

Trading Psychology Under Pressure: Cognitive Bias Evolution in a Simulated Bear Market

Finet Alain ^(a), Kristoforidis Kevin ^(a), Laznicka Julie ^(a*)

^(a) University of Mons, Belgium.



ARTICLE INFO

Article history:

Received 16 June 2025

Received in rev. form 20 July 2025

Accepted 23 July 2025

Keywords:

Behavioral Finance, Experimental Finance, Cognitive Biases, Qualitative Research

JEL Classification:

G10, G40, G41

ABSTRACT

Through a thematic analysis, we analyze the evolution of cognitive biases among eight participants (students) during a three-day trading simulation in a market that was perceived as unfavorable. The biases studied include overconfidence, representativeness, anchoring, herd behavior, availability and prospect theory. Prospect Theory, particularly through loss aversion, is strongly present and dominates the experience of most participants. It is perceived as 'difficult' even with virtual money. Some manage loss aversion with strict stop losses, while others, when confronted with losses, may take more risks in order to try to 'recover'. Gains generate moderate satisfaction rather than euphoria. Virtual money seems to reduce the emotions connected with gains and losses for some participants. The Availability Bias is widespread. The participants focus on easily accessible information such as graphs, well-known company names, basic news and widely used indicators. Fundamental analysis is often rejected as too complex, time-consuming or irrelevant. Anchoring Bias is variable. Some participants use specific limits as reference points. Representativeness bias is generally stable throughout the experiment. It involves using familiarity with companies as a decision-making criterion, or applying principles perceived as effective, such as using well-known technical indicators. Overconfidence varies considerably from one participant to another, influenced by previous experience and results achieved. It can be very low at the beginning, grow with confirmed intuition, or decrease in response to an unfavorable market. In the context of the study, Herd Behavior corresponds to a desire to find comfort in the group of participants in order to overcome a feeling of isolation, rather than a desire to copy behavior. The key findings of our research demonstrate a strong aversion to loss (prospect theory).

© 2025 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

Introduction

Decision-making in stock markets is a complex process. Traditional models assume that agents are rational, considering investors to be perfectly informed decision-makers seeking to maximize their utility in a rational way (Benjana & Yamani, 2022). However, behavioral finance has challenged this perspective (Nwosu & Ilori, 2024). Numerous empirical studies have shown that financial decisions are frequently influenced by psychological factors (Lo et al., 2005).

Among the most common biases in stock market trading, we consider overconfidence, representativeness, anchoring, herd behavior, availability bias and the processes described by prospect theory (particularly loss aversion). These biases can alter risk perception, asset valuation and response to market signals. The influence of these biases is widely discussed in the literature (Singh et al., 2024) but understanding their dynamics and evolution during a trading period is not a common topic.

Our study explores this dynamic dimension by examining the behavior of eight participants engaged in a three-day stock market simulation. A simulation environment provides a framework for observing psychological reactions under conditions that, while not involving real money, replicate the informational and time constraints of real trading. The specific context of this simulation, with a

market perceived as difficult by participants, provides a field for studying how individuals manage their biases in uncertainty (Finet et al, 2025).

Overconfidence bias reflects the tendency of individuals to overestimate their knowledge or control over random events. This bias has been widely studied in the context of trading. Barber and Odean (1999) demonstrate that overconfident investors trade more, generating lower returns than more conservative ones. This excessive confidence leads them to ignore warnings and overestimate their predictions. This bias is reinforced by specific situations. For example, the “beginner's luck” effect can shape an exaggerated perception of competence after initial gains (Gao et al., 2021). The level of overconfidence also varies according to investor profiles. Menkhoff et al. (2013) find that financial advisors exhibit greater overconfidence than institutional asset managers, which can lead to even riskier behavior when they advise customers.

Anchoring bias describes the propensity to rely excessively on an initial reference value, even if that value is arbitrary (Tversky & Kahneman, 1974). In a stock market context, this bias is particularly evident in the focus on the purchase price of an asset, which leads investors to wait for it to ‘rebound’ before selling (Furnham & Boo, 2011). Anchoring can be explained by selective attention and biased memory: investors are reluctant to update their judgements. Liang et al. (2017) note that financial decisions are often guided by mental patterns that are resistant to rational updates. Amokrane and Ouaret (2021) confirm that this bias could affect both professionals and individuals. Rani et al. (2024) observe that anchoring increases risk tolerance, as investors find it difficult to adjust their expectations after a loss. This can be exacerbated in volatile markets, where initial reference points quickly lose their relevance.

Availability bias (Tversky and Kahneman, 1973) is based on how easily information comes to mind. The more recent or emotional a piece of information is, the more representative of reality it is considered to be, even if it is statistically insignificant. This bias is particularly problematic in finance, as it leads to overestimating the importance of recent publicized events. Aren and Hamamci (2021) distinguish between two mechanisms: availability related to the perceived frequency of an event, and availability related to the brightness of the associated mental image. Thus, a recent crisis may cause investors to overestimate the risk of a market downturn, even in the absence of negative fundamental indicators. Zahera and Bansal (2018) observe that availability bias interacts with other biases, such as overconfidence or the recency effect, amplifying its effects. Empirically, Javed et al. (2017) highlight a link between availability and perceived performance, suggesting that investors influenced by striking memories tend to believe they are performing better than they actually are. Other studies (Bakar & Yi, 2016) confirm that this bias influences decisions.

Representativeness bias is the error of judging the probability of an event based on its similarity to a perceived trend. Ritika and Kishor (2022) show that this bias leads to forecasting errors, particularly among novice investors. Ates et al. (2016) note that the level of financial education plays a moderating role: people with little education tend to confuse chance with a stable pattern. Chen et al. (2007) suggest that experience partially reduces this bias, although the extent varies across markets. In emerging markets, collective irrationality and mimetic behavior reinforce this bias. Irshad et al. (2016) show that the representativeness effect encourages decisions based on emotions rather than fundamental data.

Herd behavior refers to the tendency of individuals to follow the decisions of others. In financial markets, this results in mimetic behavior in investment decisions, particularly during uncertainty. Fear of missing out on an opportunity and the need for social belonging are major contributing factors (Li et al., 2023). Galariotis et al. (2016) reveal that herd behavior is particularly prevalent in European markets. Shah et al. (2017) point out that this behavior is more common in large companies and during market upturns.

Prospect Theory (Kahneman and Tversky, 1973) is one of the foundations of behavioral finance. It provides a realistic view of human behavior in the face of risk, incorporating emotions and subjective perceptions into decision-making. Although Prospect Theory has been widely studied in financial behavior, its application to understanding the dynamic trends of biases among traders, particularly in bear markets, is a field that is still largely unexplored.

Its major contributions include:

- Loss aversion: losses generate psychological pain more intense than the pleasure from an equivalent gain. This explains the reluctance to sell assets at a loss (Coricelli et al., 2007), a behavior reinforced by feelings of regret (Deuskar et al., 2021).
- Framing: the presentation of information influences decision-making. For example, an unrealized loss causes less anxiety than a recorded loss (Chong & Druckman, 2007).
- Probability weighting: individuals overestimate low probabilities and underestimate high ones. This phenomenon is pronounced in speculative trading, where the possibility of a large gain prevails over the actual probability (Fenton-O'Creevy et al., 2010).
- The reference point: gains and losses are evaluated relative to a psychological benchmark rather than in absolute terms. Koszegi and Rabin (2006) show that this strongly influences.

General Methodological Perspective

Our article uses a qualitative methodological perspective, a method relatively uncommon in finance, which has traditionally favored quantitative techniques (Della Vedova et al., 2023). Given the nature of traders' emotions, qualitative approach provides valuable insights. Quantitative methodologies often struggle to catch the nuances of decision-making and the underlying emotional dimensions. In contrast, qualitative methods result in analyzing unexpected influences, difficult to access through quantitative tools. The qualitative perspective lays a foundation for theory development based on lived experiences, allowing the assessment of context-specific behavioral mechanisms.

In qualitative research, the aim is not to statistically generalize findings from a sample to a larger population, but rather to achieve a deep understanding of a phenomenon within a specific context. It involves collecting data from a small sample, chosen for its relevance to the research question (Firestone, 1993).

For this study, an experimental protocol involving three consecutive days of simulated trading was conducted in January 2025 with eight students¹. Following this phase, individual semi-structured interviews were carried out by a researcher with no academic ties to the participants, which encouraged open responses. Given the context of the analysis and the sample considered in our study, our research is exploratory in nature. This work can be seen as a first step before conducting quantitative approaches based on larger samples.

Data Analysis

In terms of data analysis, the narrative approach (as outlined in Creswell and Poth's (2017) five qualitative tools) was selected. Narrative research focuses on affective and experiential dimensions, often involving the reconstruction of participants' stories through the thematic identification of key elements. This analytical process includes memo-writing, contextual description, and interpretive engagement with personal narratives.

The semi-structured interviews were guided by a framework consisting of several sets of open-ended questions, each addressing specific themes related to behavioral patterns. While the full interview guide is not included in the paper for reasons of space and readability, the interviews were developed in alignment with key dimensions of cognitive biases identified in the literature and remained consistent across all interviews to ensure comparability. Additional follow-up questions were occasionally used to clarify responses or explore specific points more deeply, in line with common qualitative research practices. This interview guide allowed for flexible navigation of topics and facilitated the dynamic adaptation based on participant responses. Such flexibility is essential in qualitative research for an in-depth exploration, maintaining alignment with the research design, and supporting responsiveness to unexpected insights that may emerge during the interaction (Whiting, 2008). The complete interview guide can be made available as supplementary material upon request.

For the analysis of the interview data, a thematic analysis was employed. This method enables the identification of both commonalities and differences, while also allowing for the emergence of unanticipated insights (Nowell et al., 2017). The analysis followed the six-phase procedure proposed by Braun and Clarke (2006), ranging from data familiarization to the final report, thereby addressing common critiques in qualitative research (Özden, 2024). To ensure reliability and reduce subjective bias, two authors independently analyzed and coded the interview transcripts. Codes were then compared and discussed collectively to achieve consensus. Bias mitigation was addressed through methodological triangulation and reflexivity. The interviews were conducted immediately after the trading sessions by a researcher who had no academic authority over the participants, encouraging open responses. Furthermore, we triangulated interview data with behavioral observations from the trading simulation and emphasized reflexive memo-writing during analysis, as suggested by Creswell and Poth (2017). Each interview was summarized by dominant themes, representative codes and illustrative statements. Themes to be analyzed are biases and impact on decision-making.

All interviews were audio-recorded with participants' consent, fully transcribed (see Table 2), and analyzed by the three authors. Artificial intelligence was excluded, as technologies are not yet able to grasp the complexities involved in emotional-related reasoning (Finet et al., 2025).

Experimental Design

Participants traded equities individually through the ABC Bourse platform, focusing on stocks in the CAC40, France's main index. Each participant was given a virtual portfolio of 100,000 euros. We chose the CAC40 assuming its constituent companies would be relatively familiar to the participants. There were no limits on trading volume. The experiment lasted three consecutive days (January 27–29, 2025), divided into twelve trading sessions. To simulate the pressure found in real-world markets, participants could access real-time data showing their peers' performance.

The experiment involved students enrolled in Management Science programs at the University of Mons (Belgium). We focused on recruiting participants based on intrinsic motivations rather than financial incentives. The final sample consisted of eight participants (seven men and one woman), a size determined by both budgetary constraints and the labor-intensive nature of qualitative data analysis. Participants were financially compensated for 24 hours of trading.² The predominance of male participants is consistent with what it is documented in literature and is often linked to a greater male propensity for gambling behaviors (Barber & Odean,

¹ All participants provided written informed consent prior to participating in the study. Consent was obtained using printed documents, in accordance with ethical guidelines for research involving human participants. Although the experiment was conducted on a student population (all students were over 18 years of age), no manipulation was carried out: in practical terms, they remained seated in front of a computer for several hours without any physical interaction with the organizers. Finally, no intrusive technology was used, and no neurophysiological measurement tools were used. For all these reasons, how the experiment was designed does not fall within the scope of the Helsinki guidelines.

² All participants provided written informed consent prior to participating in the study. Consent was obtained using printed documents, in accordance with ethical guidelines for research involving human participants. Although the experiment was conducted on a student population (all students were over 18 years of age), no manipulation was carried out: in practical terms, they remained seated in front of a computer for several hours without any physical interaction with the organizers. Finally, no intrusive technology was used, and no neurophysiological measurement tools were used. For all these reasons, how the experiment was designed does not fall within the scope of the Helsinki guidelines. Helsinki guidelines concern medical research involving human participants, but in our case, this is not medical research but simply using written documents.

2001). We recognize that our sample is strongly gender-biased (7 men, 1 woman) but the main objective of our research was to address the dynamic trend of cognitive biases among individual traders during a bear market, without focusing on gender distinctions.

Participant Profile and Market Context

Although experimental finance is sometimes criticized for relying on student samples, this practice remains common due to advantages in recruitment, cost and time efficiency (Etchart-Vincent, 2006). To address concerns regarding limited real-market experience, participants had completed academic courses in finance, ensuring a basic level of financial literacy. Empirical studies further support the use of student samples, showing that their behavioral patterns can mirror those of professionals (Fréchette, 2011). To enhance engagement, a “non-monetary” incentive—a hotel stay worth €200 for the top-performing portfolio—was offered, consistent with findings on the motivational effectiveness of non-cash rewards in experimental settings (Etchart-Vincent, 2006).

The simulation occurred during a slightly negative trend in the CAC40 index (see Table 1). Although market losses were moderate, participants reacted strongly to portfolio declines, suggesting that negative perception may have fostered some biases (Xu et al., 2022). Key informational events included DeepSeek’s emergence as an AI competitor (Days 1–2), LVMH’s disappointing earnings (Day 3), and the anticipated Fed announcement maintaining interest rates (January 29).

Table 1: Evolution of CAC40, DJ30, NASDAQ 100, and TOPIX over the Experimental Period

Index	01/27/2025	01/28/2025	01/29/2025	Total Change
CAC40	-0.0003	-0.00012	-0.0032	-0.0036
DJ30	0.0065	0.0031	-0.0031	0.0065
NASDAQ 100	-0.0297	0.0159	-0.0024	-0.0162
TOPIX	0.0026	-0.0004	0.0068	0.009

Interview Structure and Emotions Analyzed

Following the three-day trading sessions, semi-structured interviews were conducted using a three-phase interview guide. The first phase consisted of introductory questions about the participants and their interest in trading. The second phase explored the development of decision-making biases during the sessions.

The interview guide was structured around biases:

- **Availability Bias:** Assessed via four questions to determine whether participants relied predominantly on recent or easily retrievable information (Sadi et al., 2011).
- **Representativeness Bias:** Explored using three questions to evaluate reliance on past experiences for decision-making (Rai, 2024).
- **Overconfidence:** Evaluated through four questions measuring participants' perceived abilities in predicting market trends (Wang, 2023).
- **Anchoring Bias:** Analyzed through three questions to examine dependence on initial reference points (Sharma & Firoz, 2020).
- **Herd Behavior:** Measured using three questions assessing conformity with peer actions (Utari et al., 2024).
- **Prospect Theory:** Via three questions regarding emotional and behavioral responses to gains and losses (Summers & Duxbury, 2012).

The final phase of the interview allowed participants to share additional reflections not previously addressed.

Summary of Key Experimental Elements

In summary, this experimental study was characterized by the following key elements:

- A three-day trading simulation within the French stock market context.
- A sample composed predominantly of male university students.
- The market environment perceived as declining.
- A performance-based reward.

Analysis Results

Procedure Followed for Producing Results

The process involved several key steps that were central to the thematic analysis:

- **Becoming familiar with the data:** Repeatedly reading the transcripts of each interview provided an overall understanding of the discourse and an opportunity to begin to note first ideas about the biases.
- **Generation of initial codes:** The interviews were then coded, assigning codes to specific manifestations of bias (e.g. ‘reluctance to sell at a loss,’ ‘trust based on intuition,’ ‘anchoring on fixed limits,’ ‘use of familiar graphs’). This step was used to break down the discourse into units of meaning. Evolution was specifically investigated by coding the manifestations of biases and relating them to the days of the simulation.
- **Research themes:** The relevant codes were regrouped to build themes representing the biases. This phase involved organizing the codes to identify recurring central themes and their temporal dynamics.
- **Themes revision:** The themes were redefined if necessary, and codes were reassigned to ensure they matched the data and the trends. The relationship between biases and their interaction was also reviewed.

- **Theme names:** Each theme was illustrated using representative statements drawn from each code and theme, linking the analysis to participants' statements. The evolution of each bias was described.
- **Final report produced participant by participant:** Finally, the analysis was written, explaining the dynamics of each bias as highlighted by the thematic analysis, illustrating key points with statements.

Results

Table 2: Statistical Summary of Semi-Structured Interviews

Student	Duration	Number of Words	Number of Pages
I.1.	42 minutes	4466	10
I.2.	42 minutes	6827	12
I.3.	59 minutes	7922	14
I.4.	43 minutes	7492	12
I.5.	42 minutes	5949	12
I.6.	36 minutes	6124	11
I.7.	36 minutes	5946	11
I.8.	33 minutes	5577	10
Mean	42 minutes	6288	11,5
Maximum	59 minutes	7922	14
Minimum	33 minutes	4466	10
Standard Deviation	8 minutes	1102	1,3

Table 3: Analysis Results

Student I.1.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence	Initial confidence based on personal experience	I'm very interested in trading on a personal level, and the whole environment. I'd really like to do it as a career in the future. So it was really for the experience. 'What I did a few years ago was cryptocurrencies.	The participant has experience in cryptocurrency trading, which gives them a degree of confidence. He is motivated by a desire to develop this experience and turn it into a job.
	Confidence challenged by losses (Day 2 - Day 3)	"Yesterday was significant in the sense that the stock I had fell sharply"	The participant notes that his mood "depended on the stock market". A significant loss on the second day affected his emotional state, which may indicate a slight decline in overconfidence.
		Basically, our mood depended on the stock market and the shares we had bought. If they went up, we were happy; if they went down, we were more cautious. But personally, yes, Wednesday, as it turned out, was significant in the sense that the shares I had bought went down significantly.	
Representativeness bias	Applying cryptocurrencies experience to shares	'What I did a few years ago was cryptocurrencies. Because trading on the stock market and all that is a bit slower, a bit less volatile.'	The participant, having traded cryptocurrencies, is projecting this experience on the stock market, even though he recognizes a difference in terms of 'speed'.
	Searching for a 'clear path'	"I expected there to be a bit more of a clear path. Like, if	The participant expresses a desire for a clear strategy, indicating a search for a

		the action does this, then you have to do that, based on what we saw in class. But the teacher told us it's not that simple."	reliable model, as if market rules should be simply predictable.
Anchoring Bias	Not Applicable	Not Applicable	No evidence for Anchoring Bias
Herd Behavior	Not Applicable	Not Applicable	The interview does not provide any evidence that the participant followed the opinions of others. The focus is on his own experience and reactions to stock market trends.
Availability Bias	Use of graphical information and prices	'Our behaviour depended on the stock market, on the actions we had taken. If they went up, we were happy; if they went down, we were more cautious.'	The immediate availability of stock market prices and fluctuations is the main source of information on which the participant bases his decisions.
	Reflection on the lack of available information	"I expected there to be a bit more of a clear path. Like, if the action does this, then you have to do that, based on what we saw in class. But the teacher told us it's not that simple."	The participant realized that he would have liked more 'information' to better guide his actions, suggesting that the information available was not sufficient to give him confidence in his decisions.
Prospect Theory	High emotional reactivity to gains and losses	"Our mood depended on the stock market and the shares we had bought. If they went up, we were happy; if they went down, we were a bit more cautious."	Facing losses, the participant wants greater certainty. The participant expresses the emotional impact of market fluctuations. The 'pain' of loss is explicitly mentioned as a "significant" factor.
	Significant impact of losses	'The stock I had dropped significantly'	A significant loss is the most memorable moment of the experience for the participant.
		"But personally, yes, Wednesday, or yesterday as it turned out, was significant in the sense that the stock I had bought fell significantly".	
Student I.2.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence (Absence of)	Low self-assessment of skills	The only knowledge I have is what we learned in class. So, it's more about the structure of financial markets than trading.	The participant repeatedly expresses low confidence in his trading skills.
	Humility towards the unpredictability of the market	"I think there's a lot of aleatory in it." 'Yes, very unpredictable.'	The participant highlights the unpredictability and element of chance in the market, even for professionals, which reduces the likelihood of overconfidence.
Representativeness bias	Learning from past experience	'I think that trying to be calmer is because my previous experience was that I was impulsive. In one day, I lost 6,000 euros. So I said to myself, "This proves that maybe it's not the best solution."' "	The participant learns lessons from a previous trading experience where impulsiveness led to a significant loss. This experience is used as a 'sample' to adjust his current behavior.
Anchoring Bias : this bias appears to be very weak or not present. The participant is not 'anchored' to an initial reference point.	Little influence of initial purchase price	'No, it's more about the gain or loss than the price I paid for it.' 'OK, so I was basing my decision more on "how much I gain, how much I	The participant states that he will not base his selling decisions on the purchase price, but rather on the current gain or loss.

		lose” rather than on the initial price.’	
Herd Behavior	Resistance to copy risky behaviour	‘I’m not going to mess everything up because others have messed it up. That means that for the past two and a half days, I’m not going to do anything, I’m going to do everything again now. I thought consistency was important.’	The participant declines to succumb to pressure to take ‘big risks’ or radically change his strategy even if others are valuing consistent behavior.
	Following the general market trend	“I was trying to follow the market trend.”	Although reluctant to imitate individuals, the participant states that he tries to ‘follow the market trend’ overall, which can be interpreted as a kind of herd behavior. The participant does not appear to be following indiscriminately but rather adapting his strategy to the perceived market direction.
Availability Bias	Influence of media coverage and familiarity with the company	Because ultimately, when I look at most of the companies I chose, I was familiar with them. So I think that yes, unconsciously, I was attracted to them.“	The participant recognises an unconscious attraction to companies they are familiar with or that receive more media coverage. The ease of access to information influences his choices.
	Impact of information accessibility on information search depth	‘It depended on the information, whether it was already comprehensive enough, and I thought, yes, they took all opinions into account.’	The nature of the information available (its completeness and clarity) determines whether the participant will look for additional information or not.
Prospect Theory	Loss aversion reduced by the selected strategy	“You could say it's more boring. Let's say, I was hoping it would go up and it went down. I was a little disappointed, but not too much, because the impact isn't that big”	The participant expresses disappointment at the losses, but the emotional impact is minimized by the small size of the amounts invested and the diversification. Loss aversion is present but mitigated by his strategy.
	Moderate satisfaction with gains	‘More satisfied than happy.’ ‘Satisfied because I knew my variations weren't going to be huge.’	The gains generate ‘satisfaction’ rather than euphoria, because he validates his cautious strategy rather than significant risk-taking.
	Limits for gains and losses	“I tried, at least for the gains, to take them if I had more than 50.” ‘Yes, I have more or less 50. Even in losses, generally.’ “I tried to say to myself, it doesn't go any further. ‘It depended on the trend.”	The participant sets a limit of plus or minus 50 euros for resale, which serves as a reference point. However, this limit is not rigid and is adjusted according to perceived market trends.
Student I.3.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence	Initial confidence based on experience	“My first motivation was that I had already traded several assets. I have a propensity for risk.”	The participant, having already traded, arrives with a certain level of confidence, even if stocks are ‘a bit new’. He considers himself with a ‘risk appetite.’
	Overconfidence persists despite losses	‘I said, I know that in the long run, we can get back on track. We're always able to get back on track.’ I don't say to myself, ‘Oh my God, I've lost.’	Despite losses, the participant does not question his strategy or ability to recover, but rather the length of time involved or luck. The participant remains confident to manage risk.

	Overestimation of market knowledge	'The stock market is very unpredictable.' 'It's difficult, but you can always make money.'	The participant demonstrates some knowledge of market mechanisms, although he recognizes the difficulty involved. He positions himself as having an understanding that could result in overconfidence.
Representativeness Bias	Anchorage in past trading experiences	"My first motivation was that I had already traded. 'I rarely trade in stocks. It's a bit new to me.'	The participant relies on his past trading experience. He projects behaviors and expectations based on these experiences.
	Applying a scalping trading strategy	"I preferred to make many trades, with small gains, but a large number of trades, few losses." I used scalping, I didn't hold on to my shares for very long.'	The participant seeks to apply a 'scalping' strategy that is common in cryptocurrencies.
	Perception of the "right" trading style based on past models	"And I preferred to make a lot of trades, with small gains, but a large number of trades, few losses, and I don't hold onto my shares." 'I've made some significant gains in the past.'	The participant continues to believe in his "scalping" and considers that if the market had been more favorable, it would have worked. He refers to his past experience.
Anchoring Bias	Anchoring on entry/exit prices	'So, I just put my stop loss and take profit straight away. Stop loss is -20. And take profit is +20.' "If it hits 20, I get out. Even if there's a gap. I don't want to keep going."	The participant is setting specific gain and loss targets ("+20, -20"), indicating a strong reference point dependency.
	Strict limits despite the market	'I'm not like people who change their stop loss.'	The participant maintains his profit-taking and stop-loss limits even when the market does not provide opportunities to achieve these targets.
Herd Behavior	Search for validation by the group	'The thing is, sometimes when you have a mentor, they say, "Look, I lost too. Let's say that even he, who is good, made a mistake."' 'A little, because if the market were to decline, I would say to myself, "We all know each other, we are all doing the same things."	The participant expresses a feeling of comfort when other people lose money. This suggests a search for validation of his own losses and a need to belong to a group experiencing the same difficulties.
	Impact of other results	'But then we were working on different assets. So that's also why I think I'm not really comparable.'	The need to compare is present. It is a kind of herd behaviour where the results of others influence the evaluation of one's own performance.
Availability Bias	Use of easily accessible information	"I collected information and based my decisions on information, news, etc. So I had a stock portfolio, and then I also had a few graphs." 'It's the only material that can be used for the short term. Because you can't wait, there's no point in looking at the value of the company, because in the short term, the variations are less rationalized.'	The participant bases his decisions on "easily accessible" information or "news" rather than on fundamental analysis.
	Reliance on popular/well-known tools	So, I had Boursorama. And then I also had a few graphs. So, sometimes I used ABC Bourse, and often Investing as well."	The use of platforms such as Boursorama and Investing, or technical analysis tools, is tied to their popularity and their availability.

Prospect Theory	Strong aversion to loss	"A loss is a loss. So, it's very boring. It hurts a little, even if it's not my money." "It's just that I'm not the type to hold on to my losses. I have a stop loss, I cut straight away."	The participant expresses a clear aversion to loss, trying to minimize losses through stop losses and refusing to hold losing positions.
	Pleasure of frequent small gains	"I preferred to make a lot of trades, with small gains, but a large number of trades, few losses, and I don't hold onto my shares." 'Even if it's small. It's always nice.'	Participant gets satisfaction from frequent small gains (prospect theory), whereby regular gains, even if small, are preferred to potentially larger but less certain gains.
	Difficulty in recognising losses	It hurts a little, even if it's not my money.' 'I prefer it to be automatic, because if I have to say it out loud, ah, I cut myself off, I'm like those people who, sometimes, ah, I don't want to lose.'	The participant expresses difficulty in accepting a loss, even though he has set up automatic stop losses.
Student I.4.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence	Conservative confidence based on specific skills	I believe in my ability to manage risk." 'Because I was able to assess the value of a company.' 'Whereas if I had based my decision on all my knowledge of the company, I might not have been able to do much with it because I don't have all the knowledge.'	The participant expresses confidence risk management skills, but this confidence is tempered by an awareness of his limitations in terms of fundamental tools.
	Control of indicators and evaluation of decision-making	"I understand the indicators, so I feel confident and can therefore assess my decision-making."	The participant feels confident in his understanding of the indicators.
Representativeness Bias	Learning from past experiences	'I also discovered this with Junior Trader Game. And I said to myself, if it can help me discover another side of stock market, why not?' 'I've become a little less risk-averse. The first time, I lost quite a bit. So now I tell myself that just because I have a propensity for risk doesn't mean I have to lose money.'" 'I've learned that sometimes you have to be very patient'".	The participant learned from his past experiences, which encouraged him to take a more diversified approach.
	Interpretation of investment principles	"It's more like real estate crowdfunding. And along with that, I'm gradually becoming interested in other investments."	The participant applies investment principles he is familiar with to stock market trading.
Anchoring Bias	Anchoring on defined loss limits	Almost every day, I lose money. But I knew I could deal with it, so I stopped. I told myself, "I don't want to lose more than 50 euros. I don't want it to go any further than that."	The participant chooses an acceptable loss limit and cuts his losses as soon as this limit is reached.

	Anchor point flexibility for gains	"However, I didn't have any targets for the gains."	As opposed to losses, the anchor point for gains is more flexible. The participant does not set a profit target.
Herd Behavior (Absence of)	Independence from other participants	"I knew that the others were very risky. So I didn't copy what they did. »	The participant states that he was not influenced by the decisions of other.
	Decision-making based on personal analysis	"I did what I planned to do."	Decision-making is seen as the result of personal analysis, rather than watching what others do.
Availability Bias	Prefer concise, rapid information	'I was looking more at news.' "I didn't look at financial statements very much." 'It's much easier.'	Participant favors easily accessible information, such as news items, rather than in-depth financial analyses.
	Rejection of complex fundamental analysis	'If I see a company's balance sheet, I wouldn't know what to do with it. Some people would calculate financial ratios that would indicate whether it is well valued or whatever. But in real life, I wouldn't know how to do it yet.'	The participant does not use fundamental analysis because he does not have the necessary experience.
Prospect Theory	Loss aversion and proactive management	I told myself, I don't want the trade to lose more than 50 euros. I don't want it to go any further. So I cut it straight away." 'I wasn't looking at my losses because I was cutting them straight away'".	The participant demonstrates a strong aversion to loss, quickly cutting losses once a predefined limit is met. He perceives losses as unpleasant but manageable thanks to his self-discipline.
	Unlimited profit targets	'However, I didn't have any targets for earnings. So, I didn't put any limits on my gains."	The participant does not set a limit on gains, showing a preference for pursuing profit.
	Emotional impact of losses despite discipline	'The thing is, I wasn't looking at my losses because I was cutting them straight away. I wasn't thinking, "Oh, I've lost 1,000 euros, I have to win it back". On the other hand, it can be discouraging.'	Even with a discipline of cutting losses, the participant recognizes disappointment from losses.
Student I.5.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence	Initial confidence in theoretical knowledge and learning	'I know that at school we touch on this very briefly in theory, so I thought, why not try it in practice?.'	The participant expresses a moderate level of confidence at the beginning, based on the theory learned and the desire to gain experience. She does not feel like an expert but is motivated to understand how things work on the stock markets.
	Loss of confidence due to unfavorable market conditions	'I told myself, 'There's nothing you can do now, because it's the last day, and you've seen the stock market, there's going to be no miracle.' You try to find a strategy, we tried in the morning, we were all discouraged, because nothing was moving forward."	Faced with a market that is not moving, the participant feels discouraged, which undermines her confidence.
Representativeness Bias (not very present)	Stereotypical perceptions of professional traders	"There are people who know; it's not because we don't know, we don't have	The participant believes that professional traders have access to privileged information.

		the information. They know what they're doing, and we don't know what we're doing. So we try to copy what they do."	
Anchoring Bias	Anchorage on the initial forecasts	'For me, the price will always rise again.' "We don't know how long it will take, but we are convinced that the price will return to its level at the time of purchase."	The participant mentions the hope that 'prices will rise again', remaining 'anchored' to the expectation of a return to normal.
	Difficulty in changing strategy	We're trying to find a strategy. We concluded that there's nothing else we could do."	Despite discouragement and the lack of market activity, the participant finds the strategy difficult to change, continuing to hope that her initial predictions will become reality.
Herd Behavior	Influence of others' results	It's the second day, so at the end of the day, or at the end of the hour, I need to climb up, you see, it's a bit like that.' 'We've seen that, well, we can't do anything else. It's in the rankings now. Whereas well in advance, when things were moving on the stock market, we were motivating ourselves."	Ranking and comparison with other participants have a impact on participant motivation.
	Group discouragement	"We were all discouraged because nothing was making any progress."	When the market stops moving, participant feels discouraged, sharing this feeling with others.
Availability Bias	Preference for 'easy' information and tools	"I relied a little more on information and technical analysis, which is quite reliable."	The participant turns to 'charts' and 'technical analysis,' which she considers more "reliable" and more understandable than other analysis.
	Influence of well-known and media-covered companies	'I knew about L'Oréal, I knew about LVMH, I knew about Hermès... 'What I hear about product tracking, for example.'	The participant favours companies that she has "heard of". Easy access to information and familiarity influence her choices.
Prospect Theory	Loss aversion	'I didn't want to cut at a loss. I don't really like that.'	The participant expresses a strong aversion to "cutting losses", believing that prices "always come back". This leads to hold on to losing positions.
	Recognising powerlessness towards the environment	I felt discouraged when I saw that the stock market had stopped moving.	Market stagnation leads to resignation, as no action seems likely to change the situation.
Student I.6.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence	Mitigated initial confidence	"I had already invested a little bit. 'At first, I said to myself, I'm going to diversify a lot.'	The participant already has previous investment experience, which gives him a confidence. He starts the simulation with diversification, a strategy perceived as 'safe'.
	Loss of confidence due to market decline	'The second day was a disaster.' 'The thing is, on the last day, when I saw that nothing was moving at all, it was hopeless.' "At that point, I was actually 3% off. But up until then, you tell yourself, come on, I believe in it, I hope it will change. When there's a small gap, like 1%, 1.5%, I thought,	As he faces losses and the impossibility of moving up in the rankings, the participant's confidence declines. He goes from initial confidence to helplessness.

		with a lot of luck, it might work."	
	"Double or nothing" strategy at the end of the experience	"So, what I should have done was put 100,000 on a single share. That would have meant that, even if I lost a lot, I would have been able to recover."	Due to a desperate situation, the participant considers a 'double or nothing' strategy. This can be interpreted as an attempt to regain control, rather than any real confidence in the strategy.
Representativeness Bias	Implementation of a common and previously used diversification strategy	"At first, I said to myself, I'm going to diversify."	The participant begins with diversification, which is a common practice in investment risk management.
Anchoring Bias (Not found)	Not Applicable	Not Applicable	Not Applicable
Herd Behavior (Absence of)	No influence from other participants	"No, actually, I was just looking at the graph. I didn't pay much attention to what the others were doing."	The participant does not appear to have been influenced by the decisions of participants.
	Using rankings as motivation, not as a decision-making tool	"I was keeping an eye on the rankings, but not too much."	Rankings give him motivation, but the rankings don't guide his decisions.
Availability Bias	Use of graphic information and the names of well-known companies	"I just saw the graph. At least I knew the name of the company."	The participant relies on the graphs and names of companies he is familiar with.
Prospect Theory	Loss aversion and aversion to selling at a loss	"Oh no, I shouldn't have sold, I'm going to do the exact opposite." "I said to myself, I absolutely have to reverse the trend. I didn't want to cut my losses, so I held on to the shares."	The participant expresses his aversion to loss, not wanting to sell shares that are falling in value, hoping for a rebound.
	Discouragement due to lack of market activity	"The thing is, on the last day, when I saw that nothing was happening, it was hopeless." "We were all demotivated because nothing was happening."	The lack of movement on the last day leads to discouragement, as there are no more opportunities to recover.
Student I.7.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence (Absence of)	Initial confidence very low	"Well, for me, it's because I've never traded before and I've always been somewhat interested. I thought it was an opportunity to gain some experience."	The participant expresses a lack of experience and low confidence at the beginning of the experience.
	Growing concerns over losses	"Even though I knew I was losing money, I didn't really know when to stop or keep going." "It was like a chain reaction: I kept losing and losing, and I didn't know how to reverse the trend. That was the most noticeable thing, and what I found most frustrating."	The participant experiences a series of losses, which undermines his confidence and causes him to doubt his decisions.
Representativeness Bias (Not Found)	Not Applicable	Not Applicable	Not Applicable
Anchoring Bias	Not Applicable	Not Applicable	Not Applicable
Herd Behavior	Comparison in the ranking	"And I said to myself, well, given the ranking, that's just how it is."	Realizing how he ranks compared to others adds to his frustration.
Availability Bias	Reliance on immediately available information	"I thought to myself: we're taking part in a stock market	The participant relies mainly on the charts to take decisions.

		game, so we need to look at the graph.'	
Prospect Theory	Strong aversion to loss	"The most frustrating time was when I started losing money and didn't know how to get back." 'It was a cycle: I lost, and didn't know how to get out of it. That was the most memorable thing, what I found most frustrating.'	The participant expresses frustration in the face of losses.
	Emotional reaction to losses	What this generated was quite frustrating because I thought, well, given the ranking, that's just how it is.	Losses result in an emotional spiral of frustration.
Student I.8.			
Theme	Codes	Statements	Descriptive Analysis
Overconfidence (Absence of)	Low initial confidence due to lack of experience	"Right away, I felt left behind the others because they had already participated in competitions, so I said to myself, "We didn't take the same courses."	The participant expresses a feeling of being inferior.
	Growing discouragement due to failure	'Completely, total abandonment. In the afternoon [of the third day], the American market was about to open, so I said to myself, maybe there will be some moves, but nothing good happened.'	Given the impossibility of improving his ranking, the participant feels demotivated.
Representativeness Bias	Applying academic knowledge	"I would have tried to estimate the expected returns, and done exactly what we were taught."	The participant considers applying academic concepts, demonstrating an effort to rely on "theoretical" representations of good financial management.
Anchorage Bias (Not Found)	Not Applicable	Not Applicable	Not Applicable
Herd Behavior (Absence of)	Feeling of isolation and not being part of a group	"I was behind the others because they had already participated in competitions or were trading on their own."	The participant feels left behind and does not speak the same language as others who have more experience.
Availability Bias (Absence of)	Not Applicable	"During the afternoons when nothing was happening, I tried to find out more. I found a book written by a psychiatrist.'	During periods when the market was "dead," the participant looked for information and found a book on managing emotions.
Prospect Theory	Strong aversion to loss	'I never know how to make a gain. A feeling of complete abandonment.'	The participant experienced a "feeling of complete abandonment".

Discussions

Overconfidence

Our interviews reveal that overconfidence is very weak: some participants insist on their lack of experience. Furthermore, the overconfidence identified tends to decline over the experiment, particularly in response to a market perceived as unfavorable, and disappointment resulting from unmet expectations. For some, overconfidence is therefore very low or absent in the beginning (I.8., I.7., I.5.). We also observe a gradual decline in confidence as experience increases (I.6., I.8., I.7.). Thus, the accumulation of losses undermines confidence, leading in some cases to resignation or despair (Maier & Seligman, 2016 ; Frydman & Camerer, 2016). Some participants (I.2., I.3., I.5.), even though they record losses, maintain confidence through self-regulation (I.2.) (Gross, 1998), by interpreting their past experiences (I.3.) or by validating their intuition after rejecting some external recommendations (I.5.). Finally, when faced with situations they consider hopeless, some participants (I.6., I.4.) consider 'double or nothing' strategies

(Kurdoglu et al., 2023), which are more indicative of desperation than overconfidence. In short, the overconfidence identified tends to decline over the experiment, particularly in response to a market perceived as unfavorable and disappointing resulting from unmet expectations. However, the current analysis does not explore whether this decline is specifically due to market conditions, peer comparisons, or emotional regulation, suggesting an area for future investigation.

Representativeness Bias

Our results demonstrate that this bias is present and relatively stable over time, influencing participants' strategies. Participants I.3., I.2., and I.4. use their past trading experiences (e.g., 'scalping trading' for I.3.). Past experience serves as a kind of 'sample' on which they base their decisions (Ikram, 2016). Participants I.4. and I.8. use some academic references: they rely on the popularity of technical indicators or, after a loss, return to academic models (I.8.) as 'representations' of best practice. In addition, knowledge of specific companies (I.5.) seems to serve as a representation of reliability.

Anchoring Bias

This bias seems to occur only rarely, but it shows up as reference points or anchoring in negative performance. Novices do not necessarily have an anchoring point. However, some anchors develop over time, either based on specific technical indicators (I.4.) or fixed limits: participant I.3., for example, uses inflexible limits (+20%/-20%) as anchoring points.

Herd Behavior

Generally, not involving direct copying of the trading behavior of other participants or the market (Luo et al., 2023). Given the stock market configuration, herd behavior refers more to the relationships within the group of participants than to the development of market trend following. The group serves as a kind of "reservoir" for disappointments. Several participants (I.2., I.3., I.4., I.5.) express resistance to following the risky behavior of others. For participants I.3. and I.7., the fact that others are experiencing financial difficulties reassures them.

In other words, while herd behavior, understood as the direct copying of other participants' or market-wide trading actions, was generally not very prevalent in our study, a different kind of group influence was observed. This influence manifested as a desire to find comfort to overcome feelings of isolation, rather than direct mimetic behavior. While herding trading decisions was rare, the psychological need for social validation played a role in how participants processed their disappointments.

Availability Bias

Our results demonstrate a strong presence of this bias. It involves reliance on accessible information: graphs, well-known company names, and popular indicators. Some participants seem to have ignored information that was not easily analyzable (I.4., I.8.): fundamental analysis is considered irrelevant for the short-term perspective of the experiment.

Prospect Theory

Loss aversion prevails among most of the participants, especially because of the bear market. Losses are experienced with frustration (Wang, 2023). Several reactions have been identified:

- Some participants (I.2., I.4.) try to reduce the negative emotional impact through diversification, investing small financial amounts, or by being aware of the virtual nature of the financial amounts invested (Quoidbach et al., 2010).
- After losses, some adopt a 'what's done is done' attitude in an effort to recover (Kurdoglu et al., 2023).
- A reluctance to 'sell at a loss' (participants I.6., I.4., I.7., I.8.): a strong tendency to hold on to losing positions in the hope of a rebound (Sharma & Firoz, 2020).
- A search for small financial gains (I.3.): frequent small gains and an increase the number of transactions.
- The development of frustration caused by the negative performance of their portfolio (I.5., I.6., I.8., I.7.) : the lack of positive market movement is a source of discouragement (Frydman & Camerer, 2016).

In summary, analysis of the eight interviews reveals that the market environment and lack of experience had a significant impact on the manifestation and evolution of biases.

Conclusion

Our study explored the dynamics and evolution of cognitive biases among eight participants in a three-day stock market trading simulation. Our qualitative methodology revealed nuances, underlying emotional dimensions and the role of intuition in decision-making.

Among the biases, loss aversion came out as the most dominant for most participants. The losses generated strong emotional reactions, ranging from frustration to desperation. The negative market performance and decline in portfolio value directly contributed to feelings of discouragement, limiting the perception of opportunities for gains or recovery. Responses to this aversion ranged from efforts to mitigate the emotional impact through diversification or investment of small amounts, to increased risk-taking after losses, and to a persistent refusal to 'sell at a loss' in the hope of a rebound. Although this result is not surprising - it has been achieved through numerous quantitative studies - it should be noted that scientific studies rarely use qualitative methodological tools to demonstrate it (Hoffman et al., 2015; Creswell & Poth, 2017).

Overconfidence was influenced by market conditions. Initially low or absent among some inexperienced participants, it decreased during the experiment in response to the perceived unfavorable market. The accumulation of losses undermined confidence, sometimes leading to resignation or despair. While some more experienced participants were able to maintain a degree of confidence through self-regulation, the overall pattern of this bias was a decline under the pressure of negative results.

The availability bias was consistent throughout the simulation. Participants favored information that was easily accessible: graphs, familiar company names, and popular indicators. The fundamental analysis was considered irrelevant in the context of the experiment. Representativeness bias was also identified, through the application of past experience-based models.

Herd behavior did not result in direct copying of market trends, but rather a search for comfort within the group of participants. The stagnation of the market may also have led to shared discouragement. This suggests that the market environment “redirected” this bias from stock market imitation towards “social support”.

Finally, anchoring bias was not very prevalent. It mainly appeared in the use of reference points, i.e. specific limits for managing losses. In short, our findings show that biases do not follow a linear path over time and depend on a number of factors, including previous experience, results from past trades, and emotional reactions. Our qualitative study, through participants' narratives, provides insight beyond static identification to understand the psychological processes at work in trading conditions (even if simulated). Although based on a small sample and a short-term simulation, our qualitative study offers perspectives for understanding the dynamic nature of biases in an unfavorable market.

Our results are dependent on the experimental design and the market configuration during the experiment and some avenues for further research could be explored:

- Our study was conducted in a market perceived as ‘unfavorable’. Questions that could be addressed include how biases might evolve in a bull market or in a highly volatile market. This would provide insight into the extent to which market configuration is a determining factor. Further research exploring cognitive biases in bull market scenarios, could specifically analyze how market momentum, heightened speculative activity, or the influence of positive peer performance might shape the dynamics of biases such as herd behavior or availability bias, offering an understanding beyond the pressures of a bearish market.
- The influence of real versus virtual money on the intensity of biases: several participants pointed out that virtual money had been ‘mildly mitigating’ or that they would have been “much more careful” with real money. Further research could compare behavior and the evolution of biases in a simulation with virtual money and in a real trading situation, using similar methods to analyze whether the emotional impact of real money modifies the intensity of biases.
- Studying the evolution of biases over a longer period of time: the experiment only lasted three days, which was perceived as ‘difficult to develop a long-term strategy’. A simulation over several weeks would provide a better understanding of the long-term dynamics of biases. However, it should be noted that students were paid for the number of hours worked and that financial constraints did not allow us to extend the experimental period and/or hire more students.

Analyzing interactions between biases: individual analysis suggests that biases do not operate alone. Future research could explore how different biases influence each other and whether they build negative or positive feedback cycles that could affect decision-making.

Acknowledgement

Author Contributions: Conceptualization, A.F.; Methodology, A.F.; Data Collection, K.K., J.L.; Formal Analysis, A.F.; Writing—Original Draft Preparation, A.F., K.K., J.L.; Writing—Review and Editing, A.F., K.K., J.L. All authors have read and agreed to the published the final version of the manuscript.

Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Funding: This research received financial support from the Walloon-Brussels Federation (Belgium) through a Concerted Research Action (Grant Number: ARC-25/29 UMONS5).

Conflicts of Interest: The authors declare no conflict of interest.

References

- Amokrane, M., & Ouaret, Y. A. (2021). Impact des Biais Cognitifs sur les Décisions Stratégiques: une Etude Conceptuelle. *Al Bashaer Economic Journal*, 7(1).
- Aren, S., & Hamamci, H. N. (2021). Biases in managerial decision making: overconfidence, status quo, anchoring, hindsight, availability. *Journal of Business Strategy Finance and Management*, 3(1-2), 8. <http://dx.doi.org/10.12944/JBSFM.03.01-02.03>
- Ates, S., Coskun, A., Sahin, M. A., & Demircan, M. L. (2016). Impact of financial literacy on the behavioral biases of individual stock investors: evidence from Borsa Istanbul. *Business and Economics Research Journal*, 7(3), 1. <http://dx.doi.org/10.20409/berj.2016321805>
- Bakar, S., & Yi, A. N. C. (2016). The impact of psychological factors on investors’ decision making in Malaysian stock market: a case of Klang Valley and Pahang. *Procedia Economics and Finance*, 35, 319-328. [https://doi.org/10.1016/S2212-5671\(16\)00040-X](https://doi.org/10.1016/S2212-5671(16)00040-X)
- Barber, B. M., & Odean, T. (1999). The courage of misguided convictions. *Financial Analysts Journal*, 55(6), 41-55. <https://doi.org/10.2469/faj.v55.n6.2313>

- Barber, B. M., & Odean, T. (2001). Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment. *The Quarterly Journal of Economics*, 116(1), 261-292. <https://doi.org/10.1162/003355301556400>
- Benjana, H., & Yamani, O. (2022). Psychology of investors: reexamination of the traditional finance. *Revue du Contrôle, de la Comptabilité et de l'Audit*, 6(1). Retrieved from <https://revuecca.com/index.php/home/article/view/786>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research In Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of behavioral decision making*, 20(4), 425-451. <https://doi.org/10.1002/bdm.561>
- Chong, D., & Druckman, J. N. (2007). A theory of framing and opinion formation in competitive elite environments. *Journal of Communication*, 57, 99-118. https://doi.org/10.1111/j.1460-2466.2006.00331_3.x
- Coricelli, G., Dolan, R. J., & Sirigu, A. (2007). Brain, emotion and decision making: the paradigmatic example of regret. *Trends in cognitive sciences*, 11(6), 258-265. <https://doi.org/10.1016/j.tics.2007.04.003>
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Della Vedova, J., Grant, A., & Westerholm, P. J. (2023). Investor behavior at the 52-week high. *Journal of Financial and Quantitative Analysis*, 58(7), 2852-2889. <https://doi.org/10.1017/S002210902200148X>
- Deuskar, P., Pan, D., Wu, F., & Zhou, H. (2021). How does regret affect investor behaviour? Evidence from Chinese stock markets. *Accounting & Finance*, 61, 1851-1896. <https://doi.org/10.1111/acfi.12646>
- Etchart-Vincent, N. (2006). Expériences de laboratoire en économie et incitations monétaires. *Revue d'économie politique*, 116(3), 383-418. <https://doi.org/10.3917/redp.163.0383>
- Fenton-O'Creevy, M., Nicholson, N., Soane, E., & Willman, P. (2010). Trading on illusions: Unrealistic perceptions of control and trading performance. *Journal of Occupational and Organizational Psychology*. <https://doi.org/10.1348/096317903321208880>
- Finet, A., Kristoforidis, K., & Viseur, R. (2021). L'émergence de biais comportementaux en situation de trading: une étude exploratoire. *Recherches en Sciences de Gestion*, 146(5), 147-182. <https://doi.org/10.3917/resg.146.0147>
- Finet, A., & Laznicka, J. (2025). Addressing Emotional Dysregulation in Experimental Design. *Psychology and Behavioral Sciences*, 14(1), 7-18. <https://doi.org/10.11648/j.pbs.20251401.12>
- Finet, A., Laznicka, J., & Palumbo, H. (2025). Qualitative analysis of the influence of biases and emotions on decision-making in stock markets: the case of individual investors. *International Journal of Research in Business and Social Science* (2147-4478), 14(3), 151-163. <https://doi.org/10.20525/ijrbs.v14i3.3992>
- Firestone, W. A. (1993). Alternative arguments for generalizing from qualitative research. *Educational Researcher*, 22(4), 16-23. <https://doi.org/10.3102/0013189X022004016>
- Finet, A., Kristoforidis, K., & Laznicka, J. (2025). Emotional Drivers of Financial Decision-Making: Unveiling the Link Between Emotions and Stock Market Behavior (Part 3). *Journal of Next-Generation Research* 5.0, 1(3). <https://doi.org/10.70792/jngr5.0.v1i3.116>
- Finet, A., Kristoforidis, K., & Laznicka, J. (2025). Emotional Drivers of Financial Decision-Making: Unveiling the Link between Emotions and Stock Market Behavior (Part 2). *Journal of Next-Generation Research* 5.0, 1(3). <https://doi.org/10.70792/jngr5.0.v1i3.114>
- Fréchette, G. R. (2011). Laboratory experiments: Professionals versus students. Available at SSRN 1939219.
- Frydman, C., & Camerer, C. F. (2016). The psychology and neuroscience of financial decision making. *Trends in cognitive sciences*, 20(9), 661-675.
- Furnham, A., & Boo, H. C. (2011). literature review of the anchoring effect. *The Journal of Socio-Economics*, 40, 35-42. <https://doi.org/10.1016/j.socsec.2010.10.008>
- Galiotiotis, E. C., Krokida, S. I., & Spyrou, S. I. (2016). Herd behavior and equity market liquidity: Evidence from major markets. *International Review of Financial Analysis*, 48, 140-149. <https://doi.org/10.1016/j.irfa.2016.09.013>
- Gao, H., Shi, D., & Zhao, B. (2021). Does good luck make people overconfident? Evidence from a natural experiment in the stock market. *Journal of Corporate Finance*, 68. <https://doi.org/10.1016/j.jcorpfin.2021.101933>
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, 2(3), 271-299. <https://doi.org/10.1037/1089-2680.2.3.271>
- Ikram, Z. (2016). An empirical investigation on behavioral determinantson, impact on investment decision making, moderating role of locus of control. *Journal of Poverty, Investment and Development*, 26, 44-50.
- Irshad, S., Badshah, W., & Hakam, U. (2016). Effect of representativeness bias on investment decision making. *Management and Administrative Sciences Review*, 5(1), 26-30.
- Javed, H., Bagh, T., & Razzaq, S. (2017). Herding effects, over confidence, availability bias and representativeness as behavioral determinants of perceived investment performance: an empirical evidence from Pakistan stock exchange (PSX). *Journal of Global Economics*, 6(1), 1-13. <https://doi.org/10.4172/2375-4389.1000275>
- Koszegi, B., & Rabin, M. (2006). A Model of Reference-Dependent Preferences. *The Quarterly Journal of Economics*, 121(4), 1133-1165. <https://doi.org/10.1093/qje/121.4.1133>
- Kurdoglu, R. S., Jekel, M., & Ateş, N. Y. (2023). Eristic reasoning: Adaptation to extreme uncertainty. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1004031>
- Li, T., Chen, H., Liu, W., Yu, G., & Yu, Y. (2023). Understanding the role of social media sentiment in identifying irrational herding behavior in the stock market. *International Review of Economics & Finance*, 87, 163-179. <https://doi.org/10.1016/j.iref.2023.04.016>
- Liang, H., Yang, C., Zhang, R., & Cai, C. (2017). Bounded rationality, anchoring-and-adjustment sentiment, and asset pricing. *The North American Journal of Economics and Finance*, 40, 85-102. <https://doi.org/10.1016/j.najef.2017.02.001>
- Lo, A. W., Repin, D. V., & Steenbarger, B. N. (2005). Fear and greed in financial markets: A clinical study of day-traders. *American Economic Review*, 95(2), 352-359. <https://doi.org/10.1257/000282805774670095>
- Luo, C. P., Ravina, E., Sammon, M., & Viceira, L. M. (2023). Retail investors' contrarian behavior around news, attention, and the momentum effect. FRB of Chicago Working Paper No. 2023-34, Available at SSRN: <https://ssrn.com/abstract=4578158>

- Maier, S. F., & Seligman, M. E. (2016). Learned helplessness at fifty: Insights from neuroscience. *Psychological review*, 123(4), 349. <https://psycnet.apa.org/doi/10.1037/rev0000033>
- Menkhoff, L., Schmeling, M., & Schmidt, U. (2013). Overconfidence, experience, and professionalism: An experimental study. *Journal of Economic Behavior & Organization*, 86, 92-101. <https://doi.org/10.1016/j.jebo.2012.12.022>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1-13. <https://doi.org/10.1177/1609406917733847>
- Nwosu, N. T., & Ilori, O. (2024). Behavioral finance and financial inclusion: A conceptual review and framework development. *World Journal of Advanced Research and Reviews*, 22(3), 204-212. <https://doi.org/10.30574/wjarr.2024.22.3.1726>
- Özden, M. (2024). Content and thematic analysis techniques in qualitative research: Purpose, process and features. *Qualitative Inquiry in Education: Theory & Practice*, 2(1), 64-81. <https://doi.org/10.59455/qietp.20>
- Quoidbach, J., Berry, E. V., Hansenne, M., & Mikolajczak, M. (2010). Positive emotion regulation and well-being: Comparing the impact of eight savoring and dampening strategies. *Personality and individual differences*, 49(5), 368-373. <https://doi.org/10.1016/j.paid.2010.03.048>
- Rai, R. (2024). Behavioural Biases and Investment Decision-Making in India: A Study of Stock Market Investors. *International Research Journal of Economics and Management Studies IRJEMS*, 3(11). <https://doi.org/10.56472/25835238/IRJEMS-V3I11P102>
- Rani, T. S., Sushmitha, S. N. V., & Vani, C. (2024). Investigate The Impact Of Overconfidence Bias And Anchoring Bias On Risk Tolerance, And Subsequently, How Risk Tolerance Affects Investment Decisions. *Educational Administration: Theory and Practice*, 30(5), 13629-13636. <https://doi.org/10.53555/kuey.v30i5.5915>
- Ritika and Kishor, N. (2022). Development and validation of behavioral biases scale: a SEM approach. *Review of Behavioral Finance*, 14(2), 237-259. <https://doi.org/10.1108/RBF-05-2020-0087>
- Shah, M. U. D., Shah, A., & Khan, S. U. (2017). Herding behavior in the Pakistan stock exchange: Some new insights. *Research in International Business and Finance*, 42, 865-873. <https://doi.org/10.1016/j.ribaf.2017.07.022>
- Sharma, M., & Firoz, M. (2020). Behavioural finance-review and synthesis of behavioural biases. *Journal of Critical Reviews*, 7(6), 1754-1762.
- Singh, D., Malik, G., & Jha, A. (2024). Overconfidence bias among retail investors: A systematic review and future research directions. *Investment Management & Financial Innovations*, 21(1), 302. [http://dx.doi.org/10.21511/imfi.21\(1\).2024.23](http://dx.doi.org/10.21511/imfi.21(1).2024.23)
- Summers, B., & Duxbury, D. (2012). Decision-dependent emotions and behavioral anomalies. *Organizational Behavior and Human Decision Processes*, 118(2), 226-238. <https://doi.org/10.1016/j.obhdp.2012.03.004>
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive psychology*, 5(2), 207-232. [https://doi.org/10.1016/0010-0285\(73\)90033-9](https://doi.org/10.1016/0010-0285(73)90033-9)
- Utari, D., Wendy, W., Azazi, A., Giriati, G., & Irdhayanti, E. (2024). The influence of psychological factors on investment decision making. *Journal of Management Science (JMAS)*, 7(1), 299-309. <https://doi.org/10.35335/jmas.v7i1.379>
- Wang, Y. (2023). Behavioral Biases in Investment Decision-Making. *Advances in Economics, Management and Political Sciences*, 46, 140-146. <https://doi.org/10.54254/2754-1169/46/20230330>
- Whiting, L. S. (2008). Semi-structured interviews: Guidance for novice researchers. *Nursing & Health Sciences*, 10(1), 42-49.
- Xu, R., Liu, Y., Hu, N., & Guo, J. M. (2022). What drives individual investors in the bear market?. *The British Accounting Review*, 54(6). <https://doi.org/10.1016/j.bar.2022.101113>
- Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, 10(2), 210–251. <https://doi.org/10.1108/QRFM-04-2017-0028>

Publisher's Note: SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2025 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

International Journal of Finance & Banking Studies (2147-4486) by SSBFNET is licensed under a Creative Commons Attribution 4.0 International License.