


“Influence of personality, biases on financial risk tolerance among retail investors in India”

AUTHORS

Aniruddha S Rao 

Savitha G Lakkol 

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Aniruddha S Rao, Dr., Assistant
Professor, Kirloskar Institute of
Management, India. (Corresponding
author)

Savitha G Lakkol, Dr., Professor,
Kirloskar Institute of Management,
India.



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INFLUENCE OF PERSONALITY, BIASES ON FINANCIAL RISK TOLERANCE AMONG RETAIL INVESTORS IN INDIA

Abstract

Investors' personality traits and psychological biases play a crucial role in the decision-making process and risk-taking behavior of investors. The emotional and psychological factors impact the decision-making, giving rise to biases. These biases make investors make irrational decisions, which signifies the need for this study. This study aims to assess investors' personalities using HEXACO model and its interaction with biases and financial risk tolerance. The data of 530 retail investors in India, who had more than 2 years of investing experience in the stock market, were collected. The study considered the HEXACO model since it captures all dimensions of personality that are not considered in the commonly used Big Five Model (BFM). The result of structural equation modeling and mediation analysis shows that the 'honesty-humility' trait significantly affects overconfidence bias. The mediation analysis of biases between traits and financial risk tolerance showed complete, partial, and no mediation effect depending on the nature of prejudice. Clear distinction of personality traits into 'virtue traits' and 'character traits' can be observed. This clear distinction paves the way for employing the HEXACO model in future studies.

Keywords

HEXACO model, emotional biases, financial risk tolerance, personality traits

JEL Classification

G40, G41, D81, G32

INTRODUCTION

The complex market movements have raised several questions over a simplified explanation of the actions of economic agents proposed by the "Efficient Market Hypothesis" (EMH) (Fama, 1970). Contrary to the observation of EMH, increasingly the actions of economic agents were not rational and prudent always. The early recognition of behavioral finance can be traced back to a work by Ball and Brown (1968) who observed a drift in the stock prices (either above or below the expected level) in the event of reported earnings. Though this observation was turned down as either a flawed model or an error in a statistical technique, Kahneman et al. (1979) brought back the attention to behavioral finance. Later the contribution of Thaler (2005) recognized economic agents as humans and suggested that economic models should incorporate the irrationality of human beings (Neszveda, 2018). This gave rise to the field of behavioral finance.

Though behavioral finance does not define people as irrational, it investigates cognitive errors, emotions, and preferences, while making financial decisions. Recent studies have relied more on psychology to understand the influence of human behavior on investment decisions, markets, and managers. In this context, personality traits play a crucial role in shaping financial decision-making. Personality traits majorly influence emotions and in turn emotions impact decision-making and information processing, leading to biases in individuals.

Understanding the personality traits and biases explain investors' decision-making process (Sadiq & Khan, 2019). Personality is defined as an exclusive attribute that contributes to the creation of individual patterns in feelings, thinking, and behaviors. The primary determinant of personality is stable and latent dispositions, called "traits". This trait appears to be more or less stable and consistent over the lifespan of individuals.

Some biases stem from the feelings of individuals and are spontaneous and impulsive, which may lead to irrational decisions. Therefore, a clear understanding of personality traits and behavioral biases helps in taking corrective actions to control the biases, as well as better financial decision-making.

1. LITERATURE REVIEW

The following review of literature establishes the choice of personality model and selection of behavioral biases and explains financial risk tolerance. The studies on personality theory and the development of the personality model are borrowed from the field of psychology. In behavioral finance, the Big Five Model (BFM) of personality and the Myers-Briggs Type Indicator (MBTI) are much-used models due to their empirical validity, easy application, and availability of a tested measurement tool. However, in recent years, HEXACO model has also gained popularity in behavioral finance studies as it is a comprehensive model capturing all the traits covered by BFM, besides, the model captures honesty-humility and emotionality (Rao & Lakkol, 2022a). Hence, the HEXACO model is more apt for capturing variances in personality and is better suited to study emotional biases and investment decisions.

Personality traits of individuals are the major influencers of emotions (Hiebler-Ragger et al., 2018). The differences in individual personalities influence emotional processing capabilities (Rusting, 1998). Emotions were also found to have a significant impact on decision-making and information processing (Franco & Sanches, 2016). Meanwhile, emotions and emotional processing capabilities lead to flaws in the decision-making process called biases. Therefore, behavioral biases cannot be neglected. This study aims to relate personality and emotions.

Behavioral biases are the misinterpretations caused due to information processing, which may lead to irrational decisions (Khilar & Singh, 2020). These behavioral biases make individuals deviate from the rational and logical decision-

making process resulting in irrational decisions (S. Kumar & Goyal, 2015). Behavioral biases are classified into cognitive biases and emotional biases (Pompian, 2012b).

Cognitive biases are those errors that stem from basic statistical or informational or memory errors and they can be rectified with proper education and guidance to the investors. On the other hand, emotional biases stem from the feelings of individuals and are spontaneous and impulsive. They are derived from the attitudes, beliefs, and behavior of individuals which stem from personality traits that influence financial decisions hence studying the influence of personality traits on the biases may lead to better understanding of investor behavior.

A clear understanding of behavioral biases may help in taking corrective actions to control or reducing these biases. Unlike cognitive biases, emotional biases cannot be rectified through education or training. Hence, it is of utmost importance to study and understand the emotional biases in detail. There are seven emotional biases, namely (1) loss aversion bias, (2) overconfidence bias, (3) self-control bias, (4) status quo bias, (5) endowment bias, (6) regret aversion bias, and (7) affinity bias. Not all these biases have been considered in this study. The reason for the elimination of some of the biases is discussed further.

Affinity bias refers to a tendency of taking irrational decisions based on how the investments an investor makes reflect their value. Affinity bias has similarities with home bias, where investor values the stocks known to them (domestic stocks) more than others, even if the contrary information is available (Pompian, 2012b); therefore, affinity bias has been excluded. Status quo bias, endowment bias, and regret aversion bias are important biases, but these

biases have limited scope individually (Dowling & Lucey, 2011). The status-quo bias and endowment bias are the manifestations of loss aversion bias itself (Ackert & Deaves, 2009). Therefore, these biases have been excluded from this study.

After excluding 4 biases (out of 7) based on the arguments provided above, the study considered loss aversion bias, self-control bias, and overconfidence bias.

Loss aversion bias is a phenomenon in which individuals are concerned about gains and losses as a relative measure of an arbitrary reference point (Ackert & Deaves, 2009). It was observed that loss aversion bias prevents people from selling unprofitable investments or portfolios, even when they see little to no outlook of a turnaround (Pompian, 2012b). This causes investors to hold on to their losing investments, and sell the winning investment, thereby reducing their overall returns.

The studies regarding loss aversion bias consider different dependent variables like investment decisions, behavioral biases, and personality traits (Aren et al., 2021). Loss aversion bias is also found to have a significant impact on investment decisions (Kaur et al., 2023).

Overconfidence biases can be described as extreme excessive self-confidence or an individual's self-assessment causing excessively optimistic beliefs about one's judgments, decisions, or predictions (Grežo, 2020). It is often considered to be the most robust, strong, and significant variable that influences the financial decision-making process of investors (De Bondt & Thaler, 1994). The overconfidence effect is rooted in the need to hold a positive, socially desirable self-image, which helps individuals enhance their self-worth (Grežo, 2020). The studies on financial markets suggest that overconfidence leads to an increase in trading volume and excessive trading. Overconfidence is often used as an explanation for empirical phenomena like the winner's curse or strategies of excessive trading (Fellner & Krügel, 2012). It is viewed as detrimental to optimum decision-making.

Overconfidence bias is also found to have serious implications on financial decision-making (Grežo, 2020). Overconfidence bias vanishes when

extremely contradicting information arrives. Meanwhile, the arrival of supporting information sharply increases this bias. It leads to high levels of counterproductive trading in financial markets and has a significant impact on the investment intentions (Jain et al., 2023). Numerous studies have shown that investors are overconfident in their investing abilities and investment predictions in narrow confidence intervals (Glaser & Weber, 2010).

Self-control bias is defined as a human behavioral tendency that causes one to postpone consumption today to save for tomorrow. Self-control involves an internal conflict between the 'rational and emotional aspects of an individual's 'personality', 'temptation', and 'willpower', involving an excretion of effort (Sahi, 2017). When an individual's temptation to consume now is very strong, a self-control bias occurs. Exercising self-control involves the cultivation of good saving habits, a better use of mental accounting (Shefrin, 2007), and making rational decisions (Bai, 2023). This bias is critical to successful investing, thus investors who exhibit better self-control tend to earn better returns. They are less inclined to react to events, more inclined to stick with their strategy, more disciplined, less emotional, and ultimately wealthier than others (Richards, 2014).

Investors who have this tendency to postpone their present consumption for the sake of saving for the future exercise self-control. They would also tend to feel more satisfied financially (Pompian, 2012b). High-risk tolerance investors tend to be aggressive investors and were found to exercise self-control bias (Dickason & Ferreira, 2018). These biases affect the creation of wealth among individuals over a long-time horizon. Behavior influenced by a lack of self-control can cause investment mistakes; therefore, it should be studied in detail.

The stability of personality traits and their influence on perceptual biases have serious implications on financial decisions (Sadi et al., 2011). An individual exhibiting prominent personality traits will be under the influence of different behavioral biases and vary in their financial behaviors. An individual with high Neuroticism tends to exhibit randomness bias, hindsight bias, and availability bias. The Extroversion trait of the people had a positive relationship with

Table 1. Recent studies using personality model, biases, and the dependent variable

Personality model	Biases	Dependent variable	Author/s
Big Five Model	Overconfidence bias	Investment intention	Jain et al. (2023)
Big Five Model	Overconfidence bias, herding behavior, disposition effect, representativeness bias, and anchoring bias	Risk tolerance	Singh et al. (2023)
Big Five Model	Financial self-efficacy, endowment bias, status quo bias and regret aversion bias	Short-term and long-term decision-making	Khan et al. (2021)
HEXACO model	Discount bias	Intertemporal financial choices	Marteloa et al. (2020)
Big Five Model	Disposition effect and availability bias	Investment performance	Loebiantoro et al. (2021)
Big Five Model	Overconfidence bias	Irrational decision making	Kanagasabai and Aggarwal (2021)
Big Five Model	Financial self-efficacy, endowment bias, status quo bias, regret aversion bias	Short-term and long-term decision-making	Khan et al. (2021)
Big Five Model	Overconfidence bias	Financial risk tolerance	Akhtar and Das (2020)

investment decisions, and investors influenced by regret bias tend to invest more in the stock market (Raheja & Dhiman, 2017). Financial behaviors form investment decisions, and these decisions are influenced by cognitive deviations (Jureviciene & Jermakova, 2012).

The personality trait of individuals influences their biases, and the biases have a significant impact on investment decisions and financial behaviors. The existing studies considered a few biases as mediating variables and used BFM of personality.

Reviewing existing studies on personality and investment, this study considered the HEXACO model to be a better model. HEXACO explains more of an individual personality than the BFM ever could. Similarly, previous literature rarely considered biases based on origin, and no study considered emotional bias with the personality model. It is inferred that emotional biases are difficult to moderate, even after recognition. Hence, it is more important to study emotional biases along with personality traits as emotionality stems from personality. Individuals prone to the influence of emotional biases can identify the biases and adapt to them since it is unlikely to be corrected or modified (Pompian, 2012a). The above explanation shows that personality trait influences biases, and biases have a significant impact on investment decisions. Therefore, bringing together these two critical factors (personality and biases) to explore investment behavior will add to the existing theory and practice. Besides, the knowledge about the risk tolerance of an individual based on the personality

trait helps financial managers to create portfolios best suited to a particular investor. In this study, financial risk tolerance is considered as the dependent variable. Financial risk tolerance is defined as the ability of the investors to take and handle risk regarding investment decisions.

Table 1 shows some of the recent studies that have used the personality model, biases considered, and the dependent variable.

The study aims to understand the influence of personality traits (assessed using the HEXACO model) and emotional biases on financial risk tolerance. The study also explores the mediation effect between predictor and dependent variable. The following hypotheses have been formulated to achieve the purpose of the study.

- H1: *Personality traits may have a significant impact on emotional biases.*
- H2: *Personality traits may have a significant impact on financial risk tolerance.*
- H3: *Emotional bias may have a significant impact on financial risk tolerance.*
- H4: *There is a mediating role of emotional bias between personality traits and financial risk tolerance.*

2. METHODOLOGY

To establish the relationship between personality traits, emotional biases, and financial risk

tolerance, data were collected through a survey of 530 respondents, using a structured questionnaire. The samples were drawn considering the non-probabilistic sampling method since expert knowledge of the individuals is an imperative aspect of the data collection (Malhotra & Dash, 2016). The judgmental sampling method has been used to select investors with more than 2 years of investing experience.

The questionnaire had 53 items excluding demographic questions. Prior to the main survey, 104 questionnaires were first administered as a part of the pilot study, and the reliability measure of Cronbach's alpha was found to be greater than 0.7 for all the constructs. The entire process of authentication, validation of the questionnaire, and measures adhered to the guidelines of Churchill (1979). The data collected from the study were subjected to reliability and validity analysis. The questionnaire was found to be reliable and valid. Based on the pilot study the sample size was determined using the precision method and was found to be 424.

The questionnaire was administered to 543 respondents (530 responses were appropriate), collected between June 2022 and May 2023 using both online and offline modes of the survey from various parts of India. The online survey was administered using Google Forms after briefing the respondents. A total of 221 responses were received from online forms and the remaining 309 were from offline mode. The exploratory factor analysis process was performed on the pilot study data collected from 104 respondents, using Statistical Package for the Social Sciences (SPSS) version 26.

The Cronbach's alpha (α), KMO, and Bartlett's test of sphericity statistics were good and significant and data is normally distributed and qualified to perform factor analysis. Structural equation modeling (SEM) was performed using the JMP version 16.

The pattern matrix (Table 2) of all variables and their factor loadings were verified, and all items were loaded to perform factor analysis. The preliminary factor analysis scree plot showed that 10-component grouping was possible.

Table 2. Fit indices for the measurement model between personality traits, biases and financial risk tolerance

Parameters	Observed value	Recommended value
CFI	0.9740	>0.95
TLI	0.9720	>0.95
NFI	0.9157	>0.95
Revised GFI	0.9651	>0.95
Revised AGFI	0.9594	>0.95
RMSEA	0.0276	<0.08
RMR	0.0450	< 0.08
Chi-squared	1725.40	
DF	1229	
Chi-squared/DF	1.402	< 5

The descriptive statistics from the variables from the main survey show that the skewness and kurtosis are between ± 2 , which are within the acceptable range (George & Mallery, 2019). The total number of responses collected is 530 (N=530). Indicator reliability was greater than the acceptable threshold of 0.25. Composite reliability (CR) was found to be greater than 0.7 (>0.70). Average Variance Extracted (AVE) was found to be greater than 0.5 (>0.50), indicating that more than 50 % of the variance is explained by the items of the construct. Heterotrait-monotrait (HTMT) ratio (Henseler et al., 2015) has been employed to determine discriminant validity. Discriminant validity among items exists if the HTMT ratio is observed to be less than 0.850 (<0.850), hence discriminant validity exists between each construct. All the reliability measures were greater than the accepted level. Further, for our measurement model, the acceptable indices values were observed (Table 3). From the above discussions, it is clear that the data considered for this study is both reliable and valid for the application of SEM.

Table 3. Fit indices for the structural model between personality traits, biases and financial risk tolerance

Parameters	Observed value	Recommended value
CFI	0.969	>0.95
TLI	0.967	>0.95
NFI	0.910	>0.95
Revised GFI	0.958	>0.95
Revised AGFI	0.952	>0.95
RMSEA	0.0298	<0.08
RMR	0.08678	< 0.08
Chi-squared	1836.5719	
DF	1247	
Chi-squared/DF	1.473	< 5

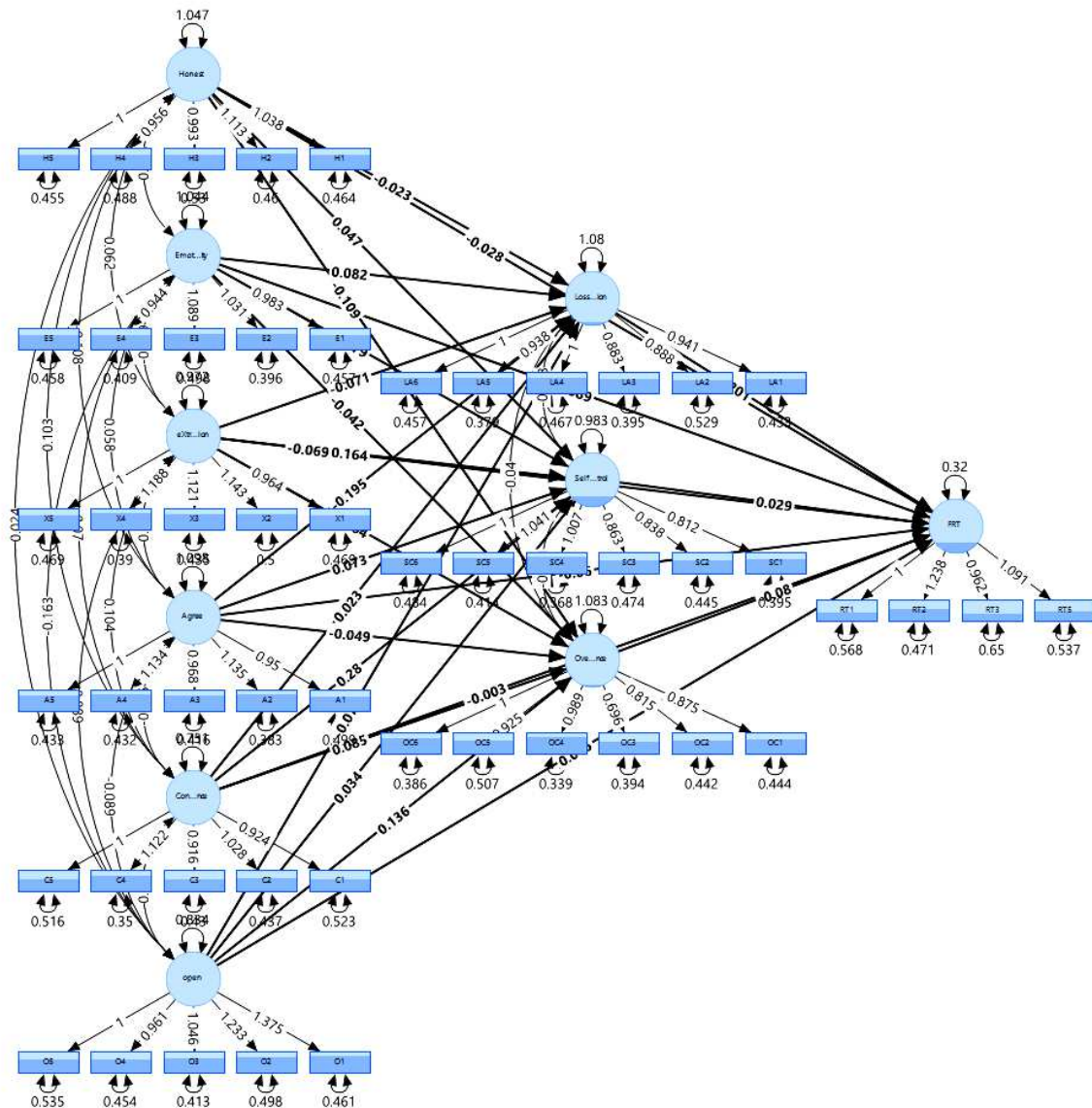


Figure 1. Structural equation model of personality traits, biases and financial risk

Table 3 shows the fit indices for the measurement model. It can be observed that the goodness-of-fit indices of the measurement models are all greater than 0.95. Therefore, it can be concluded that the measurement model is statistically significant. Hence, SEM can be performed (Figure 1).

3. RESULTS

Structural equation modeling has been performed as shown in Figure 1. The overall fit indices of the proposed model are shown in Table 4.

It can be observed from Table 4 that CFI, TLI, revised GFI, and revised AGFI are well above the recommended value. The model is considered a

good fit. Therefore, it can be inferred that the SEM is a good fit and significant.

Table 5 provides the estimated regression weights of personality and emotional bias.

Honesty-humility was found to have no significant impact on loss aversion bias and self-control bias, but a significant negative impact on overconfidence bias. Emotionality has a significant positive and negative impact on loss aversion bias and self-control bias respectively, and no significant relationship on overconfidence bias. Extraversion has a significant positive impact on self-control bias and no significant relationship between overconfidence bias and loss aversion bias.

Table 4. Estimated regression weights of personality traits and emotional biases – Hypothesis 1

Regressions	Estimate	Std. error	Sig.
Honesty-humility → loss aversion bias	-0.019357	0.0436941	0.6578
Honesty-humility → self-control bias	0.0457073	0.0437235	0.2959
Honesty-humility → overconfidence bias	-0.096805	0.0439116	0.0275
Emotionality → loss aversion bias	0.0792835	0.0459261	0.0843
Emotionality → self-control bias	-0.268146	0.046807	0.0001
Emotionality → overconfidence bias	-0.039252	0.0459392	0.3929
Extraversion → loss aversion bias	-0.063408	0.0435312	0.1452
Extraversion → self-control bias	0.1521708	0.0438598	0.0005
Extraversion → overconfidence bias	-0.052839	0.0436957	0.2266
Agreeableness → loss aversion bias	-0.17234	0.0420386	0.0001
Agreeableness → self-control bias	0.0673433	0.0416641	0.0890
Agreeableness → overconfidence bias	-0.04342	0.0416954	0.2977
Conscientiousness → loss aversion bias	0.0137476	0.0521847	0.7922
Conscientiousness → self-control bias	0.2597739	0.052913	0.0001
Conscientiousness → overconfidence bias	0.0744074	0.0523484	0.1552
Openness-to-experience → loss aversion bias	-0.055513	0.0402975	0.1683
Openness-to-experience → self-control bias	0.032311	0.0403169	0.4098
Openness-to-experience → overconfidence bias	0.1002299	0.04053	0.0134

Table 5. Estimated regression weights of personality and financial risk tolerance – Hypothesis 2

Regressions	Estimate	Std. error	Sig.
Honesty-humility → financial risk tolerance	-0.029943	0.033642	0.3734
Emotionality → financial risk tolerance	0.0994684	0.0367313	0.0068
Extraversion → financial risk tolerance	-0.073872	0.0339125	0.0294
Agreeableness → financial risk tolerance	-0.065197	0.032562	0.0450
Conscientiousness → financial risk tolerance	-0.002353	0.0413355	0.9546
Openness-to-experience → financial risk tolerance	0.0395535	0.0310952	0.2034

Table 6. Estimated regression bias weights of emotional biases and financial risk tolerance – Hypothesis 3

Regressions	Estimate	Std. error	Sig.
Loss aversion bias → financial risk tolerance	0.2473486	0.0381225	0.0001
Self-control bias → financial risk tolerance	0.0322297	0.0369187	0.3827
Overconfidence bias → financial risk tolerance	-0.099829	0.0364485	0.0062

Agreeableness was found to have a significant positive impact on self-control bias and a negative impact on loss aversion bias, with no impact on overconfidence bias. Conscientiousness has a significant positive impact only on self-control bias. Openness-to-experience was found to have a significant positive impact on overconfidence bias. Therefore, *H1* is accepted. There is a significant impact of personality traits on emotional biases.

Table 6 shows the estimated regression weights of personality and financial risk tolerance. The personality trait of emotionality was found to have a significant positive impact on financial risk tolerance, while extraversion and agreeableness were found to have a negative impact on financial risk tolerance.

Honesty-humility, conscientiousness, and openness to experience traits do have a significant impact on financial risk tolerance. Therefore, *H2* is accepted. There is a significant impact of personality traits on financial risk tolerance

Table 7 provides the estimated regression weights of emotional biases and financial risk tolerance. Loss aversion bias and overconfidence bias were found to have a significant positive and negative impact on financial risk tolerance, respectively. Therefore, *H3* is accepted. Emotional biases have a significant impact on financial risk tolerance.

The mediation analysis was performed to examine the effects of personality traits on financial risk tolerance, by considering the emotional bias's me-

Table 7. Summary of mediation analysis between personality traits, biases and financial risk tolerance – Hypothesis 4

Path	Mediating relation
Honesty-humility → loss aversion bias → financial risk tolerance	No
Emotionality → loss aversion bias → financial risk tolerance	Partial
Extraversion → loss aversion bias → financial risk tolerance	Partial
Agreeableness → loss aversion bias → Financial risk tolerance	Complete
Conscientiousness → loss aversion bias → financial risk tolerance	No
Openness-to-experience → loss aversion bias → financial risk tolerance	No
Honesty-humility → self-control bias → Financial risk tolerance	No
Emotionality → self-control bias → financial risk tolerance	No
Extraversion → self-control bias → financial risk tolerance	No
Agreeableness → self-control bias → financial risk tolerance	No
Conscientiousness → self-control bias → financial risk tolerance	Complete
Openness-to-experience → self-control bias → financial risk tolerance	Complete
Honesty-humility → overconfidence bias → financial risk tolerance	Complete
Emotionality → overconfidence bias → financial risk tolerance	No
Extraversion → overconfidence bias → financial risk tolerance	No
Agreeableness → overconfidence bias → financial risk tolerance	No
Conscientiousness → overconfidence bias → financial risk tolerance	Complete
Openness-to-experience → overconfidence bias → financial risk tolerance	Complete

diating mechanism (Table 8). The findings show that the loss aversion bias mediates the relationship between agreeableness and financial risk tolerance. Self-control bias mediates the relationship between conscientiousness, openness to experience, and financial risk tolerance. Overconfidence bias mediates the relationship between Honesty-humility, conscientiousness, openness to experience, and financial risk tolerance.

While all the above-mentioned relationships are complete mediation, partial mediation is also obtained. Loss aversion bias partially mediated the relationship between emotionality, extraversion, and financial risk tolerance. Therefore, *H4* is accepted. There is a mediating role of emotional bias between personality traits and financial risk tolerance

Table 8. Pattern matrix of HEXACO, biases and financial risk tolerance items and their factor loadings

Pattern matrix		Component									
Code	Items	1	2	3	4	5	6	7	8	9	10
H5	I often believe that I am better than others.*							0.953			
H4	I would not enjoy being a famous celebrity							0.842			
H3	I often prefer to eat at expensive restaurants.*							0.834			
H2	I would never take things that are not mine.							0.819			
H1	I often don't pretend to be more than what I am.							0.771			
E5	I usually don't understand people who get emotional easily.*						0.880				
E4	I often feel that I need the approval of others.						0.838				
E3	When I am sad, it is evident on my face.						0.832				
E2	I get stressed out easily even for small things.						0.823				
E1	I am a person who can take risks.*						0.797				
X5	I feel that I get physically exhausted often.*					0.899					
X4	At every walk of life, I found that I have a lot of inner strength.					0.890					
X3	People don't get to know me easily.*					0.877					
X2	I would be afraid to give a speech in public.*					0.849					
X1	I often express myself to people when I'm irritated.					0.791					
A5	I rarely lose my patience.				0.910						

Table 8 (cont.). Pattern matrix of HEXACO, biases and financial risk tolerance items and their factor loadings

		Pattern matrix									
Code	Items	Component									
		1	2	3	4	5	6	7	8	9	10
A4	I adapt easily to any situation.				0.876						
A3	Once I made up my mind, I am hard to convince.*				0.876						
A2	I am not a person who keeps complaining about life.*				0.834						
A1	I feel it's hard to trust most people in life.*				0.828						
C5	I often make decisions in a hurry-burry (hastily).*									0.909	
C4	I would love to do things according to a plan.									0.856	
C3	I pay too little attention to details.*									0.846	
C2	I can push myself very hard to succeed.									0.836	
C1	I want everything to be "just right".									0.795	
O5	My ideas often take people by surprise.								0.870		
O4	I often fail to predict people's reactions.*								0.854		
O3	My knowledge of history is not all that great.*								0.850		
O2	I can go on discussing political matters.								0.828		
O1	I love to get deeply immersed in music.								0.818		
LA6	I will not increase my investment when the market performance is poor.		0.883								
LA5	I feel nervous when I have to make a decision that may lead to loss.		0.864								
LA4	Experiencing a major loss stays in my mind longer than experiencing a major gain.		0.808								
LA3	The suffering that comes with losses can be fully offset by the pleasure that comes from gains.*		0.804								
LA2	Avoiding failure is less important to me than seeking success.*		0.784								
LA1	When making a decision, I think much more about what might be lost than what might be gained.		0.716								
SC6	I often wish that I had more self-discipline.*	0.918									
SC5	I refuse things that are bad for me.	0.879									
SC4	I can work effectively toward long-term goals.	0.869									
SC3	I lose my temper too easily.*	0.816									
SC2	I have trouble concentrating.*	0.812									
SC1	I am good at resisting temptation.	0.805									
OC6	I often think of myself as an experienced investor.			0.892							
OC5	The profits I make can be attributed to my successful investment strategy.			0.877							
OC4	I am fairly an experienced investor.			0.848							
OC3	I found that on an average my investments perform better than the stock market.			0.820							
OC2	I often know the best time to enter and to exit my investment position from the market.			0.816							
OC1	I believe I can predict the future trend for my investment in stocks.			0.802							
RT1	The stock market is too risky for me										0.792
RT2	I am more comfortable putting my money in a bank account than in the stock market.										0.716
RT3	When I think of the word "risk" the term "loss" comes to my mind immediately.										0.792
RT5	I am more of a saver than an investor.										0.755

Note: Extraction method: Principal Component Analysis. Rotation method: Promax with Kaiser Normalization. a. Rotation converged in 6 iterations. * Reverse coded.

4. DISCUSSION

Honesty-humility trait has a significant positive association with loss aversion, which is contrary to the findings of Weller and Thulin (2012). Leadership (Sosik et al., 2019) and interpersonal study (Yu et al., 2021) of self-control among leaders found the honesty-humility trait to have a significant impact on self-control. High honesty-humility traits investors are expected to be sincere, fair, not greedy, and modest, as opposed to a sense of self-entitlement. Therefore, the investors low on this trait exhibit more overconfidence bias. Honesty-humility trait was found to have a negative impact on overconfidence bias (Rao & Lakkol, 2022b). The honesty-humility trait of HEXACO shares commonality with the agreeableness trait of BFM only concerning modesty facets. Apart from that honesty-humility is an independent trait that is not captured by any facet of BFM (Ashton & Lee, 2020).

Emotionality traits' significant positive relationship means that investors high on emotionality are averse to losses. Individuals scoring high on emotionality are afraid of being harmed, anxious, sentimental, and dependent on others for emotional support. Because of these traits, they are fearful of making losses or selling loss-making portfolios. The emotionality of the BFM has a significant association with loss aversion bias (Heeren et al., 2016) and self-control bias (Liani et al., 2021). The emotionality of HEXACO and BFM, measure a common trait of anxiety. High emotionality investors are more fearful, anxious, and sentimental. On the lower side, the investors become fearless, calm, unemotional, and less sentimental, they have more self-control. Neuroticism of the BFM and self-control bias were found to have a positive relationship (Pilarska, 2018), the contrary finding of this study can be justified as the emotionality trait of HEXACO to explain more variance.

Investors scoring high on the extraversion trait are confident, expressive, enthusiastic, and energetic. Such investors were found to have a positive impact on self-control bias. The extraversion traits of both HEXACO and the BFM are more or less similar. Whereas, when the relationship between the extraversion trait and self-control bias was assessed by Pilarska (2018), no significant re-

lationship was found, while extraversion of the BFM with self-control bias was found to have a strong association (Aren et al., 2021). Individuals with high agreeableness may be more susceptible to making investment decisions based on the opinions or advice of others, instead of relying on their analysis and research (Buccioli & Zarri, 2015). Investors with high agreeableness are patient and calm while making decisions, therefore they possess high self-control. The agreeableness of the BFM was found to have a significant negative relationship with self-control (Pilarska, 2018). This may be because the agreeableness of the BFM might lack some traits, which are captured in the agreeableness of HEXACO. It was also observed that the overconfidence bias fades away as the investors start to gain experience (Brozynski et al., 2004).

Conscientious investors are organized, self-disciplined, and do not make any decisions based on impulse (Shaffer, 2020). Due to these characteristics, especially prudence, they exhibit more self-control. The conscientiousness of both HEXACO and the BFM are similar. Conscientiousness has a positive impact on self-control bias (Pilarska, 2018). Individuals with higher conscientiousness tend to exhibit better self-control when it comes to making investment decisions (Kubilay & Bayrakdaroglu, 2016).

Investors with high openness to experience are keen to learn, imaginative, curious, and unconventional. These facets are the source of overconfidence; openness-to-experience in HEXACO and the big five are similar. Openness-to-experience of BFM has a significant impact on overconfidence bias (Yadav & Narayanan, 2021). A similar study by Kumar et al. (2021) on the relationship between openness-to-experience and overconfidence biases found no significant impact.

As the emotionality of investors increases, the investors become fearful and anxious. They depend on the advice of others, and exhibit a strong emotional attachment to the decisions they make, this makes them more tolerant of risks. On the contrary, Weller and Tikir (2011) concluded that individuals with high emotionality traits take less risk. High extraversion investors are expressive, bold, sociable, confident, and enthusiastic.

These facets make individuals less tolerant of risk. It can be inferred that the findings of this study are in direct contradiction with the findings of Pavlíček et al. (2021) and Oehler and Wedlich (2018), which conclude that higher extraversion leads to less risk aversion.

It was found that the extraversion and openness-to-experience, along with the emotionality of the BFM significantly affect risk tolerance (Pavlíček et al, 2021). The extraversion and openness to experience are similar in both HEXACO and the BFM.

As agreeableness decreases, the investor is less forgiving, stubborn, impatient, and gets angered easily. This stubbornness makes them stick to their decision to handle more risks. This finding is an improvement over the findings of Weller and Tikir (2011), as they did not find any influence of agreeableness on risk-taking.

Neuroticism, openness to experience, extraversion, conscientiousness (Rizwanulhassan et al, 2021) and agreeableness traits (Kalabalik & Aren, 2018) significantly impact financial risk tolerance. The agreeableness of HEXACO has common facets with neuroticism and agreeableness of the BFM, the common facet being 'Anger' and 'Gentleness', respectively (Ashton et al., 2014).

Honesty-humility, conscientiousness, and openness to experience were found to have no significant impact on financial risk tolerance (Anguera-Torrell, 2020). Honesty-humility was associated with greater risk-taking behavior, and emotionality was associated with lesser risk-taking behavior and low conscientiousness was associated with risk-taking to achieve more profits (Weller & Thulin, 2012). When these were further deliberated, a clear classification of personality traits emerged.

Peterson and Seligman (2004) studied various religions, cultures, and philosophies across the world and concluded six moral behaviors for a good life and named them "core virtues" (Dahlsgaard et al., 2005). Further, the twenty-four "values in action" that is "24 VIA", describe how these six core virtues manifest in the behavior of individuals (Peterson et al., 2005). Upon comparison of the sub-traits of the HEXACO model and 24 VIA, the

sub-trait of three personality traits, namely honesty-humility, conscientiousness, and openness-to-experience can be seen in the 24 VIA, which describes the human core virtues. Therefore, in this study, honesty-humility, conscientiousness, and openness-to-experience are commonly termed "virtue traits". On the other hand, the remaining three personality traits are commonly termed "character traits". It can be seen from the above discussion, that virtue traits do not significantly affect financial risk tolerance, while character traits significantly affect financial risk tolerance.

Investors exhibiting loss aversion bias hold on to losing stocks and sell winning stocks. These investors hold on to losing stock till it starts gaining and turning into winning stock, therefore investors with a loss aversion bias have a high tolerance to risk as they hold stocks for a long time. Loss aversion bias significantly affects financial risk tolerance (Bergh-Lindeque et al., 2021).

Self-control bias was found to have no significant relationship with financial risk tolerance. On the contrary, self-control bias was found to have a significant impact on financial management behavior and financial risk tolerance (Sampoerno & Haryono, 2021).

Investors with a high overconfidence bias are optimistic about the positive outcome and overestimate their ability and chances of success. Overconfidence bias was found to have a significant negative impact on financial risk tolerance. The individuals also overestimate the risk, and hence suffer losses. Overconfidence bias emerges from experience (Combrink & Lew, 2020), hence based on previous experiences, an investor with high overconfidence biases becomes less risk-tolerant. The contradictory result shows a significant positive impact of overconfidence bias on financial risk tolerance (Chindengwike et al., 2021; Samanez-Larkin et al., 2020).

Investors high on agreeableness traits tend to be patient, tolerant, agreeable, lenient, and gentle. Due to these qualities, the investors are flexible about holding losing stocks, and they might even sell off losing stock on the advice of others, this reduces the loss aversion bias. The reduction in loss aversion bias results in a lowering of risk tolerance,

as the investors now become more vigilant and cautious about their investments, hence, their risk tolerance goes down.

Investors exhibiting high conscientiousness are expected to be diligent, organized, self-disciplined, hardworking, careful, efficient, precise, and thorough. Due to this, they are overconfident that the decision that they take is in their best interest, contrary to popular belief, it may not be, due to lack of information. This results in them exhibiting high self-control bias, where investors are not acting in their best long-term interest. This reduces the financial risk tolerance.

High openness-to-experience investors tend to be complex, innovative, philosophical, imaginative intellectual, creative, unconventional, ironic, and deep in their personality. The unconventional traits of their personality make them favor the current investment scenario over the futuristic one, due to which they invest in the market now, rather than waiting for future or even better opportunities, resulting in investors being unable to accept more risk, making them low-risk tolerant.

Investors, who are high on honesty-humility characteristics behave extremely or have excessive self-confidence in their assessment, hence making them exhibit less confidence. Since they know the limit of their assessment, they tend to take more calculated risks, making them tolerate more financial risks. Similarly, conscientiousness high investors are careful, and precise, making them cautious in the assessment of an investment opportunity; these individuals also understand the limitations of their investment, making them exhibit less confidence. Since the individual can comprehend the limitations of their assessment, it makes them take more risks and be more financially risk-tolerant. Investors high on openness-to-experience traits are expected to be diligent, organized, self-disciplined, careful, efficient, and thorough. Due to this, they are self-assured

about the decisions taken by them, and it results in high confidence. Investors are confident in the decisions made by them hence they reflect fewer variations, making them less risk-tolerant.

Investors with high emotional traits are fearful, anxious, and vulnerable; this trait in the market makes them hold on to the losing stock as they are anxious of losing money. This makes them exhibit more loss aversion bias. Holding on to losing stock for it to turn profitable, makes these investors take unnecessary risk, making them high risk tolerant. The direct effect of emotionality on financial risk tolerance is significant. Moreover, a mediation effect of loss aversion bias is significant in the relationship between emotionality trait and financial risk tolerance.

Extraversion investors often are lively, extroverted, and active, this makes them take quick decisions and get rid of losing stocks, resulting in low loss aversion bias. Selling of losing stocks resulting in cash inflows gives investors to take up more calculated risk, making them take up more risk. The direct effect of extraversion on financial risk tolerance is significant. Moreover, a mediation effect of loss aversion bias is significant in the relationship between extraversion trait and financial risk tolerance.

Further research can be conducted to study the influence of personality types like dark triad (Narcissism, Machiavellianism, and Psychopathy) or light triad (Faith in Humanity, Humanism, and Kantianism) and cognitive biases on investment decisions. Future studies can link the field of behavioral finance and positive psychology, and test whether virtues of moral behavior influence financial decision-making. These studies can shed light on whether being good is prosperous or not. The studies can be further extended to check if virtuous and non-virtuous investors are influenced by the same behavioral biases. Moreover, understanding how virtuous and non-virtuous investors make investment decisions would be a fascinating study.

CONCLUSION

The study aimed to employ the HEXACO model to assess personality traits and their influence on biases and financial risk tolerance. Conscientiousness, openness to experience, and agreeableness traits of BFM significantly affect risk aversion, cognitive biases, and socially responsible investing, respectively.

The influence of personality traits on bias was explored using the HEXACO model. The SEM, considering regression analysis between personality traits on biases and, personality traits on financial risk tolerance, is found to have a significant relationship depending on whether a personality trait is a virtue trait or character trait. In this context, honesty-humility, conscientiousness, and openness to experience are virtue traits. Emotionality, extraversion, and agreeableness are considered as character traits. Only the character traits significantly affect loss aversion bias, excluding extraversion traits. All character traits impact self-control bias; among virtue traits only conscientiousness is found to be significant. Excluding conscientiousness traits, all virtue traits significantly affect overconfidence bias.

Similarly, if one observes the regression analysis between personality traits and financial risk tolerance, only character traits showed a significant impact on the dependent variable, financial risk tolerance.

Out of the three biases considered, loss aversion bias and overconfidence bias showed a significant impact on financial risk tolerance. However, self-control bias showed an impact when considered along with personality traits. Overall, the SEM results show the model fit proving the relationship between personality traits, biases, and financial risk tolerance.

The mediation analysis of emotional biases between personality traits and financial risk tolerance also highlighted the distinction among personality traits. The mediation analysis with loss aversion bias, personality traits and financial risk tolerance showed a complete and partial mediation effect with character traits and no mediation effect between virtue traits and financial risk tolerance.

On the contrary, mediation analysis of self-control bias showed a complete mediation effect between virtue trait and financial risk tolerance, except the honesty-humility trait. No mediation effect was found between character traits and financial risk tolerance. Similarly, mediation analysis of Overconfidence bias showed a complete mediation effect between all of virtue traits and financial risk tolerance and no mediation effect for character traits. The results obtained from SEM and mediation analysis demonstrates that the influence of personality traits can be explored by classifying them into virtue traits and character traits.

Honesty-humility is an important personality trait to understand overconfidence bias. The significant negative relationship between the two shows that it cannot be neglected while studying investor behavior. Since no other model except HEXACO captures honesty-humility personality traits, it emerges as superior model over other models. Similarly, emotionality and agreeableness, though considered in other personality models, they have covered only on aspect of it. For example, emotionality has four facets such as sentimentality, fearfulness, anxiety, and dependence, which are covered by the HEXACO model. Other models only consider sentimentality. In case of agreeableness also, there are four facets to this trait such as anger, forgiveness, gentleness and flexibility. Again, all four facets are covered in the HEXACO model, while other focus only on anger. Since, the study results have clearly brought out that emotionality and agreeableness are important character traits, having significant impact on financial risk tolerance as well as loss aversion and self-control bias, it cannot be focused partially.

An interesting theoretical contribution of this study is that virtue traits showed significant influence in mediation analysis, while character traits showed significant influence in SEM. So, this clearly shows that while understanding investor behavior and risk preference, clarity on personality traits reflected by the HEXACO model is necessary. Since emotional biases are hard to mitigate and personality traits are fairly permanent in the short run, a clear understanding of their influence on each other can lead to better financial advice on the part of an advisor and better decision-making on the part of an investor. This understanding can lead to devising a better portfolio for investors and maximizing their wealth.

AUTHOR CONTRIBUTIONS

Conceptualization: Savitha G Lakkol.
 Data curation: Aniruddha S Rao.
 Formal analysis: Aniruddha S Rao.
 Investigation: Aniruddha S Rao.
 Methodology: Aniruddha S Rao.
 Project administration: Savitha G Lakkol.
 Software: Aniruddha S Rao.
 Supervision: Savitha G Lakkol.
 Validation: Savitha G Lakkol.
 Visualization: Savitha G Lakkol.
 Writing – original draft: Aniruddha S Rao.
 Writing – review & editing: Savitha G Lakkol.

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