

Mitigating Framing Effect in Advertising

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Abstract—This paper investigates how the act of “justifying the decision” helps minimize the “framing effect.” The framing effect refers to the phenomenon where the way information is presented in a statement can by itself influence people’s responses. An experiment was conducted, and responses were collected from a sample of 40 high-school students. The researcher asks the respondents to rate the worth of a virtual product according to a descriptive paragraph. The experiment asked half of the students to provide a rationale to justify their answer, the other half being the control group (no justification). The results were statistically analyzed by a T-test, which suggested sizable mitigation of the distortion. Thus, the respondents that attempted to justify their choices overcame the distorting effect to some extent. Finally, the study proposes that if survey issuers require respondents to justify their answers, the results obtained can be partially immune to the framing distortion.

Index Terms—Behavioral economics, experiment, framing effect, reduce framing effect.

I. INTRODUCTION

Experimental evidence shows that a person's response to a question may largely depend on how the question is phrased, even if the information conveyed is identical. The framing effect refers to a robust phenomenon where the accessibility of information in a statement can influence how people make decisions accordingly [1]. For example, in the well-known experiment on “Asian disease: carried out by [1], descriptions of two identical scenarios about the treatment of 1000 patients were given to participants. One scenario was positively framed; that is, the description was presented in terms of *lives saved* and the other in terms of *lives lost*. The experiment showed that participants are more risk-averse when the questions are framed as gains (*lives saved*), whereas they are more willing to be risk-loving when facing losses (*lives lost*). Many other similar studies (e.g., [2]-[4]) also show how different “framings” can significantly impact our decision making, even if the outcomes are essentially identical.

It is often described that humans’ cognitive process is conducted by either ‘effortless intuition’ or ‘deliberate reasoning’ [4], which are sometimes metaphorically referred to as ‘system one’ (intuition) and ‘system two’ (reasoning). Previous studies support the notion that the framing effect is a product of heuristic information processing. (e.g., [5]). With different framings, some information is more “accessible,” that is, it is easier to come to mind, which results in the

framing effect, especially when people carry out “heuristic” thinking [4]. Therefore, it is possible to eliminate or at least mitigate the influences of framing by encouraging people to carry out deeper analytical cognitive processing [6].

A. Reducing the Framing Effect

Many studies have been carried out aimed at investigating different methods to reduce framing effects (eg. [6]-[10]) and indeed, most of the methods were proven to be powerful. These studies investigated different methods such as highlighting the texts [11], printing texts in hard-to-read fonts [10] or creating an emotional context [12]. Essentially they all aim to reduce framing effects by increasing the subjects’ ability or willingness to extract information that is not very accessible from the texts. In this way, the effect of framing—distorting subjects’ decisions— would be weakened.

B. How Writing about a Topic Affects Our Understanding

Some previous researchers posited that writing about a particular subject could enhance our understanding of the subject and improve our learning ability. This idea is not groundless. Multiple studies have provided support. For example, a study by Langer and Applebee [13], where participants were required to read a text and, after some time, recall the contents from the text, finds those who carried out writing tasks performed better in terms of their recall. Other studies (eg. [14], [15]) show that with justification, the participants experience improved problem-solving ability.

If this is the case, writing rationales (justifications) for a choice may be followed by a more profound cognitive process, and so the subjects may be able to extract different aspects of a question, which lessens framing effects. The present study aims to extend previous findings and test whether requiring subjects to write justifications for their choices reduces attribute framing effects present in an advertisement of a virtual product.

C. Positive and Negative Attribute Framing

The effect of framing has been shown and explained by several studies in different contexts. We focus on framing in advertising and follow the study by Cheng & Wu, 2010 [7]. In this experiment, the participants need to rate their intention to buy a translator based on a paragraph of description of this particular translator. There are two types of descriptions: 1) the description with “positive attribute framing” and a 2) negatively framed question. In the positive framing, some properties (attributes) of the product are presented as gains (e.g., “translation with up to 80% accuracy). In the negatively framed description, however, the properties are presented as losses (eg. “translation with only 20% error rate”).

The participants’ intention to buy the product varies with different types of framing. According to the results obtained, this product is more favored among consumers when the

description is positively framed (presented as gains).

Similar results also appear in other researches (eg. [16]).

Based on the results of the previous studies, we can conclude that it is likely that participants will favor the product described in the positive frame. Hence we can hypothesize:

Hypothesis 1: The average Willingness to Pay¹ in the positively framed question is significantly higher than that in the negatively framed one

Furthermore, To see how much the participants in each group favor the product, the mean of their WTP(Willingness to pay) will be calculated. Since the framing effect leads to different desirability of the same product, the difference in mean WTP—the WTP gap between two groups—should indicate its effects. For example, if the (WTP in group A - WTP in group B) is larger than (WTP in group C - WTP in group D), we can claim that the effects of framing in groups C and D are reduced (See table I).

TABLE I: EXPERIMENT GROUPING

| | Positive frame | Negative frame |
|---------------------------------|----------------|----------------|
| Control group(No justification) | GroupA | GroupB |
| Provide a justification | GroupC | GroupD |

Based on the reasonings above, we can conclude our second hypothesis

Hypothesis 2: The WTP gap between group C&D(providing justification) is smaller than that between group A&B(no extra instructions given).

II. METHODS

A. Participants

This study recruited a sample of 40 students ranging from ages 15 to 17 in Shenzhen College of International Education by simple random sampling. They are all local Chinese students.

Forty-one students were asked to attend this experiment, 40 of whom consented and completed it. The questionnaires were randomly distributed to random students on the campus, the majority of whom were not acquaintances of the researcher. The participants were not rewarded.

B. Materials

The data were collected using questionnaires. Required to read a paragraph of description of a virtual product that did not exist, the participants hence needed to indicate their WTP for this product, which is used to analyze how different framings and writing tasks affect their willingness to buy the product.

Part 1: Read the positive or negative framing description: First, subjects read the description. They read either positive or negative framing questions, based on which they indicated their WTP. The descriptions, which are placed in the Appendix, are similar to the ones used in Cheng & Wu, 2010 [7]. Participants received either one from the two

descriptions. The *only* difference between them was that in the first description, the speed of the network was said to “reach 75% of the original network” (positive frame) and in the second the speed was “25% slower than the original network” (negative frame). We wish to see how this makes a difference in terms of their WTP.

Part 2: Instruction: For the sake of clarity and convenience, the writing tasks included one question only—asking the participants to provide an evaluation for the product—before the WTP was indicated. The instruction is in the Appendix.

Part 3: Indicate WTP: For the last part, the participants were asked to indicate their buying intention of the product—their WTP. They could choose from a 12-degree scale ranged from ¥0 to above ¥31. The higher the WTP, the more favored the product was for them. The scale is in the Appendix.

C. Procedure

This is a 2(positive/negative frame)*2(no instruction/request for rationale) between-participants design (see table II).

The independent variables are the instructions (no instruction/request for rationale) and framings (positive/negative). The dependent one is mean WTP from each group.

Below is the specific procedure:

Firstly random subjects were informed about the experiment and had consented to complete the questionnaires. Then they were randomly assigned to experimental conditions and questionnaires were distributed by the researcher manually.

Next, the subjects read either positive or negative product descriptions.

TABLE II: ASSIGNMENTS OF FOUR DIFFERENT CONDITIONS

| | Positive frame | Negative frame |
|---------------------------------|---------------------------|---------------------------|
| Control group(No justification) | GroupA: 10 questionnaires | GroupB: 10 questionnaires |
| Provide a justification | GroupC: 10 questionnaires | GroupD: 10 questionnaires |

Thirdly, half of the sample were instructed to write an evaluation for the product before they rated the product by WTP. For the other half of the sample, they received no instructions, meaning the participants were only asked to read the description and then rate the product, without needing to provide rationales. After that, they indicated their WTP. During this period there was no communication between the researcher and the participants.

At last, questionnaires were collected by the researcher and data were transcribed. The entire questionnaire took approximately one to three minutes to complete depending on the conditions.

III. RESULTS

Hypothesis 1: The average WTP in the positive framing question is significantly higher than that in the negative one.

To test Hypothesis 1, we:

¹ Willingness to pay is the maximum possible price of a product at which the consumer is willing to purchase. It is denoted by WTP.

Let M_p denote the mean WTP in “positive frame” group
 Let M_n denote the mean WTP in “negative frame” group.
 Hence:

$$H_0: M_p \leq M_n$$

$$H_a: M_p > M_n$$

To test for H_a , we need to compare the mean between the “positive framing” group as a whole and the “negative framing” group as a whole. A T-test has been carried out to examine whether or not there is a significant difference between the mean of the two groups (see Table III). The WTP was measured in Yuan (¥)

TABLE III: DATA FROM POSITIVE AND NEGATIVE FRAMING QUESTIONS

| | Positively frame | Negative frame |
|----------------|------------------|----------------|
| Mean WTP | $M_p = ¥15.8$ | $M_n = ¥11.35$ |
| SD | 7.0978 | 8.3809 |
| N | 20 | 20 |
| Df | | 19 |
| α | | 0.05 |
| critical value | | 1.7291 |
| t | | 1.812 |

The t value is greater than the critical value, showing that the mean WTP in the positive group is significantly greater. H_0 is thus rejected.

What it indicates is consistent with the Hypothesis 1 and the previous studies—participants receiving positively framed questions are more likely to favor the product.

Hypothesis 2: The WTP gap between group A&B (no extra instructions given) is greater than that between group C&D (providing rationale)

To test Hypothesis 2, we:

Let G_i denote the mean WTP gap in the “No justifications” group.

Let G_r denote the mean WTP gap in the “Rationale required” group.

Hence:

$$H_0: G_i \leq G_r$$

$$H_a: G_i > G_r$$

G_i and G_r are shown in Fig. 1, the upper line represents the WTP of respondents subject to positive framing. The lower line shows the negative one.

The vertical distance between the two lines indicates the difference in mean WTPs (WTP gap).

With no additional instructions, participants facing the two versions of questions give mean WTP of ¥16.6 and ¥11.1 for positive and negative framing respectively. Thus, the mean WTP gap is $(¥16.6 - ¥11.1) = ¥5.5$ (See Table IV).

Similarly, the mean WTP gap for participants who write rationales is ¥3.4. Although small, the difference between mean WTP gaps is in the predicted direction. (See table IV)

Indeed, consistent with H2, eliciting rationales narrows the mean WTP gap. Hence, we accept H2.

It shows that the participants that evaluate the product

before they give the WTP are influenced by framing effect to a smaller extent, which is also what the Hypothesis 2 expects.

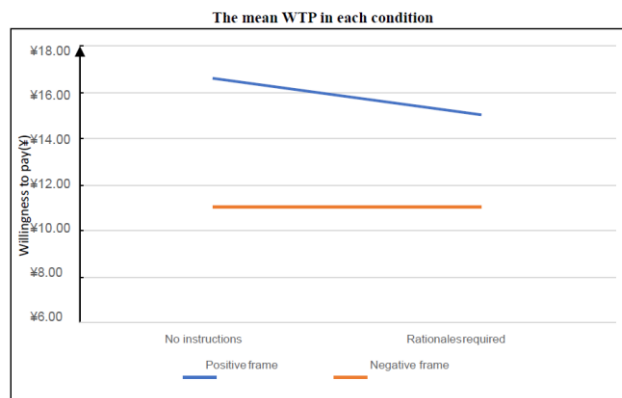


Fig. 1. The WTP gaps(gaps between the upper line and lower line) diminish, which show that the framing effect is lessened.

TABLE IV: WTP GAPS WITH AND WITHOUT JUSTIFICATION

| | Positively frame | Negative frames |
|-----------------------|------------------|-----------------|
| No instructions given | ¥16.6 | ¥11.1 |
| G_i | | ¥5.5 |
| Rationales required | ¥15.0 | ¥11.6 |
| G_r | | ¥3.4 |

IV. CONCLUSION

In the current study, we attempt to overcome the framing effects by requiring the subjects to justify their choices. The effects are gauged in terms of the participants' willingness to pay for the product since it can accurately tell how much a subject favors a product and allows for comparisons.

The results observed are consistent with both hypotheses we raised. The results clearly show that the subjects are susceptible to framing effect and base their WTP on the descriptions. This result fits the first hypothesis and is consistent with previous studies. On the other hand, by comparing WTP gaps, we have observed a mitigating effect of providing rationales on the influence of framing. This result satisfies the second hypothesis.

However, it is noteworthy that the current study is subject to limitations: the sample selected may not be representative of the whole population as it consists of only 40 students from one high school.

The present study has practical implications for individual decision-makers. For example, when selecting medical treatments or purchasing valuable items such as houses based on passages of descriptions (usually advertisements), giving some rationales on why one choice is better than its alternatives can effectively lessen framing effects. It may allow consumers to choose the most worthwhile items and avoid potential costs, such as the return of unwanted items or even unnecessary treatments.

On the other hand, this debasing method can be good news for surveyors of firms or organizations, who aim to collect the preferences or advice from the customers as accurately as possible. The current study proves that letting the customers write justifications before they indicate their choices may

² ¥ is the symbol of Yuan — China's currency

vastly diminish the bias caused by different framings in the various circumstances and thus raise the reliability of the data.

APPENDIX

This appendix contains the descriptive paragraph of the virtual product. This description are similar to that in Cheng & Wu, 2010, with slight modification.

The positively framed version used in the current study is shown below:

“‘YiShen’ is the latest VPN (virtual private network) app which allows simultaneous connection from 2 different devices and can access to networks in over 30 regions worldwide! This device will serve most social groups, especially students and businessmen. However, there will be some delay in the internet connection. The speed of data transmission on the internet using ‘YiShen’ reaches 75% of the speed of the original network”

The negative one is shown below:

“‘YiShen’ is the latest VPN (virtual private network) app which allows simultaneous connection from 2 different devices and can access to networks in over 30 regions worldwide! This device will serve most social groups, especially students and businessmen. However, there will be some delay in the internet connection. The speed of data transmission on the internet using ‘YiShen’ is 25% slower than the speed of the original network.”

Request for justification

“What do you think about this app? Please give an evaluation according to the description.”

12-degree scale for rating

| |
|------------------------|
| ¥0 per month |
| ¥1-3 per month |
| ¥4-6 per month |
| ¥7-9 per month |
| ¥10-12 per month |
| ¥13-15 per month |
| ¥16-18 per month |
| ¥19-21 per month |
| ¥22-24 per month |
| ¥25-27 per month |
| ¥28-30 per month |
| ¥31 or above per month |

*the calculation takes the lower bounds of the range of WTP from each participants (eg. ¥22-24 is taken as ¥22).

CONFLICTS OF INTEREST

The author declares no conflict of interest.

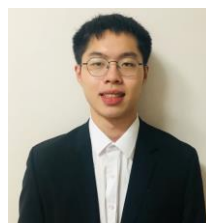
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