Representing the Pattern of Relationship between Personality Traits and Investment Patterns in the Stock Market

Somayeh Salmani Danglani
Department of Public Management, Bojnourd Branch,
Islamic Azad University, Bojnourd, Iran

Parviz Saeedi
Department of Management, Aliabad Katoul Branch,
Islamic Azad University, Aliabad Katoul, Iran
Saidi@aliabadiau.ac.ir
(Corresponding Author)

Hossein Ali Bahramzadeh
Department of Management, Bojnourd Branch,
Islamic Azad University, Bojnourd, Iran

Farshid Pourshahabi
Department of Economics, Bojnourd University, Bojnourd, Iran

Abstract. This study aims at determining the personality traits and investment patterns in the stock market and presenting the pattern with a behavioral finance approach. This is an applied, descriptive-survey, and cross-sectional study. The statistical population includes real investors in the Tehran Stock Exchange. The required information was collected using questionnaire and was analyzed using SPSS and AMOS software. Exploratory and confirmatory factor analysis were used to investigate research questions and the

results showed that, the components neuroticism, extroversion, flexibility, agreement, motivator and Self- confidence determine personality traits. Components demographic traits of the investor, type of investment, investment objective, investment time, investment efficiency, and traits of shares determine investment patterns. And components risk-taking capabilities, heuristic factors, emotional factors, psychological effects, complaint behaviors, and personal and social values, determine behavioral-finance patterns among true investors in the tehran stock exchange. Investigating the relationships between the research variables indicated that personality traits have a significant effect on behavioral- finance components.

Keywords: Personality Traits, Investment Patterns, Behavioral- Finance Approach, True Shareholders.

1. Introduction

It seems that the personal experiences of investors are influential on the way in which they choose and interpret information, therefore, successful market analysts, in addition to sufficient control over a variety of analysis, have certain personality traits. Behavioral finance analysis is beyond fundamental and technical analysis, and is in fact formed through fundamental analysis and technical analysis. In this section of science, the behavior of analysts will be examined and it will focus on how an investor will react in response to specific information. Discussions and results of behavioral research are sometimes against efficient market hypotheses and indicate the effect of human and behavioral factors on the performance of the capital market activists (Ebrahimi, Dastgir, and Latifi, 2017). So far, two main streams have emerged from the studies. The first is mainly about the cost of assets and the market efficiency hypothesis and focuses on phenomena such as price bubbles and market crash. The second stream focuses on the investor behavior and phenomena such as mental accounting and loss aversion. However, the study on investor behavior is not limited to behavioral bias. In other words, beyond the evidence related to the bias in individual behavior and predictions, past studies also show differences among individuals: first, in the susceptibility of individuals to biases;

second, in their transaction behavior and strategies, and, third in their transaction performance (Witteloostuijn & Muehlfeld, 2008). On the other hand, psychological studies show that human traits determine their main behavior and functions (Cannellin et al., 2015) and can therefore describe the differences between individuals in terms of being susceptible to bias and in relation to their transaction style and conduct and, consequently, the transaction function. However, behavioral-finance studies have so far focused more on cognitive psychology (the study of behavioral biases), not the link between personality psychology and behavioral finance. Individuals with different personality and demographic traits are likely to prefer different transaction behavior and strategies, which causes differences in their performance and in comparison with the average market performance (performance better or worse than market average). It seems that at the micro behavioral finance level, these two psychological dimensions- cognitive psychology and personality psychology- can complement each other and ignoring one can lead to the misperception of true investor behaviors (Jamshidi and Qalibaf Asl, 2018). Behavioral- finance involves a wider range of psychology and sociology aspects, which contradicts the efficient market hypothesis. The idea of rational behavior of investors cannot justify their behavior in the stock market. Psychological factors make people irrational in their investment decisions. Behavioral finance literature has developed a number of behavioral notions affecting investment behaviors. In behavioral and cognitive dimensions in financial and investment issues, various factors and structures shaping the investors behavior are examined (Lashgari and Mortazi, 2011). The issue of behavioral finance is a new debate rose by some financial scholars over the past two decades and has been quickly addressed by theorists and students throughout the world. In investment issues, investor decisions and the factors influencing their decision making are very important. Financial theories have followed two different approaches over the last few decades. The first approach is the neoclassical approach in financial sciences. The basic hypothesis of financial theories is market efficiency and rational behavior of capitalists in the market. This approach began with the Capital Asset Pricing Model (CAPM) and the Efficient Market Hypothesis (EMH) in the 1960s, and the Medium-Term Capital Asset

Pricing Model and the Miller and Modigliani Arbitrage Pricing theory in the 1970s. Over time, researchers found many movements and disruptions in financial markets that were not justified by the efficient market theories, and caused behavioral revolution in financial discussions with the articles of "Canman" and "Torsky" in 1979. Financial theories, according to this approach, have pointed out that investment decisions are not only influenced by economic indicators and rationality, but also by other factors affecting their behavior and decision (Borji Dolatabadi, 2008). The true investors behavior in the stock exchange in some cases questions the idea of maximizing utility and other classical ideas. Therefore, behavioral theory was considered in financial discussions. Although the theory of behavioral taxes is new and dates back a decade ago, the effect of cognitive and behavioral traits on purchasing decisions was much earlier addressed by Smith (megalomania), Fisher (dishonesty in the stock market), Keynes (Self-control, foresight and individual habits) and Markowitz (reference points). The behavioral tax focuses on how information is interpreted and employed in the investor's decision-making process and describes many unusual and unreasonable behaviors in the market. Behavioral taxes are defined by Schefer (1999) as a rapidly growing field dealing with the effect of psychology on those involved in the market. Behavioral tax research, developed in the last few years, seek to answer the following issues: explaining the rise in the price bubble in the capital market, the high volume of transaction in the market and the extreme price fluctuations, the difficulty of valuing Stock, high sensitivity of securities prices to inappropriate news, attitudes and beliefs of senior executives of the company about the low price of their company stock market over their intrinsic value, market acceptance of a share despite the lack of sufficient evidence. Answering the above issues is based on understanding the behavior of investors in the capital market. Understanding the behavioral process and its implications for financial planners is very important. Because proper understanding of the investors behavior in the market can help market planners to formulate a strategy for equipping and allocating financial resources (Fallah Shams and Azizi, 2008).

2. Literature review

In Jamshidi and Qalibafel Asl study (2018), entitled "Investigating the Impact of Investors Personality Traits on Transaction Behavior and Their Investment Performance, Evidence from Tehran Stock Exchange", behavioral and functional components of 380 true investors active in the capital market was surveyed using a questionnaire. The results show that the frequency of transactions with the external control Centre, type A behaviors and the tendency to maximize is higher (transact more). Also, people with an external control center and self-assessment and extreme excitement have lower portfolio diversity. Finally, the frequency of more transactions is related to better performance, while portfolio diversity does not affect individual performance. The end result is that different personality traits affect the distinct components of transaction behavior, and subsequently the transaction performance. The study conducted by Ebrahimi, Dastgir, and Latifi (2007), entitled "Assessing the Importance of Personality Traits of Capital Market Analysts as The Third Dimension of Their Success," assumes that investors are equipped with fundamental analysis and technical analysis (the first two success dimensions) and the impact of their personality traits (third dimension) on their performance is evaluated. The statistical population is the capital market analysts and the hypotheses are tested by a hybrid questionnaire the results of research show a significant relationship between extroversion, adaptability, accountability and self- control with the degree of risk aversion of the analysts, but no significant relationship was found between the personality traits and the portfolio efficiency of the analysts. In addition, no significant relationship was found between the type of fundamental or technical analysis of analysts and their degree of risk aversion. In a study by Haji Shahverdi and Tajdini (2016), entitled "Measuring the Group Behavior of Investors in Financial Markets (A Case Study in Tehran Stock Exchange)", the group behavior of investors in financial markets was measured by The beta group in 150 companies admitted to the Tehran Stock Exchange during 2001-2005 through the implementation of the Huang and Salmon model and sliding window using Matlab software. The results indicate the group behavior of investors and the negative relation between group behavior and market efficiency in Tehran Stock Exchange. The researchers concluded

that adherence to group behavior often leads to negative efficiency of Tehran Stock Exchange investors. Hasanwand (2016) study, entitled "Weighing and Identifying the Behavioral Bias of Investors in the Stock Market", weighed the behavioral bias effective on investors' decision making in the Tehran Stock Exchange in 63 biases and categorized them into five groups and prioritized them using the fuzzy analytic hierarchy process. In ranking the five groups, the cognitive, emotional, abnormal, revelatory behaviors and, ultimately, the preferential group were ranked the 1st to the 5th respectively. Also, in ranking the 63 biases, the loss bias and loss aversion of the emotional group were ranked first. Gamblers' fallacy bias from the group of revelatory behaviors, ambiguity in the process of value change from the preferential group, the complaining nature (collectivist behavior) from the group of abnormal phenomena (economic behavior) and, finally, representative of the cognitive group was ranked 2nd, 7th, 10th, and 15th respectively. In a research conducted by Mohammadi and Shah Mansouri (2016), entitled "Investigating behavioral errors (transformation aversion, regret aversion, loss aversion, mental accounting, event-oriented)" of individual investors in Tehran Stock Exchange, taking into account the previous studies and limitations in investors response, presence or absence of behavioral bias among investors was identified with a 32- item questionnaire. The results of the diagnostic analysis showed that the two groups of young and experienced investors are inclined to accounting, event- directed, and moderate behavior to the same extent, but in the other variables, namely, cross confidence, representative, adaptability, transformation aversion, regret aversion, and loss aversion behavior are not the same. The final results of the research showed that loss aversion and representative behavior had the most impact on the investors decisions. In a research conducted by Nawaian and Khoshnood (2016), " Comparative Review of Behavioral Bias of Investors According to the type of Transactions in the Tehran Stock Exchange", a questionnaire was designed and distributed among stockholders active in the regional stock exchange of Guilan province, and then, using the student T-test and Friedman tests, the findings of the research indicate that the behavioral bias proposed in the research has a significant relationship with the type of transaction in the stock exchange. In a research carried

out by Rahnama Roodpashti and Shah Mansouri (2015), entitled "Studying the Effect of Personality Traits on Investment Goals in Tehran Stock Exchange", the results showed that the behavioral traits of investors have a significant effect on investment goals and varies according to their age range, but have not had a significant relationship with the gender of the investors. There is a significant relationship between the levels of ambition and risk aversion with investment goals, especially capital growth. Also, investors with a lower-than-average age range have higher levels of ambition, cross- confidence, and risk-taking than those with a higher range age.The study conducted by Prabhau, Shilpashree, and Mahesh (2017), "Investing Patterns for Investors in Diversified Financial Products in Dakine, Canada", was based on the pattern of investors investing in various financial products in the Dakine, Canada, and reviewing the priority of investors and the time of investment.

The information was collected through a questionnaire to study the investment behavior and the interest of each individual in the investment. Investment in Dakina, Canada, focuses mainly on rural and agricultural places. Many people are not aware of investment methods. The final result is that the Indian investment community is interested in investing in various financial products available on the market due to the dramatic increase in gross domestic product, better corporate performance, and liberal laws by authorities like SEBI to protect investors, and will be faster in future. In the study of Marco Cecchini and Bajo (2016), entitled "Finance- Personality traits", the researchers stated that investment markets are characterized by abnormalities that cause the economists challenging the investor's rationality hypothesis in favor of alternative theories. Meanwhile, scientists are gradually focusing on cognitive models based on the psychological differences of individuals in decision making. The results of these studies, which follow the new analysis and are called trait investment are rare and complex. In this research, in order to clarify the effect of cognitive dimensions on the formation of financial superiority of individuals, literature on the role of personality traits in changing investor behavior is reviewed. Phung Trang and Mai Khuong (2016) in a study entitled "The Impact of 5 Great Traits and Spiritual Senses on Investment Performance: A Study

of Individual Investors in Vietnam," reviewed the effects of five major traits and spiritual modes on the investor performance in the stock market of Vietnam. The results showed that conscientiousness, acceptance of experience, and agreement have a direct impact on investment performance. In addition, duty, acceptance, and extroversion affect investment performance through positive mental states. Duty, acceptance, and extroversion have a direct impact on the positive mental states, while compromise and neuroticism have a direct impact on the negative mental states. The research suggests that the investor should have a positive mental state when investing in stock. In addition, investors who are more prone to neuroticism avoid investing in securities. In a study by Sree in India (2015), entitled "The Study Of Investment Patterns" different investment methods and their awareness of mutual funds were identified, The most common conditions about different types of investments are: relationships, stock, mutual funds, money market accounts, and exchange-traded fund. Once you have a better understanding of the available investment options, you may be in a specific situation that explains how to invest. The final result is that:

1. The term is the type of investment/asset you have and their percentage in your investment portfolio.
2. This is a risk management technique that hides a wide range of investments to potentially reduce your investment risk.
3. An investment strategy is used that investors purchase fixed investments at predetermined times, regardless of the investment price.

Samia Rizvi and Amreen Fatima (2015) in their study on "behavioral finance: A study on the relationship between behavioral traits and stock market patterns", describes the relationship between personality traits and investors' investment patterns in the Indian stock market. They surveyed about 100 investors who invested in the stock market. This study found a significant relationship between the investors and their investment in the stock market. Findings showed that male investors invest more in the stock market than female investors, while female investors are risk averse, and found that men transact 67% more than women, and their high self- confidence has caused them to put their

wealth more at risk. The results also showed that five personality traits affect stock market investment.

Zhang and Zheng (2015) explored behavioral investment based on behavioral- finance. This paper presents theoretical solutions for market abnormalities and traditional market theories. It also states that the investor does not always adopt rational behavior, as traditional financial theory assumes. But irrational decisions are taken on the basis of individual knowledge and bias. Even institutional investors often show irrational traits that the guidelines of behavioral finance highlight the importance of this attitude on investment strategies and using psychological traits to explain market abnormalities. Alex et al. (2015), in their study on "Investor Traits and State Impact", examined the effects of situation on independent traders in the Australian stock market. In fact, they specifically looked at the effects of the combination of demographic and the Chinese features on business behavior. Evidence has shown that the effect is more common in experienced Chinese investors as well as older women and investors. In addition, other behavioral biases that predict the impact of the situation were also found, including frequent transaction, business initiatives and investor levels in portfolio diversity.

3. Method
This research is an applied research in terms of purpose, and descriptive-analytical in terms of method and is done within the survey group and in a specific period of time. Statistical population of the study consists of unlimited number individual investors in the Tehran Stock Exchange. While convenience sampling method with Cochran formula and 384 samples has been used. To obtain the final model, after selecting the initial components in the initial proposed model and according to valid researches which have been cited, the questionnaire is designed. After determining the reliability, the questionnaire is provided to all subjects of the research in order to find the final model of the research by identifying the impact of each of the components and their relationship with each other.

Fig 1. Conceptual model

4. Findings
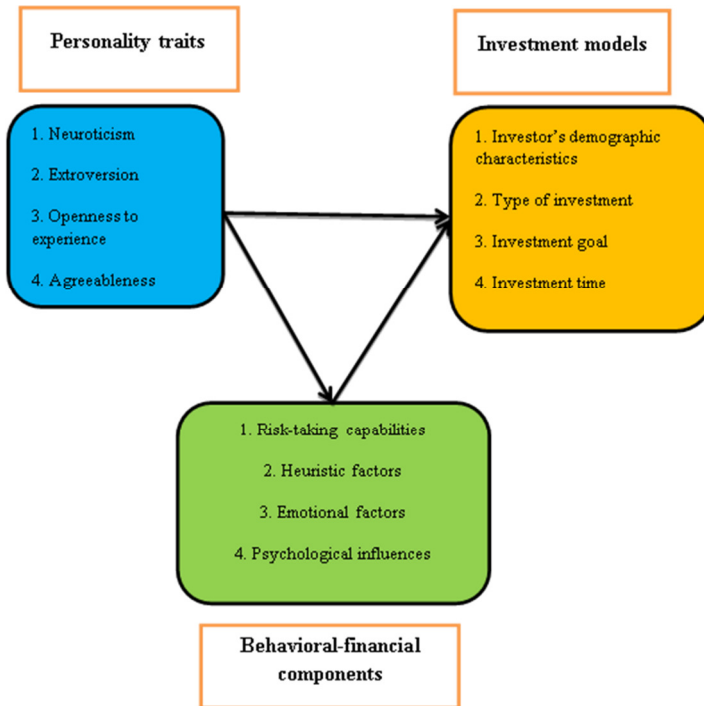
Table 1 shows that sampling adequacy, the implementation of factor analysis based on the correlation matrix can also be Justifiable.

Table 1. KMO index and Bartlett test results for personality trait structures

Structure	Kaiser Meier Fit Test and Bartlett Test	
Investment pattern	KMO	0.916
	Bartlett	6794.794
	df	435
	P-Value	0.0009

**Table 2.** Extracted factors and variance percentage

Criterion	Primary specific values			The sum of the second power extracted from the factor loads			The sum of the second power factor loads after varimax rotation		
	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance
1	10.27	34.23	34.23	10.27	34.23	34.23	3.66	12.21	12.21
2	3.28	10.94	45.17	3.28	10.94	45.17	3.65	12.16	24.36
3	2.07	6.90	52.07	2.07	6.90	52.07	3.32	11.06	35.42
4	1.84	6.13	58.20	1.84	6.13	58.20	3.30	11.00	46.42
5	1.64	5.47	63.68	1.64	5.47	63.68	3.26	10.85	57.27
6	1.20	4.00	67.68	1.20	4.00	67.68	3.12	10.41	67.68

In the following, the results of exploratory factor analysis and the determination amount of load factor of each of the main components of personality traits are addressed by the main components method and Varimax rotation. Considering versions of each dimension, if an item has less than 50% of sharing ratio, it indicates that they are not well-matched with the rest of the versions, and it is better to eliminate them. However, this should be done step-by-step. The results are presented in table 3.

Table 3. Rotated matrix personality characteristics

	1	2	3	4	5	6
personal1						0.53
personal2						0.64
personal3						0.81
personal4						0.75
personal5						0.77
personal6			0.76			
personal7			0.78			
personal8			0.72			
personal9			0.77			
personal10			0.69			
personal11	0.80					
personal12	0.82					
personal13	0.78					
personal14	0.690					
personal15	0.79					
personal16				0.68		
personal17				0.76		
personal18				0.77		
personal19				0.77		
personal20				0.74		
personal21		0.73				
personal22		0.80				
personal23		0.76				
personal24		0.77				
personal25		0.72				
personal26					0.68	
personal27					0.73	
personal28					0.74	
personal29					0.74	
personal30					0.79	

Table 3 show that extractive components are determined based on Varimax rotation and factors neuroticism, extroversion, flexibility, consent, motivating and self-confidence are identified.
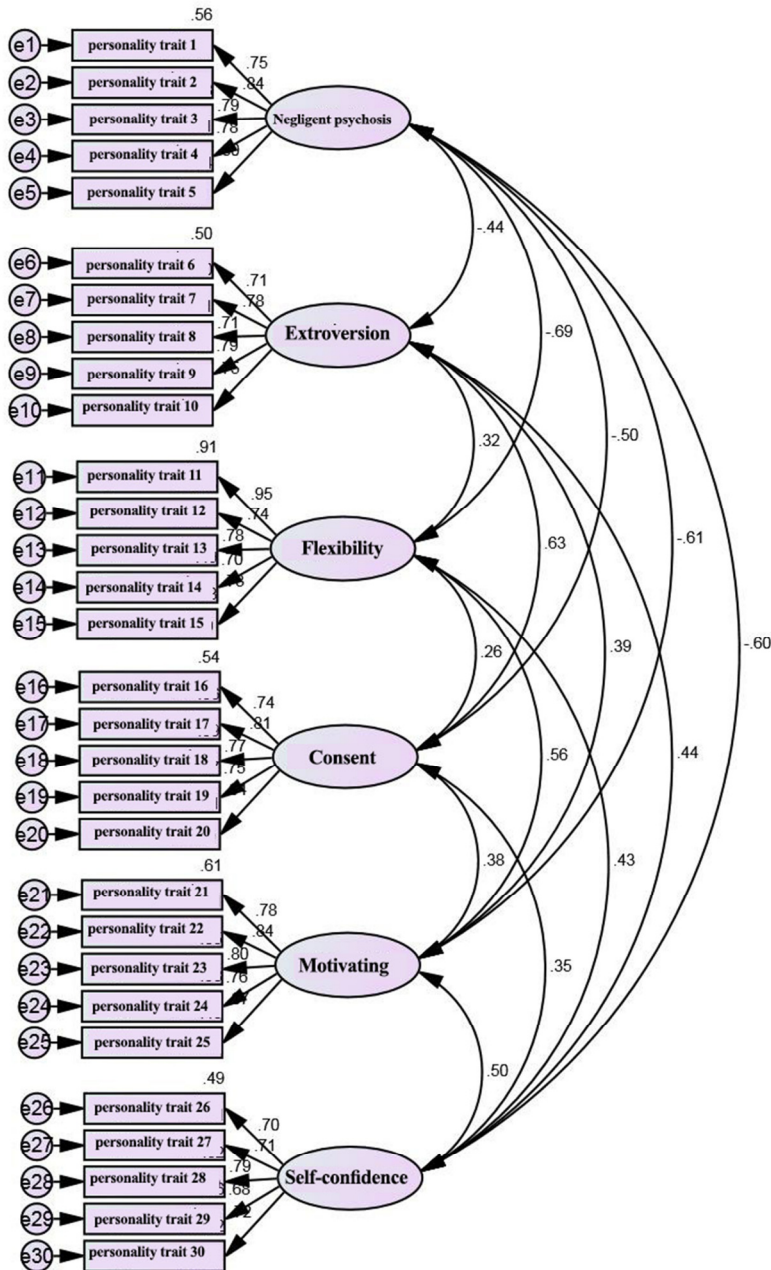
Chi_Square=836.451; DF=390; P-VALUE=.000; GFI=.872;CFI=.932;RMSEA=.055

Fig 2. Personality traits modeling

As a result, the designed structure seems appropriate to measure personality traits. To determine the effect of each variable and importance of its coefficients, second order factor analysis and standard coefficients and t values are used. In order to study adequacy of the model, chi-square indices, normal fit index, adaptive fit index, fitting goodness index, square roots of the estimation error, adjusted fit goodness index, incremental fitness index, and the normality fit index have been used.

Chi_Square=935.850; DF=399; P-VALUE=.000; GFI=.859;CFI=.918;RMSEA=.059

Fig 3. Second-order factor analysis model

Table 4. Second-order factor analysis of personality traits components

Factors	Standard coefficients	T-Value	P-Value	Result
neurosis	-0.89	-15.456	0.0009	Significant
extrovert	0.56	9.146	0.0009	Significant
flexibility	0.71	11.788	0.0009	Significant
agreement	0.56	5.563	0.0009	Significant
motivating	0.71	10.826	0.0009	Significant
self-confidence	0.67	10.552	0.0009	Significant

As a result, from the point of view of participants in the research factors are effective in explaining personality traits. In terms of proportion ratio of personality characteristics of the research model, Chi-square statistics is 85.935, and degree of freedom of the model is 399. Their ratio is equal to 345.2, which is an acceptable value.

Table 5. Results of the KMO index and Bartlett's test

Structure	Kaiser Meier Fit Test and Bartlett Test	
Investment pattern	KMO	00.872.
	Bartlett	6476.074
	df	465
	P-Value	0.0009

Table 5 shows that the implementation of factor analysis based on the correlation matrix of the study can also be justified. The preliminary statistical characteristics that are presented in the analysis of the main components obtained are shown in table 6.

Table 6. Extracted factors

| Criterion	Primary specific values			The sum of the second power extracted from the factor loads			The sum of the second power factor loads after varimax rotation		
	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance
1	8.53	27.52	27.52	8.53	27.52	27.52	5.22	16.84	16.84
2	3.55	11.45	38.97	3.55	11.45	38.97	4.34	14.01	30.84
3	2.78	8.98	47.95	2.78	8.98	47.95	3.36	10.84	41.68
4	2.04	6.58	54.53	2.04	6.58	54.53	3.27	10.53	52.22
5	1.69	5.46	59.99	1.69	5.46	59.99	2.32	7.47	59.69
6	1.25	4.02	64.02	1.25	4.02	64.02	1.34	4.33	64.02

The specific values of the six factors investigated more than 4, which together account for approximately 64.2% of the total variation. Table 7 presents the results of exploratory factor analysis and the determination of the magnitude of the cost of each of the main components of the investment model, dealt with by the main components of Varimax cycle.

Table 7. Rotational Matrix of Varimax

6	5	4	3	2	1	
				0.85		finance1
				0.73		finance2
				0.70		finance3
				0.70		finance4
				0.79		finance5
				0.71		finance6
				0.76		finance7
		0.87				finance8
		0.84				finance9
		0.65				finance10
		0.74				finance11

6	5	4	3	2	1	
		0.71				finance12
	0.80					finance13
	0.86					finance14
	0.82					finance15
			0.84			finance16
			0.80			finance17
			0.63			finance18
			0.79			finance19
			0.68			finance20
0.66-						finance21
0.65						finance22
0.64						finance23
					0.78	finance24
					0.79	finance25
					0.80	finance26
					0.74	finance27
					0.77	finance28
					0.72	finance29
					0.74	finance30
					0.75	finance31

Figure 4 shows the model of the structural measurement in the state of the standard coefficient as a result, the model is designed to measure the appropriate investment patterns. The second-order factor analysis was used to explain each of the main components of the investment model. To determine the effect of each of the variables and their importance coefficients, second order factor analysis, standard coefficients and t values are used. To assess the adequacy of the model, chi-square indices, the Normal fit index, the adaptive fit index, the fitting goodness index, the root of the estimated error, the adjusted fit goodness index, the incremental fitting index, and the normality fit index have been used.
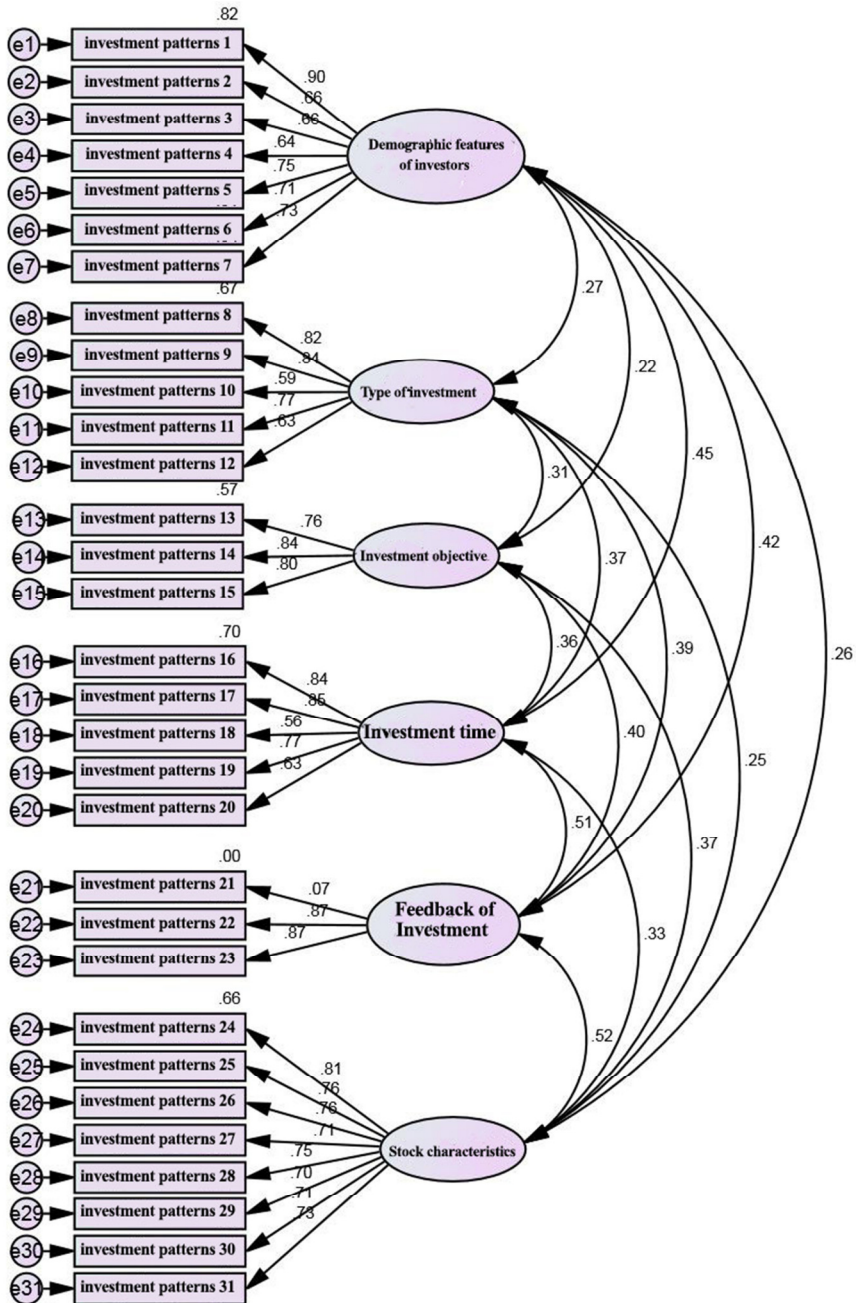
Chi_Square=1045.704; DF=419; P-VALUE=.000; GFI=.853;CFI=.899;RMSEA=.062

Fig 4. The model for measuring investment patterns
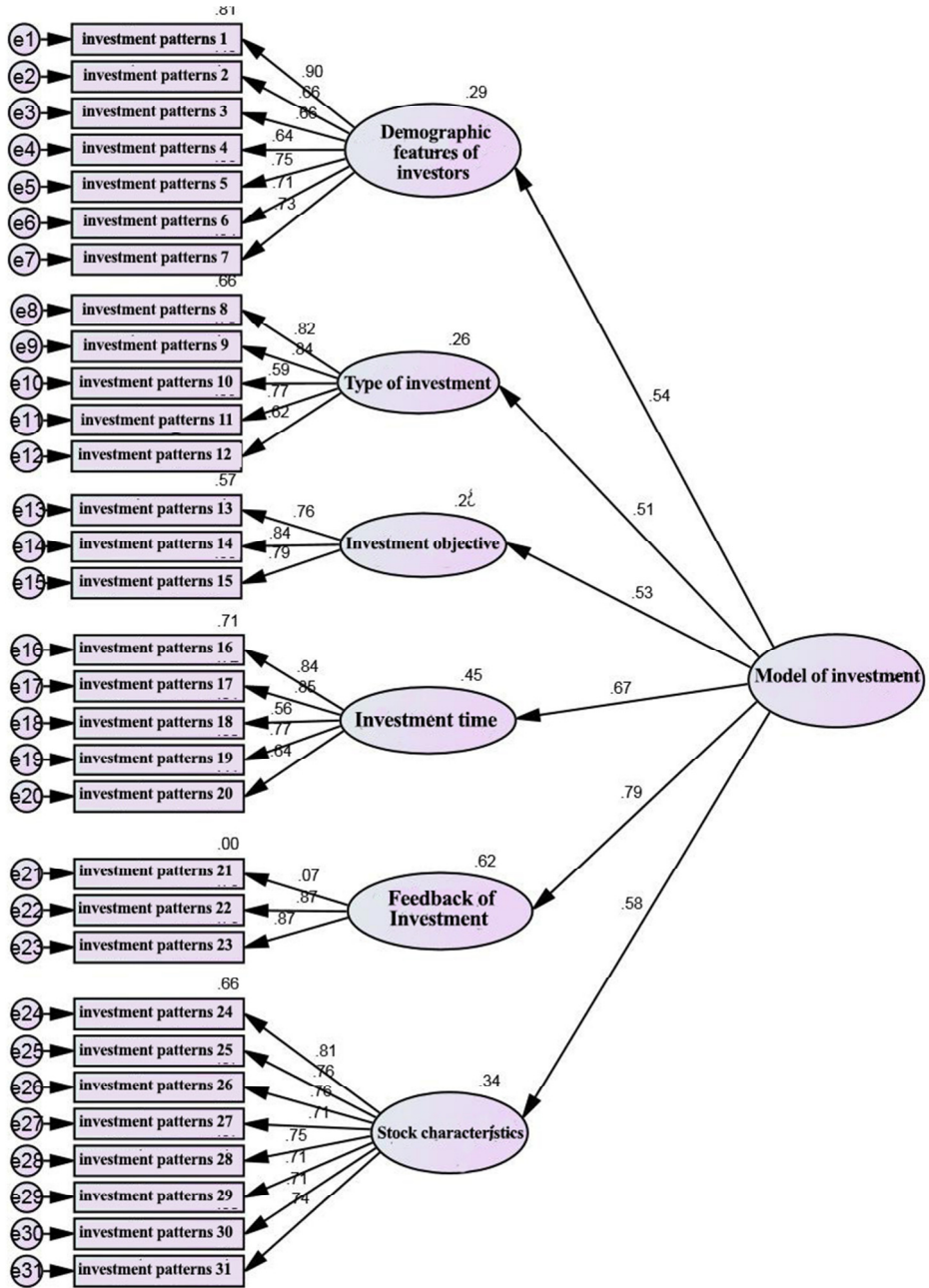
Chi_Square=1066.403; DF=428; P-VALUE=.000; GFI=.851;CFI=.897;RMSEA=.062

Fig 5. Second-order factor analysis model

Table 8. Second-order factor analysis of investment models

Structural investment patterns	Standard coefficients	T-Value	P-Value	results
Demographic characteristics	0.54	8.438	0.0009	Significant
Type of investment	0.51	7.497	0.0009	Significant
Objective of investment	0.53	8.378	0.0009	Significant
Investment time	0.67	9.479	0.0009	Significant
Feedback	0.79	12.923	0.0009	Significant
Stock characteristics	0.58	9.057	0.0009	Significant

The standard factor variables of the investor in explaining the investment patterns.

Table 9. KMO index and the Bartlett test

Structure	Kaiser Meier Fit Test and Bartlett Test	
Financial-behavioral factors	KMO	0.854
	Bartlett	7447.368
	df	666
	P-Value	0.0009

Table 9 shows that the implementation of factor analysis based on the correlation matrix of the study can also be justified. The preliminary statistical characteristics that are presented in the analysis of the main components obtained are shown in table 10.

Table 10. The factors extracted and the percentage of variance

| Criterion	Primary specific values			The sum of the second power extracted from the factor loads			The sum of the second power factor loads after varimax rotation		
	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance	Sum	Percentage out of variance	Percentage out of sum variance
1	8.15	22.02	22.02	8.15	22.02	22.02	4.97	13.42	13.42
2	4.27	11.53	33.55	4.27	11.53	33.55	4.40	11.88	25.30
3	3.66	9.89	43.45	3.66	9.89	43.45	3.78	10.21	35.52
4	2.29	6.19	49.46	2.29	6.19	49.46	3.52	9.52	45.03
5	2.10	5.68	55.32	2.10	5.68	55.32	2.92	7.89	52.93
6	1.93	5.21	60.53	1.93	5.21	60.53	2.56	6.92	59.84

The specific values of six factors investigated which together accounted for approximately 59.86% of the total variation. In terms of each dimension, items with a ratio of less than 0.50 are indicative of the fact that these clauses did not fit well with the rest of the clauses and were deleted in a step-by-step process. The results are presented in table 11.

Table 11. Rotational matrix of financial and behavioral components

	1	2	3	4	5	6
behavior1						0.52
behavior2						0.79
behavior3						0.82
behavior4						0.82
behavior5						0.76
behavior6	0.80					
behavior7	0.79					
behavior8	0.74					
behavior9	0.80					
behavior10	0.77					
behavior11	0.73					
behavior12	0.77					
behavior13	0.77					

|	1	2	3	4	5	6
behavior14		0.72				
behavior15		0.79				
behavior16		0.80				
behavior17		0.77				
behavior18		0.78				
behavior19		0.77				
behavior20		0.78				
behavior21			0.71			
behavior22			0.76			
behavior23			0.81			
behavior24			0.76			
behavior25			0.74			
behavior26			0.68			
behavior27					0.77	
behavior28					0.76	
behavior29					0.69	
behavior30					0.72	
behavior31					0.63	
behavior32				0.84		
behavior33				0.81		
behavior34				0.78		
behavior35				0.73		
behavior36				0.64		
behavior37				0.57		

According to the results of varimax rotation analysis, it was determined that the six identified factors.
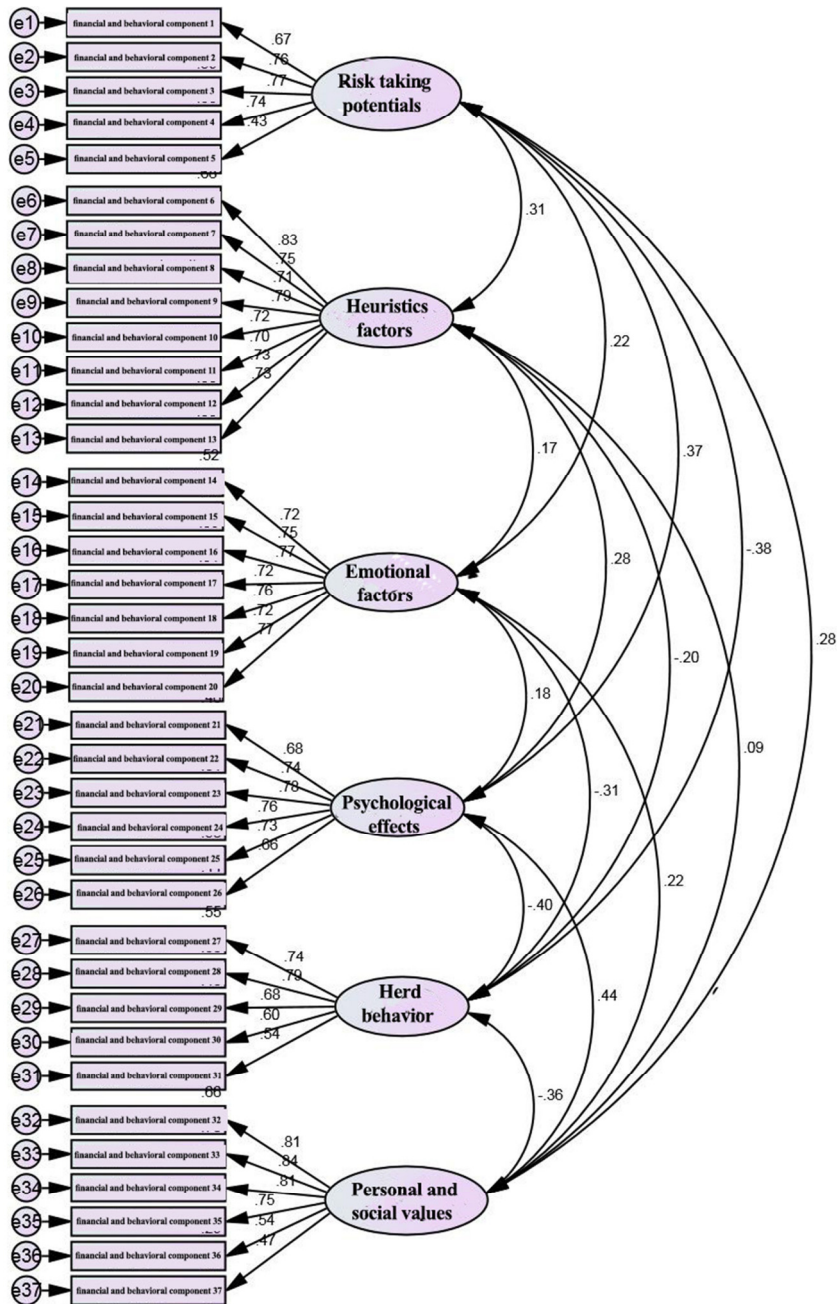
Chi_Square=1458.604; DF=614; P-VALUE=.000; GFI=.836;CFI=.880;RMSEA=.060

Fig 6. The model for measuring financial and behavioral components

As a result, the model seems appropriate to measure the financial and behavioral components. Using the second-order factor analysis, this section will explain the explanation of each main financial and behavioral component. Second order factor analysis, standard coefficients and t values are used to determine the effect of each of the variables and their importance coefficients; chi-square indices, the Normal fit index, the adaptive fit index, the fitting goodness index, the root of the estimated error, the adjusted fit goodness index, the incremental fitting index, and the normality fit index have been used to assess the adequacy of the model.
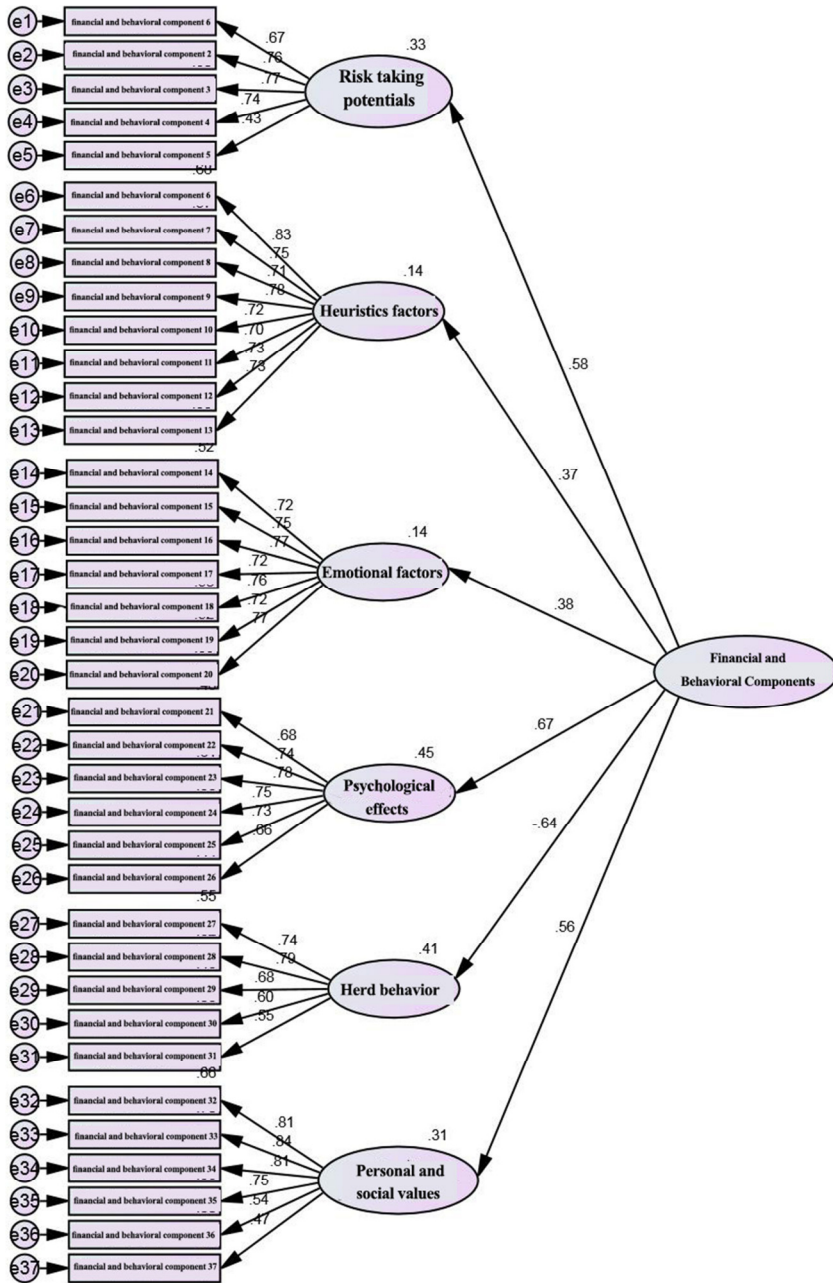
Chi_Square=1481.436; DF=623; P-VALUE=.000; GFI=.833;CFI=.878;RMSEA=.060

Fig 7. Second-order factor analysis model

Table 12. Second-order factor analysis of financial
and behavioral components

Factors	Standard coefficients	T-Value	P-Value	Results
Risk taking potential	0.57	6.268	0.0009	Significant
Heuristic factors	0.38	5.624	0.0009	Significant
Emotional factors	0.37	5.769	0.0009	Significant
Psychological effects	0.67	9.077	0.0009	Significant
Herd behavior	-0.64	-7.667	0.0009	Significant
Personal and social values	0.56	6.643	0.0009	Significant

Therefore factors explaining the financial and behavioral components.
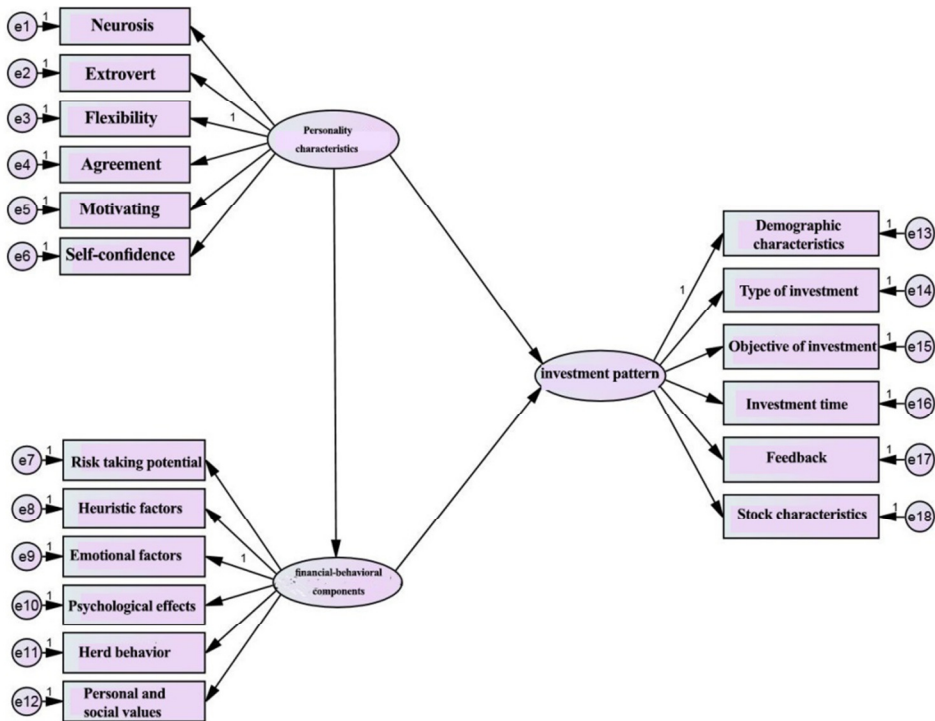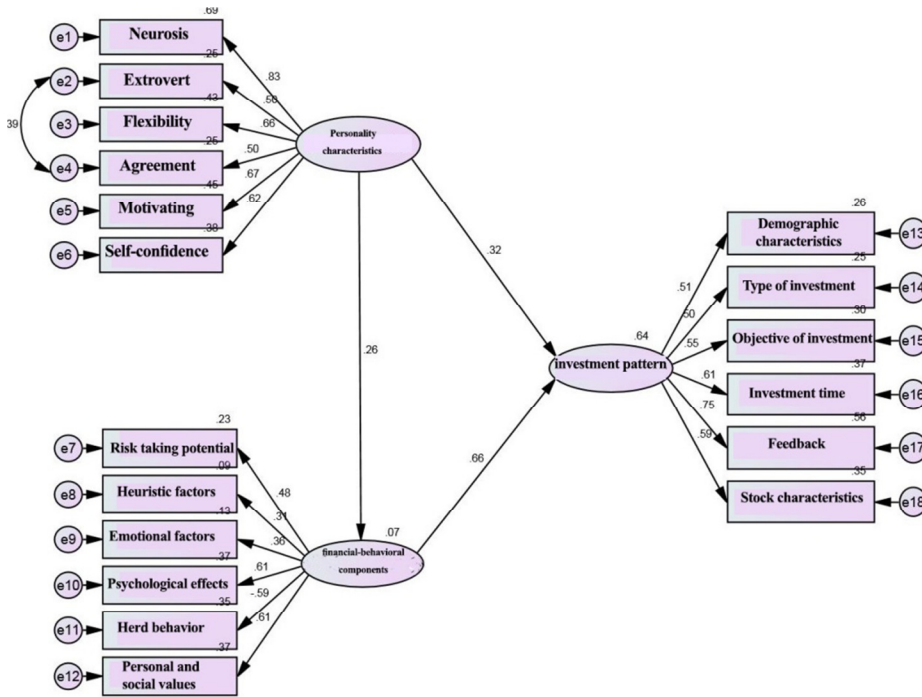

Fig 8. The model of the relationship between personality, financial-behavioral
components and investor-effective investment pattern

Figure 9 shows the output of relationships between the personality,
financial-behavioral components and the investment model affecting the

investor in the state of the standard coefficients.

Chi_Square=349.686; DF=131; P-VALUE=.000; GFI=.903;CFI=.877;RMSEA=.066

Fig 9. The model of relationships

Table 13. Route analysis of the model

Variables	Standard coefficients	T-Value	P-Value	Results
Personality traits effective on financial and behavioral components	0.26	3.329	0.0009	Significant
Personality characteristics effective on investment patterns	0.32	4.838	0.0009	Significant
Financial and behavioral components affecting investment patterns	0.66	4.998	0.0009	Significant

As seen in the table 13 variables have a significant and positive effect on financial and behavioral components. The bootstrapping method in Amos software was used to investigate the mediating role of financial and behavioral components in the model.

Table 14. Investigating the mediating role

Type	Impact	Coefficients	P-Value	Results
Direct impact	Personality characteristics effective on investment patterns	0.316	0.001	Significant
Indirect impact		0.172	0.002	Significant
Sum impact		0.488	0.001	Significant

In studying the mediating role of financial and behavioral components in relation to personality traits with behavior patterns, the direct effect of personality traits with behavior patterns is equal to 0.316, the indirect effect of personality traits on behavior patterns through (financial) component and behavior is equal to 0/172 and the total effect is equal to 0.448; given that the P-Value for direct, indirect and total effects is less than 0.05, the mediating effect of financial and behavioral relationships are significant in the relationship between personality traits and behavioral patterns. In terms of the appropriateness of the final model of the research, the QI statistic turned out to be 346/686 model and the degree of freedom of the model was 131, resulting in an acceptable ratio of 2.669. On the other hand, modeling indices such as NFI, AGFI, GFI, CFI and IFI were all acceptable and appropriate, and the SRMR index was 0.635.

5. Discussion and Conclusions

The results of the study by Shahverdi and Tajeddini (2016) on measuring the group behavior of investors in financial markets pointed to the group behavior of investors and the negative relationship between group behavior and market returns in Tehran Stock Market. The researchers concluded that, in most cases, following group behavior leads to negative returns for investors in Tehran Stock Market. In the third research question of the present study, it was found that herd behavior

had a significant effect on the decision (investment pattern) of real investors in Tehran Stock Market. Therefore, the results of the third research question in the present study regarding the mentioned component are in line with the results of the study by Shahverdi and Tajeddini. The results of the study by Hassanvand (2016) on behavioral biases of investors in stock markets showed that loss aversion, gambler's fallacy, ambiguity in the process of value changes, the herd instinct (collectivist behavior), and representation are important factors in the investors' decisions. In the third research question of the present study, in was shown that risk-taking capabilities, herd behavior and personal and social values significantly affect the investors' decisions (investment patterns) in Tehran Stock Market. Therefore, the results of the third research question of the present study regarding the mentioned behavior are in line with the results obtained by Hassanvand. The results obtained from analyzing the data in the study by Nobakht and Zaman-Nezhad (2016) regarding the effects of the investors' professional work experience on following collective behaviors showed that there was a significant direct relationship between the investors' work experience and their collective behavior, in a way that, in comparison with more experienced managers, less experienced managers are less likely to show collective behaviors. In the third research question of the present study, herd behavior was shown to have a significant effect on the decisions (investment patterns) of investors in Tehran Stock Market. In the second research question, demographic features were found to be explaining factors for investment patterns. Therefore, it can be concluded that the results obtained from the second and third research questions in the present study regarding the mentioned components are in line with the results obtained by Nobakht and Zaman-Nezhad. The results of the study by Rezapour and Sadri (2016) on the collective behavior of investors in financial markets showed that the investors' emotional decision making affects the investors' herd behavior. Also, the investors' emotional decision making has an effect on their collective behavior, while the investors' emotional decision making does not affect the behavior of non-manufacturing companies. In the third research question of the present study, it was shown that herd behavior and heuristic factors significantly affect the decision making (investment

pattern) of real investors in Tehran Stock Market. Therefore, the results obtained from the third research question of the present study regarding the mentioned components are in line with the results obtained by Rezapour and Sadri. The results of the study by Mohammadi and Shah-Mansouri (2016) on analyzing the behavioral errors of individual investors showed that status quo bias, regret aversion, loss aversion, mental accounting and event-oriented thinking significantly affect investors' decisions. In the third research question of the present study, risk-taking capabilities and emotional factors were found to significantly affect real investors' decisions (investment patterns) in Tehran Stock Market. In the second research question, it was found that being aware of returns and stock features are explaining factors for investment patterns. Therefore, the results obtained from the second and third research questions of the present study regarding the mentioned factors are in line with the results obtained by Mohammadi and Shah-Mansouri.
 The results of the study by Kmali-Ardakani and Rajabi-Ghiri (2015) on psychological effects and factors affecting the investors' understanding of risk in the stock market showed that stock market-related policies, extreme speculation, the quality of revealing information by companies and information asymmetry affect individual investors' understanding of risk. Also, risk understanding affects the investors' willingness to reinvest and investment satisfaction. In the end, it can be argued that risk understanding plays a key role in the psychological mechanism of the behavior of investors. In the third research question of the present study, it was shown that psychological effects and risk-taking capabilities significantly affects real investors' decisions (investment patterns) in Tehran Stock Market. Therefore, the results of the third research question of the present study are in line with the results obtained by Kamali-Ardakani and Rajabi-Ghiri. The results of the study by Jokar et al. (2014) on the effects of personality characteristics on risk aversion on the part of investors showed that there is a strong relationship between personality and risk-taking in Tehran Stock Market. In the fifth research question of the present study, personality characteristics were found to significantly affect the investors' decisions (investment patterns) in Tehran Stock Market. Therefore, the results of the fifth research question of the present study are in line with the results obtained by

Jolar et al. the results of the study by Hosseini-Chegeni, Haghgoo and Rahmani-Nezhad (2014) on the behavioral biases of investors in Tehran Stock Market indicate that there is significant relationship between self-control, optimism, self-attribution, illusion of control and convertism biases and the investors' investment decisions in Tehran Stock Market, and that there is not a significant positive relationship between the ambiguity aversion bias and the investors' investment decisions. Therefore, the results obtained from the third research question of the present study regarding the mentioned factors are in line with the results reported by Hosseini-Chegeni, Haghgoo and Rahmani-Nezhad . The results of the study by Santos, Brochado and Esperança (2016) on direct foreign investment patterns showed that market size, competitive advantages and special customers' knowledge affect an individual investors' decision making patterns. In the third research question of the present study, emotional factors were shown to significantly affect real investors' decision making (investment patterns) in Tehran Stock Market. In the second research question, investment time, investment returns and stock features were shown to be explaining factors for investment patterns. Therefore, the results obtained from the second and third research questions in the present study regarding the mentioned factors are in line with the results reported in the study by Santos, Brochado and Esperança. The results of the study by Saikia et al. (2015) on the investment patterns of young people in India showed that the investor's index or style determines individual preferences in investment decisions. Investment length, willingness to risk, diversity rate, stocks value, growth stocks, quality stocks, defense stock or cycle, small stocks and large stocks, understanding derivatives, family income and age affect the investor's investment patterns. In the third research question of the present study, there was a significant relationship between risk-taking capabilities and real investors' decision making (investment patterns) in Tehran Stock Market. In the second research question, the investor's demographic features, the type and purpose of investment, investment returns and the features of the invested stocks were shown to be explaining factors for investment patterns. Therefore, the results obtained from the second and third research questions in the present study regarding the mentioned factors are in line with the results

reported by Saikia et al. Taking return rate and capital coverage into consideration in choosing stocks for investment, availability of information and getting information about the dominant trend in the stock market affect the investor's decision making process. A new perspective on socks conditions and avowing a traditional perspective on investment and taking the current conditions of the stock market into consideration. Monitoring stock market changes and careful tracking of its positive and negative fluctuations are effective in appropriately using emotional factors in an investor's decision making. Improving one's personal knowledge and information and not insisting on one's previous knowledge puts the investor in a better decision making situation. Avoiding acting emotionally and being completely rational and making important decisions in a rational way leads the investor to success. Choosing the target stocks based on gathered information, analyzing field developments in stock halls and the behavior of other buyers are effective strategies for making appropriate decisions in stock markers. Paying attention to a company's conditions and the mental image created by the company in the society when buying the stocks should receive careful attention.

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