

## INFLUENCE OF HEXACO PERSONALITY MODEL ON OVERCONFIDENCE AMONG RETAIL INVESTORS

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### ABSTRACT

The paper examines the relation between HEXACO personality model and levels of Overconfidence among retail investors who invests in equity, mutual funds and bonds. The 24-item Brief HEXACO Inventory (BHI) developed by De Vries was used to measure HEXACO through a survey of 208 retail investors. The findings of the study suggest that there is a significant positive association between openness to Experience(O) and High Overconfidence, and a significant negative association was found between Honesty-humility(H), Emotionality(E), Agreeableness(A), Conscientiousness (C) and High Overconfidence. Extraversion (X) was found to have no impact on overconfidence. The study contributes to behavioural finance by helping to understand individual investor's personality when it is measured through HEXACO model. HEXACO model incorporated all the variance in personality that is described by Five Factor Model(FFM) and those dimensions which are not part of FFM. No previous studies have looked into behavioural biases through HEXACO, especially among Indian investors

**Keywords:** *HEXACO, Behavioural Bias, FFM, Overconfidence, Binary Logistic Regression*

### Introduction

Behavioral finance emerged as a consequence of the inability of traditional finance to explain the expected utility maximization of an investor within an effective market framework. It was established that investor behavior and asset price deviate from the prediction of simple rational models. Much of traditional finance theory, which was supported by the "Expected Utility theory", failed to explain the irrational behaviour of the investors decision making. Prospect theory was proposed to explain these irrational behaviors of the individuals by Kahneman & Tversky (1979), which criticized the expected utility model under risk and uncertainty. Giving rise to new field of Finance, which tries to explain the behaviours of the participants in various situations, "Behavioral Finance"

Behavioral finance uses insight from psychology, economics about preferences, and decision making with comprehensive principles of behaviors from a range of other social, biological sciences to understand how human behaviors influence the decision making of individual and professional investors, markets, and managers (Ackert & Deaves, 2009). It can

be described under various dimensions like personality, biases, heuristics, emotions, moods, attitudes, beliefs of investors, motivation, culture, neurology, and social forces to explain investment decisions.

One key aspect of describing the behaviours of individuals is the personality. Personality is a dynamic concept describing the growth and development of a person's whole psychological system. Personality was defined by Gordon Allport, as "the dynamic organization within the individual, of those psychophysical systems that determine his unique adjustments to his environment" (Robbins & Judge, 2013). American Psychological Association defines personality as an "enduring configuration of characteristics and behavior that comprises an individual's unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns" ("APA Dictionary of Psychology," 2015).

Personality has been observed that personality is one of the key determinants of human behavior (Tauni et al., 2017). Personality of individual also plays a pivotal role in decision making, especially in financial decision making (Baker et al., 2019). The economic behaviours

also have been impacted due to personality (Ahmad, 2020). Individuals choices' is also impacted by individuals personality (Durand et al., 2013a). Hence, it is crucial to understand the personality of individual.

The field of psychology provides various personality models for behavioural finance research namely Myers-Briggs Personality Model (1920), Eysenck's Three-Factor Theory (1963), Five-Factor Model (FFM) of Personality (1985), HEXACO six-factor model of personality (2000), Meta theoretic Model of Motivation and Personality (3M) (2000). These models were considered to explain investors' preference, behaviour and other complex dimensions. Herding behaviour, investment preference, risk taking, biases, investor confidence and various aspects surrounding investment decisions were explained considering personality traits. Big 5 model of personality also called as Five factor model (FFM) is the most widely used personality model as it gives common dimensional approach to personality (Gambetti & Giusberti, 2019). The further studies in personality model revealed that, personality do not have 5 dimensions, rather comprises 6 dimensions, called as HEXACO (Ashton & Lee, 2007). HEXACO is an acronym for its 6 dimensions namely H-Honesty-Humility, E-Emotionality, X-Extraversion, A-Agreeableness, C-Conscientiousness, and O-Openness to experience. HEXACO is not merely FFM plus one additions dimension Honesty-Humility, since both model share same names for its other dimensions (Lee et al., 2005).

The lexical study comparison between HEXACO and FFM show similarities with some dimensions, especially extraversion, conscientiousness, and openness to experience. The other dimensions of HEXACO, i.e. Honesty-Humility, Emotionality and Agreeableness (Ashton & Lee, 2007). When both FFM and HEXACO was subjected to testing on same group of respondents, to determine their scope, it was found that extraversion, conscientiousness, and openness to experience of HEXACO could explain all of FFM, therefore it was evident that HEXACO could explain all the dimensions of FFM and also explains those traits which is outside the scope of FFM(Ashton et al., 2014). It can be concluded that HEXACO is better personality model to explain personality of individuals.

Overconfidence is an emotional bias, that is often described as an extreme excessive self-confidence or managerial personal self-assessment causing excessively optimistic beliefs about one's own judgments, decisions, or predictions (Grežo, 2020).

Overconfidence has a very significant impact on individuals' financial decision making process(De Bondt & Thaler, 1995). It is very important to cognize overconfidence because of the reason, that it is has a high bearing on counterproductive trading in financial markets (Barber & Odean, 2001). It is also observed that due to overconfidence individuals often indulge in inadequate and abominable decisions (Baker & Nofsinger, 2010). The overconfidence fades as the individual's starts to gain experience (Brozynski et al., 2004). Hence is it important to understand overconfidence in different context of investment.

The impact of personality and overconfidence is vast, which have used many different personality models. None of the previous studies have used HEXACO model of personality to evaluate the overconfidence in individuals. The exiting literatures in this have predominantly used FFM to evaluate personality.

In the next section we see different studies that have used different personality models and have considered overconfidence bias.

### ***Personality and Overconfidence***

When overall personality of investors that were measures using FFM, personality influences overconfidence was measured through three basic concepts, namely, over-precision, over-placement and overestimation (Akhtar & Das, 2020; Durand et al., 2013b). When this study was extended using Dark triad personality, It was found that narcissistic tendencies are predictors of financial overestimation, over placement and over precision biases (Hamurcu & Hamurcu, 2021).

Literature abundant on how different dimensions of FFM personality influences overconfidence. Openness is found to be a main driver of excess trading. When Individual investors were asked to fill big 5 personality questionnaire, it was found that Overconfidence was predicted by low levels of Agreeableness that relates to excessive trading, while high levels of Extraversion do not (Kleine et al., 2016). A study by Baker et al., (2019)

also found that extroverts exhibit more overconfidence bias. Similar outcome was experienced by Ahmad (2020), in conjunction they also found conscientiousness trait also impacted the overconfidence among investors. Kumar et al., (2021), along with extroversion, also found openness to experience to have a significant impact on overconfidence bias. Openness, extroversion, and agreeableness negatively impact the susceptibility of investors towards overconfidence (Yadav & Narayanan, 2021). Sudzina et al., (2021) also found that cryptocurrency investors are more overconfident, and were influenced greatly by low agreeableness, and high extraversion.

To summarize the studies that use FFM of personality, we can a pattern emerging, most studies find that low agreeableness, high extraversion and openness to experience influences overconfidence. Unlike the previous studies, personality traits and overconfidence of retail investors in Indonesia, it was found that Extraversion, Agreeableness, Neuroticism and Openness to experience were not related to overconfidence (Utami & Kartini, 2017).

The studies also have used other personality models, like Eysenck personality traits (impulsivity, venturesomeness, and empathy) also had a significant impact on Overconfidence (Rzeszutek, 2015). A very limited studies can be found which uses HEXACO model of personality. When HEXACO personality model was used to assess the overconfidence among students, regression model with Honesty-Humility and Openness to Experience turned out to explain a significant amount of variance in overconfidence (Otten, 2017).

This study contributes to literature of Behavioural finance, by using the HEXACO model of personality and its dimensional impact on overconfidence. The study also helps financial advisers to understand the personality of the investors and design a portfolio which suits them. The study also helps to identify overconfidence that influences the investors, helps to advise clients on modifying beliefs and/or actions.

This paper aims to study the influence of personality type on overconfidence considering HEXACO model of personality. Further, the study explores the influence of each dimension of personality variables on levels of overconfidence among retail investors. The below section details the data collection method, instrument used, respondents and data analysis methodology.

### Data collection

For this study data was collected from 216 respondents. The data collection was done in the month of October 2021. It was made sure that all the respondents invested in any of the securities (equity, Mutual funds, and bonds). The survey was conducted both using offline mode, and online mode (google forms were used). Out of 208, 8 questionnaires were partially completed, hence those questionnaires were rejected. Therefore, only 208 questionnaires were eligible for further study.

The lack of short version of HEXACO instrument made it unattractive to use in studies. The 24-item Brief HEXACO Inventory (BHI) developed by De Vries, (2013), provides a solution to overcome this hindrance. This study uses 24-item Brief HEXACO Inventory (BHI), which represents the 24 HEXACO facets with 1 item per facet (i.e., 4 items per domain) makes it simple and easy to use. The items of Overconfidence was taken from Baker et al., (2019), which provides 6-items to measure Overconfidence.

The questionnaire consisted of 34 items which was divided into 3 sections. The Section 1 consisted of 4 demographics questions. Section 2 had 24-item Brief HEXACO Inventory (BHI), and Section 3 had 6 questions regarding the Overconfidence. The questionnaire was distributed to retail investors from different professional background.

The variable used in this study are Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness to Experience, which are independent variables and Overconfidence is dependent variables. The definition and source of each variable are shown in Table 1

### Dataset and methodology

**Table 1: Variable name, definition and Sources**

Variable	Definition	Source
Honesty-Humility	Persons with very high scores on the Honesty-Humility scale avoid manipulating others for personal gain, feel little temptation to break	(Ashton et al., 2004)

	rules, are uninterested in lavish wealth and luxuries, and feel no special entitlement to elevated social status.	
Emotionality	Persons with very high scores on the Emotionality scale experience fear of physical dangers, experience anxiety in response to life's stresses, feel a need for emotional support from others, and feel empathy and sentimental attachments with others.	
eXtraversion	: Persons with very high scores on the Extraversion scale feel positively about themselves, feel confident when leading or addressing groups of people, enjoy social gatherings and interactions, and experience positive feelings of enthusiasm and energy.	
Agreeableness	Persons with very high scores on the Agreeableness scale forgive the wrongs that they suffered, are lenient in judging others, are willing to compromise and cooperate with others, and can easily control their temper..	
Conscientiousness	Persons with very high scores on the Conscientiousness scale organize their time and their physical surroundings, work in a disciplined way toward their goals, strive for accuracy and perfection in their tasks, and deliberate carefully when making decisions.	
Openness to Experience	Persons with very high scores on the Openness to Experience scale become absorbed in the beauty of art and nature, are inquisitive about various domains of knowledge, use their imagination freely in everyday life, and take an interest in unusual ideas or people	
Overconfidence	unwarranted faith in one's own thoughts and abilities—which is an emotional bias (with cognitive aspects). Overconfidence manifests itself in investors' overestimation of the quality of their judgment.	(Pompian, 2012)

All the items were measured using 5-point Likert scale. To carry out further analysis, the Overconfidence score was calculated as the average score of individual responses for each component of overconfidence using the formula 1.

Overconfidence Score =  $\frac{\sum \text{Likert value}}{6}$  ..... (1)

Further, based on the score individuals were classified into high, and low Overconfidence, and were subjected to further analysis. The limitation of the study is that it is confined to explore only overconfidence, and other biases are not part of this study.

### Data Analysis

**Table 2 Descriptive Statistics**

Descriptive Statistics						
	N	Std. Deviation	Variance	Skewness	Kurtosis	Cronbach's $\alpha$
Openness to experience(O)	208	.72629	.527	1.387	1.704	0.804
Conscientiousness(C)	208	.76810	.590	.627	.199	0.759
Agreeableness(A)	208	.85569	.732	-.051	-.881	0.763
eXtraversion(X)	208	.75663	.572	.844	.371	0.748
Emotionality(E)	208	.89685	.804	-.587	-.604	0.850
Honesty-Humility(H)	208	.98412	.969	.077	-1.229	0.859
Over-Confidence level	208	.39878	.159	1.534	.356	0.823
Valid N (listwise)	208					

Table 2, shows the descriptive statistics of HEXACO and Over confidence level, that were calculated. Thereafter, Binary logistic regression has been applied and executed. The

Cronbach's  $\alpha$ , for all the variables is greater than 0.7, hence the variables are reliable. Binary logistic regression analysis is appropriate when there are several independent variable in continuous data and a single

predictor variable in categorical data (Harrell, 2015)

**Table 3: Omnibus Tests of Model Coefficients**

Omnibus Tests of Model Coefficients			
	Chi-square	df	Sig.
Model	71.221	6	.000

Table 3 shows, the model Chi square, which is statistically significant with  $p < 0.001$ . This reflects that the model explained by the independent variable is fit.

**Table 4: Model Summary**

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	135.272 <sup>a</sup>	.290	.461

The dependent variables vary our model from 29.0% to 46.10% from table 4

**Table 5: Hosmer and Lemeshow Test**

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	8.497	8	.386

Table 5 shows Hosmer and Lemeshow Test, based on this we reject the null hypothesis which states that the data do not fit the model. Since the p value is 0.386,  $p > 0.05$ , we reject the null hypothesis. Hence the model is a good fit for the data and for further analysis.

**Table 6: Classification Table**

Observed			Predicted		
			Over Confidence level		Percentage Correct
			Low Confidence	High Confidence	
Over Confidence level	Low Confidence	Over	154	13	92.2
	High Confidence	Over	20	21	51.2
Overall Percentage					84.1

Table 6 is of classification table which shows the correspondence between the observed groups and groups which are predicted by the model. In this case 167 individuals were observed to possess low overconfidence, the model predicted 157 individuals. The accuracy

of this prediction by the model was 92.21%. Similarly, out of 41 individuals who were observed to possess high overconfidence, the model predicted 21 individuals. Leading to an accuracy of 51.21%. The overall prediction accuracy of the model is 84.13%.

**Table 7: Variables in the Equation**

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	OR
Step 1 <sup>a</sup>	Openness to experience(O)	.501	.274	3.342	1	.068	1.650
	Conscientiousness(C)	-1.499	.390	14.778	1	.000	.223
	Agreeableness(A)	-.593	.289	4.218	1	.040	.553
	eXteaversion(X)	.369	.328	1.269	1	.260	1.447
	Emotionality(E)	-1.312	.310	17.938	1	.000	.269
	Honesty-Humility(H)	-1.393	.297	22.046	1	.000	.248
	Constant	9.689	2.267	18.266	1	.000	16131.114
a. Variable(s) entered on step 1: O, C, A, X, E, H.							

Table 5 shows the regression weights (B). From the table it can be seen that Openness to Experience (O) and Extraversion (X) have positive unstandardized beta weights. Only Openness to Experience (O) have significant impact on Overconfidence level at 90% confidence interval,  $p < 0.10$ ,  $p = 0.068$ . This can be interpreted that, 1-unit increase in openness to experience (O), overconfidence increases by 0.501 units. Conscientiousness (C), Agreeableness (A), Emotionality (E), and Honesty/Humility (H) have negative unstandardized beta weights. All these variables have a significant negative impact on Overconfidence level at 95% confidence interval,  $p < 0.05$ . This can be interpreted as follows, 1-unit increase in Conscientiousness (C), Agreeableness (A), Emotionality (E), and Honesty/Humility (H), overconfidence decreases by 1.499 units, 0.593 units, 1.312 units, and 1.393 units respectively. Odds Ratio indicates the probability of individuals with certain personality traits falling in the category of High overconfidence. Openness to Experience (O) has an Odds ratio of 1.65. As. Openness to Experience (O) increases by 1 unit, the probability of this individual being in High overconfidence is 65%. Similarly, Conscientiousness (C), Agreeableness (A), Emotionality (E), and Honesty/Humility (H) have an Odds ratio of 0.223, 0.553, 0.269 and, 0.248 respectively. These individuals with 1-unit increase, the probability them falling into High confidence group decreases by 77.70% for Conscientiousness (C), 44.7% for Agreeableness (A), 73.1% for Emotionality (E), and 75.20% for Honesty/Humility (H). It can be further interpreted from this is that individuals with high Conscientiousness (C), Agreeableness (A), Emotionality (E), and Honesty/Humility (H) tend to have low overconfidence, and Individuals with Openness to Experience (O) tend to have high overconfidence in terms of their investment.

### Discussion and Conclusion

The literature in behavioural finance supported the fact that the personality has always been one of the key influences on financial decision making. One way to measure this personality is HEXACO model. HEXACO model is better at describing the holistic personality, and even better than FFM (Ashton & Lee, 2020). In this

study the relation between the HEXACO and overconfidence was explored.

A significant positive relationship was obtained between openness to experience and over confidence. This may be due to the fact that higher openness to experience implies that the individual is interested in various domains of knowledge, use their imagination freely in everyday life, and take an interest in out of box ideas, this makes them overconfident. Further studies in this area could explore the relationship between openness to experience and financial literacy, and also investigate the different biases these individual are effected from.

Openness to experience is similar in both FFM and HEXACO, therefore we can emulate the similar results by Kumar et al., (2021), which showed that openness to experience in FFM have a significant impact on Overconfidence. This is also in consensus with findings of Otten, (2017), using HEXACO model.

Conscientiousness is another trait in HEXACO that shares similarities with its counterpart in FFM. Our study finds that Conscientiousness has a negative impact overconfidence level. Higher conscience individual is organised and work in a disciplined way toward their goals, these individuals strive for perfection and accuracy and are very thoughtful in decision making, hence as conscientiousness increases they become less impulsive on their decisions, hence less overconfident or just confident enough on their ability. This is in contradiction to the findings of Ahmad (2020), who concluded that Conscientiousness have a positive impact on Overconfidence.

Future studies can be employed in finding out whether the similar dimensions of HEXACO and FFM, results in same outcome, when other biases are considered. A comparative analysis might help to understand HEXACO model of personality in detail.

Honesty-Humility, Emotionality and Agreeableness of HEXACO, do not share any commonality with FFM. A negative impact on overconfidence, from these dimensions were found. Otten, (2017) also finds the same relation with Honesty-Humility. A High Honesty-Humility individuals, are uninterested in lavish wealth and luxuries, and feel no special entitlement to elevated social status, and feel little temptation, this might result in not having high overconfidence. A high emotionality person feels a need for emotional

support from others, and feel empathy and sentimental attachments with others, hence these individuals are grounded and result in not having high overconfidence. High Agreeableness individual forgive the wrongs that they suffered, are lenient in judging others, are willing to compromise and cooperate with others, and can easily control their temper, due to these, individual in high agreeableness do not having high overconfidence.

Further studies can explore how Honesty-Humility, Emotionality and Agreeableness of HEXACO, which do not have counterpart in FFM, impact other biases. This study can also be replicated by considering different biases as dependent variables and different investors group as one of the independent variables.

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