Prospect Theory and Trader Responses to Gains and Losses: A Qualitative Analysis.

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Abstract

This study explores traders' decision-making processes facing gains and losses, using behavioral finance and Prospect Theory as frameworks for analysis. Rejecting the assumption of perfectly rational agents, the research aims at understanding the psychological and behavioral mechanisms underlying choices in situations of risk and uncertainty.

Contrary to the quantitative approaches prevalent in finance, this study uses a qualitative and inductive methodology to understand the complexity of traders' motivations. The analysis is based on in-depth semi-structured interviews with eight students who took part in a three-day trading simulation with a virtual portfolio of 100.000 euros. This method was chosen to provide a nuanced understanding of the participants' experiences, perceptions and justifications, rather than confirming statistical biases. The simulation took place in a market context that was generally perceived as bearish. The interviews were analyzed using thematic analysis. Thematic analysis revealed several key insights, highlighting Prospect Theory principles through the participants' experience:

- Loss aversion, as a strong reluctance to realize losses by selling losing positions. Participants often expressed persistent hope for a market rebound to avoid having to face the loss.
- The framing related to the use of virtual money had a major impact. Participants reported that it mitigated the emotional impact of losses and could result in taking greater risks than in a situation involving real money.
- The non-linear weighting of probabilities, particularly the over-weighting of low probabilities, resulted in a persistent hope for gains that were unlikely on losing positions. This phenomenon appears to interact with the illusion of control perceived by participants and the influence of intuition.

- The reference point. Usually based on the initial purchase price, this subjective point determines whether a result is perceived as a gain or a loss. The study shows that traders may consider that they have not actually incurred a loss until they have sold, using the purchase price as an “anchoring point”.

Beyond Prospect Theory, the analysis strongly highlighted the perceived negative role of emotions in decision-making. Other qualitative insights concern frequent asymmetry in the management of gains (often with defined objectives) and losses (often without clear limits), difficulties in determining the exit point, and the influence of transaction costs on decisions to hold or exit positions.

The added value of our study lies in its in-depth qualitative approach, based on the analysis of interviews with traders who participated in a simulation. While Prospect Theory has been confirmed quantitatively, exploring traders' experiences, perceptions and subjective justifications for gains and losses, as provided by a qualitative methodology, offers a detailed understanding of the psychological mechanisms at work.

The article will be structured as follows: in the first section, we introduce our research topic. In the second section, we consider the methodological approach. The third section will present experimental design and the state of the art in relation to the issues taken into consideration. The fourth section will be dedicated to the results. These will be discussed in the next section. A concluding section is presented, and the last section will provide some limitations and suggest avenues for further research. It should be noted that we have not built a section directly related to the state of the art because it is highly dependent on the chosen experimental design. According to us, adding a specific section could make the article less easy to follow.

Keywords: Behavioural finance, Prospect theory, Trading, Gain and loss management, Decision-making, Emotions, Qualitative analysis, Simulation.

1. Introduction

Decision-making in financial markets, particularly by traders, is a central field of research due to its complexity and the significant challenges related to uncertainty and risk. Historically, standard economic theory has often analyzed financial actors as perfectly rational agents seeking to maximize expected utility. However, empirical observations of real human behavior, particularly in trading, reveal significant deviations, highlighting the predominant influence of emotional, psychological and cognitive factors. Behavioral finance has been developed to incorporate these aspects, offering theoretical frameworks that are more representative of reality. In this purpose, Prospect Theory, originally developed by Kahneman and Tversky (2013), offers an alternative for understanding choices made in situations of risk and uncertainty. This theory assumes that individuals evaluate potential outcomes and their probabilities in a subjective way.

The Prospect Theory provides a theoretical framework for analyzing gain and loss behavior in trading – the set of strategies and behaviors used to decide when to secure a profit or limit a loss.

The key principles are:

- Loss aversion: a greater sensitivity to losses than to gains of equivalent magnitude, a strong reluctance to realize losses, often encouraging to hold on to losing positions in the hope of a market rebound. In connection with Theory of Regret, regret could be defined as an emotion associated with a decision that is perceived as a mistake (Coricelli et al., 2007). It resulted from a comparative evaluation of the results of a choice and the results of the alternatives that were rejected (Tsalatsanis et al., 2010). Van Dijk and Zeelenberg (2005) investigate the role of comparison in the experience of regret. The authors argue that regret arises when a person realizes that they could have been in a better financial situation if they had made a different decision. They highlight that psychological research has often ignored the comparison process itself, as well as how real results are compared to expected ones. Connolly and Zeelenberg's (2002) focused on regret as a central emotion influencing decision-making and proposed Decision Justification Theory (DJT) to explain the complexity and contradictions found in studies on regret, with two main components: the comparative evaluation of the result and the feeling of being "guilty" of making bad choices. The extent to which regret is experienced results in adjustments to future investment strategies (Deuskar et al., 2017), even if these adjustments may lead to suboptimal results (Deuskar et al., 2021). According to Somasundaram and Diecidue (2017), regret-averse decision-makers are prone to risky behavior when faced with low probabilities of gains.
- Framing: the influence of how a decision problem is presented on the choice made, even if the options are objectively equivalent. In the context of a trading simulation using virtual money, framing can alter the perception of risk and mitigate the emotional impact of losses, potentially leading to different behaviors than those selected with real money. According to Chong and Druckman (2007), framing could be defined in two main ways: a communication frame (media frame) which refers to the words, images, expressions, and presentation styles used by a speaker (such as a politician or the media) to convey information about an issue, revealing what the speaker considers relevant and a thought frame (individual frame) which refers to the individual's cognitive understanding of a situation, representing what the audience considers to be the most striking feature of an issue. Several studies (for example, Kühberger, 1998) found that even framing is a reliable phenomenon, it is not homogeneous (kind of experiences, selected sample...) ;
- Non-Linear Probability Weighting: the tendency of individuals to overweigh low probabilities and underweight moderate to high probabilities. This bias in trading can result in a persistent hope for unlikely gains on unfavorable positions, a pattern that can interplay with loss aversion and an illusion of control. It should be noted that the illusion of control is not a central concept in Prospect Theory as formulated by Kahneman and Tversky (2013). However, we take it into consideration because Prospect Theory shows that individuals tend to overweigh

low probabilities. In trading situations, this can be combined with the illusion of control: traders overestimate their ability to influence the market, leading them to believe that they can influence probabilities in their favor (Fenton-O'Creevy et al., 2010; Gupta et al., 2019).

- The Reference Point: results (gains or losses) are assessed relative to a subjective reference point (often the initial purchase price), which defines the perception of gain or loss and influences decisions to sell or hold (Koszegi & Rabin, 2006). Some authors demonstrate that the definition of limits depends on the socio-demographic characteristics of traders and their experience (Brettschneider et al., 2025).

2. Methodological Approach

This article uses a qualitative and inductive methodology, an approach that remains relatively underutilized within the financial field, which has historically favored quantitative and deductive methods (Hoffmann et al., 2015; Della Vedova et al., 2023; Oehler et al., 2018). Given the complexity of traders' motivations, a qualitative investigation can yield substantial insights. Indeed, quantitative approaches frequently struggle to capture the subtleties of decision-making processes, underlying affects, or intuitive strategies. The qualitative method enables us to highlight unexpected influences, which are challenging to access through quantitative tools. This qualitative immersive approach provides a foundation for the development of theories based on lived experience, unveiling contextual behavioral mechanisms crucial for a holistic analysis. In a qualitative study, the primary objective is not the statistical generalization of findings to a broader population, but rather the acquisition of an in-depth understanding of a specific phenomenon within a particular context. The focus is on data collected from a sample that is often small but selected for its relevance to the research topic (Firestone, 1993; Maxwell, 1992).

For this investigation, an experimental protocol structured around three consecutive days of simulated trading in January 2025 was implemented with eight students (cf. next section). Subsequent to this experimental phase, individual semi-structured interviews were conducted by a single researcher to ensure the homogeneity of their execution. It is noteworthy that this researcher had no academic affiliation with the participants (i.e., she would never be required to evaluate them), thereby fostering the interviewees' freedom of expression. The scheduling of the interviews following the three days of experimentation naturally fostered a degree of familiarity, enriching the discussions.

For the data analysis, with reference to the framework of the five approaches developed by Creswell and Poth (2017), the narrative approach was prioritized, as the other methodological alternatives (case studies, ethnography, phenomenology, and grounded theory) did not align with the objective pursued in this article. Narrative research centers its analysis on the affects of an individual, frequently involving a 're-telling' of the story based on the themes and the identification of key elements. This process includes

reading and writing of memos, the description of the person's experiences, contextual materials, and the interpretation of personal experiences.

More specifically, our semi-structured interviews are based on an interview guide comprising several series of open-ended questions structured around different themes associated with biases. This guide allows for a reorientation of the interview if necessary, conferring substantial flexibility to the data collection process. The flexibility in the guide within a semi-structured approach is crucial in qualitative research, as it must align with the study design, enable an in-depth exploration of experiences, adapt to the natural flow of conversation via open-ended questions, and accommodate unexpected responses from participants. The guide thus serves as a framework rather than a rigid constraint (Whiting, 2008).

For the analysis of the semi-structured interviews, a thematic analysis was selected. The advantages include its capacity to facilitate participatory research, to highlight similarities and differences within the dataset, and to generate unexpected insights (Vaismoradi et al., 2013; Nowell et al., 2017).

Regarding our results, the Braune and Clarke (2006) procedure, structured in six phases ranging from familiarization to the production of the final report, was selected. This structure aims to counter the criticism of a lack of rigor frequently associated with qualitative research (Özden, 2024). Each semi-structured interview has been summarized by the main theme, representative codes, and illustrative verbatims. All interviews were recorded (with the participants' consent), fully transcribed, and analyzed by the three authors of this article. The use of artificial intelligence was not considered, as it does not yet appear capable of apprehending the nuances associated with biases (Finet et al., 2025).

3. Experimental Design and State of the Art

Our initial investigations on the influence of biases on decision-making processes date back to 2019 (Finet A. et al., 2022). The constraints induced by the Covid-19 pandemic and lockdown measures, which limited the feasibility of conducting such experiments, drove us to refine our experimental protocols (Finet A. & Laznicka J., 2025).

Participants engaged individually via the ABC Bourse platform to trade equities listed on the CAC40. Each participant managed a virtual portfolio (100,000 euros), allocated to companies within the CAC40 (the primary French stock market index), chosen for its presumed familiarity to the participants in the absence of diversification options. No restrictions were imposed on the volume of transactions. The experiment covered three days, encompassing twelve one-hour sessions (from January 27th to January 29th, 2025). To simulate the pressure in real-world markets, participants had access to real-time performance data of their peers' portfolios.

Significant consideration was given to the configuration of the initial portfolio. Prior research suggests that an initial portfolio fully invested in equities tends to encourage heightened risk-taking behavior, whereas an initial allocation entirely to cash promotes

more conservative trading strategies, irrespective of the prevailing market conditions (Finet A. et al., 2021; Finet A. et al., 2025).

The experiment, conducted in January 2025 at the University of Mons (Belgium) with students from Management Science programs, used a recruitment strategy that required participants to articulate motivations beyond monetary compensation. To build a highly motivated participant pool, no initial application deadline was established. The final sample size was limited to eight participants (seven men and one woman) due to budgetary constraints and the resource-intensive nature of the subsequent data analysis. Participants were compensated for 24 hours of trading activity over the three-day period. The overrepresentation of males in such experimental settings is a well-documented phenomenon in financial literature and can be attributed to a natural male propensity for risk-taking, or even a predisposition towards gambling (Barber & Odean, 2001; Cueva & Rustichini, 2015; Bashir et al., 2013).

While some critiques within experimental finance highlight potential differences between the psychology of student populations and professional traders, student samples remain prevalent in this kind of research. This methodological choice is often justified by the ease of recruitment, lower costs, and enhanced time efficiency (Etchart-Vincent, 2006; Kirchler, 2009; Hanke et al., 2010; Bouattour & Martinez, 2019). To address concerns regarding students' limited real-world trading experience, several factors were considered. Firstly, their successful completion of finance course suggests a reasonable degree of familiarity with trading principles. Secondly, research indicates that behavioral patterns between student and professional populations can exhibit significant similarities (Porter & Smith, 2003; Fréchette, 2011), with students even demonstrating comparable judgment in option valuation (Abbink & Rockenbach, 2006). Student samples are a widely accepted practice in experimental fields, particularly within experimental finance and the study of biases on decision-making (Rossignol et al., 2007; She et al., 2017; Ackert et al., 2005; Biais et al., 2005; Bruguier et al., 2010; Widyarini, 2017). To further align student behavior with that of actual traders, the participant achieving the highest portfolio return at the experiment's conclusion was awarded a hotel stay for two, valued at 200 euros. While not a direct monetary incentive, this reward aims to stimulate engagement, consistent with findings on the impact of rewards in such experimental settings (Etchart-Vincent, 2006; Gabbi & Zanotti, 2019). Thus, participant motivation was built on both direct remuneration for the time spent and a performance-based incentive at the experiment's conclusion.

The experiment took place during three days during which the general stock market configuration displayed a negative overall trend, even if the losses were relatively small. Table 1 presents data concerning the evolution of the CAC40 index during the experimental period, together with the performance of the American (DJ30, NASDAQ 100) and Japanese (TOPIX) stock market indices to provide a broader contextual understanding of the market environment. Despite the relatively small losses in the CAC40 index (indicating that some stock prices were increasing), participants exhibited significant concern regarding the decline in the financial value of their portfolios, even if

their losses were comparable to those of the index. This negative perception can result in specific biases and behaviors (Xu et al., 2022; Sokolowska & Makowiec, 2017).

Several informational events exerted an influence on market behavior during these three days. The first day was largely dominated by news surrounding DeepSeek, a Chinese competitor to American companies in the Artificial Intelligence sector. The second day continued to be significantly influenced by information regarding DeepSeek and its potential influences for American companies within the AI market. The third day was influenced by the announcement of LVMH's annual results, which fell below market expectations. Federal Reserve's (FED) announcement on January 29th (interest rates would remain unchanged) was largely anticipated.

Table 1: Evolution of the CAC 40, DJ30, NASDAQ 100, and TOPIX over the Experiment.

Indicator	01.27.2025	01.28.2025	01.29.2025	Total
CAC 40	-0.0003	-0.00012	-0.0032	-0.0036
DJ 30	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

At the end of the three days of experimentation, semi-structured interviews were conducted. The interview guide consisted of three main theoretical phases with considerable overlap. The first phase aimed to introduce the discussion through general questions about the interviewee, including their personal interest in trading. This step is usually used to establish an atmosphere of trust between the interviewer and the interviewee. However, given that the interviews followed three days of trading with numerous interactions between the organizers and participants, this introductory phase proved somewhat unnecessary, allowing the discussions to quickly focus on the central theme of the research. The second phase addressed in detail the potential development of biases during the experiment. Although this article focuses on prospect theory, given the close relationship between some biases (particularly anchoring bias), we believe it is relevant to consider a broader spectrum of biases.

The questions were organized based on the following biases (with particular attention paid to the last bias under consideration):

- Availability bias: according to Sadi et al., (2011), we analyzed this bias by asking four questions during semi-structured interviews to find out whether participants focused on recent events or on readily available information.

- Representativeness bias: according to Rai (2024), three questions were designed to assess the extent to which participants relied on past experiences to help them make decisions.

- Overconfidence: Overconfidence occurs when individual investors overestimate their skills, knowledge, or ability to forecast stock market movements (Wang, 2023). We analyzed participants' confidence levels using four questions.

- Anchoring bias: this bias occurs when individual investors rely on an initial reference point to make future decisions (Sharma & Firoz, 2020). The potential development of anchoring bias was analyzed through three questions:

- Herd behavior: Herd behavior refers to the tendency of individuals to follow the actions or decisions of others (Utari et al., 2024). We included three questions in the interview guide to measure this predisposition.

- Prospect theory (gain and loss management): how individual investors perceive gains and losses (Summers & Duxbury, 2012). We formulated three questions to examine how participants react to situations involving both winning and losing positions.

The last phase of the guide was dedicated to conclusions and gave the interviewee the opportunity to raise any points that had not been covered previously.

In summary, contingent upon the specific characteristics and context of the experimental experience, the experience encompasses several key elements that will be integrated into our analysis :

- A three-day trading experience within the French stock markets.
- Conducted with a predominantly male student population.
- Carried out within a stock market context perceived as exhibiting a declining trend.
- A performance-based reward offered to the portfolio with the highest financial return at the experiment's conclusion.

4. Results

Table 2 : Statistical Summary of Semi-Structured Interviews

Student	Duration	Number of Words	Number of Pages
220223	42 minutes	4466	10
212077	42 minutes	6827	12
210867	59 minutes	7922	14
220665	36 minutes	5946	11
223457	43 minutes	7492	12
221399	36 minutes	6124	11
220528	42 minutes	5949	12
190030	33 minutes	5577	10

Mean	42 minutes	6288	11,5
Maximum	59 minutes	7922	14
Minimum	33 minutes	4466	10
Standard Deviation	8	1102	1,3

1. Student 220223

Theme	**Representative Codes**	**Illustrative Verbatims**
Asymmetry in fixing limits	Limits on gains ; No limits on losses ; Aversion to loss ; Anticipation of a rebound.	‘Why not let the gains run to make even more profit?’ ‘Because I started making gains on the second day, so I thought to myself, “If it all crashes tomorrow, I'll be frustrated.” I might as well take what I can get right now. If it goes down, I'll buy back.’ “No, I tended to hold on to losing stocks because you always think they'll go up a little.”‘ ’I set a limit in my head: a loss of 100–150 euros on gains, 100–120 euros."
Influence of emotions on selling decisions	Frustration ; Disgust ; Regret ; Emotional response to loss.	"It's not enough knowledge. That's why I'm studying now. It's because I want to improve my knowledge. And also, here, it was a question of timing. When to come back, when to leave. But in terms of emotion, does it frustrate you? Does it make you angry? No, not angry. But yes, it's frustrating. And on Wednesday, it was even more than disgust.“ 'Disgusted. I think to myself, it's a shame. Because we can come back in an hour, but if I had taken it off like I was supposed to, without complaining or anything, I would feel so much better.” ‘If it's something I planned and forgot, it's more than frustrating. It's more frustrating and makes me feel disgusted. And you start thinking, if I had done this, if I had done that.’
Loss rationalisation and increased risk-taking	Rationalisation, Hope for a rebound, Risk-taking, Rebound behaviour.	‘But we're talking about LVMH here, and in a month or two, it'll be back up again.’ "No, that's right, I tried anyway. Because I don't want to stay here. I

		don't want to be in this situation where I can't do anything. I don't like it. So no, I sold a few shares at a loss to buy others, to try and get the price up. And in the end, it worked because my return remained stable. But since I was selling at a loss and buying, there were transaction costs, and there was the loss that would count on top of that. So it went down and then it went back up. In the end, what I was doing was pointless." “I had a limit, but were there reasons for keeping the losing positions in the sense that you were waiting for a rebound?”
Influence of the Experimental Context	Simulation, Emotional detachment, Increased risk-taking.	“Sometimes we forget that it's an experiment, that it's not real money.” “Market prices and trends have no influence, even if it's an experiment. I forgot that it was an experiment. It affected my mood a little. Not 100%, because I forgot that sometimes it was just an experiment.”

Student 212077

Theme	**Representative Codes**	**Illustrative Verbatims**
Careful Approach with Limits Defined	Limits on gains, Limits on losses, Prudent behaviour, Risk management.	‘Yes, I have around 50. Even including losses, generally.’ ‘But I tried to tell myself that from that moment on, it wouldn't go away.’
Influence of Analysis and Trends on Decisions	Trend analysis, Market information, Purchase price detachment.	‘It depended on the trend.’ ‘No, it's more about the gain or loss than the price at which the transaction takes place.’
Role of Intuition and Feeling	Intuition, Feeling, Subjective judgment.	‘It's just a feeling, really.’ ‘Yes. And then, when I saw that it was stabilising, I thought, “OK, it's fine, let's get started.”’

Adapting Strategy to Context	Adaptability, Flexibility, Taking context into account	'I waited for that one because, after all, LVMH is a major player that normally remains more or less stable.' 'And then, in the last few days, when the whole market is falling, I'm not going to touch it, it's not worth it, you can't buy.'

Student 210867

Theme	**Representative Codes**	**Illustrative Verbatims**
Difficulty Deciding When to Take Profits	Uncertainty about the exit point, Hope for further gains, Minimisation of transaction costs.	'The hardest part about winning is knowing when to stop.' 'Yes, that means that if I'm at more than 5%, 1%, 2%, that's how far the price will go.' 'I let it slide, so to speak, and waited to see what would happen.' 'You hoped it would continue.' 'Yeah, hoped, that's right. But that's not what you should do.'
Reluctance to Cut Losses	Loss aversion, Hope for a market rebound, Holding on to losses.	"As I told you, I didn't cut my losses." "Because for me, the price always comes back." "We don't know how long it will take, but we are convinced that the price will return to its initial level." "That's the wrong thing to do, to hope."
Influence of Emotions and the Ego	Ego, Hope, Disgust, Nostalgia, Influence of emotions on rationality	'But I'm even more at risk because of my ego.' 'So I felt a little nostalgic.' 'A little disgusted after being overconfident.' 'When you're in trading, in that position, with all the emotions... you're no longer rational.'
Importance of Discipline and Following the Plan	Discipline, Keeping to the plan, Simplifying the strategy, Personal rigor.	'And I wasn't able to stick to my plan. And then I wasn't profitable.' 'It's proportional to our choices. If I make a bad choice, I lose; if I make a good choice, that's good for me.' 'I'm able to determine strategies, but I don't necessarily stick to my plan.' 'In trading, you really have to simplify your life, which means getting results.

		When you're right, you take your profits. And when you're wrong, you cut your losses.'

Student 220665

Theme	**Representative Codes**	**Illustrative Verbatims**
Aversion to Selling at a Loss	Loss aversion, Difficulty in taking losses, Hope for a market rebound.	'Generally, I'm more averse to selling a stock when I'm losing money.' 'Because it confirms the loss.' 'I still have the same number of shares, so in theory I haven't lost anything, it's just the value that has decreased.' 'So you hope the market rebounds so that it comes back.'
Influence of Emotions on Decision-Making	Euphoria, Fear, Disappointment, Desire to recover losses,	'It's hard to differentiate between instinct and emotions, actually.' "For example, euphoria might have caused me to overestimate my expected returns." 'After a loss, I had this desire to recover my loss at all costs. 'I find that emotions are a little bit... I think they are even the biggest disadvantage of being an adult."
Importance of Technical Indicators	Technical indicators, Moving averages, Technical analysis, Reliance on tools.	'It's based on my technical indicators.' 'I looked at several indicators, including some you gave me last Wednesday to use as a reference point.' 'I look at the chart, for example, over a slightly longer term, and I see if it's true that when a particular indicator is at a certain level, the price rises or falls at that point.' 'It's mainly through indicators. For example, if the RSI is an indicator, as I understand it, which basically indicates when a stock is oversold or overbought.'

Influence of Experience and Virtual Money	Virtual money, Reduced feelings, Increased risk-taking, 'All or nothing' behavior.	"Yes, for me, the fact that it was virtual money had an impact" "It mitigated the feelings. I think that, in general, I would have acted the same way, but in a much more mitigated way." "On the second day, it was a bit the opposite. It all diminished. But then I kept investing more to recover my losses. I was taking more and more risks." "But that wouldn't have been the case with real money. Because it's virtual money."

Student 223457

Theme	**Representative Codes**	**Illustrative Verbatims**
The Importance of Intuition	Intuition, Feeling, Premonition, Self-confidence.	'The first thing is to always listen to your intuition.' 'On the second day, if I had listened to myself, I would have stayed in the top three in the rankings.'
Influence from Others and Risk-Taking	Social influence, Imitation, Risk-taking, Regret.	'I based my decision on what my colleagues and others did in order to invest.' 'I was interested in people who took risks, who went for it.'
Gradual Development of the Strategy	Adaptability, Flexibility, Learning.	"I developed it as I went along." 'Take the one you know first and give it a try. If you see that there's something there, go for the same one again.
Managing Gains and Losses	Earnings targets, No loss limits, Optimism, Cost considerations.	"Yes, it's certain that every action had a ceiling." "No, not at all." (in response to the question about a minimum sale price) "I wanted to have at least a margin because I didn't want to... I wanted to cover the costs."

Student 221399

Theme	**Representative Codes**	**Illustrative Verbatims**
Initial Strategy for Buying the Biggest Declines	Buying on a downward trend, Against the trend, Hoping for a rebound	'When things were going down, basically what I did is I looked at the worst losers of the day. I said to myself, 'It can't get any worse.' So my strategy was to look at what had really fallen so that I could take advantage of a potential rebound."
Strategy Change During the Experiment	Strategy change, Buying on a price increase, Trend follower, Panic.	'I saw it yesterday or the day before yesterday, I think. At one point, I was doing well, I was third, and then I saw that everything had dropped into the red. So then I panicked a little, in a manner of speaking, and sold everything.' 'And then I did the opposite, so I bought everything that was going up, thinking, well, if one doesn't work, we'll try the other.'
Impact of Transaction Costs	Transaction fees, Operating costs, Break-even point, Trading limits.	'The problem is that, given the high transaction fees and the fact that the market isn't moving much, like it was up 0.5% or down 0.5%, even if we made more than 0.5%, we would have been cut by the transaction fees.' "So it made us want to stay and hold our position rather than change." "For example, when I sold everything and I was down 1.5%, just by selling everything, I was down 1.8%, just by selling."
The Influence of Emotions and Rankings	Panic, Anxiety, Risk-taking, Competition, Influence of rankings.	"So then I panicked a bit, in a manner of speaking, and sold everything." 'And then suddenly, all my positions had fallen. After that, I started to get more anxious, let's say.' 'I knew that if I didn't do anything, I would stay in third place. It's pointless, you know. So I wanted to take more risks...'
Failure to Take Losses	Buying on a decline, Hope for a rebound, Aversion to loss.	'So, I was told that if I was going to go for broke, I should buy back the thing that had... In fact, I bought back the same thing that had lost value three times.'

		‘Each time, I told myself it couldn't get any worse.’ ‘I told myself that if it dropped by 10%, normally, if it went back up and levelled out, it wouldn't be up 1% or anything, it would be up 4 or 5.’

Student 220528

Theme	**Representative Codes**	**Illustrative Verbatims**
Strategy Evolution and Adjustment	Strategy change, Adaptation, Influence of others, Information analysis, Indicators.	‘Yes, after my strategy, it evolved a lot over time, because I saw that it wasn't very conclusive.’ "At first, I only used articles. Then I started listening to others, how they worked. And I saw that they were finding out more about the indexes.
The Influence of Emotions	Increasing emotions, Disgust, Determination, Detachment, Emotionally impacted by losses.	‘And it was really as time went on that I started to get into the swing of things and get into the game.’ ‘Since the second day wasn't really good for me, I was really disappointed at the end.’ ‘And it was just on the last day, in the afternoon, that I realized it was over because the experiment was almost finished. I could see that I was in the red. At one point, it just made me laugh.’
Challenges in Finding the Right Timing	Timing, Responsiveness, Anticipation, Entry and exit points.	‘I wasn't responsive enough? Exactly. I couldn't find the right moment to get in and get out.’ ‘I really noticed that because I knew I had to buy when the stock was low, let's say. But let's say I bought when it wasn't low enough yet. So that means it was starting to drop. I buy in the middle and it drops even more.’
Satisfaction Related to Prediction	Prediction, Anticipation,	“Actually, I wasn't particularly happy with the profits I was making, but rather with what I was able to predict.”

	Accuracy, Cognitive satisfaction, Detachment from gain.	"But yes, I was happier with the predictions I made, even if they weren't particularly positive."
Influence of Information and Graphs	Sources of information, News, ChatGPT, Price support forecasts, Charts.	"The news on the website. And I looked at Chat GPT. Those two, plus occasionally I would go to Boursorama". 'When you look at the charts, did that have a big impact on your decision-making or not? Well, yes, honestly, I felt that I was making quite a few small gains on most of the companies I chose based on that.'
Difficulty in Selling and Influence of Fees	Uncertainty about selling, Difficulty making decisions, Influence of transaction costs, Hope for a price rebound	'I was hesitating. I was hesitating. Yes, that was a bit of a problem for me. I found it difficult to focus on the short term. I found it extremely difficult to take action.' 'The fees make you lose money. They make you lose money.' 'Something that's high, and I hope it's going to go up even more. Something that's low, I hope it's going to go back up to reduce my loss.'

Student 190030

Theme	**Representative Codes**	**Illustrative Verbatims**
Discovering and Learning about Trading	Inexperience, Exploration, Learning, Negative-sum games, Transaction costs.	'I've never traded in my life.' 'Right from the start, I quickly felt, how can I put it, not up to it. Out of my depth compared to the others.' 'I learned that one fundamental thing is that it's a game... a negative-sum game.' 'I said, "No, because if it were a zero-sum game, that would mean that the gains and losses on the market would balance out... But on the market, we see that there are more losses than gains.'

		‘I told him, 'What's more, there are transaction fees, which means that there's a difference that is absorbed by the market.”’
Influence of Emotions and Coping Strategies	Emotions, Panic, Feelings of incompetence, Rationalization, Social influence.	“And I panicked, I went into a panic.” ‘So when I saw that it wasn't going well, I thought, my God, I'm really useless.’ ‘I thought, I'm useless, I'm useless. And then I thought, wait, that's what I've been taught. Self-fulfilling prophecy. Assumptions are self-fulfilling.’ “I tried to... to rationalise, as they say. And then I was strongly influenced by others.” 'I listened to other people's advice. Of course, so I know those aren't good signals.
Strategy Change	Development, Timing, Transaction costs, Added value.	‘And of course, the first shares I bought were Accor and ArcelorMittal, which Mr Finet had mentioned in his lectures.’ "Over time, I didn't dare buy shares in companies I'd never heard of... I thought that... that we were going to hit rock bottom, and I said to myself, it can't possibly go any lower. So what I wanted was to buy at a price that was almost nothing. I told myself that in a few days, the price would go up. And then I could sell and make a big profit." ‘But the problem is that I bought too late... I should have bought at the end of the second quarter.’ ‘And then I realised that even though I should have made a profit, I was actually in the red. And so there were transaction fees.’
Analysis and Information Sources	Fundamental analysis, Technical analysis, Bottom/top prices.	‘I said, OK, I need to go to the stock market section to look at the fundamental analysis and technical analysis.’ ‘So then I would go and look on Boursorama or Yahoo Finance. Basically, I was trying to find fundamental analysis reports.’ ‘So I just looked at the highs and lows. I don't know anything about candlesticks and all that, so I didn't know how to use technical analysis.’

Responses to Gains and Losses	Uncertainty, Indecision, Response to gains, Response to losses, Emotional detachment, Nostalgia, Regret.	'So when I placed an order, I was completely in the dark. I had no idea how it was going to turn out. When I saw a gain, I didn't know if I should sell right away. 'When I saw losses, I wondered if I should sell to avoid further losses or wait and hope for the best. So I was really lost." 'I think that was largely because I hadn't invested anything personally, it was purely virtual. And then it was my state of mind because I'm not in a very good place psychologically. I'm basically a depressive person..." 'Yes, but in the sense that when I saw at the end of the day, I looked at the quotes, I said to myself, I should have invested in it in the morning... Yes, that's why I was surrounded by nostalgia. Nostalgia for me is regret, I should have.'
Self-Assessment and Learning	Lack of confidence, Desire to learn, Skepticism towards "gurus", Believing it was just luck, Feeling abandoned	"I'm a complete novice, I still have everything to learn. Everything, from A to Z." "I don't really trust those resources. I prefer to focus purely on science. I look at scientific books or articles, but not stuff like that." "A series of successful moves, I thought to myself... it's just pure luck." 'And then I thought maybe there would be some movements, and in the end, I looked, but nothing good happened... So there you go, a feeling of abandonment, like it was over.'

5. Discussion

In this discussion, we review the different theoretical elements that comprise Prospect Theory and draw parallels with the results of our semi-structured interviews.

Loss aversion: Reluctance to Take Losses

Prospect theory suggests that individuals feel the pain of a loss more strongly than the pleasure of an equivalent gain (Vaid & Chaudhary, 2022; Xia & Madni, 2024). This 'loss aversion' significantly influences traders' decisions (Padmavathy, 2024). Our interviews reveal clear examples of this aversion:

"I tended to hold on to stocks that were performing poorly because I thought they would go up a bit." (Participant 220223). This statement reflects a reluctance to sell a stock that is losing value, with the hope of a rebound (Sharma & Firoz, 2020 ; Mdaghri et al., 2024).

"Losses, as I told you, I didn't cut." (Participant 210867). The participant explicitly admits to avoiding losses (Wang, 2023).

'Generally, I am more averse to selling stock when I am losing money.' (Participant 220665). This participant expresses his aversion, highlighting the psychological difficulty of accepting a loss.

"I was waiting for losing stocks to rebound instead of selling at a loss." (Participant 223457). This passive behavior towards losses is indicative of loss aversion.

Framing: The Influence of Information Presentation

Prospect theory emphasizes that how a decision problem is framed influences choices. Traders do not respond to the same information in the same way depending on how it is presented (Cardoso et al., 2016; Rosdini et al., 2020).

The context of trading experience and (the use of virtual money), is a clear illustration of framing:

'Sometimes we forget that it's an experiment, that it's not real money.' (Participant 220223)

"Yes, for me, the fact that it was virtual money had an impact." (Participant 220665)

'I think it was largely because I didn't invest anything personally, it was purely virtual. (Participant 190030)

These comments indicate that trading with virtual money changes the perception of risk (Gajewski et al., 2021). Traders are more inclined to take significant risks because there are no real financial consequences. The 'virtual money' framework mitigates the emotional impact of losses, which can lead to less cautious behavior.

Non-Linear Weighting of Probabilities: Hope and Illusion of Control

Prospect theory assumes that individuals do not weigh probabilities in a linear way. They tend to overweigh low probabilities and underweight average and high probabilities (Tian, 2024).

In the experiment, this was evident on several levels:

- Hoping for gains that are unlikely to happen: traders may hold on to losing positions in the hope of a magical market rebound, even if the probability of this event is low.

‘Because we think it's going to go up a bit.’ (Participant 220223)

‘Because for me, the price always comes back.’ (Participant 210867)

- The illusion of control: traders can overestimate their ability to predict market movements and influence results (Qadri & Shabbir, 2014).

‘It's just a feeling.’ (Participant 212077)

‘The first thing is to always listen to your intuition.’ (Participant 223457)

Non-linear probability weighting explains why investors may be attracted to high-risk/high-return strategies, even if the probability of success is low, and why they may find it difficult to accept losses, always hoping for a favorable reversal.

Reference Point

In the experiment, the reference point was often the initial purchase price:

‘I still hold the same number of shares, so in theory I haven't lost anything, it's just the value that has decreased.’ (Participant 220665). The participant considers that the loss is not real as long as he has not sold, with the purchase price being used as a reference point.

Gains and losses are perceived as deviations from this reference point. This can lead to a reluctance to sell below the purchase price (loss), even if this is rational, or to take profits too quickly to avoid falling back below the purchase price (Kim et al., 2023, Rai, 2024).

In summary, in the context of the experience, interviews reveal that Prospect Theory provides a relevant interpretative framework for understanding traders' behavior in the presence of gains and losses. The participants' verbatim responses illustrate how the concepts of loss aversion, framing, non-linear probability weighting and reference points influence their decisions.

6. Conclusion

Our study focused on analyzing the behavioral foundations underlying the management of gains and losses among market participants, moving away from the assumption of perfectly rational agents in favor of the Prospect Theory framework. This theory offers an alternative to understanding decision-making processes in contexts of risk and uncertainty, emphasizing individuals' subjective assessment of potential outcomes and their probabilities. By using a qualitative and inductive methodology, based on an in-depth analysis of semi-structured interviews with eight participants in a trading simulation, our aim was to capture the experiences and rationales of traders, providing a more nuanced understanding of behavioral biases than would be possible with a quantitative approach.

Thematic analysis of the data collected revealed illustrations of the principles of Prospect Theory. Loss aversion, defined as a sensitivity to losses that is greater than the sensitivity to equivalent gains and a strong reluctance to realize a loss, was evident. Participants displayed a strong propensity to hold on to positions that were losing value, driven by the hope that the market would rebound, rather than 'cutting' their losses. This difficulty in realizing a loss is a determining factor in their choices. The concept of framing, which posits that how options are presented influences the choices made, was particularly relevant. The virtual money used in the simulation created a specific context that distorted the perception of risk. Participants explicitly recognized that these conditions reduced the emotional impact of losses and inclined them to take greater risks than they would have considered with real money. Framing therefore reduced the emotional weight associated with losses, potentially leading to less cautious strategies.

The non-linear weighting of probabilities interacts with a potential illusion of control, whereby traders overestimate their ability to anticipate market fluctuations. The influence of intuition mentioned by several participants may also be part of this dynamic, suggesting confidence in subjective judgement rather than a rational assessment. The overweighting of low probabilities explains the attractiveness of high-risk strategies and the difficulty in cutting losses.

Finally, the reference point, acting as a "subjective" basis for evaluating results, played a structuring role. This point was often the initial purchase price. The perception of results as deviations from this level drove decisions to sell or hold positions. The psychological difficulty of selling below the reference price – in other words, accepting a loss – was evident. Participants reported that they considered the loss to be non-effective until the sale was completed, with the purchase price acting as a psychological "anchoring point".

In conclusion, the in-depth qualitative analysis of the interviews, conducted in the specific context of a trading simulation with virtual money, reinforces the relevance of Prospect Theory. The participants' statements illustrate how the concepts of loss aversion, framing (particularly the impact of virtual money), non-linear probability weighting (manifested by the hope of a rebound, related to the illusion of control), and reference points shape their decisions regarding gains and losses. These findings highlight biases that can lead to sub-optimal choices in trading, particularly in managing losing positions and determining the appropriate timing for closing positions.

7. Limitations and Avenues for Future Research

7.1. Limitations

- The context of simulation with virtual money: This may attenuate the emotional impact of gains and losses and encourage increased risk-taking. Decisions made in this specific context may differ from those made with real money.
- Reliance on self-reports: The analysis is based on the discourse and self-assessment of participants during interviews. Participants' narratives about their thoughts, emotions, and decisions are subject to memory bias, social desirability,

or retrospective rationalization (explaining actions that may have been more impulsive or irrational afterwards). It may be difficult for individuals to fully articulate the precise mechanisms of their decisions or the actual intensity of their emotions.

- Limited duration of the experiment: The study only covers a limited simulation period. This short duration does not give the opportunity for the observation of changes in traders' behavior over the long term or the adaptation of strategies over a longer period.
- Connections between biases: Focusing on a single theory may overlook interactions with other potential biases. For example, anchoring bias could be as relevant as Prospect Theory for understanding trading behavior.

7.2. Avenues for Future Research

- Investigate the specific interactions between the concepts of Prospect Theory and emotions: although our qualitative study highlighted the presence of emotions in traders' narratives and their ability to undermine rationality, future research could specifically analyze in greater detail how loss aversion, hope related to probability weighting, or the framing effect are moderated by specific emotions (emotions are all over the participants' stories). For example, participants recognize the difficulty of controlling their emotions and their impact on decision-making. Some describe irrational behavior motivated by emotions, such as holding on to losing positions for too long or taking excessive risks.
- Analyze the impact of framing on behavioral biases: our study showed that the context of simulation with virtual money could mitigate the emotional impact of losses and encourage increased risk-taking. Comparative studies could examine how traders' behavior changes when they move from simulation to real trading, or directly compare decisions made in both contexts by similar groups of participants, in order to better identify differences.
- Analyze the influence of experience and training on the ability to manage behavioral biases in trading: some participants are aware of their inexperience or want to get training. A focus could be given on how learning, experience, and developing disciplined strategies affect loss aversion, difficulty cutting losses, and the influence of emotions.
- Study different strategies (such as technical indicators or stop-loss orders) in overcoming biases in the management of gains and losses: research could quantitatively assess whether following clear exit strategies (stop-loss) or systematically using some technical indicators actually reduces the impact of loss aversion or difficulty in determining the exit point.
- Explore the role of social influence and intuition in trading: some participants rely on their intuition. The question is: how do these non-rational factors interact with the cognitive biases identified by Prospect Theory? Studies on the role of conformity biases in the context of trading could provide some insight.

- Examine the factors influencing persistence in losing positions: what are the specific psychological mechanisms (irrational hope, cost of anticipated regret…) that drive traders to 'let their losses run'?

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