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Decoding financial literacy's mediating role: analyzing the influence of biopsychosocial indicators on financial satisfaction and risk tolerance among millennial investors

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Abstract. *This study examine the intricate relationship among biopsychosocial indicators (Personality type A\B, Self-esteem and Sensation seeking), financial satisfaction and financial risk tolerance among millennial investors, emphasizing the mediating role of financial literacy. The study employed convenience sampling technique to gather the data from 596 millennial investors who invest in Indian stock market. Further structured equation modeling (SEM) was used to perform the statistical analysis of the gathered data. The results of this study highlight that biopsychosocial factors significantly impact the financial risk tolerance and financial satisfaction of millennial investors. Our study results also reveal that financial literacy partially mediate the relationship between biopsychosocial indicators and financial risk tolerance. However no significant mediating effect of financial literacy is found in the relationship between sensation seeking and financial risk tolerance. Lastly, our study results also revealed that financial literacy partially mediates the relationship between biopsychosocial indicators and financial satisfaction among millennial investors.*

Keywords: biopsychosocial indicators, sensation seeking, self esteem, personality type A\B, financial risk tolerance, financial literacy, financial satisfaction.

JEL Classification: G11, G41, O3.

Introduction

Financial risk tolerance (FRT) refers to an investor's inclination to embrace unforeseen investment outcomes (Grable et al., 1999, pp. 163-181). Financial Risk Tolerance plays a vital role in the process of making financial decisions (Rai et al., 2021, pp. 1935-1951). FRT has an impact on several financial decisions made in daily life, such as choosing between debt and savings, selecting a mortgage, managing credit card usage, determining spending habits in the short and long term, making insurance purchases, and distributing assets. Financial advisors are mandated by global financial authorities to assess consumer risk prior to making investments (Hari et al., 2018, pp. 128-139). Financial advisors in developed countries are legally required to assess consumer risk (Wahl et al. in 2020). SEBI has recommended that Indian wealth managers take into account their clients' risk aversion and financial objectives when providing advice. Therefore, wealth managers must possess a comprehensive understanding of their investors' FRT due to legal and ethical obligations. When it comes to choosing the best portfolio, considering both risk and reward is important, but the most crucial factor is the investor's risk tolerance. Investment plans necessitate a decision model that incorporates four key factors: objective, time horizon, financial stability, and a comprehensive review of the complex FRT. While planners and managers may readily utilize the initial three inputs, the analysis of FRT poses a challenge due to its highly personalized nature (Larkin et al., 2013). Consequently, an increasing number of studies have investigated how an individual's willingness to take financial risks in order to achieve growth might be utilized to customize financial advice services according to their requirements.

Quantifying FRT is challenging due to its intricate nature. The definition of FRT is challenging due to its dependence on demographic, environmental, and psychosocial factors (Sung et al., 1996). Contemporary scholars have prioritized the study of financial risk tolerance due to its significance in making financial decisions (Rahman et al., 2019, pp. 1-13). Therefore, numerous studies have investigated the origins and impacts of FRT. Researchers (Choudhary et al., 2021; Larkin, 2013; Muktar, 2023) have thoroughly examined the relationship between demographic characteristics and FRT. According to a study by Mukhtar et al. (2023, pp. 93-114), financial self-efficacy, positive emotions, and resilience positively influence investors' level of financial risk tolerance. Nevertheless, additional variables can also influence an individual's FRT. A thorough literature study revealed a scarcity of studies examining the influence of various biopsychosocial factors on investor FRT assessment. The biopsychosocial indicators (BPS) encompass several factors influencing financial well-being and financial behavior (Kannadhasan et al., 2016, pp. 117-131). Irwin Jr. (1993) in his renowned article “Adolescence and Risk-Taking: How They Are Related”, categorized these factors as demographics, social interactions, cultural influences, and a diverse range of personality traits. An extensive review of the literature revealed that there needs to be more research on the impact of BPS on FRT. Therefore, the first objective of the current research is to analyze the impact of biopsychosocial factors on

personality type A/B (PT), self-esteem (SE), and sensation seeking (SS), on mellinial investors' financial risk tolerance.

Financial satisfaction (FS) is a significant component that is crucial in making financial or investing decisions. It relates to the perception of achieving financial goals. The issue of financial satisfaction is a significant problem in contemporary times, as it is increasingly challenging to navigate through financial uncertainties. Consequently, it is imperative to examine the aspects that can enhance the financial satisfaction of investors (Archuleta, et al., 2013, pp. 50-62). The second objective of the present study is to evaluate the impact of biopsychosocial characteristics namely personality type A/B, sensation seeking, and self-esteem, on the financial satisfaction of investors. Financial literacy (FL) act as a crucial factor that plays a significant role in investment decision making of the investor because it has the potential to link personality traits with FRT (Janor et al., 2016). Prior literature provides ample evidence to support the notion that FL involves comprehension of financial terminology and mathematical proficiency (Awais et al., 2016). FL has been defined by Sharma (2020) as the Capability to make sound financial decisions that take into account both immediate and long-term goals. The ramifications of lacking FL are substantial. Individuals who possess insufficient knowledge and understanding of financial matters are faced with challenges in adequately strategizing and preparing for their retirement (Bayar et al., 2020). As a result, they have less wealth as they approach retirement, which limits their ability to invest in stocks (Lusardi et al., 2020). Furthermore, these individuals are more likely to borrow at high interest rates (Awais et al., 2016). Therefore lack of adequate FL has a negative influence on investment decision-making, while a high level of FL has a substantial impact on the economic behaviour of an investor (Prasad et al., 2020). The possession of FL allow investors to anticipate and acknowledge adverse fluctuations, thereby suggesting that FL has the capacity to improve the FRT and financial satisfaction of an investor (Anastasia and Basana, 2021). Prior literature has rigrously emphasised the importance of FL in determining an investors FRT and financial satisfaction (Akims et al., 2023, Akhtar and Malik, 2023, Ansari et al., 2022, Cupák et al., 2022, Raut, 2020, Naqvi et al., 2020). However, the level of FL is also influenced by various individual and social factors. The current investigation focuses on how FL being the intervening variable mediate the relationship between BPS indicators and FRT and financial satisfaction of a millinial investor.

To the researcher’s understerstanding, the present study represents a novel attempt to analyse the association between the BPS and FRT, FS by considering FL as potential mediator among mellinial generation investors. Based on the objectives, this study adopted mediation approach to thoroughly investigate the concept of BPS indicators, FL, FS and FRT, which represents a novel attempt in this field by addressing literature and empirical gaps in prior literature. In the context of emerging financial market, the current research will provide valuable insights of behavior of various stakeholders. In the context of behavioral finance, the present study introduces the mediating effects of financial literacy

for the first time in understanding the established relationships between BPS and FRT within an emerging market economy, such as India. The present study provides a significant contribution to the extant scholarly literature through an analysis of the various factors that influence individual investors FRT. Therefore, individuals who possess an inclination to evaluate and forecast FRT can advance towards a theoretical framework that combines psychological and economic perspectives. This approach will enhance comprehension of the attitudes and actions related to risk-taking exhibited by retail investors. The current research will provide valuable insights for financial advisors, policymakers and researchers regarding the investors risk tolerance levels. This knowledge will enable them to make informed recommendations regarding suitable investment options for their clients.

2. Literature review

2.1. Role of Biopsychosocial indicators in Investors Financial risk tolerance and Financial Satisfaction

The understanding of personality traits is of paramount importance in comprehending the behavioural patterns of individuals when making decisions (Rizvi and Fatima, 2015, Ozer and Mutlu, 2019, Bucciol and Zarri, 2017, Jain et al., 2022). Personality traits are stable aspects of an individual's character that vary from one person to the next and can have a wide range of values (Thanki et al., 2020). Myers–Briggs Type Predictor (MBTI), Big Five Model and Personality type A and type B are well-known personality trait models. According to the MBTI personality theory, individuals possess inherent preferences that determine their behaviour in specific situations (Dhiman and Raheja, 2018). (Pak and Mahmood, 2015) suggested that investment advisors should take into account the personality type of investors for client profiling and for proposing appropriate investment alternatives. (Barnewall, 1987) suggests that in order to facilitate investment advisers in comprehending the characteristics of their clients and recommending appropriate alternative. The primary objective of this study is to measure the impact of personality type on individuals' levels of FRT. The two personality type A and type B exhibit contrasting characteristics, with the former displaying aggression, passion and a constant sense of urgency while the latter demonstrates a relaxed, contented and unhurried demeanour (Carducci and Wong, 1998). Research findings indicate that individuals classified as type A exhibit a higher propensity for risk-taking compared to those classified as type B. Consequently, type A individuals exhibit higher levels of educational attainment, financial literacy, income and occupational status (Parsaeemehr et al., 2013) . There is a scarcity of research that has examined the correlation of personality type with financial risk tolerance by categorising investors into Type A and Type B (Hallahan et al., 2004). Hence, the present study endeavours to address the existing gap in the literature by investigating the influence of PT on the FRT of individual investors.

Self-esteem is widely recognised as a fundamental multidimensional personality trait encompassing various dimensions such as skills, social competence and self-perceived worth (Filosa et al., 2022). It is defined as an individual's perception and confidence in their own capability to possess the requisite skills and competencies needed to effectively achieve specific goals (Sekścińska et al., 2021). Furthermore, it illustrates an individual's perception of their own self-worth. (Yao and Hanna, 2005). SE influences a person's portfolio allocation (Tang and Baker, 2016), wealth creation (Chatterjee et al., 2011), and trading behavior (Kourtidis et al., 2017). Rosenberg (1965) argue that SE can be both positive as well as negative i.e constructive as well as destructive. Krueger Jr and Dickson (1994) found that individuals who ranked more on positive self esteem tend to possess more risk tolerance as compared to individuals who ranked high on negative self esteem. Individuals who possess positive self-esteem exhibit a sense of self-assurance, while those with negative self-esteem tend to experience perpetual confusion and fear regarding potential outcomes (Naqvi et al., 2020). If, for example, investors experience a loss in their investments, those with high self-esteem react more positively than those with low self-esteem (Arkes and Blumer, 1985). Also, Individuals possessing high self-esteem tend to refrain from experiencing regret upon encountering losses, as such outcomes are likely to diminish their self-esteem, which is regarded as a valuable attribute (Thanki and Jadeja, 2014, Yao and Hanna, 2005). Upon analysing demographic variables, it has been observed that males with a positive self-esteem tend to participate in trading activities more frequently and excessively compared to females Mansour et al. (2006) found that there exists a tendency for women to exhibit higher levels of pessimism compared to men, and they tend to employ strategies to counteract the decline in their self-esteem following investment failures. Grable et al. (1999) highlight that investors with a positive self-esteem tend to actively engage in the acquisition of financial knowledge and actively seek financial advice. The acquisition of financial education helps people to understand and manage their finances according to their preferences (Pinjisakikool, 2017).

Sensation seeking is an additional trait that has consistently demonstrated a relationship with FRT (Rabbani et al., 2020, Harlow and Brown, 1990). SS refers to an individual's propensity to seek out diverse, fresh and intricate sensations and experiences, coupled with their readiness to undertake physical or social risks (Zuckerman, 1994). This behaviour can be explained by biological processes taking place in the brain (Anitei, 2014). The concept of SS behaviour is often characterised as a form of risk-taking behavior (Zaleski, 1984). Carducci and Wong (1998) in his study reported a significant and positive correlation between SS and the frequency of engaging in risky behaviours, commonly referred to as the financial risk tolerance. Further The researchers have discovered that engaging in financial risk-taking behaviour can elicit emotional responses (Rubaltelli et al., 2015, Brooks et al., 2022). These emotional experiences have been identified as key motivators for individuals with a propensity for seeking thrilling sensations (Heilman et al., 2010). Additionally, it was discovered that males exhibit a greater propensity for engaging in financial risk-taking activities in comparison to females (Lerner et al., 2015). Roberti

(2004) conclude that this trait pertains to the behavioural manifestations commonly referred to as risky, including engagement in high-risk sports, gambling activities, substance consumption, alcohol consumption and preferences for adventurous holiday activities. Therefore, Individuals possessing such a characteristic demonstrate a tendency to engage in high-risk financial investments (Kannadhasan et al., 2016). The results of empirical studies have provided evidence that individuals who possess sensation seeking traits tend to display a greater degree of risk tolerance when compared to individuals who do not possess these traits (Morse, 1998, Sjöberg and Engelberg, 2009). The examination of financial risk behaviour can be readily conducted within the framework of this characteristic(Grable and Joo, 2004, Naqvi et al., 2020). However, there is a paucity of research that has empirically examined the correlation between SS and FRT. The above mentioned discussion results in the formulation of following hypothesis:

H1: Biopsychosocial indicators are positively and significantly correlated with financial risk tolerance.

H1a: Personality type is positively and significantly correlated with financial risk tolerance.

H1b: Self-esteem is positively and significantly correlated with financial risk tolerance.

H1c: Sensation seeking is positively and significantly correlated with financial risk tolerance.

Financial satisfaction pertains to an individual's contentment with their financial circumstances. Amidst the prevailing economic uncertainities, managing and attaining contentment with one's financial situation effectively has become increasingly arduous. Therefore, it is crucial to examine the factors that lead to financial contentment (Archuleta et al., 2013, pp. 50-62). The present study will examine several BPS indicators, such as A/B personality, self-esteem, and sensory seeking. It is widely recognized that individuals with type A and B personalities possess distinct characteristics that eventually impact their level of financial satisfaction. Individuals classified as Type A exhibit higher levels of competitiveness, diligence, and assertiveness in their professional endeavors, whereas those classified as Type B tend to adopt a more laid-back and easygoing approach to work, operating with no pressure. Research has demonstrated that individuals with a type A personality tend to have higher levels of financial satisfaction due to their unwavering belief in the efficacy of their diligent efforts, which ultimately yield positive outcomes.

Despite setbacks, individuals remain optimistic and exert significant effort to achieve their desired outcomes (Joo et al., 2004, pp. 50-62). They have limited time available and strive to finish their work promptly, resulting in financial gratification. By completing their responsibilities on schedule, they receive payment and potentially earn bonuses for exceptional performance. They possess a high level of risk tolerance, allowing them to remain content even during financial losses. They demonstrate a superior ability to cope with such situations (Xiao, et al., 2014, pp. 415-432). Individuals with a propensity for sensation-seeking consistently seek novel avenues to engage in adventurous experiences.

In finance, they are willing to take risks by investing their money in ventures, even without certainty regarding the potential outcomes. However, these repercussions typically result in favorable outcomes and financial satisfaction. Self-esteem is an additional measure of BPS, influencing financial satisfaction of an investor (Liang, 1986, pp. 13-22). Individuals with high self-esteem exhibit greater confidence in their abilities, leading to successful outcomes. Despite adversity, individuals often redirect their focus toward promising endeavors to maintain a resilient mindset. Otherwise, their self-esteem will be diminished. This optimistic mindset toward self-worth leads to the individual experiencing financial satisfaction. Prospect theory has implications for the relationship between BPS markers and satisfaction concerning people's expectations of future events (Payne et al., 2017). On the basis of above cited literature, we formulate the following hypothesis:
H2: Biopsychosocial indicators has a significant impact on financial satisfaction.
H2a: Personality type is positively and significantly correlated with financial satisfaction.
H2b: Self-esteem is positively and significantly correlated with financial satisfaction.
H2c: Sensation seeking is positively and significantly correlated with financial satisfaction.

2.2. Financial literacy as a mediator between biopsychosocial indicators and financial risk tolerance, financial satisfaction.

Financial literacy encompasses the ability to make well-informed judgments regarding using and managing financial resources (Hassan Al-Tamimi and Anood Bin Kalli, 2009, Bongomin et al., 2017). FL refers to the knowledge individuals need , to make significant financial decisions that align with their own best interests (Awais et al., 2016, Ahmed et al., 2021). The foundation of FL lies in the development of anticipations pertaining to various factors, including investment and savings. These expectations are supported by various indicators from the Biopsychosocial framework (Naqvi et al., 2020). Lack of financial literacy has resulted in individuals refraining from engaging in investment activities (Oppong et al., 2023). Lusardi and Mitchell (2008) suggest that an increase in FL is positively correlated with an increased likelihood of individuals engaging in stock market participation. The present study aim to examine the mediating effect of FL on the relationship between BPS indicators and FRT. Individuals with different personality types exhibit distinct attitudes towards FL (Thanki and Baser, 2019). Individuals classified as Type A exhibit characteristics such as competitiveness, diligence and self-assurance which consequently drive them to maintain a heightened awareness of various facets pertaining to the field of investment (Zsoter, 2017). Given that investors are required to navigate various economic factors such as investment, saving, and interest rates, it is crucial for them to have a deeper comprehension of these concepts in order to enhance their performance (Naqvi et al., 2020).

Kahneman et al., (2013) found that individuals classified as type A tend to exhibit a higher FL. In contrast, individuals classified as type B exhibit a greater inclination towards relaxation and tranquilly, thereby displaying a diminished concern for acquiring knowledge pertaining to economic concepts (Kannadhasan et al., 2016). Consequently, their level of

financial knowledge is comparatively lower. It can be extrapolated that a higher level of FL is related to greater risk-taking propensity (Killins, 2017). Individuals with a propensity for sensation seeking consistently exhibit a proclivity for seeking novel and distinctive avenues. Consequently, they tend to possess a greater depth of understanding regarding contemporary economic concepts, thereby resulting in an elevated level of risk tolerance (Hussain and Rasheed, 2023) . Given their understanding of these concepts, individuals adjust their expectations accordingly, resulting in a positive correlation between FL and FRT (Stanovich, 2016, Sachdeva and Lehal, 2023). Individuals with a high level of self-esteem possess a strong belief in their own capabilities, enabling them to easily grasp and apply various components of macroeconomics with minimal exertion (Kannadhasan et al., 2016). Consequently, they are able to effectively align their actions and behaviours in accordance with the principles and dynamics of the macroeconomic system. As a result of their self-assurance and elevated level of FL, individuals develop a capacity for resilience in the face of financial risks (Lusardi et al., 2020). There exists a notable relationship between financial education and monetary accumulations, as individuals who possess knowledge regarding the utilisation of stock premiums on equity investments are better equipped to capitalise on such opportunities (Reddy and Mahapatra, 2017). There is a positive relationship between FL and the planning of retired income behaviour, as indicated by Lusardi and Mitchell (2008). Empirical research findings suggest that individuals who demonstrate a higher degree of confidence in their financial literacy are more inclined to actively participate in financial planning activities (van Witteloostuijn and Muehlfeld, 2008, Lontchi et al., 2022). Based on the evidence presented, it is possible to draw the following hypothesis:

H3: Financial literacy significantly mediates the relationship between Biopsychosocial indicators and financial risk tolerance

H3 a: Financial literacy significantly mediates the relationship between personality type and financial risk tolerance

H3b: Financial literacy significantly mediates the relationship between Self-esteem and financial risk tolerance

H3c: Financial literacy significantly mediates the relationship between Sensation seeking and financial risk tolerance.

Financial literacy can be correlated with other BPS measures The impact of Type A/B personality on FL varies due to the stronger inclination of Type A individuals to acquire FL, driven by their competitiveness and strong determination. In contrast, individuals of type B show less interest in acquiring knowledge regarding investment aspects They are satisfied with their current possessions, unlike individuals who exhibit Type A behavior (Fabio et al., 2018, pp. 116-129) Consequently, individuals with Type A personality traits are motivated by economic factors, leading to financial gains and a high level of financial satisfaction. Studies have demonstrated that individuals with a propensity for seeking new and exciting experiences have a high level of FL due to their constant pursuit of innovative activities and acquisition of new knowledge (Burke & Manz, 2014, pp.1421-1456). The

high rate of FL leads to financial pleasure as individuals are pleased with their ability to seek out stimulating experiences. Research has demonstrated the notable influence of self-esteem on one's level of FS. The mediating role of FL is crucial in this context (Frederick, 2005, pp. 25-42). Individuals possessing a favorable self-image have sufficient self-assurance in their competencies, however they continually acquire knowledge about economic circumstances in order to make informed judgments based on them. This enhances their FL, leading to financially advantageous decisions and a sense of financial contentment. Prospect theory plays a significant influence in the decision-making process of individuals, which can be assessed using BPS indicators. The theory posits that FL has a key role in enhancing financial satisfaction of an investor. This theory posits that possessing knowledge regarding investment decisions can lead to increased financial satisfaction. Furthermore, the theory explores how FL can enhance financial satisfaction and elucidates the role of biopsychosocial indicators in facilitating FL. Specifically, the theory discusses the mediating effect of FL on the relationship between biopsychosocial indicators and financial satisfaction. This study highlights the importance of FL in connecting BPS indicators and financial satisfaction. On the basis of this objective, we formulate the following hypothesis:

H4: Financial literacy significantly mediates the relationship between Biopsychosocial indicators and financial satisfaction

H4a: Financial literacy significantly mediates the relationship between personality type and financial satisfaction

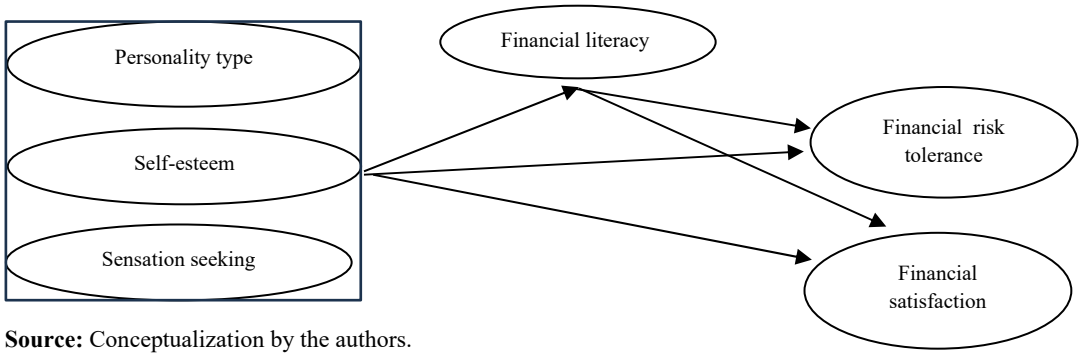
H4b: Financial literacy significantly mediates the relationship between Self-esteem and financial satisfaction

H4c: Financial literacy significantly mediates the relationship between Sensation seeking and financial satisfaction

Research model

The research model in this article has been developed by drawing upon existing literature, as depicted in Figure 1. The study investigated the proposed relationships through the utilisation of covariance based structured equation modelling (SEM).

Figure 1



Source: Conceptualization by the authors.

3. Methodology

3.1. Sampling and data collection

The present research used a cross-sectional survey design to investigate the relationship between biopsychosocial factors and individuals' propensity to take financial risks. Primary data for this study was collected through a structured questionnaire. Convinience sampling followed by snowball sampling technique was utilised to collect the data from 654 meelinnial investors born between 1981-1996 and who have the accumlated trading experience ranging from 1 to 10 years. Snowball sampling method was also used by asking the respondents to identify more respondents who possess the desired characteristics of the target population. Firstly in case of investors working in government organizations, few departments were randomly selected for the collection of data. E.g, Department of Health and Medical Education, Department of Higher Education etc. In case of private organizations, we collected data from policy bazaar, sher khan securities limited, Bajaj alliance, JKB financial services limited, HDFC bank, AXIS bank. The investors group present on social media platform (Indian trader and Investors Club, Indian Retail investors, Mutual fund investors group of India, Private investors group) also served as a potential database for data collection. Similarly, purposive sampling was done in case of businessmen and Professionals.

Hair et al. (2010) criterion was used for the determination of sample size of the study, which sugessts that there should be 10 respondents for every single item. Kaiser-Meyer-Olkin (2017) test was used to check the sample adequacy. The value of the test was 0.798 suggesting the sample adequacy for the study (Field, 2009). Pilot study of 128 investors and discussion with financial experts was done before conducting the final survey. Out of 654 responses only 596 responses were considered valid for the statistical analysis because of the appearent inconsistencies or missing values in different sections of questionnaire. The study targetted the diverse age groups, Occupations, trading experience, maraital status, gender and educational qualification the demograhic distribution of responses revealed the dominance of male respondents with 65% males and 35% females. Almost 389 investors were single and rest were married. Majority of the respondents have completed atleast bachelors level education. Respondents had an average trading experience of 4 years and a mean age of 36 as represented in Table 1.

Table 1. *Demographic Profile of Respondents*

Characteristics	Frequency	Percent
Gender		
Male	386	64.7
Female	210	35.2
Marital status		
Married	389	65.2
Unmarried	204	34.2
Educational background		
Upto-higher secondary level	88	22.2
Graduate	369	61.9
Post graduate	82	13.7
Phd or above	38	6.3
Professional	19	3.1

The respondents of the study were required to fill the multiple sub-sections of demographics, financial literacy, biosychosocial indicators, financial risk tolerance and financial satisfaction. The study consisted of three independent variables namely Personality type, Self-esteem, Sensation seeking and two dependent variable namely financial risk tolerance and financial satisfaction with the mediating variable of financial literacy. In order to measure the self-esteem which is a independent variable , the authors used 10 item scale developed by Rosenberg (1965). The 4 point scale ranged from 1 referring strongly agree to 4 referring strongly disagree e.g "I think I have a number of good qualities", "I feel I do not have much to be proud of" etc. Higher score represented positive self esteem whereas low score represented negative self esteem. Personality type was measured with the help of 6 item scale developed by Grable and Joo (2004). The 4 point scale ranged from 1 referring to not at all and 4 referring to very well. The scale contained the following items E.g. "Usually feeling pressed for time", "Eating too quickly Upset when have to wait for anything" etc. Higher score represented personality type A whereas low score represented personality type B. 5 item scale developed by Grable and Joo (2004) was employed for measuring indicator sensation seeking. The example of items used in the scale is: "It is fun and exciting to perform or speak before a group", "I would like to travel to places that are strange and far away etc". The 4-point scale ranged from not at all to very well. For measuring financial literacy we adopted 7 item scale developed by Cude et al. (2006). Few items of the scale are: "I can prepare my own weekly (monthly) budget", "I can understand financial affairs and maintained records" etc. Lower value on scale represented respondents possess low level of financial literacy and highest value on scale indicate individuals possess more financial literacy. For measuring the dependent variable of financial risk tolerance. For measuring the financial risk tolerance of an individual investor, a 5-item scale developed by Grable and Joo (2004) has been employed. The scale gathered the response on a 5-point Likert-scale ranging from "strongly disagree to strongly agree" e.g "When I think of the word "risk" the term "loss" comes to mind immediately, "I am more comfortable putting my money in a bank account than in the stock market" etc. Financial satisfaction is measured by 8-item scale developed by (Joo and Grable, 2004, Kalra Sahi, 2013). Responses are measured on a 4-point Likert scale ranging from "never" to "always". Some examples of items used in the financial satisfaction scale are: "I am satisfied with Present level of savings", I am satisfied with my ability to handle family's financial emergencies" etc. Prior literature review highlight that financial literacy as a mediating variable is underexplored in the context of investment decision making. Therefore, this study make an attempt to study its mediating effect with respect to financial risk tolerance and financial satisfaction of an investor.

4. Data Analysis and Results

To examine the hypothesis of the research, the statistical software SPSS and the technique of structural equation modelling (SEM) were employed. Additionally, the software AMOS 24 was utilised to assess the direct and indirect impact of the independent variables on the

dependent variable. The decision to accept or reject a hypothesis is contingent upon the statistical significance of the obtained results. According to Nusair and Hua (2010), in management research, the most appropriate and empirically supported method for examining the intricate behavioral cause-and-effect relationships is SEM. Hearman's single-factor test was employed to ascertain the presence of common method bias in the study. The test yielded a total variance of 32.68%, which falls below the threshold value of 50%.

4.1. Measurement model

The statistical methodologies proposed by Fornell and Larcker (1981) were employed to ascertain the validity and reliability of the constructs under investigation. The reliability analysis of the variables was done with the use of Composite Reliability (CR) and Cronbach's alpha. All the constructs of the model possessed composite reliability and cronbach alpha above the cutoff value of 0.7 (Ali et al., 2018) as shown in Table 2. Therefore all scales are reliable. Similarly, convergent validity of the variables of the study was established by using master validity tool by Gaskin and Linn (2016). Average Variance Extracted (AVE) was used for checking the internal consistency and multicollinearity of the data. The convergent validity was evaluated against the cut-off value is 0.50 as suggested by Fornell and Larcker (1981). All the constructs possessed convergent validity above the threshold value as shown in Table 2. Heterotrait - Monotrait HTMT ratio was used to check the descriminent validity. Henseler et al. (2015) suggested that all the values should be less than 0.9. The results of test are shown in Table 3. Further as a part of measurement model, factor loading for each indicator item was ascertained. As shown in Table 2, all values were greater than the 0.7 threshold value (Gefen et al., 2005). The overall goodness of fit of the models was measured using model fit indices (CMIN/df, CFI, TLI, RMSEA, and GFI). The hypothesised 5 factor CFA model fits the sample data extremely well and all values were within their respective permissible ranges.

Table 2

Constructs	Items	Factor loading	Alpha	CRE	AVE
Personality type	AB1	0.856	0.921	0.908	0.621
	AB2	0.798			
	AB3	0.902			
	AB4	0.875			
	AB5	0.877			
	AB6	0.783			
Self esteem	SE1	0.826	0.907	0.954	0.637
	SE2	0.719			
	SE3	0.785			
	SE4	0.936			
	SE5	0.971			
	SE6	0.725			
	SE7	0.863			
	SE8	0.785			
	SE9	0.908			

Constructs	Items	Factor loading	Alpha	CRE	AVE
	SE10	0.867			
Sensation seeking	SS1	0.750	0.897	0.906	0.524
	SS2	0.798			
	SS3	0.917			
	SS4	0.856			
	SS5	0.801			
Financial literacy	FL1	0.926	0.896	0.918	0.701
	FL2	0.745			
	FL3	0.826			
	FL4	0.809			
	FL5	0.798			
	FL6	0.961			
	FL7	0.896			
Financial risk tolerance	FRT1	0.765	0.904	0.963	0.524
	FRT2	0.852		.	
	FRT3	0.826			
	FRT4	0.893			
	FRT5	0.874			
Financial satisfaction	FSAT1	0.810	0.903	0.925	0.631
	FSAT2	0.936			
	FSAT3	0.785			
	FSAT4	0.905			
	FSAT5	0.741			
	FSAT6	0.904			
	FSAT7	0.865			
	FSAT8	0.793			

Table 3. *Discriminant validity (HTMT Ratio)*

	PT	SE	SS	FL	FRT	FS
Personality type (PT)	1					
Self esteem (SE)	0.358	1				
Sensation seeking (SS)	0.296	0.489	1			
Financial literacy (FL)	0.638	0.365	0.325	1		
Financial risk tolerance(FRT)	0.362	0.561	0.412	0.398	1	
Financial satisfaction (FS)	0.298	0.308	0.378	0.254	0.318	1

Table 4. *Model fit indices*

Fit Indices	RMSEA	GFI	SRMR	TLI	CFI	CMIN/df
values	0.298	0.956	0.380	0.936	0.952	2.389

4.4. Structural Model

The hypothesis testing procedure employed in this study involved an evaluation of the correlation and significance of the associations between the independent variables and the dependent variable. To accomplish this, structural equation modelling (SEM) was utilised, specifically employing the Amos 24 software package. The findings presented in Table 5 illustrate that biopsychosocial indicators, namely personality type ($b = 0.382$, $p < 0.01$), self-esteem ($b= 0.293$, $p < 0.01$) and sensation seeking ($b = 0.265$, $p < 0.01$), had a significant impact on individuals' financial risk tolerance prior to conducting the mediation analysis. Similarly, findings revealed that biopsychosocial indicators, namely personality

type (b = 0.212, p < 0.01), self-esteem (b= 0.304, p < 0.01) and sensation seeking (b = 0.256, p < 0.01), had a significant impact on individuals' financial satisfaction prior to conducting the mediation analysis. The findings of the study indicate a statistically significant positive correlation between personality type and FRT, thereby supporting the acceptance of hypothesis H1a. Findings of this study also indicate a positive and statistically significant correlation between self-esteem and FRT, thereby providing support for the acceptance of hypothesis H1b. The positive and significant relationship between Self-esteem and FRT leads to the acceptance of H1b. Similarly, it was found that Sensation seeking has a positive and significant correlation with FRT thereby resulting in the acceptance of H1c. The overall results lead to the acceptance of H1 which suggests that there is a BPS indicators are positively correlated with FRT of an individual investor.

The findings of the study also indicated a statistically significant positive correlation between personality type and FS, thereby supporting the acceptance of hypothesis H2a. Findings of this study also indicate a positive and statistically significant correlation between self-esteem and FS, thereby providing support for the acceptance of hypothesis H2b. Similarly, it was found that Sensation seeking has a positive and significant correlation with FS thereby resulting in the acceptance of H2c. The overall results lead to the acceptance of H2 which suggests that there is a BPS indicators are positively correlated with FS of an individual investor.

Table 5. *Direct effect before mediation analysis*

Hypothesis	Parameters	Direct effect before mediation (b)	P-value
H1a	PT --> FRT	0.382	***
H1b	SE--> FRT	0.293	**
H1c	SS--> FRT	0.265	***
H2a	PT --> FS	0.212	**
H2b	SE--> FS	0.304	**
H2c	SS--> FS	0.256	***

The next step is to evaluate the mediating role of financial literacy after analysing the direct correlations between the study variables. Consequently, the present study investigated the individual impact of BPS indicators under study on FRT. The findings revealed that, with the exception of sensation seeking (b = 0.235, p > 0.05), all other indicators, namely personality type (b = 0.205, p < 0.01) and self-esteem (b = 0.159, p < 0.01), exhibited statistically significant effects on financial literacy, as depicted in Table 6. In the same way, it is worth noting that financial literacy also significantly impacted investors financial risk tolerance (β=0.206, p < 0.05) and also FL positively and significantly impacted financial satisfaction of investors (β=0.156, p < 0.05). Following an evaluation of the direct effect, bootstrapping procedure was employed to examine the indirect effects of the mediation analysis. The process of bias-corrected bootstrapping was conducted in AMOS 24, involving 5,000 re-samples and a confidence interval of 95%. This analysis aimed to investigate the indirect effects on FRT and FS. The findings from the test, as presented in Table 6, suggest that financial literacy plays a mediating role in the relationship between

personality type, self-esteem and FRT. Therefore, hypotheses H2a and H2b were deemed valid and supported by the evidence. Nevertheless, the analysis did not reveal any mediation effects of financial literacy in relation to the association between sensation seeking and FRT, resulting in rejection of hypothesis H2c.similarly H3a, H3b were accepted and H3c was rejected and thereby suggesting that FL play a significant mediating role in the relationship between BPS and FS.

Table 6. *Direct and Indirect effect after mediation analysis*

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P value	Conclusion
			LOWER BOUND	UPPER BOUND		
PT-->FL-->FRT (H2a)	0.205**	0.042***	0.176	0.325	0.008**	partial mediation
SE-->FL-->FRT (H2b)	0.159*	0.032**	0.185	0.321	0.004***	partial mediation
SS-->FL-->FRT (H2c)	0.235**	0.048^{NS}	-0.006	- 0.021	0.68^{ns}	No mediation
PT-->FL-->FS (H3a)	0.192***	0.029*	0.196	0.289	0.005***	partial mediation
SE-->FL-->FS (H3b)	0.294**	0.046***	0.208	0.329	0.007**	Partial mediation
SS-->FL-->FS (H3c)	0.225***	0.035^{ns}	0.189	0.325	0.71^{ns}	No mediation

4.4. Correlation analysis

Table 7 shows matrix indicating the correlations between constructs, mean and the standard deviation (SD). The findings indicate that a significant correlation exists among the majority of the constructs examined in the study. The analysis of the correlation matrix indicated that all correlation coefficients were below 0.9, providing evidence that there was no multicollinearity present among the study constructs.

Table 7. *Correlation*

	PT	SE	SS	FL	FRT	FS	Mean	SD
PT	1						3.166	0.914
SE	0.46***	1					3.178	0.765
SS	-0.28***	-0.17*	1				3.036	0.796
FL	0.42**	0.32***	-0.28**	1			2.158	0.697
FRT	0.38***	0.48***	0.39***	0.43***	1		3.178	0.978
FS	0.25**	0.42*	-0.21**	0.28**	0.396*	1	3.159	0.658

5. Discussions and findings

The primary objective of this study was to study the relationship between biopsychosocial indicators, financial literacy and financial risk tolerance among individual investors within the Indian context. In the developing market economy, the active participation of individual investors assume a crucial significance particularly due to the presence of a highly heterogeneous retail investor base within the country. The analysis revealed that all the BPS are positively and significantly associated with FRT before the introduction of mediation test. Therefore, the findings of the present study align with the prior findings of (Kannadhasan et al., 2016, Naqvi et al., 2020, Grable and Joo, 2004, Baumeister et al., 2003). With respect to first hypothesis of the study, the findings posit that personality type

has a substantial influence on FRT and is supported by the data collected from retail investors in India. The obtained results are consistent with the findings reported in prior research.(Carducci and Wong, 1998, Wong et al., 2016, Naqvi et al., 2020, Kannadhasan et al., 2016, Hallahan et al., 2004). However, these findings contradict the findings reported by Grable and Joo (2004). The findings of our study are further corroborated by Prospect Theory which explain how Type A and Type B personalities might perceive and approach risk differently. The possible explanation is that the Individuals exhibiting Type A characteristics, such as competitiveness, ambition and a sense of urgency exhibit a higher propensity to participate in financial ventures that involve greater levels of risk(Thanki and Baser, 2019).Within the context of financial risk tolerance, individuals classified as Type A exhibit behavioural tendencies that are congruent with a greater inclination to participate in risk-taking activities (Dinç Aydemir and Aren, 2017, Wong et al., 2016). The individual's propensity for competition and aspiration for achievement renders them more prone to actively pursue investment prospects that offer higher returns(Harlow and Brown, 1990). Furthermore, individuals' lack of patience and heightened sense of urgency may result in a preference for immediate gains rather than long-term stable and secure investments(Houston and Snyder, 1988). Conversely, individuals classified as Type B exhibit a demeanour that is more inclined towards relaxation and a laid-back approach. Individuals of this group exhibit a tendency towards patience, a lower inclination towards competition, and a greater level of satisfaction with the existing state of affairs (Zuckerman and Kuhlman, 2000). The propensity for individuals to exhibit a preference for lower-risk financial decisions can be ascribed to their prioritization of stability and a sense of security over potential gains (Thanki and Jadeja, 2014).

Further the findings revealed that self-esteem significantly influence FRT of an individual investors. Our results are consistent with the prior findings of (Chatterjee et al., 2009, Grable and Joo, 2004, Kannadhasan et al., 2016, Naqvi et al., 2020, Zuckerman and Kuhlman, 2000, Rosenberg, 1965). The Self-Verification Theory provides a robust framework for comprehending the association between self-esteem and financial risk tolerance. Individuals with high level of self-esteem typically exhibit a more favourable self-concept, leading to enhanced assurance in their capabilities and decision-making (Josephs et al., 1992). This confidence can extend to their financial decisions, making them more at ease with taking financial risks. They are more likely to believe they can handle prospective losses and have confidence in their ability to make profitable investment decisions (Chatterjee et al., 2009) .conversely, investors with reduced level of self-esteem might display a greater aversion to risk. They may perceive themselves as less competent in financial matters and be fearful of making mistakes (Kannadhasan et al., 2016).Therefore, they may prefer secure, low-risk investments to avoid the possibility of failure and safeguard their fragile self concept. The subsequent hypothesis of the study was “Sensation seeking is positively correlated with financial risk tolerance”. The results of our study are supported by the previous findings of (Grable and Joo, 2004, Kuzniak and Grable,

2017, Rabbani et al., 2020, Roberti, 2004). The results suggest that sensation seeking has a significant influence on FRT of individual investor. The pluasable explanation is that Individuals having inclination towards sensation seeking exhibit a tendency to actively pursue and engage in activities that provide a heightened state of stimulation and exhilaration (Zuckerman, 1994). Within the realm of financial decision-making, individuals who exhibit sensation-seeking tendencies may demonstrate an ability to tolerate financial risk. Individuals are inclined to participate in activities that involve risk-taking as they seek potentially advantageous experiences. The willingness to engage in risk-taking activities can be observed in different domains of personal finance, including investment activities, entrepreneurial endeavors and discretionary spending. Individuals who exhibit elevated levels of sensation seeking tendencies frequently demonstrate a preference for investment opportunities that offer the possibility of substantial returns (Naqvi et al., 2020). For instance, individuals may exhibit a preference for investing in high-volatility stocks, speculative assets, or ventures within emerging markets. The allure of unpredictability and the potential for significant rewards act as compelling incentives for individuals with a propensity for seeking thrilling experiences (Rabbani et al., 2020).

Further, the results of this study also revealed the significant influence of financial literacy on the personality type and self esteem where no mediation was found with respect to sensation seeking. This is one of the pioneer study where mediating effect of FL was determined on the relationship between BPS and FRT. Individuals with higher self-esteem may display greater motivation and confidence in their abilities, which can extend to their willingness to acquire financial knowledge (Ali et al., 2021). The attainment of financial literacy empowers individuals to effectively evaluate risk and assess potential financial decisions with precision. (Hassan Al-Tamimi and Anood Bin Kalli, 2009). Those with higher financial literacy are more capable of understanding the trade-offs between risk and reward, as well as the consequences of their actions. More the individuals gain financial knowledge and understand financial concepts, more they make more informed and rational decisions about risk (Tang and Baker, 2016). This implies that investors possessing a higher level of FL are more inclined to adopt a cautious and deliberate approach when engaging in financial risk-taking activities (Ansari et al., 2022). Conversely, individuals possessing lower levels of FL may exhibit a greater susceptibility to emotional and cognitive biases, resulting in more impulsive and less meticulous decision-making regarding risk. Higher self-esteem leads to higher FL, which, in turn, contributes to a more informed and rational approach to financial risk (Sekścińska et al., 2021).

When considering the mediating role of financial literacy, we find that the relationship between personality type and financial risk tolerance is partially explained by individuals' differing levels of financial knowledge (Kannadhasan et al., 2016). Personality type A indirectly influence FRT through the pathway of financial literacy, leading to a more informed and rational approach to financial risk. Conversely, personality type B individuals may have lower financial literacy levels, potentially contributing to a more cautious and

risk-averse financial decision-making process (Thanki et al., 2020). Therefore, the results of our study leads to the acceptance of hypothesis that FL significantly mediate the relationship between personality type and FRT. H2c is rejected because our results reveal that financial literacy play an insignificant role in the relationship between sensation seeking and FRT (Worthy et al., 2010). The study indicates that financial literacy does not significantly mediate the relationship between sensation seeking and financial risk tolerance. The findings suggest that individuals with higher levels of sensation seeking are more willing to take financial risks, regardless of their financial knowledge and understanding. While financial literacy remains important for making informed financial decisions, it appears to have limited impact on how sensation seekers approach and perceive financial risks (Naqvi et al., 2020).

Moreover, our findings indicate that financial literacy plays a crucial role as a mediator in the connection between self-esteem and financial satisfaction, as well as between personality and financial satisfaction. However, it does not act as a significant mediator in the relationship between sensation seeking and financial satisfaction. Thus, H4c is rejected, whereas H4a and H4b are validated based on the current findings. The previous research conducted by Lipshits et al. (2019) and Awais et al. (2016) provide substantial evidence in favor of the involvement of financial literacy as a mediator in these relationships.

The subsequent hypothesis of this study, which posits that personality A/B exerts a substantial influence on financial satisfaction, has been empirically validated by the present findings. Research has revealed that the personality type of investors has a major impact on their satisfaction level. The outcomes of this study are substantiated by the research conducted by Grable and Joo (2004) as well as Xiao et al. (2009). The subsequent hypothesis posited that "Sensation seeking exerts a significant influence on financial satisfaction". Our findings indicated no significant influence of SS on FS. These results are in contradictory to the findings of the earlier study conducted by Hoque et al. (2018). The limited influence of sensation seeking on financial pleasure in this study may be attributed to the specific environmental or demographic characteristics of the mellinial investors examined. The final hypothesis pertaining to the influence of biopsychosocial variables on FS is that self-esteem exerts a considerable impact on FS. The findings of the present study have corroborated this hypothesis, therefore confirming its validity. Moreover, it is posited that individuals with high self-esteem are more likely to have greater FS. These findings are substantiated by previous research conducted by Kannadhasan et al. (2016), Larkin et al. (2013), and Zeger & Liang (1986).

The inaccurate assessment of the FRT has the potential to result in the selection of inappropriate investment alternatives. Consequently, this may lead to a decrease in the financial resources and overall well-being of investors. Financial service providers may face negative consequences when clients make poor investment decisions, such as selling a profitable investment or investing in an inappropriate portfolio. The consequences of such

actions include a negative impact on their credibility and reputation, leading to a decline in customer base, among other potential outcomes. This study is expected to yield a substantial scholarly contribution by expanding the scope of discussion and analysis in the fields of FRT and FL. The theory pertaining to financial decision making and FRT is expected to be reinforced. The present study's practical implications will be of value to retail investors, as it provides insights into the association between their personality traits, self-esteem, sensation seeking, and their financial literacy and financial risk tolerance. While formulating macroeconomic and investment policies, policymakers in India and other nations can also benefit significantly from the recommendations of the current study.

In addition to the noteworthy contributions made by this research, it is imperative for future researchers to take into account several limitations associated with this study. The present study solely examined three biopsychosocial indicators, neglecting the inclusion of demographic and environmental factors. In order to enhance the scope of research, future researchers may also take into consideration these factors. Moreover, the present study was carried out within the specific context of India. lastly it is suggested that future researchers should be encouraged to conduct cross-national studies to create a multidimensional model to comprehend the impact of biopsychosocial indicators in the context of FRT and investment decision making.

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