

7528303-when-framing-fails-the-role-of-affective-states-as-cognitive-triggers-in-account

SUMMARY: The study examines how affective conditions influence the framing effect in investment decision-making using Fuzzy-Trace Theory. Unlike previous studies, which assume stability, this research suggests the effect depends on cognitive processing triggered by affective states. The study employs a 2×2 between-subjects factorial design with 157 participants. The independent variables are framing (positive vs. negative) and feeling (pleasant vs. unpleasant), while the dependent variable is investment decision (certain vs. risky option). The Chi-square test is used for hypothesis testing, with ANCOVA for robustness. Results show the framing effect significantly influences decisions but is unstable. It appears under pleasant feelings but weakens or disappears under unpleasant conditions. Affective conditions don't directly moderate but influence decision patterns through cognitive processing changes. These findings highlight the importance of psychological conditions in accounting information presentation and financial decision-making.

METHOD: The study used a 2×2 between-subjects factorial design with 157 participants. Independent variables were framing (positive vs. negative) and feeling (pleasant vs. unpleasant), while the dependent variable was investment decision (certain vs. risky option). The Chi-square test was used for hypothesis testing, with ANCOVA for robustness.

KEY FINDINGS:

- The framing effect significantly influences investment decisions but is unstable.
- It appears under pleasant feelings but weakens or disappears under unpleasant conditions.
- Affective conditions influence decision patterns through cognitive processing changes.
- These findings highlight the importance of psychological conditions in accounting information presentation and financial decision-making.

IMPLICATION FOR TRADING: The findings suggest that affective states play a crucial role in accounting and financial decision-making. Practitioners should consider the psychological impact of information presentation, as it can significantly affect decision outcomes. Understanding the influence of positive and negative framing, as well as pleasant and unpleasant feelings, can help in designing more effective financial communication strategies. Additionally, recognizing the impact of cognitive processing changes can lead to the development of more robust decision-making models that account for individual differences in how information is processed.

**WHEN FRAMING FAILS:
THE ROLE OF AFFECTIVE STATES AS COGNITIVE TRIGGERS IN ACCOUNTING
DECISION-MAKING**

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Funding

This research received no external funding.

Declaration of AI-Assisted Technologies

The authors declare that no artificial intelligence (AI) or AI-assisted technologies were used in the generation, analysis, interpretation of data, or preparation of the manuscript. The authors take full responsibility for the content of this work.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

WHEN FRAMING FAILS: THE ROLE OF AFFECTIVE STATES AS COGNITIVE TRIGGERS IN ACCOUNTING DECISION-MAKING

Abstract. This study examines how affective conditions influence the framing effect in investment decision-making using Fuzzy-Trace Theory. Unlike previous studies assuming stability, this research suggests the effect depends on cognitive processing triggered by affective states. It employs a 2×2 between-subjects factorial design with 157 participants. Independent variables are framing (positive vs. negative) and feeling (pleasant vs. unpleasant), while the dependent variable is investment decision (certain vs. risky option). The Chi-square test is used for hypothesis testing, with ANCOVA for robustness. Results show the framing effect significantly influences decisions but is unstable. It appears under pleasant feelings but weakens or disappears under unpleasant conditions. Affective conditions don't directly moderate but influence decision patterns through cognitive processing changes. This study shows the framing effect as a phenomenon dependent on cognitive mechanisms and introduces affective conditions as triggers determining when the effect appears or disappears. Practically, these findings highlight the importance of psychological conditions in accounting information presentation and financial decision-making

Keywords: Framing Effect, Affective States, Fuzzy-Trace Theory, Investment Decision, Triggers

1. INTRODUCTION

Although supported by various empirical evidence, the framing effect does not always appear consistently across different decision-making contexts. Classic research shows that individuals tend to respond differently to information that is economically identical, depending on whether the information is presented in terms of gains or losses. Nevertheless, several empirical findings indicate that this effect can weaken or even disappear under certain conditions (Broniatowski & Reyna, 2018; Kühberger & Tanner, 2010; Narsa, 2022).

In the context of accounting and finance, decision-making is traditionally assumed to be rational and based on an objective evaluation of information. However, various studies in behavioral research show that individuals are susceptible to cognitive biases (Diederich et al., 2018), one of which is the framing effect (Kahneman, 1979; Tversky & Kahneman, 1981).

The framing effect occurs when information that is substantively the same produces different decisions due to differences in the way it is presented (Levin et al., 1998; Tversky & Kahneman, 1981). In the context of accounting and investment, this bias has been proven to influence risk preferences as well as the outcomes of decisions made (Arifin & Kusuma, 2005; Chang et al., 2002; Kühberger & Tanner, 2010), indicating that the presentation of financial information has important implications for economic decision-making.

Nevertheless, variations in the framing effect suggest that this phenomenon cannot be fully explained solely by differences in how information is presented. Recent research indicates that such variations are closely related to how individuals cognitively represent and process information (DeKay & Dou, 2024). Cognitive factors, such as the level of abstraction in thinking (construal level), influence whether individuals understand information abstractly or concretely (Noh et al., 2025), while contextual conditions such as time pressure can reduce deliberative processes and increase reliance on simpler processing (Gong et al., 2026; Maule & Svenson, 1993).

These findings implicitly challenge the assumption that the framing effect is stable and demonstrate that the occurrence of this effect depends on individual cognitive processing mechanisms. In the context of accounting, decision-making is heavily influenced by how financial information is presented. Financial statements, budgeting, and investment evaluation are forms of information presentation that can affect users' interpretation and decisions (Koonce et al., 2015; Libby et al., 2002).

Therefore, the framing effect in this study is not only understood as a general psychological phenomenon, but also as a representation of how variations in the presentation of accounting information can influence economic decision outcomes (Henry & Peytcheva, 2018; Hirst et al., 2004). This shows that the characteristics of accounting information presentation are not neutral; rather, they can shape the perceptions and preferences of decision-makers.

Traditionally, the framing effect is explained through Prospect Theory, which emphasizes the difference in risk preferences between the domains of gains and losses (Kahneman, 1979). Although this approach is able to explain the observed decision-making patterns, it focuses on outcomes and is less able to explain why the framing effect can vary or even disappear under certain conditions (Kühberger, 1998). Therefore, a process-based approach is needed to explain the cognitive mechanisms underlying this phenomenon. Fuzzy-Trace Theory offers this perspective by stating that individuals represent information in two forms: verbatim and gist (Reyna, 2008; Reyna & Brainerd, 1995).

Verbatim representation is detailed and quantitative, while gist representation is simple and meaning-based. In many situations, individuals tend to rely on gist-based processing because it is more cognitively efficient (Reyna, 2012). Relying on gist processing increases the likelihood of the framing effect occurring, as decisions are based on a simplified interpretation of information. Conversely, more analytical verbatim processing can reduce or eliminate this effect (Broniatowski & Reyna, 2018; Tjahjadi & Narsa, 2022).

On the other hand, recent literature emphasizes the importance of affective states in the decision-making process. Emotions and affective conditions influence how individuals process information and evaluate decision alternatives (Blanchette & Richards, 2010; Lerner et al., 2015). Positive affective states (pleasant feelings) tend to encourage intuitive and heuristic processing, while negative affective states (unpleasant feelings) promote more analytical and systematic processing (Schwarz, 2012; Seo et al., 2004; Shiv & Fedorikhin, 2002). Recent studies also show that affective responses play an important role in shaping risk preferences and decision evaluations under conditions of uncertainty (Kassas et al., 2022; Lerner et al., 2015).

Although research regarding cognitive mechanisms and affective states continues to develop, these two perspectives are still often studied separately. Most previous studies have treated cognitive processing and affective conditions as independent factors and have implicitly assumed that the framing effect is stable under various conditions (DeKay & Dou, 2024; Lerner et al., 2015). As a result, understanding of how affective states interact with cognitive representation mechanisms in determining the presence or absence of the framing effect remains limited, particularly in the context of behavioral accounting.

Based on this gap, this study aims to integrate Fuzzy-Trace Theory with affective states in explaining variations in the framing effect. Specifically, this research positions feelings not merely as a moderating variable, but as a cognitive trigger that determines an individual's tendency to use gist-based or verbatim-based processing. Within this framework, pleasant feelings are expected to increase the use of gist processing, thereby strengthening the framing effect, while unpleasant feelings encourage verbatim processing, which can weaken or eliminate the effect (Lerner et al., 2015; Schwarz, 2012; Shiv & Fedorikhin, 2002).

Accordingly, this study examines whether the framing effect persists under pleasant feeling conditions, as well as whether the effect weakens or disappears under unpleasant feeling conditions. This research not only tests the presence of the framing effect, but also seeks to explain the underlying cognitive mechanisms, incorporating affective states as a factor influencing cognitive processing mechanisms. By integrating cognitive and affective perspectives, this study contributes to the behavioral accounting literature by showing that the framing effect is not universal, but rather depends on cognitive processing mechanisms triggered by an individual's affective state. These findings challenge the implicit assumptions in the literature that consider the framing effect to be a stable bias and provide practical implications regarding the importance of considering psychological conditions in presenting accounting information and making financial decisions..

2. THEORY AND HYPOTHESIS DEVELOPMENT

2.1 Framing Effect from a Cognitive Perspective

The framing effect is a phenomenon in which individuals make different decisions even when confronted with information that is substantively the same but presented in different formats, such as in terms of gains or losses (Tversky & Kahneman, 1981). In classical literature, this phenomenon is explained through Prospect Theory, which emphasizes the difference in risk preferences between the domains of gains and losses (Kahneman, 1979).

However, this approach focuses more on decision outcomes (outcome-based explanation) and is less able to explain why the framing effect may vary or even disappear under certain conditions. Several studies have shown that the framing effect is not always stable and is highly dependent on how individuals process the information presented (Broniatowski & Reyna, 2018; Kühberger & Tanner, 2010).

Contemporary studies have also confirmed that responses to framing are greatly influenced by the way individuals construct meaning from the information (DeKay & Dou, 2024). Therefore, a process-based approach is needed to explain the cognitive mechanisms underlying this phenomenon.

2.2 Fuzzy-Trace Theory

As a process-based approach, Fuzzy-Trace Theory states that individuals represent information in two main forms: verbatim and gist (Reyna, 2008; Reyna & Brainerd, 1995). Verbatim representation is detailed, precise, and quantitative, while gist representation is simple, intuitive, and meaning-based. In many situations, individuals tend to use gist-based processing because it is more cognitively efficient (Reyna, 2012).

This reliance on gist processing causes individuals to simplify information into its general meaning, thereby increasing sensitivity to framing differences. Conversely, the use of more analytical verbatim processing leads individuals to focus more on the details of information, causing the influence of framing to weaken or even disappear (Broniatowski & Reyna, 2018; Tjahjadi & Narsa, 2022).

Thus, the framing effect can be understood as a consequence of the dominance of gist processing, while the absence of a framing effect reflects the dominance of verbatim processing. This perspective provides a more comprehensive explanation of the variation in the emergence of the framing effect in various decision-making contexts.

2.3 Feeling as a Trigger for Cognitive Mechanisms

In addition to cognitive factors, affective conditions (feelings) play an important role in determining how individuals process information. Positive affective conditions (pleasant feelings) tend to encourage intuitive and heuristic processing, whereas negative affective conditions (unpleasant feelings) promote more analytical and systematic processing (Lerner et al., 2015; Schwarz, 2012; Shiv & Fedorikhin, 2002).

Recent research also shows that affective conditions influence risk preferences and decision evaluation under conditions of uncertainty (Kassas et al., 2022; Lerner et al., 2015). Nevertheless, most of these studies still examine affective factors separately from cognitive mechanisms.

Within the framework of Fuzzy-Trace Theory, affective conditions not only influence decision outcomes but also serve as cognitive triggers that determine an individual's tendency to use gist-based or verbatim processing. Pleasant feelings increase the tendency to use gist-based processing, while unpleasant feelings encourage the use of verbatim processing. Thus, affective conditions indirectly determine the presence or absence of the framing effect through cognitive processing mechanisms.

2.4 Integration of Theory and Research Gap

Based on the previous explanation, the framing effect can be understood as the result of the interaction between individuals' cognitive representations and affective conditions. Although previous studies have examined cognitive mechanisms and affective factors (DeKay & Dou, 2024; Kassas et al., 2022; Noh et al., 2025), these two approaches are still often studied separately and implicitly assume that the framing effect remains stable across various conditions.

As a result, there are still limitations in understanding how affective conditions interact with cognitive representation mechanisms in determining whether or not the framing effect arises, particularly in the context of behavioral accounting.

This study addresses that gap by integrating Fuzzy-Trace Theory and affective conditions to explain how feelings serve as triggers that determine whether gist-based or verbatim processing is used, thereby influencing the stability of the framing effect.

2.5 Hypothesis Development

2.5.1 The Influence of Framing on Investment Decisions

Based on Fuzzy-Trace Theory, individuals tend to use gist representations to understand information, so decisions are made based on the simple meaning of the available alternatives. In this context, differences in the presentation of information in the form of gains and losses produce different interpretations, thereby giving rise to the framing effect.

H1: The framing effect influences investment decisions, where individuals tend to choose a certain option in a positive frame and a risky option in a negative frame.

2.5.2 Pleasant Feeling, Gist Processing, and the Emergence of the Framing Effect

In a pleasant feeling condition, individuals tend to use gist-based processing, which is intuitive. Relying on the simple meaning of information increases sensitivity to differences in framing, thereby strengthening the emergence of the framing effect.

H2: In a pleasant feeling condition, the framing effect arises due to the dominance of gist-based processing.

2.5.3 Unpleasant Feeling, Verbatim Processing, and the Weakening of the Framing Effect

Conversely, in unpleasant feeling conditions, individuals tend to use more analytical, verbatim-based processing. A focus on details of information and the economic equivalence between alternatives reduces the influence of framing, so the framing effect weakens or does not appear.

H3: In unpleasant feeling conditions, the framing effect weakens or does not appear due to the dominance of verbatim-based processing.

2. EXPERIMENTAL DESIGN

3.1 Research Design

This study employed an experimental method using a 2×2 between-subjects factorial design to examine the effects of framing and feeling on investment decisions. The first independent variable was framing, consisting of two conditions: positive-frame/gain-domain and negative-frame/loss-domain. The second independent variable was feeling, consisting of pleasant feeling and unpleasant feeling conditions. The dependent variable was investment decision, measured based on participants' choices between a certain option and a risky option. Thus, there are four treatment groups, as shown in figure 1:

FRAMING (2)	FEELING (2)		BETWEEN-SUBJECTS FACTORIAL 2×2		
	PLEASANT	UNPLEASANT	GROUP	FRAMING	FEELING
POSITIVE/ GAIN	1	2	1	Positive/Gain	Pleasant Feeling
			2	Positive/Gain	Unpleasant Feeling
NEGATIVE/ LOSS	3	4	3	Negative/Loss	Pleasant Feeling
			4	Negative/Loss	Unpleasant Feeling

Figure 1. Experimental design: 2 (framing: positive/gain vs. negative/loss) × 2 (feeling: pleasant vs. unpleasant) between-subjects factorial design and four treatment groups.

This experimental design was chosen because it enables strong control over the independent variable and can identify causal relationships between framing, feeling, and investment decisions. Additionally, this design aligns with the framework of Fuzzy-Trace Theory, which emphasizes the role of cognitive and affective conditions in decision-making.

3.2 Research Participants

The participants in this study consisted of 221 undergraduate students from Accounting and Management study programs at two universities in Makassar, namely Universitas Muhammadiyah Makassar and Sekolah Tinggi Ilmu Ekonomi YPUP Makassar. The use of students as participants follows prior experimental studies suggesting that students can serve as appropriate proxies for decision-makers in experiments focusing on basic cognitive processes (Ashton & Kramer, 1980; Libby et al., 2002).

The selection of student participants was considered appropriate because this study emphasizes cognitive processing mechanisms, such as gist and verbatim processing, which do not necessarily require professional experience but rather the ability to understand information and make decisions.

After excluding incomplete responses and participants who failed the manipulation checks, 157 valid responses were retained for analysis. The participants consisted of 108 females (68.8%) and 49 males (31.2%), with ages ranging from

approximately 19 to 29 years. Chi-square tests indicated that differences in age and gender did not significantly influence investment decisions.

PARTICIPANTS & CATEGORY		GROUP				TOTAL (N = 157)
		1 (n = 41)	2 (n = 49)	3 (n = 35)	4 (n = 32)	
Total Participants		41	49	35	32	157
Excluded Data		14	8	18	28	68
– Failed Manipulation Check		7	6	13	11	37
– Incomplete Responses		5	2	3	5	15
– Incomplete Manipulation		2	0	2	12	16
Final Sample		41	49	35	32	157
Frequency (Age)	19 – 20	6	5	5	6	22
	21 – 22	25	30	24	17	96
	23 – 24	9	10	6	7	32
	25 – 26	1	2	0	0	3
	27 – 29	0	2	0	2	4
	TOTAL	41	49	35	32	157
Age	Range	6	8	4	10	10
	Minimum	20	20	20	19	19
	Maximum	26	28	24	29	29
	Mean (SD)	21.54 (1.64)	22.04 (1.84)	21.48 (1.47)	22.03 (2.41)	21.77 (1.86)
Gender: Male/Female	Male	11	16	14	8	49
	Female	30	33	21	24	108
	TOTAL	41	49	35	32	157
	% Male	26.8%	32.7%	40.0%	25.0%	31.2%
	% Female	73.2%	67.3%	60.0%	75.0%	68.8%
Chi-Square Test Results for Age and Gender						
Age: $\chi^2(12) = 15.573$; $p = 0.076$			Gender: $\chi^2(3) = 0.117$; $p = 0.733$			

Figure 2. Participant demographics by age and gender across the four experimental groups.

3.3 Research Instrument

The research instrument was adapted from an investment decision scenario that has been widely used in framing effect studies by Chang et al., 2002 and has been shown to consistently elicit differences in decision-making [8]. The scenario was then adjusted to fit the context of the study to enhance participants' relevance and understanding. Participants were asked to act as corporate decision-makers who must choose between two investment alternatives related to waste management and air pollution, each involving risk consequences and potential fines.

Framing manipulation was conducted through two versions of the scenario that are economically equivalent: (1) the positive frame, which emphasizes the outcomes gained or retained; and (2) the negative frame, which emphasizes the outcomes lost or sacrificed. Feeling manipulation was carried out through two versions of affective conditions using visual, audio, and verbal cues administered by a psychology institute to induce pleasant and unpleasant moods. The dependent variable, namely investment

decision, was measured through the participants' choice between the certain option and the risky option.

In addition, participants were asked to rate their level of confidence in their decision using a 1–6 scale (1 = very unsure; 6 = very sure). This variable was used as a covariate in additional analyses to control for differences in confidence levels among participants. To ensure internal validity of the experiment, the instrument included: (1) a mood check, to measure changes in affective state before and after treatment; (2) a manipulation check, to ensure that participants understood the scenario and treatment; and (3) demographic data, to describe participant characteristics.

3.4 Experimental Procedure

The experiment was conducted in a controlled environment, with participants randomly assigned to one of four treatment groups. This random assignment was carried out to ensure there were no systematic biases between groups and to enhance the internal validity of the research. Before the experiment began, participants were given general instructions without revealing the purpose of the study, in order to minimize response bias.

The first stage was the feeling manipulation. Participants completed an initial mood check to measure their baseline affective state, then received treatment using visual, audio, and verbal cues to induce either a pleasant or unpleasant condition. Participants in the pleasant feeling condition experienced states such as joy, happiness, a sense of energy and boundless possibilities, a life that was going well, a life that spurred creativity, and energizing connections.

Conversely, participants in the unpleasant feeling condition experienced sadness, anxiety, a sense of loss, feeling burdened, experiencing loss (whether of love or affection), and even despair. After the treatment, participants completed another mood check to ensure the effectiveness of the manipulation. For this manipulation, the researchers involved a team of experts from a psychology institution. The second stage was the presentation of an investment decision scenario according to the framing condition. Each participant received only one version of the scenario (positive or negative frame), in accordance with the between-subjects design principle, thereby avoiding direct comparison between conditions. Participants were then asked to read the case, choose a decision alternative, and rate their level of confidence in that decision. Afterward, participants filled in demographic data and a manipulation check. The entire process was supervised by the researchers to ensure consistency in implementation. At the end of the experiment, a debriefing was conducted. For participants in the unpleasant feeling condition, a mood recovery session was held as part of the study's ethical considerations.

3.5 Operationalization of Variables

The variables in this study are operationalized as follows:

1. Framing: The way information is presented in two forms, namely a positive frame and a negative frame.
2. Feeling: The affective condition of participants, which is manipulated to be pleasant or unpleasant, and in this study is considered a factor that influences the cognitive processing mechanism.
3. Investment Decision: The participant's choice between a certain option and a risky option, coded as a categorical variable.
4. Confidence: The participant's level of confidence in the decision made, measured using a 1–6 scale.

3.6 Data Analysis Methods

Data analysis was conducted in two stages, namely primary analysis and additional analysis.

3.6.1 Primary Analysis

Hypothesis testing was carried out using the Chi-square test via crosstabulation, as the dependent variable consists of categorical data (sure option vs. risky option). This test is used to identify differences in decision distribution across treatment conditions.

Specifically, the analysis was conducted to: (1) test the effect of framing on overall investment decisions (H1); (2) test the effect of framing under the pleasant feeling condition (H2); and (3) test the effect of framing under the unpleasant feeling condition (H3). Significance values are determined based on a p -value < 0.05 .

3.6.2 Additional Analysis

As a robustness check, Analysis of Covariance (ANCOVA) was used. This method was chosen to test the effects of framing and feeling on investment decisions while controlling for confidence as a covariate. ANCOVA allows for examination of: (1) the main effect of framing; (2) the main effect of feeling; (3) the interaction between framing and feeling; and (4) the effect of confidence on investment decisions.

The use of ANCOVA provides additional validation for the primary analysis results and ensures that differences in decisions are not solely influenced by participants' confidence levels. All analyses were performed using SPSS software with a significance level of 5%.

3. RESULTS

4.1 Mood Check: Difference Test, Validity, and Reliability

The mood check was conducted to measure the success of the treatment on stimuli for pleasant and unpleasant feelings, each consisting of 7 indicators of mood (affective) changes during psychological therapy. The results of the difference test using the chi-square test in Table 2 show that there are differences

in all seven indicators of pleasant and unpleasant feelings, indicating that the stimuli were effective. The results of the validity and reliability tests in Table 3 also show that all items for pleasant and unpleasant feelings are valid and reliable, indicating that the measurement tool is consistent, trustworthy, and dependable.

Table 2. Results of Affective Manipulation Check

Pleasant Affective State	p-value	Unpleasant Affective State	p-value
Joy	0.000	Sadness	0.000
Happiness	0.000	Anxiety	0.000
Enthusiasm	0.000	Hopelessness	0.028
Future Outlook	0.000	Negative Future	0.000
Current Achievement	0.000	Current Achievement	0.000
Social Relationship	0.000	Social Relationship	0.000
Love or Affection	0.000	Love or Affection	0.000

Note: The results indicate significant differences in all indicators of pleasant and unpleasant affective states after the manipulation treatment ($p < 0.05$), confirming that the affective manipulation was effective.

Table 3. Validity and Reliability Results of Affective Manipulation Measures

Measure	Pleasant Feeling (n = 76)	Unpleasant Feeling (n = 81)
Validity (Corrected Item–Total Correlation)		

Pre-Treatment	0.969	0.810
Post-Treatment	0.973	0.987
Reliability (Cronbach's Alpha)		
Pre-Treatment	0.801	0.712
Post-Treatment	0.889	0.794

Note: Data are considered valid if corrected item–total correlation > 0.30 and reliable if Cronbach's alpha > 0.70.

4.2 Hypothesis Testing 1: The Effect of Framing on Investment Decisions

The first hypothesis was tested using the Chi-square test to determine whether there is a difference in investment decisions between the positive-frame/gain-domain and negative-frame/loss-domain conditions. The results of Table 4 statistical test 1 show that there is a significant difference in investment decisions between the two framing conditions (Chi-Square = 14.730, $p = 0.000$, $p < 0.05$). Of the 90 participants in the positive-frame/gain-domain condition, 65 (72.2%) chose the certain option, while out of 67 participants in the negative-frame/loss-domain condition, 39 (58.2%) chose the risky option. These findings indicate that a framing effect occurs in investment decisions, thus supporting H1.

Table 4. Chi-Square Test Results

Conditio n	Positive/G ain Certain Option	Positive/G ain Risky Option	Negative/L oss Certain Option	Negative/L oss Risky Option	Chi- Squa re	p- valu e
Framing Effect (H1)	65 (72.2%)	25 (27.8%)	28 (41.8%)	39 (58.2%)	14.73 0	0.00 0

Pleasant	33 (80.5%)	8 (19.5%)	12 (34.3%)	23 (65.7%)	16.68	0.00
Feeling					8	0
(H2)						
Unpleasant	32 (65.3%)	17 (34.7%)	16 (50.0%)	16 (50.0%)	1.878	0.17
Feeling						1
(H3)						

Note: (+F) = Positive Framing; (−F) = Negative Framing; (PF) = Pleasant Feeling; (UF) = Unpleasant Feeling.

4.3 Hypothesis Testing 2: Framing Effect in the Pleasant Feeling Condition

The second hypothesis was tested by limiting the analysis to participants in the pleasant feeling condition, then examining the difference in decisions between the positive-frame/gain-domain and the negative-frame/loss-domain using the Chi-square test. The results of the analysis in Table 4 statistical test 2 show that there is a significant difference between the two framing conditions (Chi-Square = 16.688, $p = 0.000$, $p < 0.05$). In the pleasant feeling condition, out of 41 participants in the positive-frame/gain-domain, 33 (80.5%) chose the certain option; whereas out of 35 participants in the negative-frame/loss-domain, 23 (65.7%) chose the risky option. These results indicate that the framing effect still appears in the pleasant feeling condition, thus H2 is supported.

4.4 Hypothesis Testing 3: Framing Effect in the Unpleasant Feeling Condition

The third hypothesis was tested by limiting the analysis to participants in the unpleasant feeling condition, and then examining the differences in decisions between the positive-frame/gain-domain and the negative-frame/loss-domain. The results of the Chi-square test in Table 4 statistical test 3 show that there is no significant difference between the two framing conditions (Chi-Square = 1.878, $p = 0.171$, $p > 0.05$). In the unpleasant feeling condition, out of 49 participants in the positive-frame/gain-domain, 32 participants (65.3%) chose the certain option, while out of 32 participants in the negative-frame/loss-domain, 16 participants (50.0%) chose the risky option. This indicates that in the unpleasant feeling condition, participants did not show any

significant preference difference between the certain and risky options. These findings suggest that the framing effect is weakened or does not appear in the unpleasant feeling condition, thus supporting H3.

4.5 Additional Analysis: ANCOVA

As a robustness test, an additional analysis was conducted using Analysis of Covariance (ANCOVA) by including confidence as a covariate. The results of the ANCOVA test in Table 5 show that:

1. Framing still has a significant effect on investment decisions ($p = 0.000$; $p < 0.05$), both in the overall test and in framing (H1) and framing-pleasant feeling (H2). A different result is seen in framing-unpleasant feeling ($p = 0.156$; $p > 0.05$), which indicates the absence of a framing effect.

Table 5. ANCOVA Test Results

Source	Mean Square	df	F	p-value
Overall Model				
Confidence	0.289	1	1.323	0.252
Framing	3.755	1	17.224	0.000
Feeling	1.455	1	0.000	0.993
Framing $\times$ Feeling	0.802	1	3.678	0.057
Framing (H1)				
Confidence	0.395	1	1.793	0.183
Framing	3.721	1	16.876	0.000
Framing – Pleasant Feeling (H2)				
Confidence	0.264	1	1.370	0.246
Framing	3.978	1	20.654	0.000

Framing – Unpleasant Feeling (H3)				
Confidence	0.062	1	0.254	0.616
Framing	0.500	1	2.047	0.156

Note: ANCOVA analysis was conducted by controlling participants' confidence

levels as a covariate.

1. Feeling does not show a significant direct influence on decisions ($p = 0.993$; $p > 0.05$)
2. The interaction between framing and feeling is not statistically significant ($p = 0.057$; $p > 0.05$)
3. Confidence does not have a significant influence on investment decisions, either in the overall test ($p = 0.252$; $p > 0.05$); or in framing (H1) ($p = 0.183$; $p > 0.05$); framing-pleasant feeling (H2) ($p = 0.246$; $p > 0.05$); and framing-unpleasant feeling (H3) ($p = 0.616$; $p > 0.05$)

These findings indicate that the influence of framing on investment decisions remains consistent even when controlling for participants' confidence levels. Furthermore, the insignificance of feeling and the framing-feeling interaction suggests that the effect of feeling does not function as a direct statistical moderator, but rather plays a role in influencing the stability of the framing effect under certain conditions.

5. DISCUSSION

5.1 Framing Effect from the Perspective of Cognitive Mechanisms

The findings of this study indicate that the framing effect significantly influences investment decisions. Participants in the positive framing condition tended to choose the certain option, whereas participants in the negative framing condition were more likely to select the risky option. These findings are consistent with the classic predictions of Prospect Theory, which suggest that individuals tend to be risk-averse in gain situations and risk-seeking in loss situations (Kahneman, 1979; Tversky & Kahneman, 1981).

In addition, the findings support previous studies showing that framing influences economic and investment decisions (Chang et al., 2002; Kühberger & Tanner, 2010). However, the present study does not merely confirm the outcome-based explanation of framing effects. Instead, the results also reinforce the process-based

explanation proposed by Fuzzy-Trace Theory (Broniatowski & Reyna, 2018; Reyna & Brainerd, 1995).

According to Fuzzy-Trace Theory, individuals tend to rely on gist-based processing, in which information is interpreted according to its general meaning rather than its precise numerical details (Reyna, 2012). In this context, the framing effect emerges because individuals simplify decision alternatives into intuitive interpretations, leading to different responses toward economically equivalent information. Therefore, the framing effect is not solely the result of outcome evaluation but also reflects the dominance of specific cognitive representation mechanisms.

These findings are also aligned with recent studies suggesting that framing effects depend heavily on how individuals construct meaning from information (DeKay & Dou, 2024). Consequently, this study strengthens the argument that the framing effect should be understood as a cognitive-processing phenomenon rather than merely a behavioral bias.

5.2 The Role of Pleasant Feeling in Strengthening the Framing Effect

The results demonstrate that the framing effect remains significant under pleasant feeling conditions. Participants experiencing positive affective states showed stronger preferences consistent with framing manipulation, indicating that pleasant feelings increase susceptibility to framing effects.

This finding is consistent with previous literature showing that positive emotions encourage intuitive and heuristic processing (Schwarz, 2012; Shiv & Fedorikhin, 2002). Under pleasant affective conditions, individuals are more likely to rely on simplified cognitive representations or gist-based processing rather than detailed analytical evaluation.

Furthermore, these findings extend the work of DeKay and Dou (2024), who argued that framing effects are influenced by the way individuals construct meaning from information. In the present study, pleasant feelings appear to strengthen the tendency to interpret information globally rather than analytically, thereby increasing sensitivity to framing differences.

The findings also support the assumptions of Fuzzy-Trace Theory, which posit that gist-based processing increases framing susceptibility because individuals focus on the essential meaning of decision alternatives instead of evaluating detailed numerical equivalence (Broniatowski & Reyna, 2018). Therefore, pleasant affective conditions strengthen framing effects indirectly through changes in cognitive processing style.

Importantly, these results suggest that the stability of framing effects is influenced not only by the structure of information but also by individuals' psychological conditions. This finding contributes to behavioral accounting literature by demonstrating that affective states can shape how accounting and financial information is interpreted.

5.3 The Role of Unpleasant Feeling in Weakening the Framing Effect

Unlike the pleasant feeling condition, the results show that the framing effect weakens and becomes statistically insignificant under unpleasant feeling conditions. Participants experiencing negative affective states did not demonstrate significant differences in preferences between positively and negatively framed information.

This finding challenges the traditional assumption that framing effects are stable across decision-making contexts (Kühberger, 1998; Levin et al., 1998). Instead, the results indicate that framing effects depend on the cognitive processing mechanisms activated under specific affective conditions.

The findings are consistent with Fuzzy-Trace Theory, which explains that framing effects diminish when individuals engage in verbatim-based processing rather than gist-based processing (Broniatowski & Reyna, 2018). Under unpleasant emotional conditions, participants appear to process information more analytically, focusing on numerical equivalence and detailed evaluation instead of intuitive meaning.

This interpretation is also supported by studies suggesting that negative affective states encourage systematic and analytical thinking (Lerner et al., 2015; Schwarz, 2012). When individuals experience unpleasant feelings, they become more cautious and detail-oriented, reducing the influence of framing manipulation.

Moreover, the findings are in line with Kassas et al. (2022), who demonstrated that emotions influence individuals' risk preferences and evaluations under uncertainty. In the present study, unpleasant feelings appear to reduce intuitive reactions and encourage more deliberative cognitive processing, thereby weakening framing effects.

Consequently, this study provides evidence that framing effects are not universal cognitive biases but context-dependent phenomena influenced by psychological conditions and cognitive processing styles.

5.4 Feeling as a Cognitive Trigger: A Shift in Perspective

One of the most important findings of this study is that affective conditions do not function as statistical moderators in the traditional sense. The ANCOVA results indicate that the interaction between framing and feeling was not statistically significant. Nevertheless, affective conditions still played a crucial role in influencing decision-making patterns.

This finding suggests that feelings should not be understood merely as moderating variables but rather as cognitive triggers that influence how information is processed. Within the framework of Fuzzy-Trace Theory, pleasant feelings encourage gist-based processing, whereas unpleasant feelings promote verbatim-based processing (Reyna & Brainerd, 1995).

Accordingly, affective states influence framing effects indirectly through changes in cognitive representation mechanisms rather than through direct statistical interactions. This perspective shifts the focus from traditional interaction-based explanations toward a process-oriented explanation emphasizing cognitive mechanisms.

The results also contribute to bridging cognitive and affective perspectives in decision-making research. Previous studies have often treated affective conditions and cognitive mechanisms separately (Blanchette & Richards, 2010; Lerner et al., 2015). However, the present study demonstrates that these two perspectives are closely interconnected in shaping decision outcomes.

Therefore, the concept of feeling as a cognitive trigger offers a more comprehensive explanation for variations in framing effects across different contexts.

5.5 Theoretical Implications

This study provides several important theoretical contributions. First, the findings contribute to behavioral accounting literature by demonstrating that accounting information presentation is not neutral. Different ways of presenting information can shape users' perceptions and decision outcomes through specific cognitive mechanisms.

Second, this study strengthens the process-based explanation of framing effects by integrating Fuzzy-Trace Theory into accounting and investment decision-making contexts. The findings show that framing effects can be explained not only by Prospect Theory but also by differences in cognitive representations and information processing styles.

Third, this study integrates affective conditions into the Fuzzy-Trace Theory framework by demonstrating that feelings influence individuals' tendencies to engage in gist-based or verbatim-based processing. Consequently, this research bridges the gap between cognitive and affective perspectives that have traditionally been examined separately.

Finally, the finding that framing effects may weaken or disappear under certain affective conditions helps explain inconsistencies found in previous framing literature. The study demonstrates that framing effects should not be considered universal biases but rather context-dependent phenomena shaped by psychological and cognitive conditions.

5.6 Practical Implications

From a practical perspective, the findings indicate that accounting and financial information presentation cannot be separated from the psychological state of decision-makers. Individuals' affective conditions influence whether information is processed heuristically or analytically, ultimately affecting the decisions they make.

Under pleasant affective conditions, individuals are more susceptible to framing effects because they rely more heavily on intuitive and gist-based processing. Conversely, under unpleasant affective conditions, individuals become more analytical and less influenced by framing manipulation.

These findings have important implications for accountants, managers, auditors, financial analysts, and policymakers. The effectiveness of accounting information presentation depends not only on informational content but also on the psychological state of information users.

Therefore, organizations should consider how financial information is framed and communicated, especially in contexts involving investment decisions, budgeting, and project evaluation. Differences in framing may lead to different risk preferences and decision outcomes, particularly when decision-makers are experiencing certain affective conditions.

Overall, the findings emphasize the importance of integrating psychological considerations into accounting information design and financial decision-making processes.

6. CONCLUSION

6.1 Conclusion

This study aimed to examine the influence of framing and affective conditions on investment decisions using a process-based approach grounded in Fuzzy-Trace Theory. The findings demonstrate that the framing effect significantly influences investment decisions. Participants in the positive framing condition tended to choose certain options, whereas participants in the negative framing condition were more likely to choose risky options.

However, the results also indicate that the framing effect is not stable across affective conditions. Under pleasant feeling conditions, the framing effect remained significant, suggesting that positive affective states strengthen individuals' reliance on gist-based processing. Conversely, under unpleasant feeling conditions, the framing effect weakened and became statistically insignificant, indicating a shift toward more analytical and verbatim-based processing.

These findings suggest that affective conditions do not directly moderate framing effects in a statistical sense but instead function as cognitive triggers that influence how information is cognitively represented and processed. Accordingly, this study demonstrates that the framing effect should not be understood as a universal cognitive bias but rather as a context-dependent phenomenon influenced by cognitive and psychological conditions.

The study contributes to the behavioral accounting literature in several ways. First, it strengthens the process-based explanation of framing effects by integrating Fuzzy-Trace Theory into accounting and investment decision-making contexts. Second, it incorporates affective conditions into the cognitive framework of decision-making by demonstrating how feelings influence the use of gist and verbatim processing. Third, the findings provide an explanation for inconsistencies in previous framing effect studies by showing that the emergence of framing effects depends on cognitive mechanisms triggered by affective states.

Practically, the findings imply that accounting and financial information presentation is not psychologically neutral. Differences in framing can influence decision outcomes depending on the affective condition of decision-makers. Therefore, accountants, managers, financial analysts, and policymakers should consider both informational presentation and psychological context when designing and communicating financial information.

6.2 Research Limitations

This study has several limitations that should be acknowledged. First, the study did not directly measure gist and verbatim cognitive processing mechanisms. Therefore, conclusions regarding these mechanisms are inferred from the theoretical framework rather than directly observed.

Second, the use of student participants may limit the generalizability of the findings to professional decision-makers with more extensive experience in accounting and financial decision-making. Although students are commonly used in behavioral experiments, professional participants may respond differently under real-world decision-making conditions.

Third, the study focused on a single investment decision scenario involving environmental management and financial penalties. Different decision contexts may produce different patterns of framing and affective influences.

Finally, the study only examined broad pleasant and unpleasant affective conditions without differentiating between specific emotional states or levels of emotional intensity. More nuanced emotional conditions may generate different cognitive responses.

6.3 Future Research Directions

Based on these limitations, several directions for future research are recommended. First, future studies could directly measure cognitive processing mechanisms using additional instruments or experimental techniques to distinguish between gist-based and verbatim-based processing more explicitly.

Second, future research may involve professional participants such as managers, accountants, auditors, investors, or financial analysts to improve external validity and provide greater practical relevance.

Third, future studies could explore different emotional conditions and varying levels of emotional intensity to better understand how specific emotions influence framing effects and cognitive processing.

Fourth, future research could test this model in other accounting and financial contexts, such as auditing judgments, financial reporting decisions, budgeting, managerial accounting, or corporate governance decisions.

Finally, future studies may integrate process-based approaches with more advanced methodologies, including longitudinal experiments, neurocognitive

approaches, or behavioral process-tracing methods, to provide deeper insights into the cognitive mechanisms underlying framing effects and decision-making behavior.

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