

# The impact of social influence on the relationship between personality traits and perceived investment performance of individual investors

## Evidence from Indian stock market

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### Abstract

**Purpose** – The purpose of this paper is to clarify the relationship between an individual investor's personality trait and his perceived investment performance. It proposes a novel conceptual framework that integrates social influence (as a moderating construct) and outlines the role of personality in determining the perceived investment performance during the investment decision-making process.

**Design/methodology/approach** – A questionnaire-based survey was conducted to collect responses from 396 individual investors through stratified and quota sampling approach. The collected data were then analysed using both hierarchical regression analysis and structural equation modelling to evaluate the strength of the relationship between the constructs, namely, personality trait, perceived investment performance and social influence.

**Findings** – This study suggests that social influence positively moderates the relationship between extraversion-perceived investment performance, whereas it negatively moderates the relationship between agreeability-perceived investment performance.

**Research limitations/implications** – This study has certain limitations. First, this work follows a modelling approach which is more centred towards the prediction of relationships. Second, because of choosing a research approach (since the study has been conducted in one country, i.e. India), the results of the study may lack generalisability. Therefore, further studies could be encouraged to test the proposed hypotheses.

**Practical implications** – Insights from this study suggest that investors should look in for their personality traits while making an investment decision. In fact, psychologically modified portfolios should be developed as per the personality traits of the investors.

**Originality/value** – The study, perhaps, is the only study to apply social influence in a framework using Big Five personality traits as a possible factor to understand the individual differences in terms of perceived investment performance.

**Keywords** Social influence, Individual investors, Big Five personality, Interaction moderation model, Perceived investment performance

**Paper type** Research paper

## 1. Introduction

### 1.1 Personality traits and investment performance

The literature on behavioural finance has tried to analyse investors' behaviour in an effort to improve our understanding of how investors manage their investments. Today, research has shown how an individual's personal characteristics influence their behaviour, perception of risk and willingness to take risky decisions. However, the extent to which these personal characteristics influence investment behaviour and performance has largely remained uninvestigated. This study tries to answer this question by analysing the personality traits of individual investors.

Eysenck (1991) suggested that personality traits are composed of five principles, namely, replicability, comprehensiveness, external correlates, source traits and multiple levels.



The five principles were later renamed as the Big Five factors or five-factor model (FFM). FFM classifies personality traits into extraversion (E), conscientiousness (C), agreeableness (A), neuroticism (N) and openness to experience (O). It has been observed that an individual's thinking and behavioural patterns are largely determined by their personality (Allport, 1961).

Moreover, Durand *et al.* (2008) showed that an investor's personality traits influence their investment outcomes. A possible explanation for this is that personality traits determine investment preferences and therefore affect investment performance. In related research, Durand *et al.* (2013) showed that personality traits are related to two major psychological biases, i.e. the disposition effect (tendency to sell winning assets and holding losing assets) and availability bias (ease with which relevant instances come to mind). This finding generates a new insight that personality traits have an impact on investment performance.

An investor's investment behaviour, i.e. their investment preferences and ability to make correct and incorrect judgements, has been studied from two broad perspectives: using demographic features, such as gender, wealth, income (Barber and Odean, 2001; Hallahan *et al.*, 2004), and psychological biases, like attitude to risk taking (Thoresen and Low, 1990; Carducci and Wong, 1998). However, the relationship between personality traits and investment performance has largely been uninvestigated. This study extends the work of Durand *et al.* (2008, 2013), in which they analysed the relationship between Norman's Big Five factors of personality trait and their relative effect on investment performance.

This study uses attitudinal measurements of investors' investment performance, i.e. their perceived investment performance. Specifically, it measures the rate of return against an investor's own expectation, the market rate of return (Phuoc Luong and Thi Thu Ha, 2011) and inflation factor (Sato *et al.*, 2011).

### 1.2 Social influence and investment performance

Most studies of behavioural finance discuss investors' decision-making processes from the perspective of emotion and psychology. But, there are many other factors that affect the investment decision-making process, like social interactions or social influence. Media, social interactions with friends and relatives and the internet have become essential modes for sharing ideas and information. The media is also one of the key factors which influences the decisions of individual investors. The media actually plays a pivotal role in the distribution of information regarding market moves and forecasts of moves (Shiller, 2000; Davis, 2006). It has also been documented that the media influences individuals and keeps them away from formal investment analysis (Baker and Nofsinger, 2002). Furthermore, social interactions with friends and family members also have an effect on investment decisions and returns (Shive, 2010).

People interact with each other to acquire information and then make investment decisions (Shiller and Pound, 1989). Previous literature has shown that information acquisition is positively related to trading frequency (Abreu and Mendes, 2012; Grossman and Stiglitz, 1980). The model of Ellison and Fudenberg (1995) illustrated that talking is a way of gathering information and analysing the emotional reaction of others, so as to form opinions. This observational learning leads to "herding", which can be defined as the phenomenon of individuals deciding to follow and imitate the behaviour of others, rather than acting independently (Baddeley, 2010).

It is evident that investors generally choose to invest after they collect information (Guiso and Jappeli, 2006); however, investors may also use their gathered information to check the financial performance of their investments (Tauni *et al.*, 2015). We know that cognitive factors are moderated by personality and psychological biases (Borghans *et al.*, 2008). There is evidence suggesting that people with lower cognitive ability are more risk tolerant. Assuming that herding is a response to risk, then personality as well as cognitive factors is precursors for the herding tendency (Sunde *et al.*, 2007). Personality traits also predispose an individual towards particular moods, and experimental evidence has shown that there is a relationship

between personality traits, psychological biases like overconfidence and risk taking, and sociability (Baddeley *et al.*, 2007; Bernardo and Welch, 2001). We propose that social influence may dampen or strengthen the relationship between personality traits and perceived investment performance of an individual investor.

### *1.3 Personality traits, social influence and investment performance*

There is a growing interest among behavioural finance scholars in studying the effect of social influence on investors' investing behaviour (Christie and Huang, 1995; Shiller, 2000; Hirschey and Nofsinger, 2008), but studies have ignored the possibility of social influence acting as a moderating variable between an investor's personality trait and their perceived investment performance. A moderator can be defined as a variable that influences the strength of the relationship between an independent variable and a dependent variable (Arnold, 1982; Stacy *et al.*, 1991). On the basis of our review of the literature, we conclude that previous studies have ignored the potential importance of moderating variables or have failed to examine them systematically. For example, all the studies have considered social influence from the perspective of trading behaviour (Shiller, 2000; Barber *et al.*, 2005; Davis, 2006). In contrast, we investigate this variable as a moderator of the relationship between personality and perceived investment performance of an individual investor.

The literature on personality research shows that people with the openness personality trait are imaginative and creative; they are curious and like to investigate and generate new ideas and viewpoints (Costa and McCrae, 1992). People with high openness traits have an increased inclination towards information and apply imaginative methods to acquire information from a variety of sources (Palmer, 1991). Although people with the openness trait are free thinkers, they do not accept everything and often try to find innovative solutions to a particular problem (Brookfield, 1987; Heinström, 2010). Therefore, we propose that:

*H1.* Social influence negatively moderates the relationship between openness and perceived investment performance.

People who are self-disciplined, responsible and effective are said to be conscientious. People with high conscientiousness are said to have a more goal-oriented approach and are very active while making decisions. They are not good losers, and tend to keep trying until their goal is accomplished (Costa and McCrae, 1992). These individuals consistently try to find high-quality information that will meet their needs and be more reliable (Heinström, 2003). These individuals would therefore have high perceived investment performance and we propose that:

*H2.* Social influence positively moderates the relationship between conscientiousness and perceived investment performance.

Individuals who are neurotic are characterised by emotions like anxiety, anger, fear and depression. These are stable and resistant people who are not easily provoked (Costa and McCrae, 1992). High neuroticism induces individuals to acquire huge amounts of information and make themselves sure about every important aspect before taking any decision (Krohne *et al.*, 2000; Nichols-Hoppe and Beach, 1990). Highly neurotic individuals are more sensitive to their external environment and overreact even in ordinary situations. Therefore, we propose that:

*H3.* Social influence positively moderates the relationship between neuroticism and perceived investment performance.

Individuals who are extravert are said to be energetic, sociable, adventurous and assertive (Costa and McCrae, 1992). They are talkative and frequently interact with friends, peers, family and superiors, for help in the process of decision making (Sims, 2002; Heinström, 2010).

These individuals tend to obtain information through their increased social networks and are very confident about their decisions (Pompian and Longo, 2004), hence they will have high perceived investment performance. Therefore, we propose that:

*H4.* Social influence positively moderates the relationship between extraversion and perceived investment performance.

Individuals who have high agreeableness are more courteous and tend to maintain conformity. These individuals are friendly and avoid conflict in order to establish harmony (Costa and McCrae, 1992). Moreover, they tend to believe others without any assessment of the information and readily accept any kind of misinformation (Heinström, 2010; McCrae *et al.*, 1998; Eisen *et al.*, 2002). Therefore, we propose the following hypothesis:

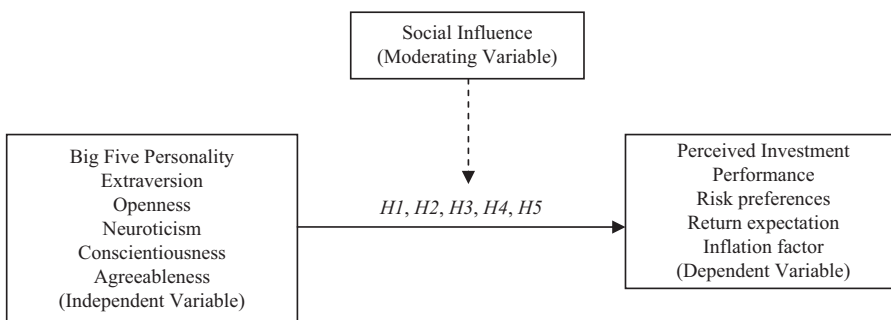
*H5.* Social influence negatively moderates the relationship between agreeableness and perceived investment performance.

In the present study, we have used the Big Five personality traits to measure the personalities of individual investors, because of their huge acceptability in applied research (Barrick and Mount, 1991), in spite of cultural and language differences (Roberts and Robins, 2000). Based on the literature review, we have also developed a conceptual framework (Figure 1). The framework investigates the role of social influence in the relationship between an individual investor's personality trait (i.e. neuroticism, openness, extraversion, conscientiousness and agreeability) and their perceived investment performance. Previous studies, like that of Shanmugham and Ramya (2012), have highlighted the importance of investor behaviour and social influence (herding) in Indian stock markets. Moreover, Poshakwale and Mandal (2014) provided much evidence for the existence of herding in the Indian stock market. To the best of our knowledge, the present study is the only study of the Indian stock market to analyse the relationship between personality traits and perceived investment performance from the perspective of social influence as a moderating variable.

## 2. Data and methodology

### 2.1 Survey procedures

In order to have a random and representative sample, all the data were collected in two stages. In the first stage, a stratified random sampling method was utilised to select 21 security companies in the Indian stock market, according to their brokerage market share. In the second stage, brokers at the security companies were contacted to seek permission and assistance with on-site data collection. The data were collected in three districts of Jharkhand (India): Dhanbad, Ranchi and Jamshedpur, which are three mid-sized



Source: Author's compilation

**Figure 1.** Proposed conceptual model – antecedents of an investor's perceived investment performance

districts of Jharkhand. To qualify as a respondent for the survey, an individual had to have at least two years of investment experience. Accordingly, stratified and quota sampling methods were employed to recruit respondents of the questionnaire. A total of 500 individual investors were contacted, and 401 of them responded positively to the questionnaire; therefore, the response rate was 81.60 per cent. This sample also received questionnaire that was distributed via prepaid stamped envelope as well as mailed. After eliminating incomplete responses and extreme outliers, a total of 396 usable responses were considered for further investigation. It has been documented that there is no specific rule for determining sample size in case of behavioural studies (Osborne and Costello, 2004).

*2.2 Participants description*

The sample mainly composed of male investors (78.3 per cent). This sample is consistent with Clark-Murphy and Soutar (2004) and Lewellen *et al.* (1977), in which men comprised about 80 per cent of the total sample. The majority of the investors were college graduates (68.1 per cent). The sample was largely composed of adults between 35 and 45 years of age (32.2 per cent), this distribution is consistent with Chen (2004), who showed that the largest number of brokerage accounts come from investors who are 29-49 years old. Moreover, studies like Graham *et al.* (2009) and Barber and Odean (2001) showed that the average age of individual investors in USA is around 49-50, with these details it can be said that Indian investors are much younger than their US counterparts. On the income note, most of the investors belonged to the annual income group of 15-20 lakhs (35 per cent). The investors had an average of 5.08 years' experience in the financial market. This may indicate that the subjects of the study are experienced in the financial market. This ensured more reliable results, as it has been documented that experience has a positive impact on investment skills (Korniotis and Kumar, 2011) (Table I).

Variables	Category	Frequency	%
Gender	Male	310	78.5
	Female	86	21.4
Age	0-25 years	57	14.6
	26-35 years	86	21.7
	36-45 years	128	32.3
	46-55 years	86	21.7
	56 years above	39	9.8
Education	High school	17	4.3
	Senior secondary school	55	13.8
	College graduate	269	68.1
	Advance degree	55	13.8
Income	0-5 lacs	55	13.8
	6-10 lacs	30	7.5
	11-15 lacs	139	35
	16-20 lacs	134	33.9
	21 lacs above	38	9.8
Investment experience	2 years	29	7.5
	3 years	44	11.0
	4 years	64	16.1
	5 years	70	17.7
	6 years	130	32.7
	7 years	36	9.1
	8 years above	23	5.9

**Table I.**  
Demographic and  
socioeconomic profiles  
of the investors

**Note:** *n* = 396  
**Source:** Author's compilation

### 2.3 Measurements: dependent variable, independent variables and the moderator

This section presents the measurements employed in the study, with an estimation of their dimensionality and the epistemic relationships. An epistemic relationship describes the relationship between constructs and indicators (Picón *et al.*, 2014). There are two types of epistemic relationship: a reflective measurement model shows the relationship between the construct and its indicators, and a formative measurement model depicts the relationship between indicators and the latent variable (Polites *et al.*, 2012).

To establish the epistemic relationship, a structured questionnaire was constructed and was used as the main survey instrument. At first, the instrument was extensively pretested, when the questionnaire was delivered to professionals and individual investors, to improve the format of the survey instrument. The instrument was then delivered to fellow researchers face-to-face, in order to eliminate any possible errors in understanding and completing the questionnaire. To increase the response rate, each questionnaire was accompanied by a covering letter, assuring the respondents that the information they provided would be confidential; the letter also gave the respondents an estimation of the time period they would be allotted to answer the questionnaire (Brown and Coverley, 1999).

The questionnaire consists of 32 questions that gather information about personality traits, social influence and their effect on the perceived investment performance of individual investors. The questionnaire is divided into four broad sections. The first section is based on demographic and socioeconomic questions (seven items, multiple choices). The second section comprises 18 questions (five-point Likert scale) that are based on the identification of personality traits (Big Five personality traits) adapted from McCrae and Costa (2003) and Mayfield *et al.* (2008). The third section consists of three questions (five-point Likert-type scale), relating to the measurement of social influence that had been adapted from Shanmugham and Ramya (2012), Abreu and Mendes (2012) and Hong *et al.* (2004). Moreover, the last section of the questionnaire includes four questions (seven-point scale) which relate to the relative and comparative measurement of investment performance adapted from Le Phuoc Luong and Doan Thi Thu Ha (2011) and Sato *et al.* (2011). Table II lists the questionnaire items, along with their source and the measure of the constructs' sampling adequacy.

### 2.4 Data analysis

The moderation test examines the relationship between an independent variable and a dependent variable, in terms of size and direction, as a function of a moderating variable (Baron and Kenny, 1986). The moderation test is important in the field of social sciences (Koufteros and Marcoulides, 2006) as it offers a more precise explanation for the nature of causal relationships between the dependent and independent variables. A moderation test can be done in two forms, namely, multi-group moderation and interaction moderation. In multi-group moderation, the data set is split on the basis of the moderator, which may be a categorical variable (e.g. gender), whereas in the case of interaction moderation, the whole data set is used to test the moderation effects (Hair *et al.*, 2006).

In the present study, to test our proposed hypotheses, we employed two statistical techniques, namely, hierarchical regression analysis and structural equation modelling. In hierarchical regression analysis, the Big Five personality dimensions were entered into the equation, which predicted perceived investment performance in the first step, followed by social influence variables in the second step and the interaction terms in the last step. Evidence for the moderation effect can be detected if there is a significant increment in the variance of perceived investment performance, which could be explained with the introduction of interaction terms into the equation. For the structural equation modelling, we used Analysis of Moment Structure (AMOS) version 21 software, which is a co-variance-based structural equation modelling technique. Structural equation modelling was chosen for the following reasons: it allows for the evaluation of a series of independent

Construct	Supporting literature	Measuring items	KMO
Personality traits	Mayfield <i>et al.</i> (2008) and Soane and Chmiel (2005)	Neuroticism: 1. Under immense stress and burden, I feel like I am going to pieces 2. Frequently I feel like I am totally unimportant 3. Too often, when things go wrong, I get discouraged and feel like giving up 4. I often feel tense and anxious Extraversion: 1. I really enjoy talking to people 2. I often feel as if I am bursting with energy 3. I am a cheerful and high-spirited person 4. I am a very active person 5. I make friends easily Openness to experience: 1. I am full of ideas 2. I have a lot of intellectual curiosity 3. I carry conversations to a higher level 4. I often enjoy playing with theories of abstract ideas Agreeableness: 1. I generally try to be thoughtful and considerate 2. I never get into arguments with my family and co-workers 3. Most people think that I am not selfish and egotistic Conscientiousness: 1. I am pretty good about paving myself so as to get things done in time 2. I am always dependable and organised	0.78
Social influence	Shanmugham and Ramya (2012), Abreu and Mendes (2012) and Hong <i>et al.</i> (2004)	1. The members of my family (e.g.: parents, spouse or children) think that I should make financial investments in stock markets 2. I expect to invest in stock market in near future (i.e. in next three months) 3. I often try to get information regarding the evaluation of stock prices	0.65
Perceived investment performance	Le Phuoc Luong and Doan Thi Thu Ha (2011), Ken Sato <i>et al.</i> (2011)	1. The rate of return of my recent stock investment meets my expectations 2. My rate of return is less than the average rate of return of the market 3. I do not care about the affects of the financial market on my return, as long as I am able to beat inflation <sup>a</sup> 4. I feel satisfied with my investment decisions in the last year (including selling, buying, choosing and deciding on stock volumes)	0.78

**Table II.**  
Questionnaire design

**Note:** <sup>a</sup>Items were reverse scored  
**Source:** Author's compilation

multiple regression equation simultaneously, and it can incorporate latent variables into the study and estimate the measurement errors in the assessment process (Hair *et al.*, 2011; Nusair and Hua, 2010).

### 3. Empirical results

#### 3.1 Hierarchical regression analysis

Descriptive statistics and correlations among the studied variables are depicted in Table III.

Variables	Mean	SD	Cronbach's $\alpha$	1	2	3	4	5	6	7
1. NEU	2.91	0.80	0.81	<i>0.72</i>						
2. CON	2.94	1.20	0.94	0.68**	<i>0.94</i>					
3. AGR	3.35	0.94	0.79	0.71**	0.65**	<i>0.78</i>				
4. EXT	2.73	0.98	0.88	0.55**	0.49**	0.72**	<i>0.78</i>			
5. OPN	2.05	0.64	0.86	0.70**	0.69**	0.65**	0.65**	<i>0.79</i>		
6. SI	3.28	0.95	0.86	0.71**	0.69**	0.75**	0.71**	0.69**	<i>0.88</i>	
7. PIP	3.69	1.37	0.81	0.01	0.05	0.02*	0.05	-0.07	0.04**	<i>0.72</i>

**Notes:** PIP, perceived investment performance; CON, conscientiousness; NEU, neuroticism; AGR, agreeableness; EXT, extraversion; OPN, openness; SI, social influence. Diagonal elements (italic) are the square root of variance shared between the constructs and their dimensions (AVE). The off-diagonal elements are the correlations among the constructs. For discriminant validity, the diagonal elements should be larger than the off-diagonal elements. \*, \*\*Correlation is significant at 0.05 and 0.01 levels, respectively (two-tailed)

**Table III.** Descriptive statistics and discriminant validity

**3.1.1 Model 1.** In model 1, we entered the Big Five personality dimensions as the basic predictors for perceived investment performance. It was observed that, of the five personality dimensions, neuroticism ( $\beta = -0.01, p < 0.01$ ), extraversion ( $\beta = 0.01, p < 0.05$ ), agreeableness ( $\beta = -0.02, p < 0.05$ ) and conscientiousness ( $\beta = -0.04, p < 0.05$ ) were significantly related to perceived investment performance. However, the effect for openness to experience ( $\beta = -0.08, ns$ ) was found not to be significant.

**3.1.2 Model 2.** In model 2, we added our moderating variable, i.e. social influence, into the equation; we observed that social influence was a significant predictor of perceived investment performance ( $\beta = -0.05, p < 0.05$ ).

**3.1.3 Model 3.** In model 3, we tested the moderating role of social influence by introducing five interaction terms into the equation. It was observed that these interaction terms significantly increased the explained variance of the outcomes ( $\Delta R^2 = 0.07, p < 0.01$ ). Of the five interaction terms, results for two interaction terms were significant: the interaction between extraversion and social influence ( $\beta = 0.04, p < 0.05$ ) and the interaction between agreeableness and social influence ( $\beta = -0.08, p < 0.01$ ) (Table IV).

**3.2 Structural modelling equation**

**3.2.1 Measurement model.** The measurement model is used for quantitative evaluation of validity and reliability (Henseler *et al.*, 2009). An individual item is considered to be reliable if

Predictors	Model 1	Model 2	Model 3
Neuroticism	-0.01**	-0.01**	-0.05
Neuroticism $\times$ Social influence			-0.02
Extraversion	0.01**	0.01**	0.09**
Extraversion $\times$ Social influence			0.04*
Agreeableness	-0.02*	-0.03*	-0.17*
Agreeableness $\times$ Social influence			-0.08**
Conscientiousness	-0.04*	-0.04*	0.01
Conscientiousness $\times$ Social influence			0.05
Openness to experience	-0.08	-0.10	-0.18
Openness $\times$ Social influence			-0.12
Social influence		-0.05*	-0.17*
$\Delta R^2$	0.14***	0.18***	0.25***
		0.04	0.07**

**Notes:**  $n = 396$ . Standardized  $\beta$  coefficients are shown. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table IV.** Hierarchical regression analysis



its factor loading exceeds 0.6 (Chin *et al.*, 1997) for its key dimensions. In the present study, all dimensions showed proper loading and correlation between the constructs (Tables III and V).

The construct reliability was assessed using composite reliability (CR) and Cronbach's  $\alpha$ . For CR, the score of 0.6 and above (Bagozzi and Yi, 1988) and for Cronbach's  $\alpha$  the score of 0.7 and above (Hair *et al.*, 1998) was considered to be adequate. In the present study, all the constructs and their dimensions are reliable (Tables III and V).

For convergent validity, the average variance extracted (AVE) was measured. All the constructs and dimensions attain the benchmark, because their AVE rate exceeds 0.5 level (Hair *et al.*, 1998; Roldán and Sánchez-Franco, 2012). Table V shows the results of discriminant validity, showing that each construct relates more strongly and closely to its own measures than to the other constructs. To evaluate formative measurement models, potential multiple co-linearity between the items was tested (Henseler *et al.*, 2009). The maximum value of the variance inflation factor for the construct is 2.12, which is below the threshold level of 3.3 (Roldán and Sánchez-Franco, 2012).

Construct/key dimensions/items	SFL	SMC	VIF	Composite reliability (CR)	Average variance extracted (AVE)
<i>Construct 1: personality trait</i>					
Neuroticism			1.81	0.81	0.52
N1.	0.77	0.55			
N2.	0.90	0.56			
N3.	0.78	0.57			
N4.	0.71	0.50			
Conscientiousness			1.87	0.88	0.61
C1.	0.71	0.50			
C2.	0.79	0.62			
Agreeableness			2.06	0.87	0.63
A1.	0.79	0.62			
A2.	0.91	0.82			
A3.	0.86	0.75			
Openness to experience			2.12	0.83	0.62
O1.	0.82	0.68			
O2.	0.94	0.88			
O3.	0.85	0.72			
O4.	0.76	0.58			
Extraversion			1.89	0.94	0.89
E1.	0.85	0.72			
E2.	0.89	0.80			
E3.	0.91	0.83			
E4.	0.76	0.58			
E5.	0.96	0.85			
<i>Construct 2: social influence</i>					
SI1.	0.88	0.78		0.89	0.77
SI2.	0.89	0.69			
SI3.	0.86	0.64			
<i>Construct 3: perceived investment performance</i>					
IP1.	0.72	0.52		0.81	0.52
IP2.	0.92	0.85			
IP3.	0.97	0.84			
IP4.	0.75	0.56			

**Table V.**  
Measurement model

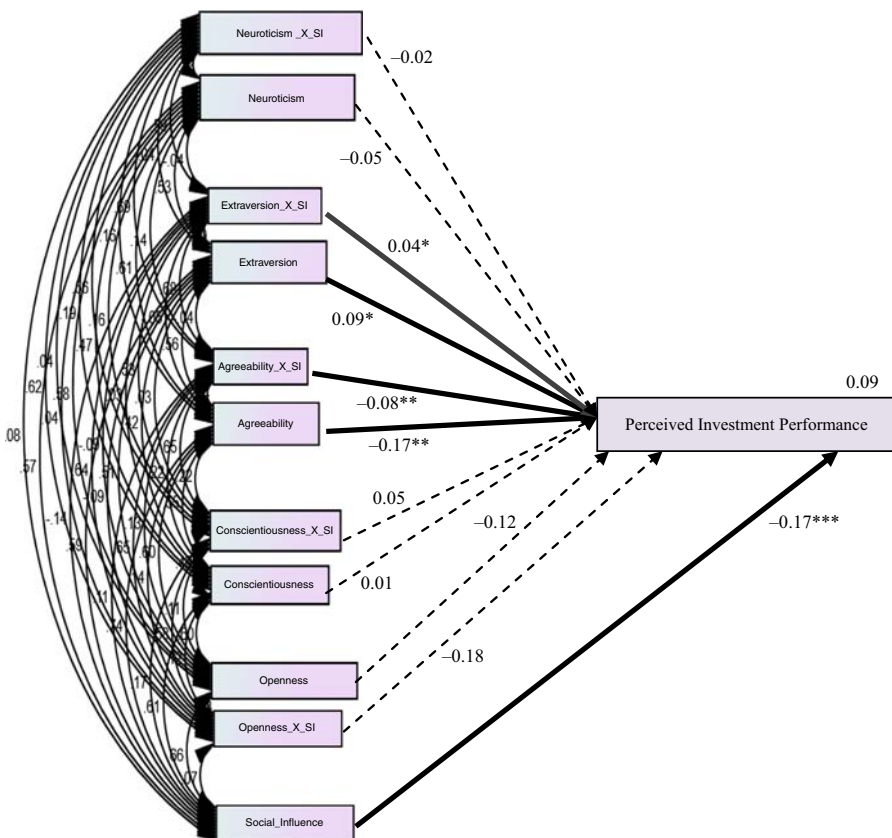
**Source:** Author's compilation

3.2.2 *Confirmatory factor analysis.* At first, we conducted a confirmatory factor analysis to evaluate the items for the Big Five personality dimensions, social influence and perceived investment performance, in order to measure how well the items signified the latent variables based on various goodness-of-fit indices. For the above purpose, one model was constructed, which comprised dimensions of the Big Five personality traits, social influence and perceived investment performance. As a result of the confirmatory factor analysis, the goodness-of-fit index revealed that the Big Five personality traits, social influence and perceived investment performance fitted the data reasonably well, based on the following criteria goodness-of-fit and satisfied the suggested cut-off values (Kline, 2005; Bentler and Bonett, 1980; Byrne, 1994):

Measurement model:  $p$  value < 0.001,  $\chi^2/df = 1.67$ , CFI = 0.97,

TLI = 0.97, GFI = 0.96, AGFI = 0.90, IFI = 0.99, NFI = 0.98 and RMSEA = 0.04

3.2.3 *Moderating effect of social influence on the relationship between personality traits and perceived investment performance.* Figure 2 shows the path analyses of the structural model using AMOS version 21. The moderating effect of social influence on the Big Five personality traits was tested using path analyses according to the study's conceptual model (Figure 1).



**Notes:** Dashed line represents insignificant path and the continuous line shows the significant path.  
\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Figure 2.**  
Structural equation  
modelling: interaction  
moderation

The five interaction terms of the Big Five personality traits and social influence were computed using SPSS version 20 and were then entered into the model (Figure 2). Path analysis was done to assess the goodness-of-fit indices for the interaction moderation structural model. It was observed that the model showed a good model fit (Kline, 2005; Bentler and Bonett, 1980; Byrne, 1994):

Interaction moderation structural model:  $p$  value < 0.001,  $\chi^2/df = 1.78$ ,  
CFI = 0.98, TLI = 0.99, GFI = 0.95, AGFI = 0.89,  
IFI = 0.99, NFI = 0.97 and RMSEA = 0.04

According to the moderation model, the standardized effect of the interaction term Extraversion\_X\_Social Influence ( $\beta = 0.04$ ,  $p < 0.05$ ) with investment performance indicated that social influence positively moderated the relationship between extraversion and investment performance. On the other hand, social influence negatively moderated the relationship between agreeability and investment performance, as the standardized coefficient of the interaction term Agreeability\_X\_Social Influence ( $\beta = -0.08$ ,  $p < 0.01$ ) showed negative association with investment performance.

All other hypothesised paths from openness, neuroticism and conscientiousness with social influence as a moderator failed to show a significant path, as the standardised coefficient of the interaction terms of openness (Openness\_X\_SI), neuroticism (Neuroticism\_X\_SI) and conscientiousness (Conscientiousness\_X\_SI) with investment performance did not contribute to the variance of investment performance.

In addition, to this, in Figure 3, we observe that, at a higher level of social influence, a high level of extraversion is associated with higher (perceived) investment performance. On the other hand, social influence dampens the positive relationship between agreeableness and (perceived) investment performance. Hence, social influence strengthens the positive relationship between extraversion and investment performance, whereas it supports the negative relationship between agreeableness and (perceived) investment performance.

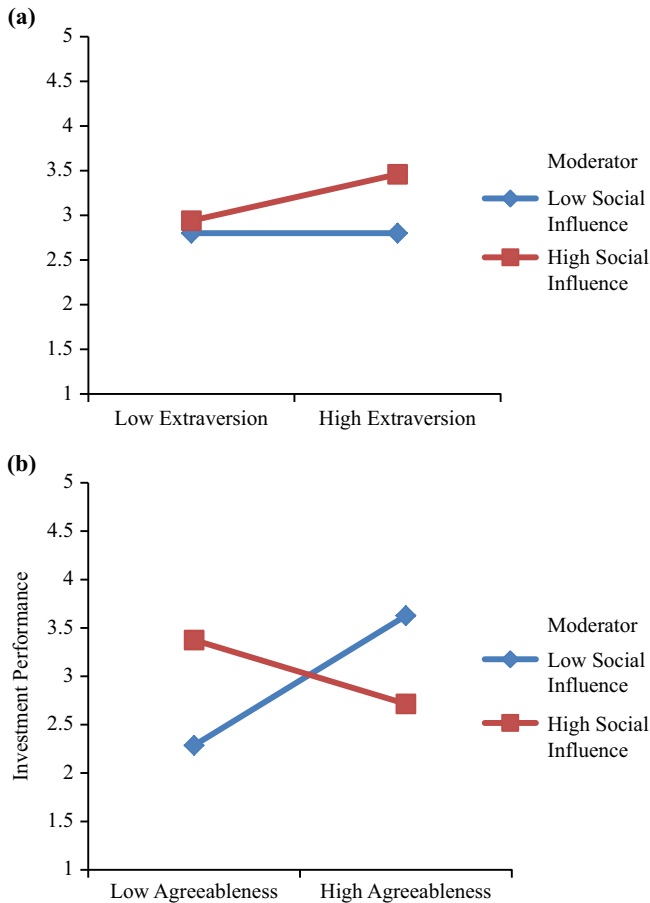
Therefore, it was statistically proved from the two statistical techniques, namely, hierarchical regression analysis and structural modelling equation, that social influence exerted a moderating effect on the personality traits of extraversion and agreeability.

#### 4. Further evidence and robustness check

To check the robustness of our model, we also constructed and analysed an alternative model, by placing social influence as a mediating variable between the relationship of personality traits and perceived investment performance of an individual. But it was observed that social influence showed a direct effect on perceived investment performance and the indirect effect was non-significant. Therefore, it was inferred that social influence was not acting as a mediator in the relationship between personality traits and perceived investment performance. This is a critical finding, because many studies have illustrated that social influence is a direct antecedent to investment decision and performance, whereas it can be said that social influence plays a different role in the case of perceived investment performance, perhaps that of a moderator.

#### 5. Discussion

The purpose of this study was to analyse the factors that affect the relationship between personality traits and perceived investment performance of individual investors, when investors choose to enter and invest in stock market under the influence of their friends, peers, family or media (i.e. modes of social influence). First, we conclude that there is a significant negative relationship between social influence and perceived



**Notes:** (a) Social influence strengthens the positive relationship between extraversion and investment performance; (b) social influence dampens the positive relationship between agreeableness and investment performance

**Figure 3.** Graphic representation of the interaction between social influence and Big Five personality traits to investment performance (perceived)

investment performance. As observed in this study, investors have low aspirations in terms of their perceived investment performance under the influence of social interaction. Moreover, investors are less prone to buy new financial assets or seek new financial services under the influence of social interaction (Mangleburg *et al.*, 2004). Our result matches the findings of Abreu and Mendes (2012), who found that investors choose to trade less frequently under the influence of social interaction. Bartels (1988) also observed that individuals tend to be influenced by others because they believe that decisions taken by a group of investors cannot be wrong.

The stock market in India is one of the fastest growing among the emerging markets in the world (Poshakwale and Mandal, 2014), where investors try to imitate others due to rational considerations. Poshakwale and Mandal (2014) showed that these rational considerations are due to the lack of information, therefore investors become dependent on the information held by others and try to imitate it in their decision making (Frenkel *et al.*, 2005). With the advent of

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liberalisation and globalisation, stock markets in India have shown a rapid increase in investor-based activities, like the entry of new entrants in the stock market, rapid and intense trading and increased presence of foreign investment institutions. This study confirms the presence and influence of social interaction on the relationship between personality traits and perceived investment performance.

In this study, we have also proposed a conceptual framework, through the combination of literature on behavioural finance. We examined whether perceived investment performance that relates to the personality traits of individual investors is influenced by social influence, and we concluded that investors who differ from the perspective of social influence and personality traits may also differ in their perceived investment performance. We also infer that certain personality traits, namely, extraversion and agreeableness, have a significant relationship with perceived investment performance, which is moderated by social influence. It was observed that social influence exerts a positive moderation effect on extraversion-perceived investment performance, but a negative effect on agreeableness-perceived investment performance. We found that social influence did not moderate the relationships of conscientiousness-perceived investment performance, openness-perceived investment performance and neuroticism-perceived investment performance. Therefore, we conclude that social influence can explain significant variations in the link between personality trait and perceived investment performance.

We extend the existing literature on behavioural finance, by considering social influence as an antecedent for perceived investment performance, and conclude that social influence is a significant predictor for the unique relationship between personality trait and perceived investment performance. Our study is perhaps the only study to apply social influence in a framework using the Big Five personality traits as a possible factor to understand the individual differences in terms of perceived investment performance in the Indian stock market.

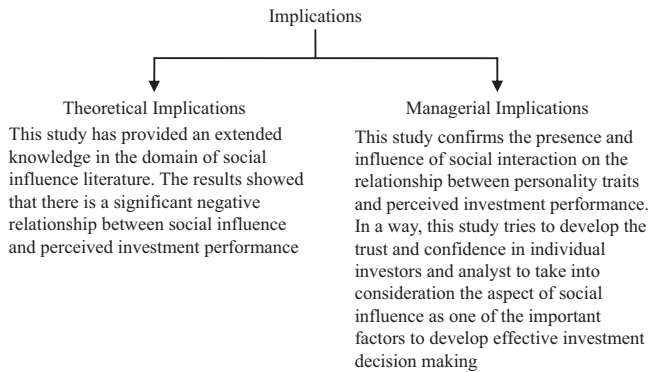
## 6. Conclusion and implications

Personality has not been considered in great detail in the wide literature on behavioural finance (Fung and Durand, 2014). This study contributed to the literature on both personality traits and social influence-interactions, though empirically validating the effect of social influence on the relationship between the personality traits of individual investors and their perceived investment performance. Our study might be the first to utilise the Big Five personality dimensions in the Indian stock market to explain the deviations in perceived investment performance based on the effects of social influence. Insights from this study suggest that investors should look at their personality traits while making investment decisions.

This study provides several practical contributions to the field of financial decision making, which may be important to all individual investors who have either invested or are planning to invest in financial markets (Figure 4).

### 6.1 Managerial implications

Individual investors are susceptible to social influence, which might have serious implications on their investment decisions. The asset allocation by individual investors also depends on various other extraneous factors, such as advice from family members and peers, information from the media and newspapers. A wrong asset allocation can hamper the investment objectives of an individual investor. Individual investors, therefore, need to safeguard against these social influences, to avoid any investment loss. Correct investment decisions, i.e. asset allocation and a well-diversified portfolio, are very necessary to achieve both long-term and short-term investment objectives. Investors investing in equity are required to act fast on the arrival of any new information from a company or development in



Source: Author's compilation

Figure 4.  
Summary of research  
implications

the economy. Hence, there is a need for proper investor education, regarding allotment of resources among various investment horizons. Companies working in the financial sector, such as mutual funds, insurance companies, financial intermediaries, are there to provide useful information to individual investors, hence facilitating them in making proper investment decisions.

Findings of this research study have many managerial implications for different stakeholders such as individual investors and financial professionals as discussed below.

**6.1.1 Implications for financial advisors.** Evidence from this study in the field of behavioural finance indicates that investors are influenced by various extraneous factors, like information from the internet, media, etc. Hence, proper methods should be followed while making financial decisions. The evidence on limited computational ability implies that investors will have difficulty making optimal choices when information requires complex processing, such as aggregating risks across investments or time. The implication for financial advisors is that information should be presented in a simpler manner, so that individual investments could be compiled and aggregated in a well-diversified portfolio instead of being presented separately. Projections regarding returns should be presented according to definite horizons, instead of presenting specific information about annual returns, so that individual investors can evaluate their perceived return. A financial advisor could ask for an investor's specific preferences and build a behavioural portfolio depending upon their risk-taking propensity rather than expecting investors to build efficient portfolios by themselves. Observations obtained from this study suggest that appropriately designed and communicated funds may improve investors' choices and their investment performance. The past literature provides much evidence regarding the fact that individual investors make decisions based on their personality traits (Patterson and Daigler, 2014) and psychological biases. These investors take shortcuts, instead of considering all available information. Furthermore, individual investors pay more attention to some kinds of information than to others (due to social influence). In this scenario, an important implication for financial advisors is that they should furnish decision-relevant information to their clients (individual investors) in a clean and salient manner. Moreover, the results of this study suggest that financial advisors should provide all useful information to their clients, keeping in mind, the risk associated with each asset class.

**6.1.2 Implications for individual investors.** It has been observed that, after liberalisation, individual investors are ready to make new investments for better return opportunities, but individual investors should be careful when making a new kind of investment. They should study the risks and returns associated with the investment, and should also analyse

their risk-taking propensity. There is no investment plan which can match everyone's investment objectives, therefore, investment portfolios should be constructed so that they meet the requirements of individual investors, depending upon their risk appetite, age, income, etc. The wrong choice is never about the investments, it is rather a mismatch between the investment objectives and the risk-taking propensity of the individual investor. Social interactions with family and peers tend to influence investment decisions. Individual investors generally are confident about the kind of investments they are making and the return that they are getting. But these investors often lose heavily from their stock investments. In this scenario, this study would enable individual investors to understand their personality type, in order to overcome the ill effects of the same, thereby enabling them to make efficient and effective investment decisions which could guarantee a good investment performance.

*6.1.3 Implications for academics.* This study has a number of implications which are significant for academicians. First, this study broadens the knowledge of various external factors like external social influence which might influence the decision making of individuals. Second, the integrated model developed in this study can be used for analysing other behavioural factors, like mental accounting. Third, previous studies have mainly discussed the relationship between personality traits and investment decision making, whereas in this study, an attempt has been made to study the perceived investment performance using relative measures for investment performance from the perspective of the Big Five personality traits and social influence. Finally, in India, a negligible number of studies have been done in this area, so this study extends the knowledge for Indian researchers and academicians for further investigation in this area.

This study has a series of limitations in its findings and conclusions. First, the technique for testing the model assumes that the latent variables possess linear relationships. Second, this work follows a modelling approach which is more focussed on the prediction of relationships. Third, the study has been done only on individual investors in one country, India, and one financial market. Caution should be therefore taken when generalising the results to other regions. We recommend that future research should be done with different populations, like professional investors, and to determine the extent to which other psychological factors, like risk taking, overconfidence, and financial literacy, may promote the relationship between personality traits and perceived investment performance.

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