisfaction and life satisfaction.

The remainder of the paper is structured as follows. Section 2 includes a review of the relevant literature, which develops hypotheses. In Section 3, we explain the dataset, show the variables and their items, and explain the method of data analysis. Section 4 presents empirical results, which are discussed in Section 5. Finally, we conclude the paper and convey implications in Section 6, followed by the limitations and future research directions in Section 7.

## **2. Literature review and hypotheses development**

### *2.1 FRT as a mediator*

The literature demonstrates that FRT mediates the associations between concepts. Specifically, FRT mediates the association between gender and investment behavior (Heo et al., 2016), self-efficacy and entrepreneurial behavior (Al Issa, 2021), religious attachment of entrepreneurs and new venture performance (Liu et al., 2019), personality traits and entrepreneurial intention (Ahmed et al., 2022), financial literacy and financial behavior

(Fernandes et al., 2014), and financial knowledge and financial satisfaction (Saurabh and Nandan, 2018). Prior research contends that financial literacy is a critical factor in having higher levels of financial satisfaction (Xiao and Porto, 2017, Xiao and O'Neill, 2016).

Consumer financial satisfaction refers to consumers' perception of their financial condition (Brown and Gray, 2016, Xiao and O'Neill, 2018). Financial literacy<sup>1</sup> means the knowledge of basic financial concepts, including interest, the time value of money, and inflation (Lusardi and Mitchell, 2011, Grohmann, 2018). Financial literacy is linked to traditional finance theories, which argue that consumers are rational (Sahi, 2017), and their rationality provides them with high monetary rewards (Ackert, 2014), making them financially satisfied.

Expected utility theory, a traditional finance theory (Ackert, 2014), contends that rational consumers accurately understand their FRT and increase their probability of getting high financial rewards. Thus, different risk preferences will lead consumers to make different financial decisions (Joo and Grable, 2004). Financially literate consumers apply their rationality to maximise their utility according to their risk preferences (West and Worthington, 2014a), make optimal financial decisions, and achieve financial satisfaction.

Research has found that financial literacy is associated with FRT (Korkmaz et al., 2021, Noviarini et al., 2021), FRT is associated with financial satisfaction (Çera et al., 2020, Aboagye and Jung, 2018), and financial literacy is associated with financial satisfaction (Xiao and O'Neill, 2018, Xiao and Porto, 2017). However, research has not explored whether financial satisfaction is related more to FRT, financial literacy, or both equally. Hence, the

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<sup>1</sup> We acknowledge that the research has not agreed on a single definition and measurement scale of financial literacy (Warmath and Zimmerman, 2019, Goyal and Kumar, 2021). However, in this paper, we define financial literacy using the Lusardi and Mitchell (2011) approach, and this approach has been used in recent research (Tahir et al., 2021, Tahir et al., 2020, Pahlevan Sharif et al., 2020).



association between financial literacy and financial satisfaction could be indirect via FRT. In this paper, we propose a mediation model of FRT (refer to Figure 1), which highlights the importance of FRT for rational consumers to achieve high financial rewards.

In summary, we extend research on the associations between financial literacy, FRT, and financial satisfaction and propose the following hypothesis:

***H<sub>1</sub>***. FRT mediates the relationship between financial literacy and financial satisfaction.

[Figure 1 about here]

## *2.2 PTP, FRT, financial satisfaction, and life satisfaction*

Ameriks et al. (2003) introduced the concept of PTP (Xiao and O'Neill, 2018) and empirically established a positive association between PTP and wealth accumulation.

Ameriks et al. (2003) argue that a high PTP and a high FRT may result in more wealth accumulation. This argument implies that consumers who attain high financial rewards are those who are inclined to take substantial risks to obtain significant returns and have high planning propensity. Given that money gets devalued with the passage of time and savings need to be invested in maintaining their present value, one's FRT plays a significant role in making financial decisions (West and Worthington, 2014a). Prior studies indicate that financial planning propensity and FRT are crucial to achieving high financial rewards (Ameriks et al., 2003, Xiao and O'Neill, 2018).

Recent research finds that the interaction between financial knowledge and PTP is positively related to high financial well-being (Lee et al., 2020). A positive association between PTP and financial satisfaction has also been discovered (Xiao and O'Neill, 2018, Ali et al., 2015). However, there exists a gap in the literature to empirically explore the combination of FRT and PTP with financial satisfaction. Although financial planning propensities are considered

an important indicator of good money management skills (Xiao and O'Neill, 2018, West and Worthington, 2014b, West and Worthington, 2014a, Barbić et al., 2019, Lynch et al., 2009), a consumer's financial satisfaction could be attributed to having a high FRT and a high PTP. For example, consumers may organise their financial affairs efficiently to create a budgetary surplus. If this surplus is invested into high risk and high return instruments, they will perform better over the long term and create more financial satisfaction, than a surplus invested into low risk and low return instruments. Thus, we form the following hypothesis:

*H<sub>2</sub>*. The interaction<sup>2</sup> between PTP and FRT is positively associated with financial satisfaction.

Extant research shows that higher financial satisfaction levels lead to higher life satisfaction levels (Vera-Toscano et al., 2006, Xiao et al., 2009). Life satisfaction refers to consumers' perception of their overall situation (Becchetti and Conzo, 2018, Brown and Gray, 2016). Given that a common goal for people is to improve life satisfaction (Hagmaier et al., 2018, Erdogan et al., 2012), research has examined different interconnections between life satisfaction and its determinants. Life satisfaction has been linked with demographic and socio-economic factors (Ambrey and Fleming, 2014), decreased household debt (Bialowolski and Weziak-Bialowolska, 2021), job and health satisfaction (Ilies et al., 2019, Steckermeier, 2021), healthy lifestyle (Hoffmann and Risse, 2020), and financial resilience (Jayasinghe et al., 2020).

Studies examining the association between PTP and life satisfaction are scarce in the literature. Since differences in financial planning propensities lead to different financial decisions (Lee et al., 2020), PTP may result in achieving different life satisfaction levels via

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<sup>2</sup> 'Interaction' is another word to show the effect of a moderator variable. In this research, we are interested to determine whether FRT moderates the association between PTP and financial satisfaction and thereby leads to life satisfaction.

financial satisfaction. Literature suggests that a high PTP positively contributes to financial satisfaction (Xiao and O'Neill, 2018) and financial satisfaction is a significant determinant of life satisfaction (Brown and Gray, 2016). Alternatively, PTP could have a direct relationship with life satisfaction because people who make plans may be more inclined to achieve goals and experience high life satisfaction by doing so. However, no prior research has explored a direct and indirect relationship between PTP and life satisfaction via financial satisfaction.

Therefore, we propose the following hypotheses:

*H<sub>3A</sub>*. PTP is positively associated with life satisfaction.

*H<sub>3B</sub>*. Financial satisfaction mediates the association between PTP and life satisfaction.

Next, we combine the second and third hypotheses and form the following hypothesis to investigate an overall association between PTP, FRT, financial satisfaction, and life satisfaction:

*H<sub>4</sub>*. The interaction between PTP and FRT is positively associated with financial satisfaction, which leads to higher life satisfaction.

The proposed moderated mediation research model of this paper is presented in Figure 2. This model is based on the PTP concept of Ameriks et al. (2003), which highlights the importance of PTP and FRT to achieve high rewards.

[Figure 2 about here]

### **3. Descriptions of the HILDA survey, variables, and data analysis method**

#### *3.1 Data*

We use data from the HILDA dataset that was first undertaken in 2001. The HILDA dataset covers almost every aspect of life and represents a true sample of the Australian population (Summerfield et al., 2017). The yearly repetition of the survey is called a ‘wave’. In our research, we can only use the 2016 wave because the 2016 wave, unlike the other recent waves of HILDA (2017, 2018, and 2019 waves), contains the key variables of this research. Specifically, data related to financial literacy was collected in the 2016 wave only. Using the 2016 wave makes this research cross-sectional instead of a longitudinal panel study. Wooden et al. (2002) describe the initial details of HILDA, whereas Wooden and Watson (2007) state the initial contributions of HILDA to the literature.

### *3.2 Variables and summary statistics*

The HILDA is a secondary dataset and contains many incomplete entries, which we omit before proceeding towards the statistical analyses. The data had 17694 respondents, but only 12952 respondents had answered questions used to measure the constructs in our analysis. These 12952 respondents include 52 percent female, 50 percent married, and 69 percent employed in either full-time or part-time positions. The youngest respondent was aged 15, the oldest was 99, and the mean age was 46. In terms of income, the mean was \$50,954 in Australian currency. In terms of education, 29 percent of respondents have a tertiary education (including a graduate diploma, bachelor, or a postgraduate degree) and 71 percent have completed high school, year 12, certificate III/IV, or advanced diploma<sup>3</sup>.

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<sup>3</sup> As we are using the reduced dataset in our paper, we have compared the demographics of our sample to the full dataset as below. After this comparison, we believe that the reduced dataset is a true proxy for the full dataset.

Detail of the full dataset having 17,694 respondents: females (53%), married (46%), employed (62%), mean age (45 years), mean income (AU\$48,732), and those who completed tertiary education (26%).

Table I lists the variables, their relative items, socio-demographic factors, and sample statistics. Our sample shows above-average PTP (4.776) and financial literacy (4.109) scores<sup>4</sup>. Furthermore, the mean value of life satisfaction (8.028) is higher than that of financial satisfaction (6.959). The mean value of FRT (1.658) shows that our sample respondents are average risk-takers.

[Table I about here]

### *3.3 Data analysis method*

We begin our data analysis by showing a correlation among the key variables of this paper using Pearson correlation analysis. Next, we use the variance-based Partial Least Square Structural Equation Modelling (PLS-SEM), also known as the PLS path modelling approach to test the proposed hypotheses empirically. PLS-SEM is an advanced form of the traditional covariance-base SEM (Hair et al., 2017b). One of the reasons to use the PLS-SEM in this paper is that it supports the use of single-item measures (Hair et al., 2017a). SmartPLS software is usually used to run the PLS-SEM data analysis technique. In our data analysis, we control the effects of age, gender, income, marital status, employment status, and education status.

## **4. Results**

### *4.1 Correlation analysis*

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<sup>4</sup> The average PTP score of the United States (US) sample reported by Xiao and O'Neill (2018) is 4.86, which is slightly higher than our Australian sample (4.776). Whereas, the average financial literacy score of the United States (US) sample reported by Xiao and O'Neill (2016) is 3.1, which is lower than our Australian sample (4.1).

Table II presents the Pearson correlation among the key variables. The analysis in Table II reports that all the key variables, except for life satisfaction, financial literacy, and FRT, are positively correlated with each other<sup>5</sup>.

[Table II about here]

#### 4.2 Estimation results

In our data analysis, we use three path models to test our four proposed hypotheses. The first path model specifies financial literacy as an independent variable, FRT as a mediating variable, and financial satisfaction as the dependent variable. Table III shows the outcome of the first path model, which examines the extent to which FRT is a mediator in the relationship between financial literacy and financial satisfaction. This outcome is presented in three steps. Step 1 shows the total effect of financial literacy on financial satisfaction. Step 2 is a regression of financial literacy on FRT. Step 3 is a regression showing the direct effect of financial literacy on financial satisfaction when controlling for FRT. Table III reports that financial literacy is statistically significant in all three steps, showing that financial literacy has both a direct and indirect relationship with financial satisfaction. Hypothesis  $H_1$  is supported by this analysis.

A further examination of Table III indicates that the mediation effect accounts for 32 percent<sup>6</sup> of the total effect of financial literacy on financial satisfaction. Also, the significance level of

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<sup>5</sup> We acknowledge that life satisfaction is uncorrelated with FRT and negatively correlated with financial literacy. However, we are not examining the associations of life satisfaction with FRT and financial literacy as neither of our hypotheses posits such associations.

<sup>6</sup> Total effects of financial literacy = 0.063

Direct effects of financial literacy = 0.043

Mediation effects =  $\frac{(0.043-0.063)}{0.063} = -32\%$

financial literacy on financial satisfaction dropped from 99.99% in Step 1 to 99% in Step 3 when FRT was controlled. We interpret this as a strong partial mediating role (Xiao and Porto, 2017) by FRT on the relationship between financial literacy and financial satisfaction. Overall, the results convey that a consumer's FRT is more relevant to financial decisions as compared to financial literacy.

[Table III about here]

The next path model assesses the moderation of FRT by including the interaction term of PTP and FRT. Table IV shows the results. As Table IV demonstrates, the interaction term (PTP  $\times$  FRT) is statistically significant and positively associated with financial satisfaction. It implies that a high PTP together with a high FRT is associated with high financial satisfaction. The findings confirm our hypothesis  $H_2$ .

The second part of Table IV conveys that PTP is associated with life satisfaction when the relationship between PTP and financial satisfaction is controlled. It implies that financial satisfaction plays a mediating role in the association between PTP and life satisfaction, supporting our hypotheses  $H_{3A}$  and  $H_{3B}$ . Overall, the results depicted in Table IV support our Hypotheses  $H_4$ , as all the variables included in this PLS path model are statistically significant.

[Table IV about here]

Although the second path model has shown the mediation of financial satisfaction, we further examine the percentage of the mediation effect of financial satisfaction in the third path model. Table V demonstrates the findings of the third PLS path model, exploring the indirect relationship between PTP and life satisfaction via financial satisfaction. As Table V presents, financial satisfaction is positively associated with life satisfaction, and PTP is statistically significant with both financial and life satisfaction. The findings again confirm that PTP is

both directly and indirectly associated with life satisfaction via the mediating effect of financial satisfaction. The results indicate that the mediation effect accounts for 61 percent<sup>7</sup> of the total effect of PTP on life satisfaction, implying a partial mediating role of financial satisfaction in the association between PTP and life satisfaction. Here, we only suggest a partial mediating role of financial satisfaction because the significance level of PTP did not drop when financial satisfaction was included in the regression model (Xiao and Porto, 2017).

[Table V about here]

#### *4.3 Robustness check*

Although we employed the latest robust methodology, the PLS-SEM path modelling approach, to analyse our data and produce results, yet we verify our findings using another data analysis technique named the PROCESS macro for the purpose of checking the robustness of our main findings. The PROCESS macro for SPSS assists in analysing the combined moderated mediation models (Hayes, 2013). Since the traditional Baron-Kenny approach (Baron and Kenny, 1986) has been critiqued in relation to statistical limitations regarding the lack of power (Hayes, 2009), social sciences researchers consider it appropriate to use the PROCESS macro as a modern and robust data analysis tool. One of the advantages of this tool is that it uses a bootstrap confidence interval for inference (Hayes et al., 2017).

We use Model 4 of the PROCESS macro to test the mediating effect of FRT and Model 7 of the PROCESS macro to assess the moderation of FRT, mediation of financial satisfaction, and a combined moderated mediating effect of FRT and financial satisfaction, respectively

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<sup>7</sup> Total effects of PTP = 0.126

Direct effects of PTP = 0.049

Mediation effects =  $\frac{(0.049-0.126)}{0.126} = -61\%$



(Hayes, 2017). Tables A1, A2, A3, and A4 in the appendices section of this paper demonstrate the output.

Furthermore, we completed additional robustness checks and sensitivity analyses to assess if the method, sample size, or household situation of respondents influenced our results. Firstly, we dropped the PROCESS macro, standardised the variables using the z-score technique (Kesavayuth et al., 2020), and ran the multiple linear regression analysis in Stata. Tables A5, A6, and A7 in the appendices section show the output. Secondly, we dropped half of our sample (n=6,476) and ran the multiple linear regression analysis. The results are appended in Table A8. Thirdly, we filtered our data to select one person per household. This filtering process reduced our sample from 12,952 individuals to 4,390 households. The new analyses are appended in Tables A9, A10, and A11. In this analysis, we controlled additional demographic factors, namely, educational status, employment status, and marital status.

As can be seen in the appendices of this paper, the additional analyses uncovered the same associations among the key variables of our research. We conclude that our main empirical findings are robust and consistent irrespective of the method, sample size, and household composition of respondents.

In summary, the robustness check sub-section of this paper confirms our main findings about the associations between financial literacy, FRT, PTP, financial satisfaction, and life satisfaction.

## **5. Discussion**

Financial satisfaction is a determinant of life satisfaction (Brown and Gray, 2016). Literature on the factors associated with financial satisfaction and life satisfaction is growing (Nanda and Banerjee, 2021, Gonçalves et al., 2021). This research contributes to the literature in four

aspects. First, we find that FRT plays a mediating role in the association between financial literacy and financial satisfaction. Second, our findings convey that a high PTP combined with a high FRT results in high financial satisfaction. Third, our results indicate that the association of PTP with life satisfaction is partially mediated by financial satisfaction. Fourth, our results uncover the direct and indirect association between PTP and life satisfaction via financial satisfaction, which FRT moderates.

We separately discuss these findings in the following sub-sections.

### *5.1 The mediating role of FRT*

Extant research finds a positive relationship between financial literacy and financial satisfaction (Çera et al., 2020, Xiao and O'Neill, 2018, Xiao and Porto, 2017, Ali et al., 2015). Financially literate consumers are perceived to perform their financial tasks better than others (Huston, 2010, Grohmann, 2018), which makes them financially satisfied (Tahir et al., 2021). Expected utility theory supports this notion and posits that rational consumers are risk-averse and intend to maximise their expected utility according to their FRT to achieve financial satisfaction (Ackert, 2014, West and Worthington, 2014a). This paper empirically tests this argument and explores if a consumer's FRT mediates the association between financial literacy and financial satisfaction. Our results convey a strong partial mediation of the association between financial literacy and financial satisfaction by FRT. In other words, we find that consumers with high financial literacy are more likely to take a substantial risk with an expectation of high return, which, in turn, makes them financially satisfied. The life-cycle model of Lusardi and Mitchell (2014) supports the findings, which argues that the financial rewards of financially literate consumers are higher than others.

The findings extend prior research, which has determined an association between financial literacy and FRT (Korkmaz et al., 2021), FRT and financial satisfaction (Çera et al., 2020,

Aboagye and Jung, 2018), and financial literacy and financial satisfaction (Xiao and O'Neill, 2018, Xiao and Porto, 2017). Other studies in the literature have investigated the mediating role of FRT differently. Saurabh and Nandan (2018) explored the mediation of FRT in the association between financial knowledge and financial satisfaction. Their findings show that the association between financial knowledge and financial satisfaction positively improved when FRT was included in the regression model. However, our findings show that the direct effect of financial literacy on financial satisfaction is reduced by 32 percent when FRT was included in the regression model.

Our results are different from Saurabh and Nandan (2018) because; (1) we have a larger sample size ( $N=12,952$ ), (2) we use a nationally representative dataset, namely HILDA, (3) we use different measures of financial literacy and FRT, and (4) we use robust statistical techniques, PLS-SEM and the PROCESS macro, to test the proposed hypothesis. Moreover, our results are in line with the prior research, which explored the partial mediating role of FRT in the association between financial literacy and retirement savings intention (Nguyen et al., 2021).

### *5.2 The moderating role of FRT*

Ameriks et al. (2003) proposed the PTP concept, where they explained that a combination of a high PTP and a high FRT might lead to wealth accumulation. In line with the PTP concept of Ameriks et al. (2003), our study is the first to examine if an interaction between a high PTP and a high FRT leads to achieving high financial satisfaction. The statistical results of our research convey that consumers who are both willing to take substantial risks to obtain substantial rewards and have high financial planning propensities are more likely to perceive that they have high financial satisfaction. Our research adds empirical support to the PTP concept of Ameriks et al. (2003).

Furthermore, our findings extend prior research, which finds a positive relationship between a high PTP and high financial satisfaction (Xiao and O'Neill, 2018). Other research conveys that PTP is a moderator in the relationship between financial literacy and financial well-being (Lee et al., 2020). Our research findings posit that financial planning propensities are imperative to achieve higher levels of financial satisfaction. Lee et al. (2020) concluded that financial well-being is a function of both financial literacy and high financial planning propensities. Our findings endorse support for the arguments of the traditional expected utility theory and the PTP concept by empirically establishing that high financial satisfaction is a function of three factors: a high PTP, a high FRT, and high financial literacy. We contribute to this paradigm by showing that financial planning propensities are more relevant to financial satisfaction as compared to the other factors.

### *5.3 The moderated mediation role of FRT and financial satisfaction*

We extend research on the associations between PTP, FRT, and financial satisfaction by investigating if these factors relate to life satisfaction. Our results uncover the direct and indirect associations between PTP and life satisfaction via financial satisfaction. Specifically, we find that PTP is positively associated with financial satisfaction, which, in turn, is positively associated with life satisfaction. Also, this association is moderated by FRT. Putting it differently, consumers with future financial planning propensities and an attitude of taking substantial risks are more likely to achieve higher levels of financial satisfaction as compared to others, which, in turn, improves their life satisfaction. The results extend prior research findings, which show that those who avoid taking on risks are less likely to achieve financial goals (Yao et al., 2004, Castro-González et al., 2020).

## **6. Conclusion and implications**

Life satisfaction is perceived as an important objective of humans (Hagmaier et al., 2018), and financial satisfaction is considered a strong indicator of life satisfaction (Xiao et al., 2009). The question – how a consumer can achieve higher levels of financial satisfaction? – is worth exploring. This paper is the first to empirically compare multiple factors associated with financial satisfaction, which are, financial literacy, planning propensity, and attitudes towards risk. Theoretically, we contribute to the expected utility theory by showing that rational and financially literate consumers are more likely to be financially satisfied when they are willing to take substantial risks expecting substantial returns. In addition, we highlight the importance of the PTP concept of Ameriks et al. (2003) by finding that high financial satisfaction is a function of both a high FRT and high financial planning propensities. This, in turn, contributes to achieving life satisfaction.

Our results have implications for consumers, financial institutions, financial advisers, policymakers, and academics. In light of these findings, we encourage consumers to seek professional financial advice, create financial plans, set financial goals, and keep track of their finances (Willows, 2020, Xue et al., 2021). The positive association between FRT and financial satisfaction also guides consumers to show their willingness to take substantial risks as it will enhance their financial satisfaction level. However, the attitude towards taking a substantial risk will be rewarding in the presence of efficient financial planning propensities. In summary, consumers are encouraged to make financial plans but also take the appropriate amount of risk to achieve those plans as this will help them in achieving higher levels of financial satisfaction and life satisfaction.

An implication of our findings is that it supports a fitting practice amongst financial planners where they consider both client's circumstances and a client's risk profile to develop financial plans. Our research does not specifically research financial planning. However, the results endorse a practice that many financial planners undertake, which is combining risk

profiles with financial plans to improve clients' financial satisfaction and life satisfaction. Furthermore, our results stress the importance of financial planners' accurately measuring their clients' FRT and that encouraging those with long term financial goals to invest in some risky assets. In practice, a distinction is made between risk tolerance (based on the client's attitude) and risk capacity (based on the client's circumstances). Our research focused on the former, but future research could investigate FRT further to identify if attitudes or circumstances have a larger influence on financial satisfaction and life satisfaction.

Finally, the results inform policymakers and the relative departments of government, which tend to focus on financial literacy initiatives to improve financial decision making. Our results show that improving PTP is a necessary ingredient to improve financial satisfaction and has a direct and indirect contribution to improving life satisfaction. Financial institutions can play an influential role in this regard. With the uptake of financial technology increasing, financial institutions can spread awareness of financial literacy, but importantly create and deliver tools that help consumers plan appropriately for the future. On moral and ethical grounds, this should be included in their institutional policy to improve consumer well-being.

## **7. Limitations and future research**

Although this paper is the first to address the moderated mediation mechanisms of FRT and financial satisfaction, this research is not free from limitations that future research can address. Our first limitation relates to the use of the expected utility theory, which was criticised by the prospect theory (Kahneman and Tversky, 1979). Despite the criticism on the expected utility theory, we offer unique insights on the use of both the expected utility theory and the PTP concept by highlighting the importance of FRT and financial planning

tendencies to attain high rewards. However, we offer future research to incorporate the variables relevant to the prospect theory and compare the new results to our research.

As we analysed a secondary dataset in our research, future research can validate the results using other data such as interviews and self-administered questionnaires. Future research can also employ a time series analysis and monitor a change in the proposed associations.

Furthermore, we had limited items to measure our variables due to using a secondary dataset. Other research can use different measures of the variables.

Although we used a popular item to measure FRT (West and Worthington, 2014a), future research can use other popular measures of FRT (Joo and Grable, 2004, Saurabh and Nandan, 2018, Çera et al., 2020) and generate different results. Moreover, we acknowledge that the concept of risk-taking has been used with different dimensions in the literature (Bran and Vaidis, 2020). For instance, literature uses terms such as risk-tolerance (Aboagye and Jung, 2018, Çera et al., 2020, Baláž and Valuš, 2020), risk propensity (Korkmaz et al., 2021), and risk capacity and risk-averse behavior (Oehler and Horn, 2021). This paper used FRT to indicate the consumers' willingness to take a risk and expect a return. In addition, we acknowledge that the item used in HILDA to measure FRT (which we used in this paper) is slightly different from the item used in the American Survey of Consumer Finances (SCF) (see for example, Xiao et al. (2001)). Therefore, we invite future research to determine whether the slight difference in both statements is significant or not.

Finally, we acknowledge that this paper uses data before the start of the COVID-19 pandemic. We encourage future researchers to use a similar research model in the post-COVID settings in order to investigate the impact of the pandemic on both financial and life satisfaction.

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**Table I.** Key variables of this research, their items, and sample statistics

Variable	Item	Attribute	Mean (Standard Deviation)	N
Financial literacy	Five items of financial literacy as used in another research (van Rooij et al., 2011, Lusardi and Mitchell, 2011)	0-5, the sum of correct answers for financial literacy questions, where ‘0’ indicates that the respondent could not answer all the questions correctly, and ‘5’ shows that the respondent has correctly responded to all the financial literacy questions.	4.109 (1.118)	12,952
Financial risk-taking attitudes	“Which of the following statements comes closest to describing the amount of financial risk that you are willing to take with your spare cash? That is, cash used for savings or investment.” (West and Worthington, 2014a)	(1) takes substantial risks expecting substantial returns (2) takes above-average risks expecting above-average returns (3) takes average financial risks expecting average returns (4) not willing to take financial risks	1.661 (0.706)	12,952

(5) never has any spare cash

After omitting the fifth option (as of being irrelevant), this scale is reversed to make it consistent with the other key variables. A similar item has been used in the US Survey of Consumer Finances to measure the financial risk-taking attitude of the respondents (West and Worthington, 2014a).

Propensity to plan	"I set long term financial goals and strive to achieve them." (Fernandes et al., 2014)	This item is measured on a seven-point Likert-scale (1 for strongly disagree - - - - - 7 for strongly agree).	4.776 (1.591)	12,952
Financial satisfaction	"Rate the level of your satisfaction with your financial situation." (Joo and Grable, 2004)	This item is measured on an 11-point scale (0 for totally dissatisfied - - - - - 10 for totally satisfied)	6.959 (1.909)	12,952

Life satisfaction	“All things considered, how satisfied are you with your life?”  (Diener et al., 1999)	This item is measured on an 11-point scale (0 for totally dissatisfied - - - - 10 for totally satisfied)	8.028 (1.318)	12,952
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**Socio-demographic characteristics of the respondents**

Gender	Male or female	Recoded, 0 = male; 1 = female	0.52	
Marital status	Married, unmarried, divorced, separated	Recoded, 0 = unmarried, divorced, or separated; 1= married	0.50	
Employment status	Employed or unemployed	Recoded, 0 = unemployed; 1 = employed (full-time or part-time)	0.69	
Age	Age (in year)	In years	46	
Income	Income (yearly in Australian dollars)	yearly in Australian dollars	\$50,954	
Education status	Below bachelor degree, bachelor, or above bachelor degree	Recoded, 0 = below bachelor; 1 = bachelor or above	0.29	

**Table II.** The Pearson correlation of key variables

Variable	1	2	3	4
1. Financial literacy				
2. Financial risk-taking attitudes	0.195***			
3. Propensity to plan	0.056***	0.094***		
4. Financial satisfaction	0.072***	0.087***	0.220***	
5. Life satisfaction	-0.028**	-0.006	0.156***	0.472***

\*p<0.05 \*\* p<0.01 \*\*\* p<0.001. N=12,952.

**Table III.** Mediation analysis of financial risk-taking attitudes using the PLS-SEM path modelling approach

Variable	Financial satisfaction			Financial risk-taking attitudes			Financial satisfaction		
	Coefficient	LB	UP	Coefficient	LB	UP	Coefficient	LB	UB
	(Total effects)						(Direct effects)		
Financial literacy	0.063***	0.036	0.077	0.099***	0.084	0.107	0.043**	0.031	0.072
	(0.015)			(0.005)			(0.015)		
Financial risk-taking attitudes							0.201***	0.185	0.228
							(0.024)		
N	12,952			12,952			12,952		
Adjusted R-squared				0.038			0.011		
Mediation effect							-32%		

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is

LB and upper bound is UB. The analysis controls for age, gender, income, marital status, employment status, and education status.

**Table IV.** Moderated mediation analysis using the PLS-SEM path modelling approach

Variable	Financial satisfaction			Life satisfaction		
	Coefficient	LB	UB	Coefficient	LB	UB
Financial satisfaction				0.323*** (0.006)	0.302	0.347
Propensity to plan (PTP)	0.179*** (0.013)	0.165	0.199	0.049*** (0.007)	0.035	0.067
Financial risk-taking attitudes (FRT)	0.102*** (0.011)	0.086	0.118			
PTP × FRT	0.034*** (0.005)	0.021	0.052			
N	12,952			12,952		
Adjusted R-squared	0.053			0.225		

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is

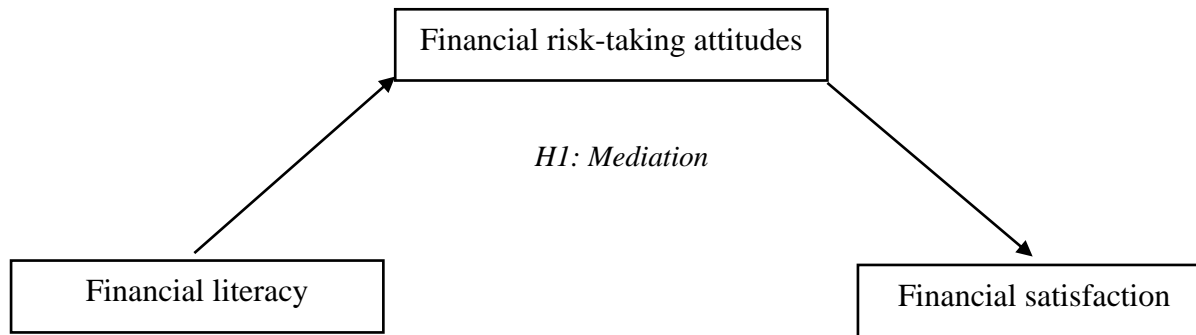
LB and upper bound is UB. The analysis controls for age, gender, income, marital status, employment status, and education status.

**Table V.** Mediation analysis of financial satisfaction using the PLS-SEM path modelling approach

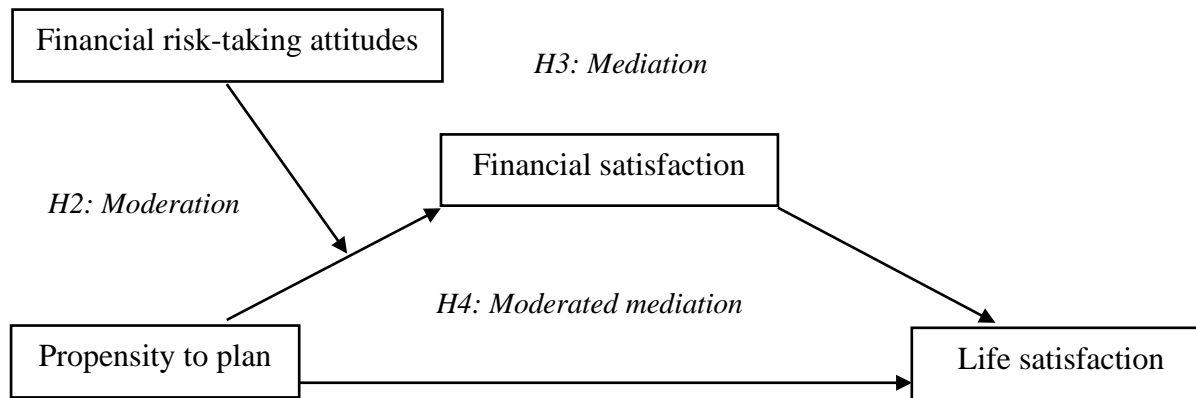
Variable	Life satisfaction			Financial satisfaction			Life satisfaction		
	Coefficient	LB	UP	Coefficient	LB	UP	Coefficient	LB	UB
	(Total effects)						(Direct effects)		
Propensity to plan	0.126***	0.107	0.146	0.239***	0.214	0.248	0.049***	0.035	0.067
	(0.007)			(0.010)			(0.007)		
Financial satisfaction							0.323***	0.302	0.347
							(0.006)		
N	12,952			12,952			12,952		
Adjusted R-squared				0.048			0.225		
Mediation effect							-61%		

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is

LB and upper bound is UB. The analysis controls for age, gender, income, marital status, employment status, and education status.



**Figure 1.** A proposed mediation model of financial risk-taking attitudes



**Figure 2.** A proposed moderated mediation model of financial risk-taking attitudes and financial satisfaction



## Appendices

### A1. Result of the PROCESS Model 4 (mediation analysis of financial risk-taking attitudes)

Variable	Financial satisfaction			Financial risk-taking attitudes			Financial satisfaction		
	Coefficient	LB	UP	Coefficient	LB	UP	Coefficient	LB	UB
Age	0.130*** (0.001)	0.012	0.015	-0.079*** (0.000)	-0.004	-0.002	0.136*** (0.001)	0.012	0.016
Female	0.031*** (0.034)	0.051	0.184	-0.125*** (0.012)	-0.200	-0.152	0.040*** (0.034)	0.086	0.219
Income	0.118*** (0.000)	-	-	0.162*** (0.000)	-	-	0.106*** (0.000)	-	-
Financial literacy	0.037*** (0.016)	0.031	0.095	0.156*** (0.006)	0.088	0.110	0.025** (0.017)	0.010	0.076
Financial risk-taking attitudes							0.074*** (0.027)	0.147	0.254
N	12,952			12,952			12,952		
R-squared	0.037			0.088			0.042		

F-statistics	108.992 <sup>***</sup>	270.278 <sup>***</sup>	102.248 <sup>***</sup>
Mediation effect			-32%

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\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is

LB and upper bound is UB.

**A2. Results of the PROCESS Model 7 (moderated mediation analysis)**

Variable	Financial satisfaction			Life satisfaction		
	Coefficient	LB	UB	Coefficient	LB	UB
Age	0.012*** (0.001)	0.011	0.014	-0.001 (0.001)	-0.002	0.000
Female	0.119*** (0.033)	0.054	0.184	0.015 (0.021)	-0.025	0.056
Income	0.000*** (0.000)	-	-	0.000*** (0.000)	-	-
Financial satisfaction				0.323*** (0.008)	0.308	0.338
Propensity to plan (PTP)	0.234*** (0.011)	0.212	0.256	0.049*** (0.007)	0.035	0.063
Financial risk-taking attitudes (FRT)	0.161*** (0.027)	0.109	0.213			
PTP × FRT	0.033*	0.000	0.066			

	(0.017)		
At -1 standard deviation on FRT	0.212***	0.182	0.243
	(0.015)		
At the mean of FRT	0.234***	0.212	0.256
	(0.011)		
At +1 standard deviation on FRT	0.2658***	0.225	0.291
	(0.017)		
N	12,952		12,952
R-squared	0.079		0.229
F-statistics	167.962***		422.851***

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\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Unstandardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is LB and upper bound is UB.

**A3. Effects of propensity to plan on life satisfaction (PROCESS Model 7)**

	Life satisfaction		
	Coefficient	LB	UB
Direct effect of propensity to plan on life satisfaction	0.049 (0.007)	0.035	0.063
<i>Conditional indirect effect of propensity to plan on life satisfaction</i>			
At -1 standard deviation on financial risk-taking attitudes (FRT)	0.069 (0.005)	0.058	0.079
At the mean of FRT	0.076 (0.004)	0.068	0.084
At +1 standard deviation on FRT	0.083 (0.006)	0.072	0.095
Overall index of moderated mediation	0.011 (0.005)	0.001	0.021

Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is LB and upper bound is UB.

**A4. Result of the PROCESS Model 4 (mediation analysis of financial satisfaction)**

Variable	Life satisfaction			Financial satisfaction			Life satisfaction		
	Coefficient	LB	UP	Coefficient	LB	UP	Coefficient	LB	UB
Age	0.046*** (0.001)	0.002	0.004	0.117*** (0.001)	0.010	0.014	-0.009 (0.001)	-0.002	0.000
Female	0.016 (0.023)	-0.004	0.087	0.022* (0.033)	0.018	0.147	0.006 (0.021)	-0.025	0.056
Income	-0.010 (0.000)	-	-	0.108*** (0.000)	-	-	-0.061*** (0.000)	-	-
Propensity to plan	0.152*** (0.008)	0.111	0.141	0.199*** (0.011)	0.217	0.261	0.059*** (0.007)	0.035	0.063
Financial satisfaction							0.468*** (0.008)	0.308	0.338
N	12,952			12,952			12,952		
R-squared	0.027			0.075			0.229		
F-statistics	77.033***			229.785***			422.851***		

Mediation effect

-61%

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\* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$ . Standardised coefficients are reported in the table and the values in parentheses are standard errors. Lower bound is

LB and upper bound is UB.

**A5.** Linear regression results after standardising the variables (Mediation analysis of financial risk-taking attitude)

Variable	Financial satisfaction	Financial risk-taking attitude	Financial satisfaction
Financial literacy	0.037*** (0.009)	0.156*** (0.009)	0.025** (0.009)
Financial risk-taking attitude			0.074*** (0.009)
N	12,952	12,952	12,952
Adjusted R-squared	0.037	0.088	0.042
Mediation effect			-32%

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The mediation analysis controls for age, gender, and income.



**A6.** Linear regression results after standardising the variables (Moderated mediation analysis)

Variable	Financial satisfaction	Life satisfaction
Propensity to plan	0.195*** (0.009)	0.059*** (0.008)
Risk-taking attitude	0.594*** (0.009)	
Propensity to plan × Financial risk-taking attitude	0.020* (0.008)	
Financial satisfaction		0.468*** (0.008)
N	12,952	12,952

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The mediation analysis controls for age, gender, and income.

**A7. Linear regression results after standardising the variables (Mediation analysis of financial satisfaction)**

Variable	Life satisfaction	Financial satisfaction	Life satisfaction
Propensity to plan	0.152*** (0.009)	0.199*** (0.009)	0.059*** (0.008)
Financial satisfaction			0.468*** (0.008)
N	12,952	12,952	12,952
Adjusted R-squared	0.026	0.075	0.229
Mediation effect			-61%

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The mediation analysis controls for age, gender, and income.

**A8.** Linear regression results after standardising the variables and splitting the data into equal half (Moderated mediation analysis)

Variable	Financial satisfaction	Life satisfaction
Propensity to plan	0.181 <sup>***</sup> (0.012)	0.052 <sup>***</sup> (0.011)
Risk-taking attitude	0.110 <sup>***</sup> (0.012)	
Propensity to plan × Financial risk-taking attitude	0.025 <sup>*</sup> (0.012)	
Financial satisfaction		0.456 <sup>***</sup> (0.011)
N	6,476	6,476

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Risk-taking attitude is converted into a dichotomous variable, where ‘1’ denotes that the respondent is not willing to take financial risk, and ‘2’ denotes that the respondent is willing to take an average, above-average, or substantial financial risk. Variables are standardised using the z-score technique. Coefficients reported in the table are standardised. Standard errors in parentheses. The moderated mediation analysis controls for age, gender, and income.

**A9.** Linear regression results after incorporating only one person per household (Mediation analysis of financial risk-taking attitude)

Variable	Financial satisfaction	Financial risk-taking attitude	Financial satisfaction
Financial literacy	0.052*** (0.016)	0.134*** (0.015)	0.041** (0.016)
Financial risk-taking attitude			0.085*** (0.015)
N	4,390	4,390	4,390
Adjusted R-squared	0.063	0.113	0.069
Mediation effect			-21%

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The mediation analysis controls for age, gender, income, marital status, employment status, and education status.

**A10.** Linear regression results after incorporating only one person per household (Moderated mediation analysis)

Variable	Financial satisfaction	Life satisfaction
Propensity to plan	0.184*** (0.015)	0.059*** (0.013)
Risk-taking attitude	0.073*** (0.015)	
Propensity to plan × Financial risk-taking attitude	0.031* (0.014)	
Financial satisfaction		0.477*** (0.014)
N	4,390	4,390

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The analysis controls for age, gender, income, marital status, employment status, and education status.

**A11.** Linear regression results after incorporating only one person per household (Mediation analysis of financial satisfaction)

Variable	Life satisfaction	Financial satisfaction	Life satisfaction
Propensity to plan	0.149*** (0.015)	0.189*** (0.015)	0.059*** (0.013)
Financial satisfaction			0.477*** (0.014)
N	4,390	4,390	4,390
Adjusted R-squared	0.028	0.096	0.234
Mediation effect			-60%

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001. Variables are standardised using the z-score technique. Standardised coefficients are reported in the table and the values in parentheses are standard errors. The mediation analysis controls for age, gender, income, marital status, employment status, and education status.