International Journal of Application on Economics and Business (IJAEB)
Volume 3, Issue 3, 2025. ISSN: 2987-1972

EXPLORING HOW GENDER MODERATES THE EFFECT OF PERSONALITY TRAITS ON OVERCONFIDENCE BIAS AMONG INVESTORS IN THE INDONESIAN STOCK MARKET

Khairina Natsir[1*], Agus Zainul Arifin[2], Fanny Wijoyo[3]

[1,2,3] Faculty of Economics and Business. Universitas Tarumanagara, Jakarta, Indonesia
Email: khairinan@fe.untar.ac.id

*Corresponding Author

Submitted: 15-06-2025, Revised: 09-07-2025, Accepted: 30-07-2025

ABSTRACT

This research aims to explore the impact of investor personality traits towards overconfidence bias in investment behaviors. Additionally, it examines whether gender differences serve as a moderating factor. The study focuses on three main variables: personality traits, gender, and overconfidence bias. Data for the study is gathered through a primary data collection method using an online questionnaire, distributed via Google Forms. This questionnaire incorporates relevant indicators that effectively represent the variables under investigation and is disseminated across social media platforms, including WhatsApp, Facebook, Instagram, Twitter, and Telegram, to broaden respondent reach. The sample consists of individual stock investors in Indonesia, selected through non-probability sampling. For statistical analysis, Structural Equation Modeling is employed using the SmartPLS software, applying the Partial Least Squares (PLS-SEM) approach based on variance. The evaluation includes an Outer Model Assessment (validity and reliability testing) and an Inner Model Assessment, which involves R-square, Q-square, and Goodness of Fit tests, alongside hypothesis testing. According to this study, neuroticism and conscientiousness positively contribute to overconfidence bias in both genders, while openness has a negative effect on this bias among male and female investors alike. The findings of this study imply that understanding investors' personality traits, such as neuroticism, conscientiousness, extraversion, and openness, is essential for tailoring investment strategies and mitigating overconfidence bias. Financial education focusing on self-awareness and emotional management is crucial to helping investors make more rational decisions and avoid unnecessary risks.

Keywords: *Personality Traits, Overconfidence, Gender, Individual Investors, Indonesian Stock Market*

1. INTRODUCTION

Indonesia's economic recovery after the Covid-19 pandemic is evident in the growth of its capital market, as highlighted in the KSEI statistical report from January 2023. The report shows notable growth in Single Investor Identification (SID) from 2020 to January 2023. SID refers to a unique identification number issued by KSEI (PT Kustodian Sentral Efek Indonesia) to individual investors, enabling participation in capital market activities such as purchasing and transaction settlements. The number of capital market investors grew by 92.99 percent to 7.4 million in 2021 compared to 2020, further increasing by 37.68 percent to 10.31 million in 2022. In January 2023, the figure rose slightly by 1.65 percent, reaching 10.48 million investors compared to 2022 (KSEI, 2023).

The demographic profile of individual investors in Indonesia reveals that 62.53 percent of registered investors are male, while 37.47 percent are female. Among these investors, 58.55 percent are under the age of 30, with 32.46 percent employed as private sector workers, civil servants, or teachers. Regarding education, 63.16 percent are high school graduates, while 27.43 percent hold bachelor's degrees. In terms of income, 48.55 percent of investors possess assets valued between 10 million and 100 million rupiah annually. Geographically, the majority of investors in the domestic capital market reside on Java, including DKI Jakarta,

representing 69.01 percent, followed by Sumatra (16.81 percent), Kalimantan (5.47 percent), Sulawesi (4.32 percent), Bali/NTT/NTB (3.36 percent), and Maluku/Papua (1.02 percent) (KSEI, 2023).

The increasing number of individual investors in Indonesia's domestic capital market offers an engaging area of research. A specific focus lies in understanding the behavior of investors under 30, particularly those with a high school educational background. Researchers are keen to investigate whether overconfidence bias plays a role in their investment decision-making processes. This group, categorized as Generation Z, is recognized for its unique attributes, including technological adaptability, innovative thinking, and distinct approaches to financial and investment goals. The expected utility hypothesis suggests that individuals think rationally and strive for optimal decisions when equipped with relevant information, carefully weighing it to achieve maximum benefits (Briggs, 2019). Rational decision-making involves defining goals or needs, obtaining and analyzing pertinent data, considering alternatives, and making a deliberate choice based on thorough evaluation (Kumar & Goyal, 2016).

Research has shown that decision-making under stressful conditions often increases the likelihood of irrational thinking, which can result in biases in financial or investment decisions (Baker et al., 2021). Testing on individual investors' personalities further reveals that behavioral biases can significantly impact their investment outcomes.

Investment decisions are influenced by various personality traits of individual investors, such as their level of courage, tolerance for uncertainty, and problem-solving approach. Behavioral finance theory highlights the critical role of psychological factors, including personality traits, in shaping an individual's decision-making process, strategic planning, and risk evaluation capabilities (Roszkowski, 2005).

An aggressive investor (risk-taker) who successfully earns significant profits from high-risk investments may exhibit overconfidence in their investment abilities. Overconfidence refers to a cognitive bias where individuals overestimate their accuracy, skills, and competence, often believing they are superior to others (Moore & Healy, 2008). This behavioral bias is driven by an internal tendency to attribute successful investment outcomes entirely to personal intelligence and skills, while attributing failures to external factors like luck or market conditions (Odean, 1998). This mindset fosters excessive self-confidence, increasing the desire for larger profits and encouraging greater risk-taking in subsequent investment periods, aligned with the principle of "High Risk, High Return." This bias can result in higher trading volumes in the stock market (Statman et al., 2006). potentially destabilizing the market and exposing investors to higher risks, which may reduce overall returns.

Research in financial behavior highlights significant evidence linking personality traits to investment decisions, risk tolerance, and other financial behaviors. Personality, as a concept, offers a framework for understanding an investor's nature and its impact on their decision-making and investment outcomes (Fung & Durand, 2014). The Big Five Personality model is widely adopted in financial behavior studies, as its five dimensions—neuroticism, extraversion, conscientiousness, openness, and agreeableness—effectively encapsulate a wide range of individual traits, providing a comprehensive profile of an individual's personality (McCrae & Costa, 2004), (Costa & McCrae, 2012)

Individuals with high neuroticism often experience heightened negative emotions such as anxiety and anger. This predisposition to agitation and worry makes them highly susceptible

to market fluctuations, leading to strong emotional responses that may trigger irrational investment decisions. These reactions can also foster overconfidence, stemming from the perception that their decisions are rational.

On the other hand, individuals with an extraverted personality, characterized by enthusiasm and high energy, may be motivated to engage in the market based purely on excitement, often overlooking critical risks. This emotional impulsiveness can impair rational thinking, and their excessive optimism may result in overconfident investment behavior.

A person with high conscientiousness, marked by carefulness and confidence in their abilities, is often a prudent investor. They approach decisions with caution, relying on solid data, effective risk management, and portfolio diversification. These qualities help maintain rational thinking and reduce the likelihood of developing excessive confidence in their abilities.

Meanwhile, individuals with high openness are imaginative and creative, often drawn to exploring new strategies or untested assets. Their curiosity drives them to seek knowledge and adapt to the stock market's dynamics. However, this same curiosity may expose them to unreliable information, leading to irrational decisions and a lack of objectivity in assessing potential risks and returns.

Individuals with a high agreeableness personality are skilled at forming harmonious relationships and are highly sensitive to the emotions of those around them. This trait often leads them to avoid conflict, which may result in ignoring potential investment risks. When influenced by poorly managed advice or opinions from others, they may be prone to irrational decision-making, opting to follow others' suggestions simply to maintain harmony.

The primary theoretical framework employed in this research is Behavioral Finance Theory. This theory integrates psychological and economic principles to elucidate how emotions, risk perception, and cognitive biases influence individuals' financial decision-making and investment choices in stock market trading. Due to the cognitive limitations of the human brain, individuals often struggle to handle multiple tasks simultaneously. Consequently, their decisions are frequently driven by preferred characteristics of alternatives rather than a rational evaluation of profit and risk, as highlighted by Kahneman & Tversky (1979).

Bounded Rationality Theory, the second theoretical approach used, describes how the human brain's limited ability to process extensive information and its restricted memory capacity can result in decisions that lack rationality. Emotions and external pressures—ranging from fear and anxiety to greed and over-optimism—commonly drive irrational behavior, causing individuals to downplay risks in decision-making. As Simon (2000) notes, these cognitive and emotional constraints lead to irrational actions, with the degree and nature of biases varying among individuals. Theories of bounded rationality and financial behavior suggest that the five personality traits discussed above are susceptible to behavioral biases and inconsistencies in decision-making, particularly when driven by emotions or external influences rather than solid data.

The third theoretical foundation supporting this research is Psychology Theory. Sigmund Freud's psychosexual development theory, a central concept in psychoanalysis and psychological studies, forms its primary basis. According to Bandura & Adams (1977), modeling processes play a significant role in shaping an individual's gender identity phase. For

instance, women often observe societal representations around them to develop their personality and self-perception.
Research by Baker et al., (2023) identified a negative relationship between neuroticism and overconfidence bias, indicating that increased anxiety and worry tend to reduce self-confidence. Additionally, a correlation was found between extraversion, agreeableness, and conscientiousness with overconfidence bias among investors in the Lahore stock market. These findings illustrate irrational decision-making tendencies in this group, as explained by bounded rationality theory.

According to Sadi et al., (2011), the research findings revealed a significant relationship between personality traits and misperception in the Tehran stock market. However, of the five personality traits studied, only four demonstrated a meaningful connection. The extraversion personality was associated with hindsight bias, while openness was linked to overconfidence bias. Conscientiousness showed an inverse relationship with misperception, whereas agreeableness had no significant relationship with investor misperception bias. These diverse personality traits, therefore, play a role in influencing behavioral biases such as overconfidence, hindsight, randomness, and availability.

Observations from Kubilay & Bayrakdaroglu (2016) indicated that neuroticism had no influence on overconfidence but was related to regret aversion bias. Extraversion was linked to overconfidence, representativeness, and herding biases. Agreeableness influenced overconfidence bias and several other biases, including representativeness, availability, anchoring, overoptimism, and herding behavior, while showing a low tolerance for investment risks. Conscientiousness showed no effect on overconfidence but was related to anchoring and regret aversion biases, as well as a low tolerance for risk. Openness, on the other hand, was connected to overconfidence and overoptimism biases and exhibited a high tolerance for financial risk.

In a similar study conducted by Utami & Kartini (2017) on the Indonesian stock market, they explored the impact of demographic factors and personality traits on overconfidence bias. Their results showed no relationship between neuroticism, extraversion, openness, or agreeableness and overconfidence bias. However, they found that conscientiousness had a significant influence on overconfidence behavior in Indonesian investors.

Earlier studies have pointed out that social and demographic factors such as age, gender, income, education, and psychological characteristics, including personality traits, can influence an individual's investment decisions or financial choices (Maxfield et al., 2010). Research by Graham et al., (2002) found that female investors tend to be less risk-tolerant and less confident in their investment decisions compared to male investors. Similarly, Lin (2011) found that male investors are more likely to exhibit overconfidence bias in their investments compared to their female counterparts. In contrast, Barber & Odean (2001) discovered that both male and female investors showed poor stock market performance, with men engaging in more frequent trading but achieving lower returns than women. On the other hand, Utami & Kartini (2017) did not find any significant relationship between demographic factors such as age, gender, education, or investment experience and overconfidence bias in individual investors. Similarly, Zaidi & Tauni (2012). observed a correlation between investment experience and overconfidence bias but found no link between age, education, and this bias.

Given these conflicting findings and the theoretical perspectives and phenomena involved, the author seeks to further investigate how personality traits influence investor behavior,

specifically in making investment decisions and selecting portfolios to achieve desired investment outcomes. This study will draw on behavioral finance theory and bounded rationality theory to address the research gap.

Behavioral finance is a theory that emerged in the finance field, based on the observation that human behavior often tends to be irrational when making financial and investment decisions, particularly under certain market conditions. As research in this area has progressed, behavioral finance has evolved alongside business and academic advancements, highlighting the impact of human behavior on financial decision-making [(Natsir & Arifin, 2021), (Yusbardini & Natsir, 2022)]. This irrational decision-making contradicts traditional economic theories that assume markets are rational. Behavioral finance focuses on the psychological factors influencing decisions, helping explain why investors may make emotional decisions that do not align with their financial objectives.

Bounded Rationality Theory explains the limitations of the human brain, which often cannot process information thoroughly and has limited memory capacity, leading to decisions that may not be rational. Emotional pressures like fear, anxiety, greed, excitement, and optimism can drive individuals to make irrational choices and downplay risks. In certain scenarios, these limitations and emotional influences can result in irrational decisions and biased behaviors, which vary from person to person (Simon, 2000). Bounded rationality refers to the phenomenon where organizations have insufficient contextual information to make optimal decisions, leading them to base decisions on limited knowledge, which often results in suboptimal outcomes. In the context of finance, business, or investment, the quality of decision-making is often compromised by bounded rationality due to the lack of reliable information (Hernandez & Ortega, 2019).

This study also incorporates the Gender Schema Theory, proposed by Sandra L. Bem in 1981. The theory provides a psychological framework for understanding how children develop their awareness of gender, identify themselves as male or female, and internalize gender roles, which influence their behavior and self-concept. According to the theory, children's social and cultural interactions shape their gender schema, helping them recognize and categorize appropriate and inappropriate behaviors, roles, and relationships between genders. The gender schema theory suggests that the information children absorb from their environment molds their understanding of gender, guiding them in identifying activities and objects linked to their gender concept (Bem, 1981).

The primary goal of this research is to examine the impact of investors' personality characteristics on behavioral biases, with a specific focus on overconfidence bias, and to explore the moderating role of gender in this relationship. This approach is expected to provide essential insights for both individual investors and financial managers. The findings aim to assist in developing tailored portfolios that align with each investor's personality, risk tolerance, and behavior, ultimately reducing the impact of behavioral biases in decision-making. Understanding an investor's personality is expected to help mitigate errors and encourage rational thinking, enabling investors to create a portfolio that matches their risk profile and personal preferences.

Research Model and Hypothesis

Based on the theory and research that has been carried out, this research model depicted in the following scheme:

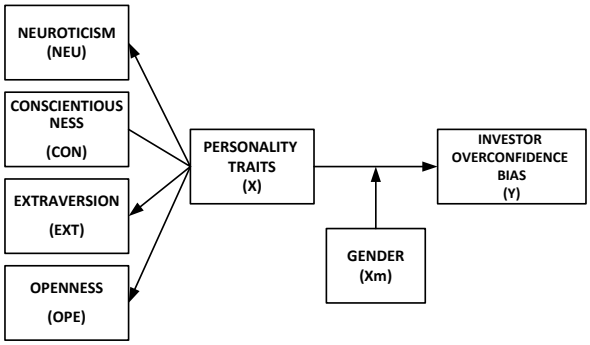

Figure 1. Research Model

The proposed hypotheses for this study are stated as follows:

H1a : Individual investors' overconfidence bias is positively and significantly influenced by neuroticism.

H1b : The conscientiousness traits has a significant positive effect on overconfidence bias among individual investors.

H1c : There is a positive and significant impact of extraversion on overconfidence bias an individual investors.

H1d : Openness significantly enhances the overconfidence bias of individual investors.

H2 : Gender acts as a moderator in the effect of personality traits (neuroticism, conscientiousness, extraversion, and openness) on overconfidence bias among individual investors.

2. RESEARCH METHOD

Research Design and Period

This study employs a cross-sectional approach, where data is gathered only once within the research timeframe, without any subsequent follow-up on the subjects. The purpose of this method is to capture and describe phenomena, characteristics, or relationships occurring during the study period, rather than tracking changes or developments over time. The research focuses on stock investors listed on the Indonesian Stock Exchange who possess a SID issued by KSEI. The choice of this subject stems from the significant increase in the number of stock investors in Indonesia since 2020, accompanied by the rapid proliferation of stock investment applications across the country.

Data Sources and Collection

This research relies on primary data, collected through an online questionnaire distributed via Google Forms. The questionnaire includes relevant indicators designed to represent the variables under investigation. It is shared widely across social media platforms such as WhatsApp, Facebook, Instagram, Twitter, and Telegram to reach a broader audience. Data collected is processed and analyzed using the SmartPLS 4 software. Responses to the questionnaire are measured on a 10-point Likert scale, ranging from 1 (strongly disagree) to 10 (strongly agree). A score closer to 1 indicates a lower variable value, while a score closer to 10 reflects a higher variable value.

Population and Research Sample

This study targets all individuals actively investing in the Indonesian capital market, whether directly or via officially licensed platforms regulated by the OJK. A sample is drawn from the population of individual stock investors in Indonesia using a non-probability sampling method, specifically purposive sampling. Eligible respondents must meet the criterion of holding a

Single Investor Identification (SID), which verifies their legal ownership of shares or bonds registered with PT Kustodian Sentral Efek Indonesia (KSEI).

Research Variables and Variable Operationalization
This study involves three types of variables, namely independent variables, dependent variables, and mediating variables. The explanation and operationalization of the variables are as follows.

Dependent Variable: Overconfidence bias, which is measured using six questions derived from prior research (Baker et al., 2021). This overconfidence bias is measured by 6 questions Each question item is measured using a 10-point Likert scale

Independent Variable: Personality traits, which influence investor behavior. These traits are measured using the Big Five Personality framework, specifically focusing on the NEO five-factor inventory (Costa & McCrae, 2012). Four traits are included: neuroticism, extraversion, openness, and conscientiousness. Neuroticism is evaluated through six questions based on previous studies (Baker et al., 2021), extraversion through five questions (Baker et al., 2021), openness through five questions (Baker et al., 2021), and conscientiousness through five questions sourced from earlier research [(Baker et al., 2021), (Sachdeva & Lehal, 2023)].

Moderating Variable: Gender, which moderates the relationship between personality traits and investor behavior. This variable is measured on a nominal scale (male or female) and is based on prior research [(Graham et al., 2002), (Sachdeva & Lehal, 2023)].

Data Analysis Techniques
This study employs Structural Equation Modeling (SEM) with the Partial Least Squares (PLS-SEM) method, utilizing the SmartPLS application. As outlined by (JrJoe F. Hair et al., 2014), the PLS-SEM approach involves the following steps:

1) **Model Specification:** Researchers must ensure the proposed model avoids circular relationships among dependent, independent, and latent construct variables, as such relationships can invalidate statistical analysis and obscure result interpretation.
2) **Outer Model Evaluation:** This step involves assessing the model's validity and reliability.
3) **Inner Model Evaluation:** This step assesses the model's overall fit and adequacy using metrics such as R-square, Q-square, and Goodness of Fit. Hypothesis testing is performed using the T-Statistic test.

3. RESULTS AND DISCUSSIONS

Outer Model Testing
This study performed outer model tests, including convergent validity, discriminant validity, and reliability tests, to ensure the suitability of the research instruments.

Convergent Validity Test
Convergent validity determines how well an indicator reflects its corresponding construct or latent variable. The assessment criteria require an AVE > 0.5 and a loading factor > 0.7 ((Chin & Marcoulides, 1998), (Joe F. Hair et al., 2012)). In the initial analysis, all indicators achieved a loading factor > 0.70 except the EXT1 indicator within the extraversion variable, which scored 0.539. This indicator was excluded from the study for failing the validity test. After re-evaluating without the EXT1 indicator, all remaining indicators passed the validity test with

loading factor values > 0.70, confirming their validity and enabling further analysis. The validity results following the removal of the EXT1 indicator are shown below.

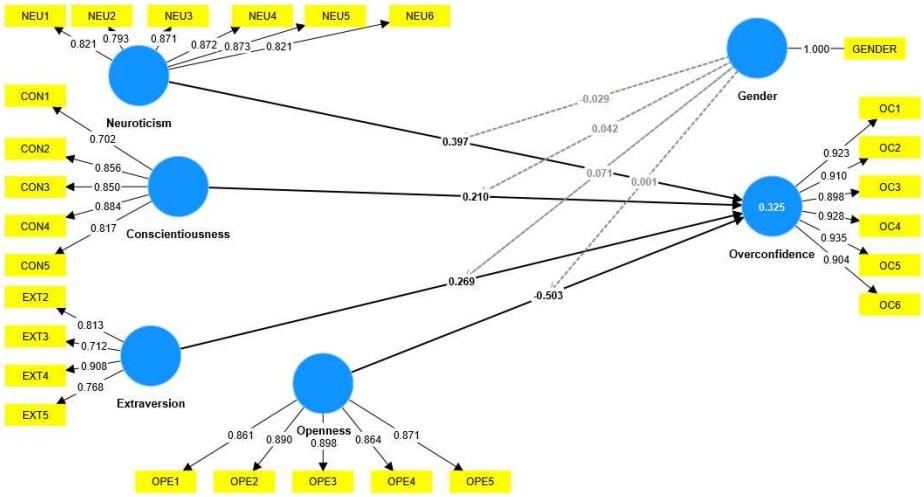

Figure 2. Results of Loading Factor Validity Test
Source: Result of data processing by author

Based on the AVE value data presented in Table 1, all variables show AVE values above the threshold of 0.50. This confirms that all measurement items are valid and meet the standards for satisfactory convergent validity.

Table 1. Results of Cronbach's Alpha, Composite Reliability, and AVE Tests
Source: Result of data processing by author

	Cronbach's Alpha	Composite Reliability (rho_a)	Average Variance Extracted (AVE)
Conscientiousness	0.882	0.911	0.679
Extraversion	0.841	0.986	0.577
Neuroticism	0.918	0.932	0.709
Openness	0.925	0.926	0.769
Overconfidence	0.962	0.963	0.840

Reliability Test

There are two methods for conducting the reliability test: Cronbach's Alpha and Composite Reliability. For valid results, Composite Reliability should be greater than 0.70, and Cronbach's Alpha should be above 0.60 ((F., Joseph Hair et al., 2022),(Henseler et al., 2009)). **Table 1** shows that the Composite Reliability (rho_a) values for conscientiousness, extraversion, neuroticism, openness, and overconfidence are all above 0.70, and the Cronbach's Alpha values exceed 0.60, indicating that all constructs are reliable for this study.

Inner Model Testing.

After ensuring the validity and reliability of the outer model, the next phase is evaluating the inner model (structural model). This includes testing for Goodness of Fit (GoF), the determination coefficient (R Square), and prediction relevance (Q Square). The results from the test are as follows:

Table 2. Results of R^2, Q^2, and GoF tests
Source: Result of data processing by author

Variables	R^2	R2 adjusted	Q^2	GoF (NFI)
Overconfidence Bias	0.325	0.312	0.286	0.826

The determination coefficient test (R^2) is used to quantify the influence of each independent variable on the dependent variables in the research model. The R^2 value can be categorized as substantial (0.75), moderate (0.50), or weak (0.25), with values closer to 1 indicating better explanatory power (JrJoe F. Hair et al., 2014). As shown in **Table 2**, the determination coefficient value is weak, meaning that the overconfidence bias variable is explained by neuroticism, extraversion, openness, and conscientiousness by only 32.5%, with the remaining 67.5% influenced by factors outside the model.

In the predictive relevance test, the Q^2 value obtained is greater than 0, indicating the model's prediction accuracy. The Q^2 value categorizes accuracy as small ($Q^2 > 0$), moderate ($Q^2 > 0.25$), or large ($Q^2 > 0.50$) (Hair et al., 2019). The Q^2 value of 0.286 in Table 2, which is greater than 0.25, suggests the model has moderate prediction accuracy.

To evaluate model fit, the NFI value is assessed. An NFI value of 0.1 signifies small GoF, 0.25 for medium GoF, and 0.36 for large GoF. If the NFI value exceeds 0.36, the model is considered well-fitting, with values closer to 1 indicating better fit ((F., Joseph Hair et al., 2022),(Wetzels et al., 2009)). In this study, the NFI value of 0.826 is greater than 0.36 and close to 1, confirming that the model is fit and appropriate.

Research Hypothesis Testing

A t-statistic test will be used to evaluate the influence of each independent variable on its dependent variable in the research hypothesis. The hypothesis is accepted when the t-statistic test results show a value greater than 1.96 at a 5% significance level (α) (JrJoe F. Hair et al., 2014). The results of the t-test are displayed below.

Table 3. Results of t-statistics test
Source: Result of data processing by author

Relationship	Original Sample (O)	T statistics	P Values	Hypothesis
CON → OC	0.210	3.616	0.000	Accepted
EXT → OC	0.269	2,908	0.004	Accepted
NEU → OC	0.397	8.445	0.000	Accepted
OPE → OC	-0.503	11,267	0.000	Accepted
GEN*NEU → OC	-0.029	0.758	0.449	Rejected
GEN*EXT → OC	0.071	1.315	0.189	Rejected
GEN*OPE → OC	0.001	0.037	0.970	Rejected
GEN*CON → OC	0.042	0.831	0.404	Rejected

The research results confirm a significant positive correlation between neuroticism traits and overconfidence bias. This implies that as investors experience less anxiety, fear, and temperamental behavior, their tendency toward overconfidence diminishes. Anxiety, particularly fear of loss, often leads to irrational decision-making, exacerbating overconfidence bias. To address this issue, individual investors should reduce their emotional reactivity and adopt more robust market risk management strategies. By fostering self-awareness, managing negative emotions, and utilizing comprehensive market information, investors can make more rational and strategic decisions.

Neuroticism is strongly associated with feelings of insecurity (NEU5) and tense states (NEU4), which contribute to irrational thought patterns and biased investor behavior. These findings align with the work of Zaidi & Tauni (Zaidi & Tauni, 2012) who identified a significant relationship between neuroticism and overconfidence bias in the Lahore stock market. However, they diverge from the conclusions of Baker et al. (Baker et al., 2021) and Jency (Jency S, 2017) which found no such relationship in the context of the Indian stock market.

The study identified a significant positive relationship between conscientiousness traits and overconfidence bias. This indicates that individuals with high confidence in their analytical abilities and self-assurance in investment decisions are more prone to overconfidence bias. Psychologically, these individuals often perceive themselves as superior to other investors, which reduces their caution regarding potential risks and amplifies overconfidence in their investment behavior. A conscientious investor aware of their propensity for overconfidence can manage this by focusing on rational risk assessment and acquiring extensive investment-related information, enabling them to base decisions on data and diversify their portfolio effectively.

The study revealed that conscientiousness traits are primarily driven by a belief in their reliability to make investment decisions (CON4) and confidence in their ability to act independently (CON2). However, these traits can lead to irrational thinking and investor biases. These findings align with the research of Baker et al. (Baker et al., 2021), Jency (Jency S, 2017), and Lin (Lin, 2011), who also observed a significant positive relationship between conscientiousness and overconfidence bias.

Additionally, the study found a significant positive relationship between extraversion traits and overconfidence bias. Investors with optimistic, active, and enthusiastic traits are more likely to exhibit overconfidence behavior. This optimism and active engagement often manifest in frequent interactions with others, which can foster irrational decision-making and amplify overconfidence in investing. To mitigate these tendencies, self-awareness, critical analysis, and effective risk management are essential. Recognizing impulsive behaviors and emotions can help investors make more calculated decisions and minimize risks.

Extraversion traits in this study were characterized by active participation in investing (EXT4) and heightened enthusiasm (EXT2), which contributed to irrational behaviors and biases. These findings are consistent with research by Schaefer et al. (Schaefer et al., 2004), Jency (Jency S, 2017), and Baker et al., (Baker et al., 2021), which also reported a significant positive effect of extraversion traits on overconfidence bias.

The study revealed a significant negative relationship between openness traits and overconfidence bias. This indicates that individuals with higher levels of imagination, curiosity, and a willingness to embrace new challenges in investing exhibit lower levels of overconfidence bias. An openness to new experiences and a preference for facing challenges seem to enable these individuals to better tolerate market risks and adapt to changing conditions. As a result, their overconfidence bias becomes more balanced and realistic, reflecting a heightened awareness of market risks. Openness traits were particularly evident in interest in speculative investments (OPE3) and enthusiasm for exploring new investment opportunities (OPE2). This awareness is believed to help mitigate overconfidence bias.

Interestingly, these findings differ from the results of Jency (Jency S, 2017) and Yadav & Narayanan (Yadav & Narayanan, 2021) who reported a significant positive relationship

between openness traits and overconfidence bias. Moreover, this study's results contradict those of Baker et al. (Baker et al., 2021) and Schaefer et al. (Schaefer et al., 2004) who found no direct influence of openness traits on overconfidence bias but identified a link between openness and accuracy or mental accounting.

Overconfidence behavior itself is a psychological phenomenon where individuals exhibit excessive self-assurance and optimism about their decision-making abilities, often neglecting objective facts and data. This behavior is often driven by an investor's belief that their past investment successes are consistently superior to those of others. In this study, overconfidence bias was predominantly characterized by an overreliance on past investment success (OC5) and an inflated belief in one's investment skills compared to peers (OC4). Such attitudes lead investors to underestimate market risks and adopt less cautious decision-making approaches.

This study found that personality traits influencing overconfidence behavioral bias exert a similar effect on both men and women, indicating that gender does not differentiate the emergence of overconfidence bias in investment decisions. When under pressure, both genders are susceptible to irrational thinking, which triggers overconfidence bias. These findings align with Sachdeva & Lehal (Sachdeva & Lehal, 2023)], who reported that gender acts as a consistent moderator for men and women. Additionally, Barber & Odean (Barber & Odean, 2001) found that investment performance outcomes are comparable between male and female investors. Similarly, Utami & Kartini (Utami & Kartini, 2017) concluded that there is no significant relationship between gender and overconfidence bias, attributing this to modern trends where women now have access to equal education and knowledge about investment and associated risks.

The results further align with studies by Croson and Gneezy (Croson & Gneezy, 2009), which highlight the complexity of gender influences on financial decision-making, varying with context. Supporting this, Arifin (Fusva et al., 2020) discovered that financial behavior impacts retirement planning and investment decisions equally for men and women. These findings suggest that women today exhibit a high degree of independence, financial knowledge, and responsibility in making investment decisions. For instance, Table 4.2 shows that 46.4% of the 483 respondents were female investors, reinforcing the notion that women now have comparable opportunities, educational attainment, and confidence in finance and investment as men.

Overall, these findings support behavioral finance theory, which posits that human brains face inherent limitations in processing complex financial information and analyses. The theory of bounded rationality further explains that individuals under stress are prone to cognitive and emotional constraints, which can result in biased behavior. Stressful situations are shown to impair decision-making as the brain lacks the necessary cognitive resources to function optimally. However, the degree of bias may vary depending on the individual's stress tolerance and cognitive control.

Additionally, the findings are consistent with gender schema theory, which suggests that gender identity is influenced by observing and modeling behaviors in one's environment. This has resulted in evolving perceptions of gender roles, where modern women have achieved parity with men in areas such as education, careers, and investments. This study corroborates other research that employs psychological approaches to explore how men and women react to market dynamics and make investment decisions. The convergence of these theories

emphasizes that both genders, under similar conditions, exhibit equivalent tendencies toward overconfidence bias, shaped by broader societal and cognitive factors.

4. CONCLUSIONS AND SUGGESTIONS

Based on the results of the theoretical review, data collection and analysis and the approach in solving the problems in this study, the results of this study can be concluded that: Neuroticism traits, Conscientiousness traits, and Extraversion traits have a significant effect on the emergence of overconfidence behavioral bias from an individual investor when investing in the Indonesian stock market. Openness traits have a significant negative effect on the emergence of overconfidence behavioral bias from an individual investor when investing in the Indonesian stock market. Neuroticism, conscientiousness, extraversion, and openness traits in both men and women have the same effect on the overconfidence behavioral bias of individual investors. Behavioral Finance Theory and Bounded Irrational Theory, as well as the combination of these two theories are able to explain and describe the approach but only partially in solving the problems in this study.

This research advises investors to develop awareness of their personality traits and the behavioral biases these traits may trigger. By doing so, individual investors can improve self-management and decision-making processes, ensuring they act more rationally and minimize bias. This strategy can ultimately help them achieve the best possible outcomes from their investments.

REFERENCES

Baker, H. K., Kapoor, S., & Khare, T. (2023). Personality traits and behavioral biases of Indian financial professionals. *Review of Behavioral Finance*, *15*(6). https://doi.org/10.1108/RBF-11-2021-0246

Baker, H. K., Kumar, S., & Goyal, N. (2021). Personality Traits and Investor Sentiment. *Review of Behavioral Finance*, *13*(4), 354–369. https://doi.org/10.1108/RBF-08-2017-0077

Bandura, A., & Adams, N. E. (1977). Analysis of Self-Efficacy Theory of Behavioral Change. *Cognitive Therapy and Research*, *1*(4), 287–310. https://doi.org/10.1007/BF01663995

Barber, B. M., & Odean, T. (2001). Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment. *Quarterly Journal of Economics*, *116*(1), 261–292.

Bem, S. L. (1981). Gender schema theory: A Cognitive Account of Sex Typing. *Psychological Review*, *88*(4), 354–364. https://doi.org/10.1037/0033-295X.88.4.354

Briggs, R. A. (2019). Normative Theories of Rational Choice: Expected Utility. *The Stanford Encyclopedia of Philosophy*, *(Fall 2019*. https://plato.stanford.edu/entries/rationality-normative-utility/

Chin, W. ., & Marcoulides, G. A. (1998). *The partial least squares approach for structural equation modeling. In George A. Marcoulides (Ed.), Modern Methods for Business Research, Lawrence Erlbaum Associates*. Lawrence Erlbaum Associates Publishers.

Costa, P. T., & McCrae, R. R. (2012). *The Five-Factor Model and the NEO Inventories. In Oxford Handbook of Personality Assessment*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195366877.013.0016

Croson, R., & Gneezy, U. (2009). Gender Differences in Preferences. *Journal of Economic Literature*, *47*(2), 1–27. https://doi.org/10.1080/00020188308707602

F., Joseph Hair, J. ., Hult;, G. T. M., Ringle;, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)-Third Edition*.

Fung, lucia, & Durand, R. B. (2014). *Personality Traits. In Investor Behavior*. John Wiley & Sons, Inc. https://doi.org/10.1002/9781118813454.ch6

Fusva, A., Dean, D., Suhartanto, D., Syarief, M. E., Arifin, A. Z., Suhaeni, T., & Rafdinal, W. (2020). Loyalty formation and its impact on financial performance of Islamic banks – evidence from Indonesia. *Journal of Islamic Marketing*. https://doi.org/10.1108/JIMA-12-2019-0258

Graham, J. F., Jr, E. J. S., Myers, J. K., & Graham, M. J. (2002). Gender differences in investment strategies: an information processing perspective. *International Journal of Bank Marketing*, *20*(1).

Hair, Joe F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An Assessment of the Use of Partial Least Squares Structural Equation Modeling in Marketing Research. *Journal of the Academy of Marketing Science*, *40*(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6

Hair, JrJoe F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling with R. *Practical Assessment, Research and Evaluation*, *21*(1), 1–16. https://doi.org/10.1108/ebr-10-2013-0128

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20*, 277–319. https://doi.org/10.1108/S1474-7979(2009)0000020014

Hernandez, J. G. V., & Ortega, R. P. (2019). Bounded Rationality in Decision–Making. *MOJ Current Research & Reviews*, *2*(1), 1–8. https://doi.org/10.15406/mojcrr.2019.02.00047

Jency S. (2017). Impact of Investor ' s Personality Traits on Overconfidence Bias. *International Journal of Management and Economics Invention*, *3*(8), 1307–1315. https://doi.org/10.18535/ijmei/v3i8.03

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, *47*(2), 263–291.

KSEI. (2023). Statistik Pasar Modal Indonesia. *KSEI-Indonesia Central Securities Depository*, 1–7. www.ksei.co.id

Kubilay, B., & Bayrakdaroglu, A. (2016). An Empirical Research on Investor Biases in Financial Decision-Making, Financial Risk Tolerance and Financial Personality. *International Journal of Financial Research*, *7*(2), 171–182. https://doi.org/10.5430/ijfr.v7n2p171

Kumar, S., & Goyal, N. (2016). Evidence on Rationality and Behavioural Biases in Investment Decision Making. *Qualitative Research in Financial Markets*, *8*(4), 270–287. https://doi.org/10.1108/QRFM-05-2016-0016

Lin, H. W. (2011). Elucidating the influence of demographics and psychological traits on investment biases. *World Academy of Science, Engineering and Technology*, *5*(5), 145–150.

Maxfield, S., Shapiro, M., Gupta, V., & Hass, S. (2010). Gender and risk: women, risk taking and risk aversion. *Gender in Management, 25*(7). https://doi.org/10.1108/17542411011081383

McCrae, R. R., & Costa, P. T. (2004). *A contemplated revision of the NEO Five-Factor Inventory. Personality and Individual Differences*. https://doi.org/10.1016/S0191-8869(03)00118-1

Moore, D. A., & Healy, P. J. (2008). The Trouble With Overconfidence. *Psychological Review*, *115*(2), 502–517. https://doi.org/10.1037/0033-295X.115.2.502

Natsir, K., & Arifin, A. Z. (2021). The effect of product knowledge and influence of society on investment intention of stock investors with perceived risk as mediation. *Estudios de Economia Aplicada*, *39*(12). https://doi.org/10.25115/eea.v39i12.6022

Odean, T. (1998). Are investors Reluctant to Realize Their Losses? *The Journal of Finance*,

LIII(5), 1775–1797.

Sachdeva, M., & Lehal, R. (2023). The influence of personality traits on investment decision-making: a moderated mediation approach. *International Journal of Bank Marketing*, *41*(4).

Sadi, R., Asl, H. G., Rostami, M. R., Gholipour, A., & Gholipour, F. (2011). Behavioral Finance: The Explanation of Investors' Personality and Perceptual Biases Effects on Financial Decisions. *International Journal of Economics and Finance*, *3*(5). https://doi.org/10.5539/ijef.v3n5p234

Schaefer, P. S., Williams, C. C., Goodie, A. S., & Campbell, W. K. (2004). Overconfidence and the Big Five. Journal of Research in Personality. *Journal of Research in Personality*, *38*(5). https://doi.org/10.1016/j.jrp.2003.09.010%0AGet rights and content%0A

Simon, H. A. (2000). Bounded Rationality in Social Sciences: Today and Tomorrow. *Mind & Society*, *1*(1), 25–39. https://doi.org/10.1163/9789401206037_012

Statman, M., Thorley, S., & Vorkink, K. (2006). Investor Overconfidence and Trading Volume. *The Review of Financial Studies*, *19*(4). http://dx.doi.org/10.1093/rfs/hhj032

Utami, L. D., & Kartini, K. (2017). Faktor demografis, personality traits, dan overconfidence (Survey terhadap investor saham di Yogyakarta). *Jurnal Siasat Bisnis*, *20*(2), 181–196. https://doi.org/10.20885/jsb.vol20.iss2.art6

Wetzels, M., Odekerken-Schröder, G., & Van Oppen, C. (2009). Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. *MIS Quarterly: Management Information Systems*, *33*(1), 177–196. https://doi.org/10.2307/20650284

Yadav, A., & Narayanan, G. B. (2021). Do Personality Traits Predict Biasedness While Making Investment Decisions? *International Journal of Accounting & Finance Review*, *6*(1), 19–33. https://doi.org/10.46281/ijafr.v6i1.939

Yusbardini, Y., & Natsir, K. (2022). Investor Bias Behavior in Investment Decision Making. *Proceedings of the Tenth International Conference on Entrepreneurship and Business Management 2021 (ICEBM 2021)*, *653*(Icebm 2021), 424–428. https://doi.org/10.2991/aebmr.k.220501.064

Zaidi, F., & Tauni, M. (2012). Influence of investor's personality traits and demographics on overconfidence bias. *Institute of Interdisciplinary Business Research*, *4*(6).