

# Nationality of Victims Will Not Influence Participants' Risk Preference

## A Framing Effect Study

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### ABSTRACT

The human brain does not always function rationally. The classical framing effect suggests people have different risk preferences regarding how the situation is framed. Some research suggests nationality will influence decision-making. This study explores whether people will change their risk preferences when questions are framed differently and set in different national contexts. An online between-subject-design experiment among 224 Chinese grownups was conducted, using a modified version of "Asian Disease Problem". The independent variables of this study were the nationalities in each question and negative or positive framings of the question, while the dependent variable was the participants' risk preference. The results showed that framing has a significant main effect. Nationality was not found a significant main effect, but the main effect of framing remains significant in each nationality setting. This study revealed that people had different risk preferences depending on the framings of the question. Participants were inclined to choose the risk-seeking option. At the same time, the question was framed negatively but not showed a salient preference for risk-seeking or risk-averse options in positive framing. However, participants were not influenced by which nationality the question was set in. Further research containing the priming of nationality before the framing question is needed to examine the exact relationship between nationality and the framing. fMRI studies of which parts of the brain are active during participants' decision-making might also help to provide deeper understandings of the neuropsychological rationales of their choices.

**Keywords:** Nationality, the Framing Effect, Chinese, Asian-disease-problem.

### 1. INTRODUCTION

Cognitive psychologists had already provided numerous pieces of evidences suggesting that humans do not always make rational decisions [1, 2]. Examples of people making biased decisions seem comprehensive. For example, people insist on making judgments based on the first impression they had, even they might be presented with completely contrary information later (Anchoring Bias) [1]. Humans also have biased evaluations of experience, which were seemed to be determined only by the most memorable part from that experience (Peak-end Rule) [3]. Not to mention how people made their responses due to the framing of the question.

Tversky and Kahneman discover prospect theory in 1979 [4] during a study using the "Asian disease problem", which later becomes one of the most widely used tools in research surrounding the framing effect, providing evidence supporting their later investigation. Tversky and Kahneman's "Asian disease problem" are:

Imagine that the US is preparing for an unusual Asian disease outbreak, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed.

Problem 1: Assume that the exact scientific estimate of the consequences of the programs is as follows: If Program A is adopted, 200 people will be saved. If Program B is adopted, there is a one-third probability that

600 people will be saved and a two-thirds probability that no people will be saved. Which of the two programs would you favour?

Problem 2: Given the same scenario, if Program C is adopted, 400 people will die. If Program D is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die. Which of the two programs would you favour? [5]

Prospect theory describes the way people choose between alternatives that involve different levels of risk, where the probabilities of outcomes are known [4]. The theory states that people evaluate these losses and gains using heuristics. One of those heuristics is the framing effect. People prefer the more certain outcomes when information is framed in positive language but prefer the less certain outcomes when the same information is framed in negative language. In simple terms, when people expect to succeed, they prefer a definite win rather than a possible win, but when people expect to lose, they will gamble on an uncertain defeat rather than a definite loss. Later, the concept of the framing effect has gradually become mature. The framing effect causes people to respond differently towards objectively equivalent descriptions framed in divisive ways of the same problem [5].

Later studies done by many other researchers and scholars have shown that the framing effect can be affected by various factors. The different cultures were shown to have impact on risk involved decisions. Huang et al. [6] published a meta-analysis of research on loss aversion tasks, showing that people from more individualistic cultures are more risk-averse than those from a collectivist culture. Moreover, various evidence support that the social cue essentially influences the individual's subjective interpretation and comprehension about the relationship between people at risk and the decision maker themselves [7-9]. In light of the above literature, social cues, especially nationality, might play an important role in impacting the framing effect.

Nationality is one subjective identity people use to define themselves universally. According to Chimienti et al. [10], nationality naturally divides people into two groups, "nationals" and "non-nationals", suggesting ontological differences between these two groups. Tourism's study also presented how nationality plays a part in whether people will recommend a place: people are more likely to recommend their own countries [11]. In contrast, a marketing study found nationality has a significant impact on the country-of-origin effect. People from some countries might find the country-of-origin effect less impactful than people from other countries [12]. One article even reveals how people might treat each other differently based on their nationality or ethnicity, making unjust judgments [13].

Even though there is enlarging attention paid to the influence of nationality in recent years because of globalization [12], the investigation on its influence on the framing effect is barely developed. We found nationality was one highly under-researched element while considering cognitive bias like the framing effect. Meanwhile, one of the theoretical supporting materials, which is widely used in demonstrating the framing effect, is called "the Asian disease problem" while including people's attitudes and the decision made on other groups of people [5]. We become interested in whether nationality, especially China nationality, will play a part in the decision making process when people are pondering on saving or giving up other people's lives and whether or not nationality will overpower the framing effect.

This study was still in an attempt to test the framing effect. Additionally, we further investigated whether participants' cognitive process of perceiving nationality or not would trigger different responses conduction. Therefore, this study explores how the perception of nationality in framing questions will influence the framing effect in Chinese participants. The first hypothesis is that participants would avoid risks when questions are framed positively, whereas saliently seeking risks when a negative frame is presented. The second hypothesis is that nationality appeared in the question would affect the framing effect. 224 Chinese participants were recruited via an online platform, and a between-subject design was employed. Participants are randomly assigned to six different groups and then asked to answer the questionnaire. They were presented with either gain or loss framed questions and whether people in danger were from China, America, or a non-specific country.

## **2. METHODS**

### **2.1. Participants**

A total 224 adults including 135 (60.26%) participants aged 18-25, 39 (17.41%) participants aged 26-45, 29 (12.94%) participants aged 36-45, 17 (7.59%) participants aged 46-60, and 4 (1.79%) participants aged 61 or more. All participants in this study are Chinese citizens. They were recruited online, and their data were collected via an online platform—Wenjuanwang (www.wenjuan.com), one popular Chinese platform used to generate digital questionnaires. 158 of the participants were female (70.54%), 57 of them were male (25.45%), 3 participants define themselves as "other gender" (1.34%), and 7 participants prefer not to expose their gender (3.13%). After completing the brief questionnaire and demographic information collecting, participants will receive a prize draw provided by the website (Wenjuanwang).

**2.2. Designs and Materials**

This study wants to investigate the framing effect and how the nationality of the hypothetical situation will influence it. Therefore, the dependent variable is whether the participant will make a more “risk-averse” decision or a more “risk-seeking” decision. The independent variables are two framings of the options provided (positive/negative), and three nationalities appeared in the framing (China/USA/Control). Our questionnaire is a moderate adaptation of Tversky and Kahneman’s Asian Disease problem [5].

Our adapted version (Appendix) contains a similar hypothetical scenario where participants must choose from two medicines that can cure this incurable disease with different cure rates. This version of the questions is presented in simplified Chinese because all target participants are Chinese. This study also wants to investigate the impact of nationality during the framing

process. Therefore, scenarios are set in three different countries, in China, in the USA, and in a non-specific country. The last setting is used as the control group. Note that the numerical properties of all six conditions are kept identical. In both frames, the risk-seeking option was paired with a risk-averse option.

We choose the between-subjects design to prevent participants from guessing the aim of the current research. This design can also prevent any unwanted increase in dosage of framing given. According to Ratcliff et al., the dosage of framing elements will potentially raise participants’ reactance and then influence their response [14]. Each participant will be presented with only one of the six conditions, framed either positively or negatively, that happened in China, in the USA, or in the non-specific country (Control).

**2.3. Procedures**

**Table 1.** Number of Responses in Positive/Negative Framing and in China/USA/Control context

	Framing	Response	
		Risk-averse (%)	Risk-seeking (%)
China	Positive (Gain)	22(55.00%)	18(45.00%)
	Negative (Loss)	4(28.53%)	13(76.47%)
USA	Positive (Gain)	15(48.39%)	16(51.61%)
	Negative (Loss)	9(21.43%)	33(78.57%)
Control	Positive (Gain)	20(57.14%)	15(42.86%)
	Negative (Loss)	17(28.81%)	42(71.19%)

Participants are tested on their own mobile devices at any time during the day by scanning our QR code and accessing the questionnaire. We designed a QR code that will randomly lead participants to one of the six different questionnaires after scanning the code.

Participants are all informed about how their data will be used and instructed to sign the consent form at the beginning of the questionnaire. If they do not agree to the consent form, their questionnaire session will end immediately.

After the framing question, participants are instructed to indicate whether or not they notice the nationality in the framing question. If they answered yes, they would be asked whether the country's appearance influences their decision-making process. At the end of the questionnaire, participants will complete demographic information collecting of their age groups, genders,

educational levels, employment situations, and aboard experiences.

**3. RESULTS**

**3.1. Descriptive Statistics**

The dependent variable in our analysis is either the risk-averse or the risk-seeking response participants made. The independent variables are three nationality contexts (China/USA/Control) and two framings of the question (Negative/Positive). Table 1 presented how participants respond under each condition among negative or positive framing in three nationality contexts (China/USA/Control). It suggests that participants obviously made more risk-seeking responses in negative (Loss) framing than positive (Gain) framing no matter the context of nationality. It also suggests that the framing effect might not be identical powerful under positive

(Gain) framing and negative (Loss) framing in three nationality contexts. The more specific analysis will be elaborated and explained in 3.2.

**3.2. Generalized Linear Model**

We are using the 3 x 2 between-subject generalized linear model to analyse whether framing and nationality's

main effects are significant. As presented in Table 2, the main effect of framing is salient ( $\chi^2(1) = 16.136, p < .001$ ). However, nationality has no significant main effect ( $\chi^2(2) = 1.191, p = .551$ ). The interaction of nationality and framing has no significant main effect on response

**Table 2.** Participants' Responses on Different Framing Conditions within Three Nationality Contexts

	<i>Wald Chi-Square</i>	<i>df</i>	<i>p</i>
(Intercept)	9.749	1	.002
Nationality	1.191	2	.551
Framing	16.136	1	.000***
Nationality * Framing	.057	2	.972

*Note.* Dependent Variable: Response, \*\*\* $p < .001$

( $\chi^2(2) = 0.057, p = .972$ ).

We also made a pairwise comparison within two framings in three nationality contexts. The results suggest the robustness of the framing's influence on the response. Between the negative and positive framing, the influences are always significant ( $p = .015 < .05$  in China,  $p = .006 < .01$  in USA,  $p = .014 < .05$  in Control).

**4. DISCUSSION**

This study aims to see how the Chinese participants' perception of nationality in framing questions would positively or negatively influence their choices. The framing effect was found robust throughout this study. People were inclined to avoid risks when theoretical questions were framed positively, and they preferred to seek risks in the face of the negatively framed choices, concurring the first hypothesis. However, people's responses were not altered by nationalities appeared in the framed questions, which demonstrates that subjects' responses to framed questions remained the same as the first hypothesis mentioned regardless of the impact of the nationality, opposing the second hypothesis.

Concerning the first hypothesis, our finding is consistent with the findings of Tversky [15] that the US subjects tend to be risk-averse when exposed to positive framed questions. In contrast, they are prone to be risk-seeking when negatively framed questions are presented. We found several investigators who have conducted experiments examining the framing effect

afterward. For instance, Bless et al. [16] altered the original experiment to a medical decision problem, and the same results were found as Tversky. Plus, Druckman [17] replicated Tversky and Kahneman's initial Asian disease research and found that the framing effect plays a salient part in people's decision-making, the same as found in Tversky and Kahneman's original study. Furthermore, Tabesh et al. [18] also tested the association between the frame and decision in Iranian participants by using the questionnaire. Also, they adopt the between-subject design by randomly assigning participants to either gain condition or loss condition. Consequently, the robust framing effect also emerged in the Iranian condition that respondents become risk-averse when the choices are framed as a gain and tend to take risks when decisions are framed as a loss, supporting the first hypothesis of this study.

Regarding the second hypothesis, although there is not ample evidence proving the association between nationality and the framing effect, our results could be parallel as Huangfu's study [15] that people make decisions differently based on their closeness with people at risk. In other words, the framing effect will vanish when participants are told that people in danger are their friends or relatives in both positively and negatively framed conditions. In contrast, the framing effect is still robust when lives at risk whom participants perceived were strangers to them. These findings by Huangfu is consistent with our findings that even though the victims

in the hypothetical scenario share the same nationality with the participants in our study, they don't share a close-enough relationship and have still regarded each other as strangers. Consequently, people's perception of nationality does not affect the framing effect in our study because it is not a sign of closeness.

Moreover, from a neuropsychological perspective. Based on the fact that a potential mechanism activation in ventral portions of the posterior cingulate cortex is associated with the framing effect and could be modulated by the social closeness [19]. Researchers also claim that people's neural mechanisms controlling decision-making could be changed when their close friend is present. Therefore, this mechanism in their brains might not be altered by nationality while completing the questionnaire in our study since there is no bonding between respondents and people at risk in the questions, even though participants shared the same Chinese identity. As a result, the framing effect was not affected and was apparently observed.

#### ***4.1. Limitations and Future Directions***

The benefits of this study are clear. We have probed one sub-domain of the framing effect that lacks a basic amount of research, whether victims' nationality could affect the framing effect or not, providing some insights for future investigation. Also, according to Dawson and Dobson [13], national identity could alter refugees' decisions, which biases the match results, causing conflicts. Thus, how nationality affects people's decision-making needs to alleviate the racial tension when people are having worldwide competition, increasing the harmony of interactions internationally. However, there are also limitations. On the one hand, the representativeness of our participants cannot be fairly generalized because the participants' population is not evenly distributed. 70.54% of our participants are female, and only 25.45 % of them are male (with 1.34% other genders and 3.13% participants prefer not to reveal their gender). Also, participants from the age group of 18-25 take up to 60.26% of all participants. The subjects allocated to each questionnaire are not even (59 participants for the Control loss group while 17 participants for the China loss group). On the other hand, the average time of participants completing these questionnaires is around one and a half minutes, which might be too short for participants to consider the question thoroughly. Finally, this study did not investigate what mechanisms in the brain account for the phenomenon that emerged during our study.

Therefore, participants should be recruited from different age ranges for future study and require a more even distribution. Also, as mentioned above, researchers might insert a starting session before the framing question to extend the completion time in the further study. From a neuropsychological perspective, they are

studying how mechanisms associated with the perception of nationality in the brain should be further investigated. Finally, our experiment adopted the between-subject design, so respondents were only exposed to one condition where people at risk were either from China, the USA, or from the non-specific country. Thus, we conjecture that the reason underlying the robust framing effect in our research might be due to not using a within-subject design. The framing effect might be weakened if participants face those at risk from China (the same nationality) and from the USA (different nationality) simultaneously, and the choices they make will be different. Therefore, researchers could further investigate whether nationality would influence the occurrence of the framing effect by employing a within-subject design.

## **5. CONCLUSION**

The objective of the current research is to probe whether nationality would affect the framing effect. It was observed that the effect of framing was robust in all six conditions, which suggests that people tend to avoid risks when questions are framed in a way that they will be gaining and seek risks when questions are framed in a way that they feel like losing. In contrast, participants' perception of nationality did not influence their risk preference. These findings imply that even though people and victims in question share the same nationality, the shared nationality does not alter the occurrence of the framing effect. Thus, during our study, people do not show more sympathy or less to people with or without the same nationality as them. In cognitive studies, investigating the influence that nationality exerts on the framing effect is also essential. Because there is still so little research done on how nationality affects the framing effect up to the date this study was done. For policies makers, it is also imperative to eliminate unnecessary conflicts potentially caused by the framing effect when citizens face new policies released by the government, especially for those districts involving ethnic diversity. In terms of further investigation, future researchers could adopt a within-subject design to see if there would be a difference when participants faced compatriots and foreigners simultaneously. In addition, a priming study that provides the priming of certain nationalities before the framing question can also be done to further investigate in the study of the relationship between nationality and the framing effect. Finally, they could also further examine which mechanisms in the brain account for the phenomenon of why individuals' perception of nationality fails to influence the framing effect.

## **APPENDIX: QUESTION TEXT TRANSLATED INTO ENGLISH**

For three gain groups:

To combat a disease that will definitely cause death without treatment, 2 types of new medicines were invented by a hospital (in China/in the USA/none). Clinical trials are going to be held among 600 patients with that disease. Please choose the BETTER solution out of the two presented below.

Medicine A: 200 of the patients will be cured.

Medicine B: There is a 1/3 probability that 600 people will be cured and a 2/3 probability that nobody will be cured.

For three loss groups:

To combat a disease that will definitely cause death without treatment, 2 types of new medicines were invented by a hospital (in China/in the USA/none). Clinical trials are going to be held among 600 patients with that disease. Please choose the BETTER solution out of the two presented below.

Medicine A: 400 of the patients will die.

Medicine B: There is a 1/3 probability that nobody will die and a 2/3 probability that 600 people will die.

## REFERENCES

- [1] Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: heuristics and biases. *Science*, 185(4157), 1124-1131. <https://doi.org/10.1126/science.185.4157.1124>.
- [2] Urai, A. E., de Gee, J. W., Tsetsos, K., & Donner, T. H. (2019). Choice history biases subsequent evidence accumulation. *eLife*, 8(e46331). <https://doi.org/10.7554/eLife.46331>.
- [3] Fredrickson, B. L. & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. *Journal of Personality and Social Psychology*, 65(1), 45-55. <https://doi.org/10.1037//0022-3514.65.1.45>.
- [4] Kahneman, D. & Tversky, A. (1979) Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-292.
- [5] 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>.
- [6] Huang H. et al. (2016). Social exchange process in collectivistic countries: an examination of sporting events in China. *European Sport Management Quarterly*, 16(2), 172-189. <https://doi.org/10.1080/16184742.2015.1135974>.
- [7] Wang X. (1996). Domain-specific rationality in human choices: violations of utility axioms and social contexts. *Cognition*, 60(1), 31-63. [https://doi.org/10.1016/0010-0277\(95\)00700-8](https://doi.org/10.1016/0010-0277(95)00700-8).
- [8] Landa T. J. & Wang X. (2001). Bounded Rationality of Economic Man: Decision Making under Ecological, Social, and Institutional Constraints. *Journal of Bioeconomics*, 3(2-3), 217-235. <https://doi.org/10.1023/A:1020597813814>.
- [9] Zhang Y. & Miao D. (2008). Social cues and framing effects in risky decisions among Chinese military students. *Asian Journal of Social Psychology*, 11(3), 241-246. <https://doi.org/10.1111/j.1467-839X.2008.00263.x>.
- [10] Chimienti, M. Guichard, E., Bolzman, C. & Le Goff, J. (2021) How can we categorize ‘nationality’ and ‘second generation’ in surveys without (re)producing stigmatisation? *CMS*, 9(29). <https://doi.org/10.1186/s40878-021-00237-1>.
- [11] Vieira, J., Jordan, E., & Santos, C. (2021). The effect of nationality on visitor satisfaction and willingness to recommend a destination: A joint modelling approach. *Tourism Management Perspectives*, 39. <https://doi.org/10.1016/j.tmp.2021.100850>.
- [12] Ahmed, S. & Astous, A. (2007). Moderating effect of nationality on country-of-origin perceptions: English-speaking Thailand versus French-speaking Canada. *Journal of Business Research*, 60, 240-248. <https://doi.org/10.1016/j.jbusres.2006.11.004>.
- [13] Dawson, P., & Dobson, S. (2010). The influence of social pressure and nationality on individual decisions: Evidence from the behaviour of referees. *Journal of Economic Psychology*, 31(2), 181-191. <https://doi.org/10.1016/j.joep.2009.06.001>.
- [14] Ratcliff C. L., Jensen, J. D., Sherr, C. L., Krawkow, M. & Crossley, K. (2019). Loss/Gain Framing, Dose, and Reactance: A Message Experiment. *Risk Analysis: An Official Publication of the Society for Risk Analysis*, 39(12), 2640-2652. <https://doi.org/10.1111/risa.13379>.
- [15] Huangfu, G. (2014). The influence of social cues on framing effect. *Social Behavior and Personality: An International Journal*, 42(3), 371-377. <https://doi.org/10.2224/sbp.2014.42.3.371>.
- [16] Bless, H., Betsch, T. & Franzen, A. (1998). Framing the framing effect: The impact of context cues on solutions to the ‘Asian disease’ problem. *European Journal of Social Psychology*, 28(2), 287-291.
- [17] Druckman, J. N. (2001). Evaluating framing effects. *Journal of Economic Psychology*, 22(1), 91-101. [https://doi.org/10.1016/S0167-4870\(00\)00032-5](https://doi.org/10.1016/S0167-4870(00)00032-5).

- [18] Tabesh, P., Tabesh, P. & Moghaddam, K. (2019). Individual and contextual influences on framing effect: Evidence from the Middle East. *Journal of General Management*, 45(1), 30-39. <https://doi.org/10.1177/0306307019851337>.
- [19] Sip, K. E., Smith, D. V., Porcelli, A. J., Kar, K. & Delgado, M. R. (2015). Social closeness and feedback modulate susceptibility to the framing effect. *Social Neuroscience*, 10(1), 35-45. <https://doi.org/10.1080/17470919.2014.944316>.