

# Framing Effect in Everyday Decision-Making

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## 1. Topic

### Background and Motivation

Human decision-making is rarely rational because people's choices are influenced by how information is presented. One of the most well-documented examples of this phenomenon is the framing effect, first demonstrated by Tversky and Kahneman (1981). The framing effect refers to the tendency of people to make different decisions depending on whether the same logical information is presented in a positive (e.g., gain) or negative (e.g., loss) frame. For example, people are more likely to accept a medical treatment if the emphasis is put on success rates rather than failure rates, even though the two statements contain identical factual information.

This study aims to investigate the framing effect in everyday consumer decisions — domains that involve personal benefit and moderate risk, such as health, finance, and environmental behavior. Although the effect has been robustly demonstrated in high-stakes contexts (e.g., medical or public policy scenarios), it remains valuable to test whether similar framing biases persist in more routine, low-risk settings. Understanding this can provide insights into how ordinary people interpret information in product marketing, financial choices, and sustainability programs.

### Research Questions and Hypotheses

The central research question is:

*Does positive framing increase individuals' willingness to act across everyday decision contexts compared with negative framing of the same information?*

From this question, the following hypotheses are derived:

- **H<sub>1</sub>:** Participants exposed to positive framing will show a higher rate of affirmative ("Yes") choices than those exposed to negative framing.
- **H<sub>2</sub>:** Participants in the positive frame condition will report higher confidence in their decisions.
- **H<sub>3</sub>:** Participants in the positive frame condition will perceive the described options as more effective.
- **H<sub>4</sub> (Exploratory):** The strength of the framing effect will not significantly differ across domains (health, finance, environment), indicating generalization across everyday contexts.

This topic connects principles of behavioral economics and experimental psychology and demonstrates how minor linguistic manipulations can influence preferences even when objective information remains constant.

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## 2. Method

### Experimental Design

The experiment adopts a between-subjects design with one manipulated independent variable: *Frame Type* (Positive vs. Negative).

Each participant will be randomly assigned to one framing condition and will read three short scenarios describing common decision situations — purchasing a health supplement, joining a savings plan, and registering for an environmental program.

All scenarios are structurally equivalent: each presents success/failure information summing to 100%, followed by an identical Yes/No choice and two rating scales. This design ensures that the only systematic difference between conditions is the *framing* of the numerical information.

Variable	Type	Levels / Description
Independent Variable	Categorical	Frame Type: Positive vs. Negative
Dependent Variable 1	Binary	Decision choice (Yes = 1, No = 0)
Dependent Variable 2	Continuous	Confidence rating (1–7)
Dependent Variable 3	Continuous	Perceived effectiveness rating (1–7)
Control Variable	Categorical	Domain (Health, Finance, Environment)

### Participants

Data will be collected from approximately 30 adult volunteers (targeting roughly 15 per framing condition). Recruitment will occur through university networks and online platforms (e.g., classmates and social media). Participation is anonymous, voluntary, and without compensation. This sample size is feasible for detecting medium-sized framing effects in behavioral research while maintaining ethical and practical constraints of student projects.

### Justification of Conditions

The two framing conditions (positive/negative) represent logically equivalent but linguistically opposite ways of presenting information. Comparing them allows the

experiment to isolate the psychological effect of *how* information is framed rather than *what* is being communicated. The inclusion of three scenarios (health, finance, and environment) ensures internal replication of the framing effect across different but structurally similar contexts, increasing the reliability and generalizability of the findings.

## **Materials and Scenarios**

Participants will complete an online questionnaire created with Google Forms. They will first view a consent page outlining anonymity and the right to withdraw. Each participant then proceeds to one of two randomized survey versions (positive-frame or negative-frame).

### **Example — Health Product Scenario**

- **Positive Frame:**  
“A new vitamin supplement was tested on 100 adults. It improved energy levels in 85 out of 100 users. Would you consider purchasing this supplement?”
- **Negative Frame:**  
“A new vitamin supplement was tested on 100 adults. It failed to improve energy levels in 15 out of 100 users. Would you consider purchasing this supplement?”

### **Each scenario is followed by:**

1. “How confident are you in your decision?” (1 = Not confident at all, 7 = Very confident)
2. “How effective do you think this product/program is?” (1 = Not effective at all, 7 = Very effective)

The same structure is applied to the financial and environmental scenarios (with 80%/20% and 75%/25% success—failure frames, respectively).

Then, demographic variables are collected which include:

- **Gender**
- **Age group** (e.g., 18–24, 25–34)
- **Decision-making style** (“Analytical,” “Intuitive,” “Mixed”)

These variables were later explored as potential covariates or descriptive indicators to contextualize the findings.

## **Procedure**

1. Participants access one of two survey links randomly distributed by the researcher.
2. They read the consent statement and confirm participation.

3. They respond to all three scenarios under one consistent framing condition and provide demographics.
4. Data are automatically stored in spreadsheet format for analysis.

The total duration is approximately 3-5 minutes, minimizing fatigue or suspicion of manipulation. The study involves no deception, risk, or personally identifiable data.

### **Ethical Considerations**

The study adheres to ethical principles of anonymity, informed consent, and voluntary participation. No medical, financial, or personal information is collected. Participants can withdraw at any time without penalty. The framing manipulation uses standard linguistic variations and poses no psychological risk.

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## **3. Analysis**

Below is the actual analysis that was conducted, integrating and replacing the earlier “planned analysis” description.

### **Data Preparation**

Responses will be screened for completeness.

- Yes/No decisions will be coded numerically (Yes = 1, No = 0).
- Confidence and effectiveness ratings will remain on a 1–7 scale.
- Frame Type will be coded as 0 = Negative, 1 = Positive.

### **Reliability Analysis**

To evaluate whether the three scenarios reflected consistent constructs, Cronbach’s  $\alpha$  was computed:

- Decision Choices:  $\alpha = 0.92$  (excellent)  
→ Participants showed a stable tendency to accept or reject options across contexts.
- Confidence Ratings:  $\alpha = 0.67$  (moderate)  
→ Confidence varied by domain but items were sufficiently correlated to justify a composite score.
- Perceived Effectiveness:  $\alpha = 0.89$  (high)  
→ Strong internal consistency, supporting use of a composite index.

## **Statistical Methods**

Group differences were analyzed using:

- Chi-square test for binary decisions ( $H_1$ ).
- Welch's independent-samples t-tests for confidence and effectiveness ( $H_2, H_3$ ), due to unequal variances.
- Mixed ANOVA for domain generalization ( $H_4$ ), assessing Frame Type  $\times$  Domain interaction.

Effect sizes included Cramer's V, Cohen's d, and ANOVA F values.

All analyses were performed in R using libraries such as dplyr, psych, ggplot2, and ez.

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## **4. Results**

### **4.1 Decision Choices ( $H_1$ )**

Participants in the positive framing condition selected the affirmative option ("Yes") far more frequently (91 percent) than participants in the negative framing condition (2 percent).

A chi-square test of independence confirmed that framing had a significant effect on decision choice,

$\chi^2(1, N = 90) = 67.90, p < .001$ , with an extremely large effect size (Cramer's V = 0.89).

These findings provide strong support for  $H_1$ , indicating that positively framed information substantially increases acceptance rates relative to negatively framed but logically equivalent information.

### **4.2 Confidence Ratings ( $H_2$ )**

In contrast to the initial hypothesis, confidence levels were higher under negative framing than under positive framing.

Participants in the negative frame reported consistently high confidence ( $M = 6.38, SD = 0.52$ ), whereas those in the positive frame reported lower and more variable confidence ( $M = 4.82, SD = 1.12$ ).

A Welch's independent t-test showed that this difference was statistically significant,  $t(19.73) = 4.89, p < .001$ , with a very large effect size (Cohen's d = 1.78).

Thus,  $H_2$  was not supported.

Although positive framing increased actual acceptance ( $H_1$ ), it paradoxically reduced subjective

confidence in the decision, suggesting that different cognitive mechanisms may underlie choice versus perceived certainty.

#### **4.3 Perceived Effectiveness ( $H_3$ )**

Participants exposed to positive framing rated the described options as substantially more effective than those in the negative frame.

Mean effectiveness ratings were approximately 5.33 in the positive frame and 2.53 in the negative frame.

Welch's t-test indicated a highly significant difference,  $p < .001$ , accompanied by an exceptionally large effect size(Cohen's  $d = 3.35$ ), implying minimal overlap between the two distributions.

These results provide strong support for  $H_3$  and demonstrate that framing meaningfully alters perceptions of product or program efficacy, even when the underlying success probabilities remain identical.

#### **4.4 Domain Generalization ( $H_4$ )**

To assess whether the framing effect varied across decision domains (health, finance, environment), a mixed-design ANOVA was conducted with Frame Type as a between-subjects factor and Domain as a within-subjects factor.

The analysis revealed a significant main effect of Frame Type,  $F(1,28) = 84.39$ ,  $p < .001$ , indicating that positive framing consistently increased perceived effectiveness across all scenarios.

A significant main effect of Domain was also observed,  $F(2,56) = 9.74$ ,  $p < .001$ , showing that some scenarios were generally evaluated as more effective than others regardless of framing.

Crucially, the Frame Type  $\times$  Domain interaction was not significant,  $F(2,56) = 0.32$ ,  $p = .726$ .

Because Mauchly's test indicated a violation of sphericity, both Greenhouse–Geisser and Huynh–Feldt corrections were applied, and the interaction remained non-significant under all corrected models.

These findings support  $H_4$ : the magnitude of the framing effect was consistent across health, financial, and environmental contexts, indicating that the bias generalizes robustly to multiple everyday decision domains.

## **Demographic Patterns in Decision-Making**

Although demographic variables were not part of the primary hypotheses, exploratory analyses were conducted to understand whether gender, age group, or self-reported decision-making style influenced participants' likelihood of choosing "Yes." Gender differences were minimal: females (46%) and males (48%) showed nearly identical acceptance rates, suggesting that the framing effect operates similarly across genders and does not appear to be moderated by gender-related cognitive tendencies. Age differences were also modest. Participants aged 25–34 demonstrated slightly higher acceptance rates (53%) than those aged 18–24 (43%), hinting that older individuals may feel more comfortable making affirmative choices in low-stakes scenarios. However, both groups responded clearly to the framing manipulation, reinforcing the generalizability of the effect.

Decision-making style yielded the most notable variation. Intuitive participants exhibited the lowest acceptance rate (33%), perhaps due to relying more heavily on affective impressions or skepticism toward numerical information. Analytical participants accepted options at a moderate level (44%), consistent with more deliberative processing. Participants who identified as having a mixed decision style showed the highest acceptance (54%), suggesting they might be more flexible or more easily influenced by the way information is framed.

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## **5. Discussion**

### **Personal Interest**

This project connects theoretical principles of behavioral economics with practical, everyday human behavior. Investigating how simple linguistic shifts can meaningfully alter perceptions and actions was both conceptually engaging and methodologically instructive. Conducting the experiment and performing the statistical analysis provided valuable hands-on experience with research design, R-based analysis, and interpretation of results.

### **Outcomes**

This experiment demonstrates that positive linguistic framing can dramatically alter how individuals respond to everyday decision scenarios, influencing not only behavioral choices but also subjective evaluations of effectiveness. The magnitude of the effects observed here—particularly for decisions and perceived effectiveness—aligns with, and in some cases exceeds, findings from classical behavioral economics.

The unexpected reversal of confidence judgments provides a particularly interesting psychological insight. While positive frames made the options appear more appealing and effective, they simultaneously introduced a degree of uncertainty. Negative frames, by contrast, made it easier to reject the option with confidence. This dissociation between confidence and choice highlights that the motivational and metacognitive components of decision-making may respond differently to the same linguistic cues.

Demographic analyses provided additional interpretive richness. Gender differences were minimal, indicating that the framing effect operated similarly across male and female participants. Slightly higher acceptance rates among participants aged 25–34 suggest that older individuals in the sample may approach low-stakes decisions with somewhat greater willingness to act, although both age groups were clearly responsive to the framing manipulation. The clearest differences emerged in decision-making style: intuitive decision makers were the least likely to choose the affirmative option, whereas mixed-style decision makers were the most receptive to positive framing. Analytical respondents fell in between. Although these trends were descriptive rather than inferential, they imply that cognitive style may influence the degree to which individuals rely on framed information when forming judgments.

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## 6. Limitations

This study has several limitations that should be considered when interpreting the findings. First, the overall sample size was relatively small ( $N = 30$ ), which reduces the precision of statistical estimates and may limit the generalizability of the results. With only 15 participants per framing condition, the confidence and effectiveness ratings may not fully capture the variability that would appear in a larger population.

Second, the binary decision outcomes were extremely skewed between conditions—nearly all participants in the positive frame chose “Yes,” whereas almost all participants in the negative frame chose “No.” Although this pattern strongly supports a framing effect, the near-zero variability in the negative condition likely inflated effect sizes and constrains the use of more nuanced statistical models. Chi-square assumptions may also be strained by such uneven cell frequencies.

Third, all scenarios were hypothetical and involved no real consequences. While this approach is common in behavioral research, real-world decisions involving financial, health, or environmental outcomes may engage additional motivational or emotional factors that were not captured in the experiment, limiting ecological validity.

Finally, demographic analyses (gender, age group, decision-making style) were exploratory. These patterns should therefore be interpreted cautiously and not treated as evidence of genuine moderating effects. Larger and more diverse samples would be necessary to draw reliable conclusions about demographic influences on framing susceptibility.

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## 7. Conclusion

Despite these limitations, the study provides strong evidence that framing effects extend powerfully into everyday consumer contexts. Positive framing increased willingness to act and impressions of effectiveness, while negative framing paradoxically increased confidence. The framing effect generalized across health, finance, and environmental decisions and across gender, age brackets, and decision styles. These findings reinforce the pervasive influence of linguistic framing and underscore the importance of mindful communication in marketing, financial advising, policy design, and public messaging.