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Framing the Decision: An Experimental Study on Managerial Judgements Post-Leadership Training

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Abstract

This study was designed to contribute to the literature on behavioral economics and managerial psychology by investigating the influence of cognitive biases on decision-making processes. The research experimentally examines how managerial investment decisions may vary when identical market information is framed positively or negatively (framing effect). The study involved a total of 45 managers employed at a university. Participants first received a four-hour leadership training and were then randomly divided into two groups. Each group was presented with identical investment content, but framed differently. One group received information emphasizing investment opportunities (positive framing), while the other was exposed to risk- and uncertainty-oriented expressions (negative framing). Participants were asked to respond to the question "Should the company enter the market under these conditions?" with a simple "yes" or "no" and provide a brief justification for their decision.

The quantitative findings revealed no statistically significant difference between the positively and negatively framed groups ($\chi^2 \approx 0.045$, $p > .05$). However, content analysis of open-ended responses showed that the underlying arguments were shaped in a frame-sensitive manner. While the positive framing group focused on opportunity-oriented reasoning, the negative framing group emphasized risk avoidance themes. These results are consistent with Tversky and Kahneman's (1981) prospect theory and

Loewenstein's (2001) risk-as-feelings hypothesis. Furthermore, the leadership training appears to have mitigated the framing effect. The study highlights the impact of cognitive awareness and presentation style on managerial decisions and provides important evidence suggesting that such cognitive biases can be reduced through training.

Keywords: Framing effect, decision-making, leadership training, behavioral biases, experimental research, managerial psychology

Introduction

Theoretical Framework

The framing effect is a cognitive bias that systematically alters individuals' decisions depending not on the content of information, but on how it is presented (Tversky & Kahneman, 1981). It refers to the phenomenon where individuals' choices are influenced by whether identical outcomes are framed in terms of gains or losses. Prospect theory, developed by Kahneman and Tversky (1979), offers the core theoretical foundation for understanding this bias. According to this theory, people tend to avoid risks when information is framed positively (as gains), but are more likely to accept risk when the same information is framed negatively (as losses), especially in conditions of uncertainty (Levin, Schneider, & Gaeth, 1998).

Following Levin et al.'s (1998) typology, framing effects can be categorized into three types: risky framing, attribute framing, and goal framing. Risky framing refers to individuals' preferences shifting according to the frame in scenarios with equivalent outcomes - e.g., "200 people will be saved" vs. "400 people will die" (Tversky & Kahneman, 1981; Gong et al., 2013). Attribute framing concerns how consumer evaluations change when the same product is described as "75% fat-free" versus "25% fat" (Levin & Gaeth, 1988). Goal framing involves the way behavioral outcomes are framed - positively or negatively - and how that affects persuasiveness (Piñon & Gambara, 2005).

The framing effect is driven not only by cognitive mechanisms, but also by emotional evaluations. The risk-as-feelings model proposed by Loewenstein et al. (2001) posits that individuals rely on emotional reactions, rather than purely rational calculations, when making risky decisions. Emotions such as uncertainty, threat, and anxiety significantly guide judgment processes. For example, Stark et al. (2017) demonstrated that framing effects can be mediated by affective responses, where positive frames elicit more favorable emotional reactions from participants.

Thus, the power of the framing effect can vary depending on individual and contextual variables. Individuals with high social anxiety, for instance, tend to exhibit stronger avoidance behavior under uncertainty,

making them more susceptible to framing (Lincă, 2016; Maner et al., 2007). Similarly, ambiguity aversion - the discomfort with uncertainty - can shift the direction of the framing effect (Osmont et al., 2014), prompting individuals to choose certain outcomes especially under negatively framed scenarios.

Cognitive awareness and education level also influence the strength of the framing effect. Neuroimaging research by Gonzalez, Dana, and Koshino (2005) revealed that educated individuals show greater activation in the brain's frontal regions, facilitating more rational decisions and reducing framing sensitivity. Fan (2017) further found that individuals with strong analytical reasoning skills are less influenced by framing.

The framing effect is not limited to individual decisions but has significant implications in organizational and institutional settings. For example, Diacon and Hasseldine (2007) found that presentation format significantly affected investors' financial preferences. Ventre et al. (2023) reported statistically significant differences in product choices based on framing using a multi-criteria decision-making model. Similarly, the framing effect has been demonstrated in health-related decisions (Gong et al., 2013), discrimination judgments (Hsee & Li, 2022), and e-commerce settings (Li & Ling, 2015).

Meta-analytical evidence further underscores the robustness of the framing effect. According to Piñon and Gambara (2005), the average effect sizes were $d = 0.437$ for risky framing, $d = 0.260$ for attribute framing, and $d = 0.444$ for goal framing. These findings affirm that the framing effect is not merely an experimental artifact but has meaningful consequences in real-world decision-making.

In sum, the framing effect has the potential to influence not only decision outcomes but also the entire decision-making process, including its cognitive, emotional, and discursive components. Decision rationales are systematically shaped by the presentation format, which implies that the quality of a decision may be contingent on its frame. Therefore, to reduce the impact of systematic biases in decision-making, strategies such as debiasing techniques, training in analytical reasoning, and increasing framing awareness are recommended (Kahneman, 2011; Milkman et al., 2009).

Experimental Design

This study aims to investigate how the framing effect, a cognitive bias that systematically alters individuals' decisions based on the presentation of information, operates within a managerial context. The experimental design utilized a single-factor between-subjects model to examine how framing influences managerial investment decisions and the reasoning behind them. The design draws upon the classical framing

paradigm of Tversky and Kahneman (1981), rooted in prospect theory, which allows for the causal assessment of framing on decision outcomes.

The independent variable in this study was the framing of the investment information:

- Gain frame – highlighting the probability of success,
- Loss frame – emphasizing the likelihood of failure. This structure corresponds to the risky framing category described by Levin, Schneider, and Gaeth (1998). Although the content remained identical across conditions, the linguistic framing differed, prompting participants to process the same information through distinct emotional and cognitive lenses (Stark et al., 2017; Loewenstein et al., 2001).

The dependent variable was the binary investment decision ("yes" or "no") made by the participants. In addition, participants were asked to briefly justify their decisions in writing, which enabled analysis of how framing not only affects behavioral choices but also shapes the cognitive and discursive structures underlying those decisions (Levin et al., 1998; Hsee & Li, 2022).

The sample consisted of 45 managers employed at a public university in Turkey. Participants volunteered to take part in the study and received a structured four-hour leadership training prior to the experiment. The training was designed to enhance behavioral awareness and analytical decision-making, and included modules on decision biases and leadership strategies. Its purpose was to reduce susceptibility to the framing effect by fostering cognitive de-biasing (Milkman et al., 2009; Fan, 2017), offering a testable condition for theoretical claims regarding the role of awareness in mitigating cognitive distortions (Lincă, 2016).

Following the training, participants were randomly assigned to two equally sized groups ($n_1 = 23$; $n_2 = 22$). One group was exposed to the investment scenario framed positively ("70% chance of success"), while the other received the same scenario framed negatively ("30% risk of failure"). The framing was carefully designed to isolate the effect of presentation, ensuring that content, length, and cognitive load remained equivalent across groups. This methodological rigor enhanced internal validity and supported causal inference regarding framing effects (Piñon & Gambara, 2005).

The scenario involved a realistic market-entry decision. Participants were asked the question: *"Given these conditions, should the company enter the market?"* They were required to answer either "yes" or "no," and to provide a written rationale for their decision. The responses were coded at the nominal level and analyzed thematically. This dual-layered approach allowed the study to examine not only behavioral outcomes but also the

emotional and cognitive reasoning strategies employed by participants (Loewenstein et al., 2001; Stark et al., 2017).

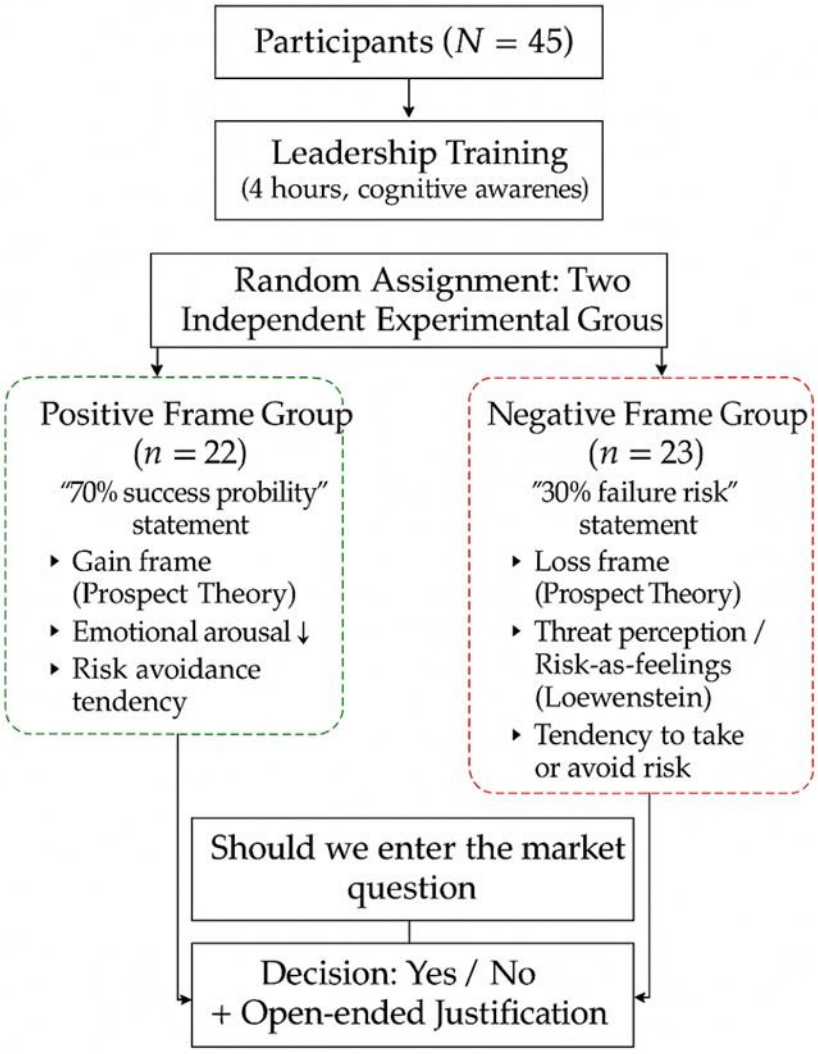

Figure 1: Created By Authors

This design provided a multidimensional decision analysis model, extending beyond statistical comparison to include the discursive and cognitive strategies used by participants. As such, the study aimed to make an original contribution to the decision-making literature by capturing both behavioral and narrative dimensions of the framing effect within a managerial decision-making context.

Data Collection

The data collection phase of the study was structured to experimentally reveal the impact of the framing effect on decision-making processes. Data were obtained from managers who were directly exposed to framing manipulation and were evaluated based on both their investment decisions and the reasoning behind these decisions. Thus, the dataset comprised both quantitative (decision outcome) and qualitative (decision justification) components, enabling a multilayered analysis of framing's influence.

During the experimental implementation, each participant was presented with one of two information texts that were identical in content but varied in linguistic framing. The framing structure followed the risky framing typology defined by Levin, Schneider, and Gaeth (1998). The gain-frame group (n = 22) received expressions emphasizing investment success, such as "70% chance of success," whereas the loss-frame group (n = 23) was exposed to identical content framed negatively, such as "30% risk of failure." This design aimed to test the effect of framing on risk perception and decision tendencies, as predicted by prospect theory (Tversky & Kahneman, 1981).

Participants were asked to answer the scenario-based question: *"Given these conditions, should the company enter the market?"* Responses were recorded dichotomously (1 = yes, 0 = no). In addition, participants were asked to provide a brief written justification for their choice. These qualitative responses were thematically analyzed to explore how affective and cognitive themes were influenced by the frame (Stark et al., 2017; Hsee & Li, 2022).

All data were coded at the nominal measurement level, and non-parametric statistical techniques such as chi-square (χ^2) were employed to assess whether the distribution of decisions significantly differed between framing conditions. This method enabled the researchers to determine the statistical significance of framing on decision behavior.

The materials used in the study were pre-tested to ensure content equivalence and semantic clarity. Subject matter experts reviewed the stimuli to ensure that the only variation was the framing, while other variables - such as length, complexity, and cognitive demand - were held constant. This ensured the content validity of the instruments and enhanced the effectiveness of the experimental manipulation (Gonzalez, Dana, & Koshino, 2005).

In conclusion, the data collection strategy adopted in this study allowed not only for the assessment of framing's influence on binary decisions but also for the analysis of the cognitive narratives underlying those decisions. Thus, the framing effect was evaluated not only at the

behavioral outcome level but also across multiple dimensions of the decision-making process.

Data Analysis

In this study, the data analysis aimed to assess whether managers' investment decisions differed according to the framing of the presented information. To this end, a Chi-square (χ^2) test for independent samples was employed. The Chi-square test is a non-parametric statistical method used to determine whether two categorical variables (i.e., framing type and investment decision) are independent of each other. This analysis was selected to examine whether the positive or negative framing had a significant impact on participants' decision-making behavior (yes or no).
The observed distribution was as follows:

- Gain-framed group (n=22):
  - ✓ Yes: 11 X No: 11
- Loss-framed group (n=23):
  - ✓ Yes: 11 X No: 12

Based on this distribution from a total of 45 participants, the Chi-square test yielded:

$$\chi^2 \approx 0.045, p > .05$$

Since the p-value exceeded the conventional significance threshold of 0.05, it was concluded that there was no statistically significant difference between the groups. In other words, the framing of identical content - whether positive or negative - did not produce a statistically meaningful divergence in managers' investment choices.

However, this quantitative result should be interpreted cautiously in light of several methodological and contextual limitations. First, the relatively small sample size (n = 45) and the near-even split in responses across both groups may have reduced the statistical power of the test. In the context of subtle cognitive phenomena such as framing, this limitation could mask potentially meaningful differences. Future studies with larger sample sizes or more advanced statistical modeling may be better suited to detect such effects.

On the other hand, the symmetrical nature of the response distribution may reflect the impact of the leadership training provided prior to the experiment. A considerable portion of participants in both groups gave similar responses, suggesting that the training may have increased cognitive awareness, thereby dampening the framing effect. This interpretation is supported by the thematic content analysis of the qualitative data (i.e., participants' decision justifications).

In summary, while the statistical analysis did not confirm a direct framing effect on decision behavior, the findings suggest that leadership training may have enhanced participants' ability to recognize and resist cognitive biases. Accordingly, future research should explore the contextual conditions and cognitive mediators that influence framing susceptibility by employing more diverse and larger samples.

Preliminary Analysis of Open-Ended Responses

In addition to recording participants' binary investment decisions ("yes" or "no"), the study also collected their underlying rationales. Each participant was asked to briefly explain the reasoning behind their decision. This qualitative approach aimed to uncover how framing influences not only the behavioral outcome but also the cognitive justification process. The open-ended statements were analyzed using thematic content analysis, allowing for comparative evaluation across different framing conditions.

Analytical Method:

The open-ended responses from 45 participants were analyzed using open coding, a common technique in qualitative research. First, each participant's statement was carefully examined line by line and segmented into units of meaning. These units were then grouped under thematic categories. Two independent coders conducted the analysis, and disagreements were resolved through consensus. At the end of the coding process, all responses were classified by both frame type (positive/negative) and decision outcome (yes/no), enabling cross-comparison.

Findings: Thematic Comparisons

Positive Frame Group (n = 22):

The majority of participants in this group emphasized opportunity-oriented reasoning. Those who answered "yes" often referred to market growth, technological innovation, and competitive advantage. Sample responses included:

- *"Early movers gain competitive advantage."*
- *"Becoming a pioneer in AI and 5G strengthens our brand."*

Conversely, participants who responded "no" under the same frame mostly cited internal organizational constraints:

- *"Due to lack of preparation, this opportunity is premature."*
- *"There is potential, but our strategic plan is not yet ready."*

These findings indicate that positive framing generally enhances opportunity perception, although internal readiness may still inhibit decision approval.

Negative Frame Group (n = 23):

Responses in this group primarily centered on risk and uncertainty. Participants who answered "no" frequently mentioned factors such as cost, market saturation, and technological immaturity:

- *"This investment could be too costly."*
- *"The market is saturated; profit margins will shrink."*
- *"The technology is not mature; risk is high."*

Interestingly, those who answered "yes" under the negative frame exhibited more strategic foresight and proactive thinking:

- *"Competitors are moving ahead; we cannot afford to be late."*
- *"Uncertainty creates opportunity; those who take risks win."*

These statements demonstrate that even under negatively framed conditions, some participants engaged in high-level strategic reasoning and risk tolerance.

Interpretation: The Impact of Framing on Reasoning

The analysis reveals that framing type influences not only decision-making behavior but also the structure and content of cognitive reasoning. Three major observations emerged:

1. Frame-Congruent Reasoning:
   Most participants used language and themes that aligned with the frame they received. This indicates that the framing effect operates not only behaviorally but also discursively.
2. Decision-Theme Consistency:
   Participants' decisions and their justifications were semantically aligned. "Yes" responses often emphasized growth and opportunity, while "no" responses focused on risk and uncertainty.
3. Organizational Context Sensitivity:
   In both groups, some "no" responses were based not on the framing of the information but on internal organizational realities, such as lack of preparation, limited resources, or strategic misalignment. This suggests that framing effects may be moderated by contextual factors.

In conclusion, the analysis of open-ended justifications provides strong evidence that the framing effect manifests not only in behavioral outcomes but also in the cognitive and discursive processes underlying those outcomes. This highlights the need for decision analysis to move beyond binary outcomes and to incorporate systematic evaluation of explanatory narratives.

Discussion

The primary aim of this study was to evaluate how presenting identical information in either positive or negative frames affects the investment decisions of managers who had previously received leadership training. While the quantitative findings did not indicate a statistically significant difference between groups, the thematic content analysis of open-ended justifications revealed that the framing effect persists at a cognitive level. This suggests that framing influences not only the decision outcome but also the rationalization process behind the decision.

General Consistency of the Framing Effect

As demonstrated in the seminal work of Tversky and Kahneman (1981), individuals tend to avoid risk when confronted with gain-framed scenarios, whereas they are more prone to risk-taking when faced with loss-framed information. This directional influence of framing on decision strategies has been consistently supported in the literature (Kühberger, 1998; Levin, Schneider, & Gaeth, 1998). In line with these findings, the current study observed that participants in the gain-frame group employed growth-oriented, opportunity-based, and technology-driven justifications, whereas those in the loss-frame group emphasized cost, risk, and uncertainty. These results align with Stark et al.'s (2017) claim that framing functions as an attentional guide, shaping decision processes through its emotional tone.

Framing Effect in Managerial Decision-Making

Decision-making literature has shown that even experts and highly educated individuals are not immune to framing effects (Druckman, 2001). In domains such as healthcare, law, and business, professionals may reach different conclusions based on the same information when it is framed differently. For example, a systematic review by Gong, Zhang, and Sun (2013) found that medical professionals' risk perceptions and treatment preferences were affected by framing. Similarly, this study found that managerial decisions in uncertain investment scenarios were shaped by framing: gain-framed participants focused on opportunities, whereas loss-framed participants concentrated on risk avoidance. These observations are consistent with the affect heuristic framework by Slovic et al. (2002), which posits that people adjust their risk perceptions based on emotional reactions to the decision object.

The Potential Role of Leadership Training

The near-symmetrical distribution of responses between the two groups may indicate that the leadership training administered prior to the experiment had a de-biasing effect. Educated individuals are known to be

better at detecting framing manipulations and engaging in critical reasoning (Lincă, 2016). Previous studies have found that framing effects are more pronounced among individuals with lower analytical capacity or less education (Smith & Levin, 1996). Therefore, the training session may have strengthened participants' ability to recognize emotional cues and construct neutral decision strategies.

Insights from Open-Ended Justifications

Not only were the final decisions influenced by framing, but also the nature of the justifications. Participants in the gain-framed group referred to "first-mover advantage," "strategic positioning," and "technological transformation," while those in the loss-framed group highlighted "market saturation," "cost burden," and "risky technology." These findings are consistent with Hsee and Li's (2022) experiments, which demonstrated that emphasis, not content, primarily determines decision orientation. This supports the view that framing operates not merely through informational content but via cognitive attention redirection.

Limitations and Future Research

Several limitations of the current study should be acknowledged, including the small sample size, the scenario-based decision context, and the one-time application of the experiment. Furthermore, real-world organizational factors - such as social responsibility and team-based consultation - could not be fully captured. Future research should:

- Replicate the experiment with larger and more diverse samples (Levin et al., 1998),
- Examine the effects of individual differences (e.g., leadership style, analytical reasoning, risk tolerance) (Stanovich & West, 2000),
- Utilize neuroscientific tools such as fMRI or EEG to explore brain responses during decision-making (Gonzalez, Dana, & Koshino, 2005).

Such approaches would offer a deeper understanding of both the behavioral and neuropsychological foundations of the framing effect.

Conclusion

This study aimed to investigate the framing effect, a well-documented phenomenon in the decision-making literature, through an experimental design involving managers who had received leadership training. The research examined how the presentation format - positive versus negative framing - of identical investment information influences managerial decision-making processes.

Although the quantitative analysis revealed no statistically significant differences between the positively and negatively framed groups, the content analysis of open-ended responses demonstrated that framing had a substantial impact on the justification structure behind decisions. These findings suggest that the framing effect manifests not only in behavioral outcomes but also in underlying cognitive and emotional processes.

The results support prospect theory as introduced by Tversky and Kahneman (1981), confirming that even decision-makers in positions of authority are vulnerable to emotionally guided cognitive distortions. The consistent differences in how participants justified their decisions indicate that individuals interpret identical information differently based on its frame. This aligns with Loewenstein et al.'s (2001) risk-as-feelings hypothesis, which asserts that people rely not only on cognitive evaluations but also on emotional framing when making decisions.

However, the lack of statistically significant differences between decision outcomes may be attributed to the leadership training provided beforehand. As highlighted in Lincă (2016), developing analytical reasoning capacities can reduce susceptibility to framing effects. Neuroimaging findings by Gonzalez, Dana, and Koshino (2005) further support this, indicating that the framing effect varies depending on which cognitive systems are activated during decision-making.

Another important finding of this study is that participants' decisions were influenced not only by the content of the information, but also by how it was presented. This observation echoes Hsee and Li's (2022) findings on context-sensitive judgment, whereby the framing of a message - rather than its factual substance - redirects the thematic orientation of individuals' reasoning, shifting their focus from opportunity to risk or vice versa.

In conclusion, this study demonstrates that the framing effect impacts not only behavioral decisions but also the cognitive and discursive mechanisms underlying those decisions within managerial contexts. At the same time, it provides evidence that such effects can be mitigated through cognitive awareness, targeted training, and strategic reasoning development. These findings suggest that decision-making education should go beyond information delivery to include explicit training in recognizing and managing cognitive biases.

Suggestions for Future Research

To build on the findings of this study, future research should consider the following directions:

1. Replication with larger and more sectorally diverse samples:
    - Reproducing the experiment with participants from various industries and organizational contexts would enhance the

generalizability and external validity of the results (Levin et al., 1998).

2. Investigation of group-level decision dynamics:
    - Instead of focusing solely on individual-level decisions, future studies could explore how group-based framing influences collective decision-making processes in managerial or boardroom settings.
3. Inclusion of moderating variables:
    - Introducing factors such as time pressure, information ambiguity, or social norms as moderators may reveal under which conditions the framing effect becomes stronger or weaker.
4. Modeling post-decisional variables:
    - It is recommended to examine the relationships between the framing effect and post-decision variables such as regret, confidence level, and uncertainty perception (De Martino et al., 2006; Slovic et al., 2002).

By pursuing these directions, future research can provide deeper theoretical and empirical insights into both the behavioral mechanisms and psychological underpinnings of framing effects, especially in high-stakes managerial environments.

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References:

1. De Martino, B., Kumaran, D., Seymour, B., & Dolan, R. J. (2006). Frames, biases, and rational decision-making in the human brain. Science, 313(5787), 684–687. https://doi.org/10.1126/science.1128356
2. Diacon, S. R., & Hasseldine, J. (2007). Framing effects and risk perception: The effect of prior performance presentation on investment fund choice. *Journal of Economic Psychology, 28*(1), 31–52. https://doi.org/10.1016/j.joep.2006.01.002
3. Diacon, S., & Hasseldine, J. (2007). Framing effects and risk perception: The effect of prior performance presentation format on

investment fund choice. *Journal of Economic Psychology, 28*(1), 31–52. https://doi.org/10.1016/j.joep.2006.01.003

4. Druckman, J. N. (2001). The implications of framing effects for citizen competence. Political Behavior, 23(3), 225–256. https://doi.org/10.1023/A:1015006907312
5. Fan, X. (2017). Decision-making and the framing effect in a foreign and native language. *Frontiers in Psychology, 8*, 744. https://doi.org/10.3389/fpsyg.2017.00744
6. Fan, Y. (2017). The framing effect, cognitive style and financial decision making: A study on Chinese individual investors. *Frontiers in Psychology, 8*, 854. https://doi.org/10.3389/fpsyg.2017.00854
7. Gong, J., Zhang, Y., Yang, Z., Huang, Y., Feng, J., & Zhang, W. (2013). The framing effect in medical decision-making: A review of the literature. *Psychology, Health & Medicine, 18*(6), 645–653. https://doi.org/10.1080/13548506.2013.766352
8. Gong, Y., Zhang, L., & Sun, X. (2013). The framing effect in medical decision making: A review. Chinese Medical Journal, 126(10), 1968–1971.
9. Gong, Y., Zhang, L., & Sun, X. (2013). The framing effect in medical decision making: A review. *Chinese Medical Journal, 126*(10), 1968–1971.
10. Gonzalez, C., Ben-Asher, N., Martin, J. M., & Dutt, V. (2005). A cognitive model of dynamic decision making in real-time. *Dynamic Decision Making Laboratory Technical Report*. Carnegie Mellon University.
11. Gonzalez, C., Dana, J., & Koshino, H. (2005). The framing effect and risky decisions: Examining cognitive functions with fMRI. Journal of Economic Psychology, 26(1), 1–20.
12. Gonzalez, C., Dana, J., & Koshino, H. (2005). The framing effect and risky decisions: Examining cognitive functions with fMRI. *Journal of Economic Psychology, 26*(1), 1–20. https://doi.org/10.1016/j.joep.2003.10.002
13. Hsee, C. K., & Li, N. (2022). A framing effect in the judgment of discrimination. *Psychological Science, 33*(6), 879–892. https://doi.org/10.1177/09567976221094201
14. Hsee, C. K., & Li, N. (2022). Judgment under framing and the illusion of understanding. Annual Review of Psychology, 73, 573–595. https://doi.org/10.1146/annurev-psych-021521-051410
15. Hsee, C. K., & Li, X. (2022). A framing effect in the judgment of discrimination. *Proceedings of the National Academy of Sciences, 119*(47), e2205988119. https://doi.org/10.1073/pnas.2205988119

16. Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.
17. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263–291. https://doi.org/10.2307/1914185
18. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263–291. https://doi.org/10.2307/1914185
19. Kahneman, D., & Tversky, A. (1981). The framing of decisions and the psychology of choice. *Science, 211*(4481), 453–458. https://doi.org/10.1126/science.7455683
20. Kühberger, A. (1998). The influence of framing on risky decisions: A meta-analysis. Organizational Behavior and Human Decision Processes, 75(1), 23–55.
21. Levin, I. P., & Gaeth, G. J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research, 15*(3), 374–378. https://doi.org/10.1086/209174
22. Levin, I. P., & Gaeth, G. J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research, 15*(3), 374–378. https://doi.org/10.1086/209174
23. Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*(2), 149–188. https://doi.org/10.1006/obhd.1998.2804
24. Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*(2), 149–188. https://doi.org/10.1006/obhd.1998.2804
25. Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*(2), 149–188. https://doi.org/10.1006/obhd.1998.2804
26. Li, F., & Ling, Y. (2015). The impact of framing on online consumer behavior. *Open Journal of Business and Management, 3*, 95–100. https://doi.org/10.4236/ojbm.2015.31010
27. Li, X. Y., & Ling, W. Q. (2015). How framing effect impact on decision making on internet shopping. *Open Journal of Business and Management, 3*(1), 96–108. https://doi.org/10.4236/ojbm.2015.31010
28. Lincă, A. (2016). Cognitive control and the framing effect: The role of education and analytical thinking. Procedia - Social and

Behavioral Sciences, 217, 1134–1140. https://doi.org/10.1016/j.sbspro.2016.02.131
29. Lincă, F. I. (2016). The relationship between the risk decision making and framing effect. *Romanian Journal of Cognitive Behavioral Therapy and Hypnosis, 3*(2), 16–23.
30. Lincă, F. I. (2016). The relationship between the risk decision making and framing effect. *Romanian Journal of Cognitive Behavioral Therapy and Hypnosis, 3*(2), 16–21.
31. Loewenstein, G., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. Psychological Bulletin, 127(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267
32. Loewenstein, G., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267
33. Malenka, D. J., Baron, J. A., Johansen, S., Wahrenberger, J. W., & Ross, J. M. (1993). The framing effect of relative and absolute risk. *Journal of General Internal Medicine, 8*(10), 543–548. https://doi.org/10.1007/BF02599636
34. Maner, J. K., Richey, J. A., Cromer, K., Mallott, M., Lejuez, C. W., Joiner, T. E., & Schmidt, N. B. (2007). Dispositional anxiety and risk-avoidant decision-making. *Personality and Individual Differences, 42*(4), 665–675. https://doi.org/10.1016/j.paid.2006.08.016
35. Maner, J. K., Richey, J. A., Cromer, K., Mallott, M., Lejuez, C. W., Joiner, T. E., & Schmidt, N. B. (2007). Dispositional anxiety and risk-avoidant decision-making. *Personality and Individual Differences, 42*(4), 665–675. https://doi.org/10.1016/j.paid.2006.08.016
36. Milkman, K. L., Chugh, D., & Bazerman, M. H. (2009). How can decision making be improved? *Perspectives on Psychological Science, 4*(4), 379–383. https://doi.org/10.1111/j.1745-6924.2009.01142.x
37. Niehaus, G., & Shrider, D. (2014). Framing and the disposition effect: Evidence from mutual fund investor redemption behaviour. *Quantitative Finance, 14*(4), 683–697. https://doi.org/10.1080/14697688.2013.819114
38. Niehaus, G., & Shrider, D. G. (2014). Framing and the disposition effect: Evidence from mutual fund investor redemption behavior. *Journal of Financial Markets, 18*, 77–89. https://doi.org/10.1016/j.finmar.2013.07.001
39. Osmont, A., Cassotti, M., Agogué, M., Houdé, O., & Moutier, S. (2015). Does ambiguity aversion influence the framing effect during

decision making? *Psychonomic Bulletin & Review, 22*(2), 572–577. https://doi.org/10.3758/s13423-014-0688-0
40. Osmont, A., Rozenblit, L., & Leland, J. (2014). Ambiguity and framing effects in risky choice. *Psychonomic Bulletin & Review, 21*(3), 800–807. https://doi.org/10.3758/s13423-014-0688-0
41. Piñon, A., & Gambara, H. (2005). A meta-analytic review of framing effect: Risky, attribute and goal framing. *Psicothema, 17*(2), 325–331. http://www.redalyc.org/articulo.oa?id=72717222
42. Piñon, A., & Gambara, H. (2005). A meta-analytic review of framing effect: Risky, attribute and goal framing. *Psicothema, 17*(2), 325–331.
43. Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. Heuristics and biases: The psychology of intuitive judgment, 397–420.
44. Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 397–420). Cambridge University Press.
45. Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 397–420). Cambridge University Press.
46. Smith, S. M., & Levin, I. P. (1996). Need for cognition and choice framing effects. Journal of Behavioral Decision Making, 9(4), 283–290.
47. Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? Behavioral and Brain Sciences, 23(5), 645–665.
48. Stark, E., Baldwin, A. S., Hertel, A. W., & Rothman, A. J. (2017). Understanding the framing effect: Do affective responses to decision options mediate the influence of frame on choice? *Journal of Risk Research, 20*(12), 1585–1597. https://doi.org/10.1080/13669877.2016.1200654
49. Stark, E., Baldwin, A. S., Hertel, A. W., & Rothman, A. J. (2017). Understanding the framing effect: Do affective responses to decision options mediate the influence of frame on choice? *Journal of Risk Research, 20*(12), 1585–1597. https://doi.org/10.1080/13669877.2016.1200654
50. Stark, L., Müller, T., & Vossen, R. (2017). Emotional framing effects on risk-taking behavior. Frontiers in Psychology, 8, 2196. https://doi.org/10.3389/fpsyg.2017.02196

51. Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. Science, 211(4481), 453–458. https://doi.org/10.1126/science.7455683
52. Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*(4481), 453–458. https://doi.org/10.1126/science.7455683
53. Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business, 59*(4), S251–S278. https://doi.org/10.1086/296365
54. Ventre, V., Sbardella, A., & Ferraris, A. (2023). Framing effects in multi-criteria decision making: An application to investment product preferences. *Annals of Operations Research, 322*, 259–285. https://doi.org/10.1007/s10479-022-05142-z