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The impact of behavioral biases on investment decisions: a serial mediation analysis

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Abstract

Purpose – The purpose of this study is to investigate the impact of behavioral biases on investment decisions through a serial mediation of overconfidence and disposition effects.

Design/methodology/approach – The authors assess the behavioral biases affecting the investment decisions of life insurance policyholders through the serial mediation of overconfidence and disposition effects using a structured questionnaire. The study included 501 life insurance policyholders who were selected using a snowball sampling technique.

Findings – The results of this study revealed that behavioral biases influence the investment decisions of life insurance policyholders. The results also support the serial mediation model, where behavioral biases influence the investment decisions of life insurance policyholders via overconfidence and disposition effects.

Research limitations/implications – This study makes a theoretical contribution to the field of behavioral finance by exploring the influences of behavioral biases on investment decisions. It also introduces overconfidence and disposition effects as serial mediators between behavioral biases and investment decisions. The study will be helpful for researchers, academicians and policymakers in the development of a more comprehensive model in the area of behavioral finance and in raising awareness regarding those biases among policyholders in order to improve their investment strategy.

Originality/value – This study has extended the ongoing simple mediation model by integrating overconfidence and disposition effects in a serial mediation model between behavioral biases and investment decisions. The study will contribute to the area of behavioral finance, as it is the first time this particular study has been conducted according to the authors' knowledge.

Keywords Decision-making, Investment, Heuristics, Psychological biases, Sequential mediation

Paper type Research paper

1. Introduction

Standard finance consists of a collection of different concepts and theories, such as the Markowitz portfolio principles (Markowitz, 1952) and the expected utility theory (Bernoulli, 1738), in order to discuss the efficiency of the market, considering all the available information while making investment decisions. However, investment decisions are not only based on standard finance, as attitudes, emotions and psychological biases all influence investment decisions, which tend to be irrational (Kapoor and Prosad, 2017; Bihari *et al.*, 2022). Previous studies have found the existence of both rational as well as irrational behavior in almost every market across the world (Davis *et al.*, 2015), and the same results have been found for India.

JEL Classification — G11, G40, G41

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Psychological factors play a significant role in the investment decisions of investors and are encapsulated in the wider area of behavioral finance (Prosad *et al.*, 2015). Nowadays, investors are prone to various psychological errors (Ritika and Kishor, 2020). Psychological biases have immense influence on investment decisions; this is a fact that cannot be ignored. It can be deduced from the past literature that various behavioral biases are shown by investors in the market and how these biases influence the investment decisions of investors (Yoong and Ferreira, 2013). Various studies in the behavioral finance area have been published and have yielded mixed results (Rasheed *et al.*, 2018).

The objective of this paper is to examine the impact of behavioral biases on investment decisions focusing on confirmation bias, conservatism bias, overconfidence and disposition effects. This paper aims to analyze the influence of behavioral biases on investment decisions and to examine overconfidence and disposition effects as serial mediators between behavioral biases and investment decisions by analyzing the responses of 501 life insurance policyholders using a structured questionnaire through partial least squares structural equation modeling (PLS-SEM). The results of this study indicate the significant influence behavioral biases have on investment decisions and also show that overconfidence and disposition effects serially mediate the association between behavioral biases and investment decisions.

The remaining sections of this study are classified into the following sections: Section 2 of the study explains the previous literature on behavioral biases, overconfidence, disposition effects and investment decisions that further lead to the development of hypotheses on direct relationship and serial mediation analysis; Section 3 discusses the research methodology used in this study; Section 4 presents the results and findings of the study; Section 5 emphasizes the discussion and implications of the study and Section 6 provides the conclusion of the study, as well as its limitations and future research directions for researchers.

2. Literature review

2.1 Theoretical background

The decision-making of policyholders in life insurance is influenced by behavioral biases (Shunmugasundaram and Sinha, 2022). The psychology of policyholders investing in life insurance plays an important role in shaping their decisions. Opposing the assumptions of perfect knowledge and rationality of traditional finance in the market, behavioral finance asserts that behavioral biases are influencing the investment decisions of investors in real-life (Barber and Odean, 2001). Several studies have evaluated the rationale behind purchasing life insurance and justifying the purchase of these products (Pitthan and Witte, 2022). Nevertheless, the decision to purchase life insurance, along with other financial products, is complex and involves elements of both irrationality and rationality (Mohamad *et al.*, 2014). The abundance of products overwhelms consumers, as well as the limited time available to assess those products, potentially leading to biased decision-making (Kinatta *et al.*, 2021). In this contemporary world, humans are susceptible to numerous psychological errors (Ritika and Kishor, 2020). There are biases (confirmation bias, conservatism bias, representativeness bias, herding, mental accounting, overconfidence, disposition effects, self-control, regret-aversion, etc.) that influence the investment decisions of investors (Acker and Duck, 2008; Jonas *et al.*, 2001; Luo, 2012; Messis and Zapranis, 2014; Thaler and Benartzi, 2004). Mohamad *et al.* (2014) identified that consumers evaluate their life insurance purchase decision on the basis of product traits such as benefits, costs and premiums in a rational manner. However, due to the lack of readily available information and limited knowledge about insurance products (Nomi and Sabbir, 2020), consumers may subject to uncertainty in their life insurance purchase decisions. This uncertainty can lead to an exploration of the behavioral

aspects that influence the life insurance policyholders' purchase decisions in India. Asri (2013), as suggested by Shefrin (2000), identified one group of behavioral biases as the framing effect or framing bias. This is a decision-making bias on the basis of a framework of information and can influence decisions based on positive or negative options, such as loss or gain. Different ways of perceiving facts can lead to different decisions and judgments, including conservatism and confirmation biases (Kartini and Nahda, 2021). Furthermore, Altaf and Jan (2023) postulated that generational biases are influential factors in decision-making among humans of the same generational cohort. These biases are premised on the notion of age-related commonalities that shape the behavior of each generation (Noble and Schewe, 2003). This notion includes two specific biases: overconfidence and disposition effects (Altaf and Jan, 2023).This study focuses on the literature on behavioral biases (confirmation bias and conservatism bias), mediators (overconfidence and disposition effects) and their impact on investment decisions.

2.2 Hypotheses development

2.2.1 Behavioral biases and investment decisions. The irrational behavior of individuals in the market can be explained by various concepts of behavioral finance (Bansal, 2020). Behavioral heuristics and biases provide a framework that helps in taking investment decisions easily and quickly (Shah and Oppenheimer, 2008). Various types of biases have been developed to elaborate the process of decision-making (West *et al.*, 2008). This study includes confirmation bias and conservatism bias as behavioral biases. Confirmation bias was coined by Peter Watson, a psychologist. It refers to the fact that individuals tend to favor the information that confirms their beliefs or ideas (Plous, 1994). The conservatism bias was evolved by Edwards, who stated that individuals tend to forecast and take decisions based on their own beliefs rather than accepting other factors of investment decisions (Edward, 1982). Calvet *et al.* (2009) studied the presence of behavioral biases in investment decisions. There is a significant association between behavioral biases and heuristics in investment decisions, and there is a significant association between behavioral biases and investment decisions (Gennaioli *et al.*, 2015; He and Li, 2019; Jiang *et al.*, 2020; Kumar and Lee, 2020). Other studies conducted by Kasoga (2021), Mohanty *et al.* (2023) and Shah *et al.* (2018) found a significant impact of behavioral biases (availability bias, confirmation bias, conservatism bias, disposition effects, overconfidence and representativeness bias) on investment decisions.

Chen *et al.* (2020) investigate the role of behavioral biases, particularly overconfidence, in various market conditions. Parveen *et al.* (2021) studied different behavioral biases (anchoring bias, confirmation bias, etc.) leading to overconfidence and investment decisions. Another study examines the role of behavioral biases in influencing overconfidence (Savor and Wilson, 2019). Kumar and Lee (2020) explore the influence of behavioral biases contributing to disposition effects.

The following hypotheses are framed on the basis of the above discussion:

H1. Behavioral biases influence the investment decisions of life insurance policyholders.

H2. Behavioral biases influence the overconfidence of life insurance policyholders.

H3. Behavioral biases influence the disposition effects of life insurance policyholders.

2.2.2 Overconfidence, disposition effects and investment decisions. Overconfidence is the most studied bias in the past (Tekce *et al.*, 2016), as it is one of the biases that affect the investment decisions of individuals and can lead them to overestimate their competencies (De Bondt and Thaler, 1995). Glaser and Weber (2007) confirm that overconfidence leads to excessive involvement in investment. In addition to over confidence, disposition effects also influence the investment decisions of investors (Grinblatt *et al.*, 2012; Rau, 2015). Some previous studies show

how disposition effects influence investment decisions (Guenther and Lordan, 2023; Haryanto *et al.*, 2020). Other studies also investigated the contribution of overconfidence to disposition effects and its influence on investment decisions (Abideen *et al.*, 2023; Trejos *et al.*, 2019).

The above discussion proposed the following hypotheses:

H4. Overconfidence contributes to the disposition effects of life insurance policyholders.

H5. Overconfidence has a significant impact on the investment decisions of life insurance policyholders.

H6. Disposition effects have a significant impact on the investment decisions of life insurance policyholders.

2.2.3 The role of mediation. De Bondt and Thaler (1995), in their study, discuss various biases influencing the decision-making of individuals. They also highlight how confirmation bias and conservatism bias interact with overconfidence and contribute to disposition effects. This study provides an overview of the relationship between overconfidence, behavioral biases and investment decisions. We have also traced how overconfidence mediates the association between behavioral biases and investment decisions (Parveen *et al.*, 2021). Previous studies also examined the mediating role of disposition effects between behavioral biases and investment decisions (Raza and Mohsin, 2016). After performing a thorough study, we have also identified a study examining serial mediation of overconfidence and disposition effects in investors' decisions. Parveen *et al.* (2021) examine the impact of behavioral heuristics on investment decisions, including overconfidence and disposition effects, as a serial mediator. To the best of our knowledge, no prior research has focused on this model in relation to life insurance decisions. We endeavored to address this gap in light of the outcomes of prior studies.

Based on the above discussion, the following hypotheses are proposed:

H7. Overconfidence mediates the association between behavioral biases and investment decisions.

H8. Disposition effects mediate the association between behavioral biases and investment decisions.

H9. Overconfidence and disposition effects serially mediate the association between behavioral biases and investment decisions.

Keeping in mind the above literature, the present study extended the simple behavioral bias model in life insurance decision by incorporating serial mediation of overconfidence and disposition effects. We have used the same serial mediators' overconfidence and disposition effects as used by Parveen *et al.* (2021) in the stock market between behavioral heuristics and investment decisions. The proposed serial mediation model is presented in Figure 1.

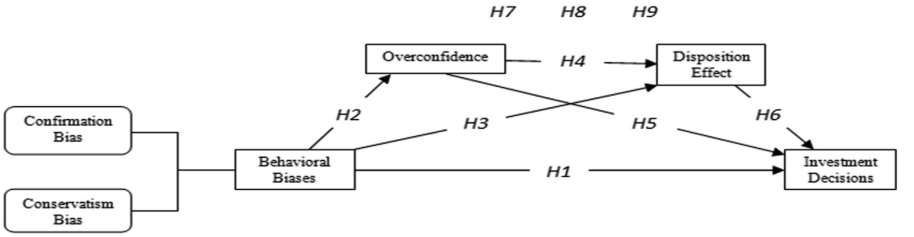

Figure 1.
Proposed model

Source(s): Figure by authors

3. Method

This study theorizes behavioral biases related to investment decisions based on overconfidence and disposition effects. The model used in this study is evaluated by employing the survey technique and bootstrapping method applying PLS-SEM to check the effect of mediation as well as a direct effect .

3.1 Research design

This study adopts a quantitative and empirical research approach to examine the impact of behavioral heuristics on investment decisions. It also identifies the impact of behavioral biases, including overconfidence bias and disposition effects, as sequential mediation factors on investment decisions. The research design involves the collection of data for the study from a number of life insurance policyholders.

3.2 Questionnaire design

This study employed a structured questionnaire in order to collect the data from 501 policyholders who invested in life insurance policies. The questionnaire used in this study is adopted from the previous studies of Baker *et al.* (2019), Jain *et al.* (2019), Ndawula *et al.* (2023), Prosad *et al.* (2015) and Sinha and Shunmugasundaram (2023) to ensure the reliability and validity of measures. This study was evaluated through three validity tests: face, content and construct. These tests were administered to ensure the accurate measurement of the intended variables (Field, 2005). The face validity test was successful as the content of the questionnaire was deemed appropriate and reasonable by the respondents (Oluwatayo, 2012). The content validity test was also passed, as the questionnaire was designed to reflect the target population, and the items were selected based on a thorough review of relevant literature (Boudreau *et al.*, 2001). Experts in behavioral finance were consulted to conduct the face and content validity tests. Furthermore, the study met both discriminant and convergent validity criteria for construct validity, thus passing all the validity tests. The credibility of the questionnaire was evaluated using Cronbach's alpha test for reliability. As the reliability and validity of the questionnaire have been established, it is regarded as the most effective means of gathering the requisite data from respondents and is deemed suitable in the prevailing research environment. The questionnaire of this study is divided into two sections: the first section included questions related to the demographic information of respondents, while the second section consisted of questions related to behavioral biases, investment decisions, overconfidence bias and disposition effects. This study used close-ended questions of 20 items that were used to collect data from the respondents. The respondents included in this study answered all of the questions, except for demographic information, on a "five-point Likert scale," ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3 Sampling technique

This study utilized snowball sampling to recruit the participants. Initially, few life insurance policyholders were selected for the study based on specific criteria, and later on, these participants referred the other potential respondents. This sampling technique enables access to a wide range of life insurance policyholders, especially those who may not be easily approachable by following traditional sampling techniques (Adil *et al.*, 2021; Almansour, 2020; Yoshida *et al.*, 2013).

3.4 Sample size

The determination of sample size is based on the guidelines for analysis employing PLS-SEM. As recommended by Hair *et al.* (2017), a minimum sample size of 10 times the largest number

of structural model paths is generally considered appropriate for behavioral studies. The proposed model of this study includes three sequential mediation paths. Therefore, a minimum sample size of 300 respondents should be targeted; however, efforts have been made to collect a larger sample size to reduce the redundancy and enhance the statistical power of the study. A total of 600 questionnaires were distributed and 501 samples were received, indicating an 83.5% response rate in this study.

3.5 Method

The normality of data was analyzed to decide the tools for analysis, and it was found that the data were not normally distributed. The adequacy of data for the study has been finalized by the Kaiser–Meyer–Olkin criterion (KMO) and Bartlett's sphericity test. The result was found acceptable in our study, as the value of KMO was 0.895, indicating the acceptability of factors and significance in Bartlett's test ($p < 0.01$). We have also used Harman's single-factor test to check for common method bias and found that one factor explained 47.267% of the variance, which is below the threshold of 50% (Podsakoff *et al.*, 2003). Hence, this study is free from bias.

4. Results

The sample of this study comprises 58.5% of males and 41.5% of female respondents. Regarding the age of the respondents, 52% of the sample belongs to the age group of 18–35, 31.4% belongs to the age group of 36–55 and 16.6% belongs to above 55 years of age. In terms of the qualification of respondents, the sample consisted of 5% matriculated, 15.4% intermediate, 50.9% graduate, 25% postgraduate and 3.7% doctorate respondents. The sample of this study comprises a sample of 40.5% earning below ₹2.5 lac., 30.5% earning ₹2.5–5 lac., 12% earning ₹5–7.5 lac., 10.8% earning ₹7.5–10 lac. and 6.2% earning above ₹10 lac. of annual income.

The study used SPSS 21 and SmartPLS 4.0.9.1 for analyzing the data. SPSS 21 was applied to code the response of respondents and the calculation of variables. PLS 4.0.0.1 was used to calculate the direct and indirect (mediation) effects and also the serial mediation effect. In PLS-SEM, first, we need to compute the measurement model, and then the structural model of this study.

4.1 Measurement model

To establish the measurement model, we first assessed the inter-item reliability using factor loadings. The threshold value for factor is 0.70, but factor loading of items 0.50 is also acceptable (Anderson and Gerbing, 1988; Maziriri *et al.*, 2022). The study revealed that the factor loading for all of the items included in this study falls within the acceptable range, which explains the consistency of the instrument and the items. Composite reliability (CR) is used to assess the internal consistency and the recommended value for CR is 0.70 and above (Hair *et al.*, 2014). The study revealed that the CR values of all items fall within the recommended range, confirming the internal consistency. Furthermore, to establish the convergent validity, the average variance explained (AVE) was computed in this study. The threshold value for AVE is 0.40 or higher to attain convergent validity in any study (Anderson and Gerbing, 1988; Maziriri *et al.*, 2022). In this study, we have found that the values of AVE for all items were above 0.70, confirming that convergent validity has been established. Table 1 illustrates the computation of factor loadings, CR and AVE for this study. Furthermore, to establish the discriminant validity in this study, the hetrotrait-monotrait (HTMT) ratio was used. Previous studies also used the Fornell–Larcker criterion to establish the discriminant validity, but because of criticism expressed

regarding the Fornell–Larcker criterion, this study has used the HTMT as Fornell–Larcker's criterion does not accurately measure discriminant validity (Henseler *et al.*, 2014), implying that HTMT is more suitable for measuring discriminant validity (Henseler *et al.*, 2016; Verkijika and De Wet, 2018). The threshold values for HTMT are less than 0.90 and 0.85 to establish discriminant validity (Henseler *et al.*, 2015; Neneh, 2019; Verkijika and De Wet, 2018). We have found that discriminant validity was established in this study, as the HTMT values are far below the threshold value. Table 2 illustrates the computation of discriminant validity.

4.2 Structural model

After establishing the requirements of the measurement model, the structural model was evaluated to test the significance of various hypotheses. This includes the direct effect, indirect effect, total effect and specific indirect effect to check the significance of serial mediation. In this study, the computation of the direct path, specific indirect path, serial mediation path, t-values and *p*-values was considered through bootstrapping in order to investigate the important role of serial mediation between behavioral biases (confirmation bias and conservatism bias) and investment decisions through serial mediation of overconfidence and disposition effects.

Serial mediation analysis: the direct impact of one variable on another is shown through the path coefficient. In PLS-SEM, after analyzing the strength of the impact of the structural model, the significance of each path has to be looked at using bootstrapping. The direct and specific indirect effects are calculated by applying the algorithm of PLS, mediation and serial mediation analysis. The models given below are the direct, total and specific indirect effects used in the mediation analysis of the study (see Figures 2–5):

	α	CR	AVE
Behavioral biases	0.627	0.841	0.726
Disposition effects	0.843	0.904	0.759
Investment decisions	0.885	0.920	0.742
Overconfidence	0.915	0.940	0.796

Source(s): Authors' own elaboration

Table 1. Reliability and convergent validity

	Behavioral biases	Disposition effects	Investment decisions	Overconfidence
Behavioral biases				
Disposition effects	0.182			
Investment decisions	0.272	0.484		
Overconfidence	0.194	0.410	0.571	

Source(s): Authors' own elaboration

Table 2. HTMT

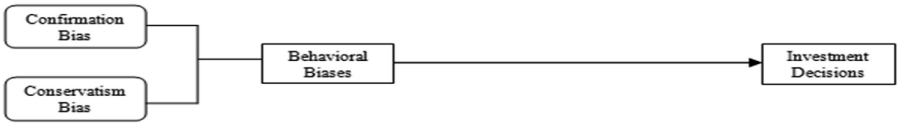

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Figure 2. Model 1 with direct and total effects

Model 1: Behavioral biases → Investment decisions

Model 2(a): Behavioral biases → Overconfidence → Investment decisions

Model 2(b): Behavioral biases → Disposition effects → Investment decisions

Model 3: Behavioral biases → Overconfidence → Disposition effects → Investment decisions

To examine the results of the study, PLS-SEM was run, and the findings are presented in Table 3. Following the results, H1 behavioral biases have a significant and positive impact on investment decisions, as indicated by the beta value and the t value ($\beta = 0.109$, $t = 2.577$, $p < 0.05$). Besides, it was also found that the relationship between behavioral biases and overconfidence was significant ($\beta = 0.152$, $t = 2.756$, $p < 0.05$); hence, H2 was supported. For H3, behavioral biases have no significant impact on disposition effects ($\beta = 0.082$, $t = 1.688$, $p > 0.05$).

The analysis also revealed the existence of a significant association between overconfidence and disposition effects ($\beta = 0.358$, $t = 7.709$, $p < 0.01$); hence, H4 was supported. For H5, it was identified that overconfidence has a significant and positive influence on investment decisions ($\beta = 0.412$, $t = 8.982$, $p < 0.01$). It was also found that disposition effects have a significant and positive impact on investment decisions ($\beta = 0.263$, $t = 5.971$, $p < 0.01$), thus supporting H6.

Furthermore, the mediating effect of overconfidence between behavioral biases and investment decisions was found significant ($\beta = 0.063$, $t = 2.589$, $p < 0.05$), thus supporting H7

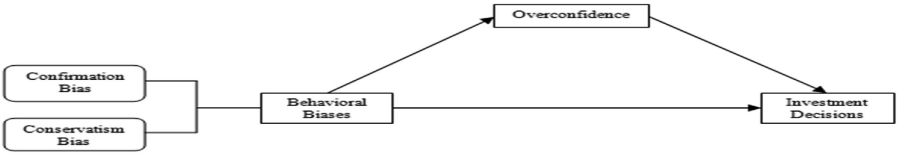

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Figure 3.
Model 2 (a) with overconfidence as a mediator

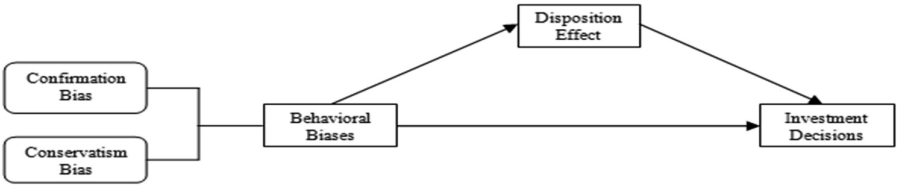

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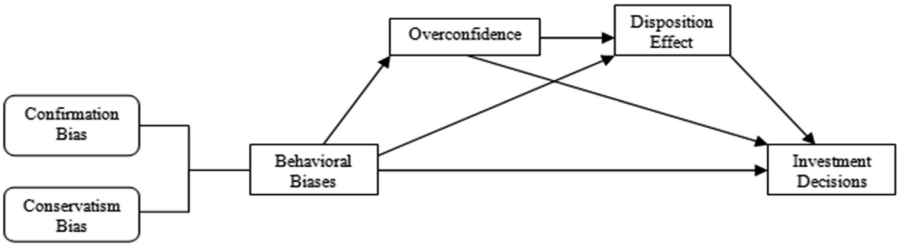
Figure 4.
Model 2 (b) with disposition effects as a mediator



Source(s): Figure by authors

Figure 5.
Model 3 with overconfidence and disposition effects as serial mediators

H No.		Original sample (O)	Standard deviation	T Statistics	P values	Result
H1	Behavioral biases -> Investment decisions (Direct effect)	0.109	0.042	2.577	0.010	Accept
	Behavioral biases -> Investment decisions (Total effect)	0.207	0.054	3.876	0.000	Accept
H2	Behavioral biases -> Overconfidence	0.152	0.055	2.756	0.006	Accept
H3	Behavioral biases -> Disposition effects	0.082	0.048	1.688	0.092	Reject
H4	Overconfidence -> Disposition effects	0.358	0.046	7.709	0.000	Accept
H5	Overconfidence -> Investment decisions	0.412	0.046	8.982	0.000	Accept
H6	Disposition effects -> Investment decisions	0.263	0.044	5.971	0.000	Accept
H7	Behavioral biases -> Overconfidence -> Investment decisions	0.063	0.024	2.589	0.010	Accept
H8	Behavioral biases -> Disposition effects -> Investment decisions	0.021	0.014	1.541	0.123	Reject
H9	Behavioral biases -> Overconfidence -> Disposition effects -> Investment decisions	0.014	0.006	2.485	0.013	Accept

Note(s): P values in red show insignificant results and P values in green show significant results
Source(s): Authors' own elaboration

Table 3.
Hypothesis testing

and also revealing that there was a partial mediation effect. The result of the mediation analysis of disposition effects in the association between behavioral biases and investment decisions was found insignificant ($\beta = 0.021$, $t = 1.541$, $p > 0.05$). Therefore, rejecting H8 and also indicating that there was a direct-only, non-mediation effect. In the end, H9 was analyzed for serial mediation of overconfidence and disposition effects in the association between behavioral biases and investment decisions. The impact of behavioral biases on investment decisions through serial mediation of overconfidence and disposition effects was found significant ($\beta = 0.207, t = 3.876, p < 0.01$), thus supporting H9 and also revealing a partial serial mediation effect. Table 3 illustrates the results of the hypotheses testing.

R-square (R^2): this table indicates the effect of the predictor variable on the criterion variable. In this study, behavioral biases (confirmation bias and conservatism bias) and serial mediators (overconfidence and disposition effects) contributed 35.3% toward the decisions made by life insurance policyholders. Here, a serial mediation analysis (three-path model) was part of the structural model of the study. Table 4 reveals the summary of R^2.

	R-square
Investment decisions	0.353

Source(s): Authors' own elaboration

Table 4.
R-square

5. Discussion

The theoretical model of this study contemplates the way in which behavioral biases impact the investment decisions of life insurance policyholders in India. Besides, this study also tries to examine the influence of overconfidence bias and disposition effects through the serial mediation analysis. The results of the study draw several conclusions. This study supports the findings of previous studies that behavioral biases have a significant and positive impact on investment decisions (Ritika and Kishor, 2020; Pradhan, 2021). This research puts forward that behavioral biases have a significant impact on investment decisions and also explains that overconfidence and disposition effects serially mediate the association between behavioral biases and investment decisions. Various behavioral biases affect investment decisions, which have been supported by several scholarly works (Akgul and Cetin, 2021).

Bashir (2013) provides a clear insight into how behavioral biases can be attributed to overconfidence. Previous studies have explored and discussed how behavioral biases lead to overconfidence (Martinez-Conde and Macknik, 2020). The findings of various studies and theoretical frameworks, including confirmation bias and conservatism bias, help in shaping the role of overconfidence in decision-making (Ditto and Lopez, 1992; Kuhl *et al.*, 2021), while these studies also found similar results as behavioral biases are associated with overconfidence. Guenther and Lordan (2023) examined the influence of behavioral biases on disposition effects. They found that investors hold losing investment avenues because of confirmation bias that ultimately affects the returns. Investors tend to seek information that confirms their ideas or beliefs and neglect other information and contributions, which lead to disposition effects (Hossain and Siddiqua, 2022). Barber and Odean (2001) and Daniel *et al.* (1998) found that conservative investors are likely to exhibit disposition effects. Behavioral biases influence disposition effects (Barber and Odean, 2013). In contrast, this study found that behavioral biases do not influence disposition effects related to investments in life insurance.

Overconfidence leads investors in the market to exhibit disposition effects (Dhar and Zhu, 2006). Trejos *et al.* (2019) examined the role of overconfidence in disposition effects and found that overconfident individuals exhibited disposition effects while making investment decisions. This study found a similar result. Investment decisions are highly influenced by overconfidence and also lead to frequent trading and investment decisions (Dhar and Zhu, 2006). The findings of this study support the previous literature stating that overconfidence has a significant impact on investment decisions (Trehan and Sinha, 2018). It is proven from the previous literature that disposition effects influence investment decisions (Shandu and Alagidede, 2022) and support the findings of the present study in respect of disposition effects and investment decisions. In contrast, Adil *et al.* (2021) and Ali *et al.* (2023) found an insignificant influence of disposition effects on investment decisions.

This study found a partial mediating effect of overconfidence between behavioral biases (confirmation bias and conservatism bias) and investment decisions and the same result was found in previous studies, which show that overconfidence has a mediating effect between behavioral biases (anchoring bias, confirmation bias and representative bias) and investment decisions (Fitri and Cahyaningdyah, 2021; Park *et al.*, 2010). Parveen *et al.* (2021) found that disposition effects partially mediate the association between behavioral heuristics and investment decisions. On the contrary, this study found a direct-only, non-mediation role of disposition effects between behavioral biases and investment decisions. This study revealed the role of serial mediation of overconfidence and disposition effects between behavioral biases and investment decisions of life insurance policyholders. Studies conducted by Damayanti and Rokhim (2022) found a significant impact of overconfidence and disposition effects on investment decisions. Parveen *et al.* (2021) found in their study that overconfidence and disposition effects serially mediate the association between behavioral heuristics and investment decisions, and a similar result was found in this study. Therefore, it can be

observed from this study that overconfidence and disposition effects serially and partially mediate the association between behavioral biases and investment decisions of life insurance policyholders.

5.1 Theoretical implication

This study also makes theoretical contributions by exploring the influence of behavioral biases on the investment decisions of life insurance policyholders on the theoretical paradigm of behavioral biases and investment decisions (Shunmugasundaram and Sinha, 2022). This study also unravels the role of overconfidence and disposition effects in the process of linking behavioral biases to investment decisions. The study conducted by Parveen *et al.* (2021) on the mediating effect of overconfidence and disposition effects provides a better understanding of the association between behavioral heuristics and investment decisions. Besides, overconfidence and disposition effects also have a significant impact on investment decisions as independent variables rather than intervening variables, as supported by previous works of literature (Hoxha and Hasani, 2022; Hossain and Siddiqua, 2022).

This study has extended the forgoing direct relationship or simple mediation model by integrating behavioral biases and investment decisions in a serial mediation model. This is the first time that the result of this study reveals that overconfidence and disposition effects serially mediate the association between behavioral biases (confirmation bias and conservatism bias) and investment decisions. This study enhances our knowledge, as the above has not been identified in previous studies.

5.2 Managerial implications

This study is helpful for researchers, academicians and policymakers in developing countries. This study helps academicians with the underlying mechanisms of overconfidence and disposition in investment decisions. Based on these results, academicians can contribute to the development of more comprehensive theories in the area of behavioral finance. Academicians can also develop a new behavioral model to depict the solutions for dealing with behavioral biases in investment decisions (Parveen *et al.*, 2021). Researchers can use the findings of this study in validating the results of future studies. The irrational aspect of decision-making is a complex phenomenon, which also requires an interdisciplinary approach. Therefore, researchers can use the results of this study as a base and collaborate with experts in psychology, behavioral economics and others to enhance the theoretical foundations that can lead to more fruitful insights into the mechanism underlying these biases. The role of the Insurance Regulatory and Development Authority of India is significant, as it regulates the whole insurance market. They can recognize the impact of these biases and develop regulations and policies for the protection of policyholders. They can arrange workshops to educate the policyholders in order to make best use of the rational and irrational factors in investment decisions, while also using Lo's (2004) adaptive market hypothesis to make more informed and rational choices.

6. Conclusion

The findings of this study revealed the existence of behavioral biases, overconfidence, disposition effects and impact on the investment decisions of life insurance policyholders. Psychological biases positively affect life insurance policyholders in India. Life insurance policyholders mostly relied on their intuitions and emotions when considering the value of the policies for them and their families while making the investment decision. The study will contribute to the literature on behavioral finance in developing countries as it revealed the impact of behavioral biases on investment decisions of life insurance policyholders through

serial mediation of overconfidence and disposition effects, as this area of study is least explored. The findings of this study can be generalized for the insurance market of India and other developing countries, such as Indonesia, Malaysia, etc., as these markets have almost the same structure in terms of their insurance market, culture, income level and uncertainty when it comes to the occurrence of events. The impact of any uncertain circumstances is almost the same on life insurance policyholders in all of these countries, so the findings can be generalized.

Apart from making remarkable contributions, a few limitations can be taken into consideration in future research works. The main limitation of this study is the fact that the sample study represents the life insurance policyholders, which may not be true universally, as this study uses a non-probability sampling technique. As a consequence of this, the results can be obtained depending on cultural settings. Future researchers in the field of behavioral finance can replicate this model across the globe and also in different investment avenues where investors are investing to validate results and find similarities and dissimilarities. Secondly, the study used only two behavioral biases. Future researchers may include more of such biases in their study. The study is cross sectional, but there can be chances of common method bias. We have used Harman's single-factor test to reduce the common method bias, but it cannot be completely ignored. Hence, future researchers can undertake a longitudinal study to overcome this limitation. This study only considers the mediating effect, while future studies can uncover the moderating effect, as demographic characteristics might influence the association between behavioral biases and investment decisions and can also explore mediated moderation.

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