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The Effect of Emotion Priming on Risk Attitudes among Southern Chinese College Students

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Abstract: The correlation between emotions and risk attitudes has been thoroughly substantiated in various disciplines such as behavioral economics, finance, and psychology. Evidence has revealed that emotions, influenced by a range of emotional factors, have the potential to significantly affect risk attitudes. Building upon prior research, this study investigates the impact of certain emotional triggers on risk attitudes in a sample of university students in southern China. A total of 55 valid subjects, including 42 females (76.4%), were enrolled in the experiment. Their risk attitudes were assessed using multiple scales, and they were randomly assigned into three groups to receive positive, neutral, and negative emotional stimuli before making risky decisions separately. The findings demonstrated that individuals who were emotionally primed with a positive emotion video were more inclined to undertake hazardous decisions compared to those exposed to negative emotional priming. This outcome aligns with earlier studies indicating that positive emotions are linked with a heightened fondness for risky behavior. In conclusion, this study corroborates the relevance of this theory to a group of undergraduates in the south of China.

Keywords: emotion, decision making, risk attitudes, domain-specific risk-taking scale, Positive and Negative Affect Schedule (PANAS)

1. Introduction

The history of research on emotions and risk attitudes dates back to the early 1900s when studies focused on the impact of emotions on risky decisions. Subsequently, researchers began exploring the relationship between emotions and risk attitudes, as well as how emotions moderate risk decisions. Nowadays, investigating emotions and risk attitudes is a crucial research topic in various disciplines, such as behavioral economics, finance, and psychology.

The study of emotions and risk attitudes encompasses various theories and models, including the emotion-driven theory, the emotion-inspired theory, and the emotion-regulation theory. These models offer distinct interpretations of the relationship between emotions and risk attitudes, providing diverse hypotheses and predictions. Empirical research has extensively verified the correlation between emotions and risk attitudes. Studies have demonstrated that emotions significantly influence risky decisions, with the effects moderated by variations in type, intensity, source, and stability. Furthermore, research across several fields has identified variations and shared characteristics between emotions and emotional states towards risk, warranting further investigation into this matter.

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2. Literature Review

2.1. Emotion

Emotion, which is relational in nature and has diverse and complex definitions, can be summarized as consisting of specialized neural circuits, response systems, and sensory processes that stimulate and organize cognition and action. This provides individuals experiencing the emotion with cognitive appraisal, including interpretation of sensory, expressive and communicative signals, which may trigger certain behaviors or regulatory responses [1]. Emotions can be roughly classified into various distinctive basic emotions, such as anger, sadness, happiness, surprise, etc. [2,3]. Additionally, emotions can also be categorized according to the dimensional approach: namely, valence (subjective emotional response to particular object or event, from unpleasant to pleasant) and arousal (somatic change caused by emotion, from deactivation to activation). This categorization allows emotions to form a circumplex structure [4]. For example, excitement and tension are both activated, but the subjective attribute of excitement is pleasant, while that of tension is unpleasant. Furthermore, emotion can also be classified as incidental emotions, referring to emotions arising from one situation and extending to another irrelevant situation [5], and integral emotions, referring to coping emotions directly related to event outcomes [6, 7], based on the type of relationship between emotion itself and the event or object being evaluated. Both emotions are important to decision-making.

2.2. Emotion and decision-making

The relationship between emotion and decision making has been debated for years. Initially, expected utility theory originally proposed by Von Neuman and Morgenstern [8] posited that people generally prefer the choice consistent with the highest subjective expected utility, which emphasized the rational attributes and excluded emotions from the study of decision making. However, two crucial theories - prospect theory and bounded rationality -mainly changed the situation.

The prospect theory [9, 10] assumes that, in addition to the expected subjective utility of outcomes, decision-makers presuppose an internal reference point, referring to a scenario based on the status quo, and then measure whether each outcome is above or below this reference point. Human decisions depend on the gap between the expected outcome and the reference point, rather than just on the expected outcome itself. If the expected outcome is above the reference point (i.e., they will gain), they exhibit risk aversion and prefer small gains with certainty; if the expected outcome is below the reference point (i.e., they will lose money), then they exhibit risk preference and prefer loss avoidance with uncertainty. In addition, people are more sensitive to losses than to gains. This pattern leads to the fact that if people lose money, they are likely to continue their risk preference in an attempt to recoup the losses they once made until they go bankrupt. Furthermore, prospect theory points out a non-linear human response to probabilities, namely, an over-sensitivity to small probabilities and an under-sensitivity to large probabilities, as well as heuristics, leading to a cognitive bias in decision-making.

Bounded rationality points out the cognitive limitations of human beings and interprets irrational decision making as the most efficient choice balancing the neural metabolic costs for evaluating various alternatives with the subjective utilities of the alternatives [11, 12].

It was not until the 1980s that an emotional revolution took place and the relationship between emotions and decision-making and finally began to be explored [13]. It is shown that since 2001, the number of studies on emotion and decision has increased exponentially [14]. Emotions were thought to be impeding decision-makers from making decisions that maximized benefits and well-being to some degree [15], which is reflected in negative emotions causing excessive attention to detail and analytical processes for alternatives, while positive emotions causing heuristic strategies that

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indirectly affect decision outcomes [16]. However, more and more studies show that the effects of emotion on decision making are not all negative [17]. The integral emotions, as bias, may overestimate the possibility of low-frequency accidents [18], but can also help avoid some high-risk events, such as regret [19]. According to the Appraisal-Tendency Framework, emotions may affect decision-making through three mechanisms: the content of thoughts, the depth of thoughts, and the content of implicit goals [20, 21].

2.3. Risk attitudes

Risk attitude is a key principle in prospect theory and comprises three distinct categories with variations among individuals. These categories include: 1) Risk-seeking, where an individual prefers options with uncertain prospects over options with predictable outcomes; 2) Risk-averse, where an individual prefers options with predictable outcomes over options with uncertain prospects; and 3) Risk-neutral, where an individual exhibits an indifferent attitude towards risk choices [22].

It is evident that the perception of gain and loss is relatively dependent on reference points, and that the distance between the value and the reference point is congruent with the diminishing sensitivity of perception. Generally, people tend to be risk averse for high probability of returns and low probability of losses, while being risk seeking for low probability of returns and high probability of losses [23]. Research has classified factors influencing risk attitudes into three categories: family, individual, and environmental. The impact of family factors on individual risk attitudes is U-shaped, with middle-income households displaying a higher level of risk aversion compared to high- and low-income families. Furthermore, the higher the level of education in the family as a whole, the lower the risk preferences of its members [24]. Additionally, risk attitudes may be affected by an individual's gender [25] and age [26], as well as alterations in socio-economic settings [27].

3. Methodology

3.1. Participants

College students from a Chinese-foreign joint university, Beijing Normal University Hong Kong Baptist University United International University (UIC), were recruited to complete an online survey from May to June, 2023. A question "Do you consider yourself emotionally stable at present?", serving as a validity test to establish the baseline of neutral emotional states, was used to screen out participants with unstable emotions, resulting in a total of 55 data obtained.

3.2. Procedure

Data for this study were collected through Wenjuanwang (https://www.wenjuan.com/s/UZBZJvNHuw/). Participants completed the questionnaires online after reading the informed consent. The questionnaires included demographic questions such as ID numbers, gender, age, major, and socioeconomic status, followed by 12 risk attitude questions and an emotional stability question. Afterwards, they were instructed to watch a 2~3-minute video. All three videos were sourced from the Bilibili website and are accessible for free. The videos that stimulate positive and negative emotions comprise character dialogues, whereas the neutral video was retrieved from an open-source historical documentary. The aim of using these three videos is to control the variables more precisely so that participants can focus on the emotions evoked by the discourses in them; all protagonists in these videos are human beings speaking Chinese with no background music. Participants were randomly assigned to one of three groups to watch one of the videos. This will be followed by the presentation of a 20-item emotion questionnaire following the three videos, in order to record their emotions at the time. Finally, participants are requested to respond to 18 financial-

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choice questions with confirmation of identity via their respective ID numbers. Each participant will receive a reward of 2 RMB.

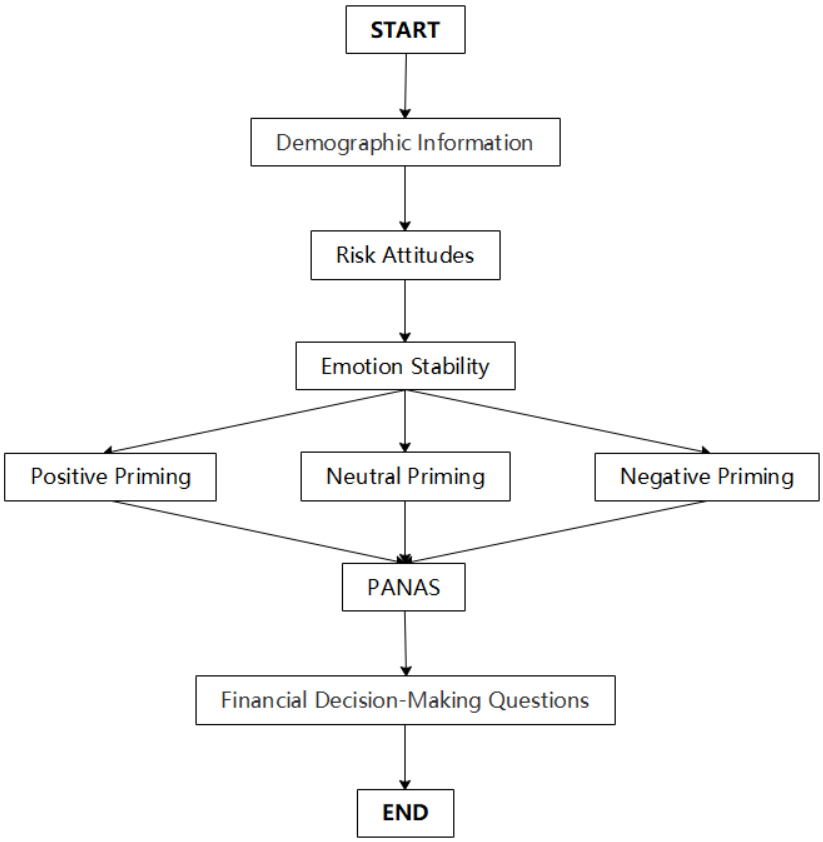

Figure 1: Experiment Procedure.

3.3. Materials

The Domain-Specific Risk-Taking Scale (DOSPERT) is a 30-item questionnaire that measures people's risk attitudes towards events in five domains (financial, social, health, recreational, ethical). [28] For this study, only the six items related to financial risk-taking in DOSPERT will be utilized. Participants were required to complete each item on a 7-point Likert scale ranging from 1 (extremely unlikely) to 7 (extremely likely).

The Positive and Negative Affect Schedule (PANAS) is a 20-item questionnaire measuring people's current positive and negative emotions, which has been widely used in community and clinical contexts [29, 30]. Using a 5-point Likert scale, individuals should rate each item from 1 (not at all) to 5 (extremely).

3.4. Hypothesis

In situations where various emotions are activated, a person's decision-making is affected differently.

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4. Results

4.1. Descriptive Statistics

The final sample included 55 participants, aging from 18 to 23 years old (M = 20.96, SD = 1.440). The majority of the participants were females (76.4%), and came from families with an average income (67.3%).

Table 1: Demographic Information: Gender, Age, Major, Father's level of education, Mother's level of education, Family average income, Group.

Categories	Options	Frequency	Percentage	Cumulative Percentage
Gender	Male	42	76.4	76.4
	Female	13	23.6	100.0
Age	18~20	19	34.5	34.5
	21~23	36	65.5	100.0
Major	Science	25	45.5	45.5
	Humanities	11	20.0	65.5
	Economic management	19	34.6	100.0
Father's level of education	Junior high school and below	3	5.5	5.5
	Undergraduate	22	40.0	45.5
	professional training college	13	23.6	69.1
	High school or middle school junior college	9	16.4	85.5
	Master or above	8	14.5	100.0
Mother's level of education	Junior high school and below	5	9.1	9.1
	Undergraduate	24	43.6	52.7
	professional training college	7	12.7	65.5
	High school or middle school junior college	12	21.8	87.3
	Master or above	7	12.7	100.0
Family average income	(80,000, 150,000]	6	10.9	10.9
	(150,000, 300,000]	17	30.9	41.8
	(300,000, 500,000]	14	25.5	67.3
	(500,000, ∞)	18	32.7	100.0
Group	Positive	21	38.2	38.2
	Neutral	16	29.1	67.3
	Negative	18	32.7	100.0
Total	/	55	100.0	/

4.2. Data analysis

Firstly, one-way ANOVA was conducted to examine the differences of risk attitudes among three groups. The risk attitudes of three groups are significantly different, $F = 2.682$, $p = .078$. Among three groups, only the risk attitudes of positive and negative groups are significantly different, $p = .032$; however, that of positive and neutral groups ($p = .114$) as well as that of neutral and negative groups

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(p = .611) are not different. After adding weight to the results of the gambling games, the risk attitudes between the three groups were not significantly different instead, F = 2.034, p = .141.

Besides, groups of male and female have no significant differences on risk attitudes as well (t = .396, p = .694; after adding weight: t = .653, p = .517). Separately, in positive emotion priming condition, male and female have no significant differences on risk attitudes (t = - .099, p = .922; after adding weight: t = .109, p = .914); in neutral emotion priming condition, male and female have no significant differences on risk attitudes (t = - .616, p = .548; after adding weight: t = - .622, p = .544); while in negative emotion priming condition, results showed significant differences between males and females regarding risk attitudes (t = 2.067, p = .055; after adding weight: t = 2.122, p = .05).

5. Conclusion

The findings demonstrate that individuals exposed to positive emotions are more likely to make risky decisions compared to those subjected to neutral and negative emotions. This suggests that positive emotions encourage people to take risks. This discovery aligns with previous studies, which argue that positive emotions are more likely to induce risk-seeking behaviors than neutral and negative emotions, and that positive-emotional adults are also more risk-tolerant [31, 32]. However, after empowering risk decisions, there is no significant difference in decision-making between different emotional groups, suggesting that the inclination for the level of decision-making risk is not affected by emotion. Another finding is that, in the negative emotion priming condition, men are more likely to make risky decisions than women. The contributions of this study include collecting a small amount of data on the population of college students aged 18-23 in southern China, obtaining results consistent with previous studies, and providing a reference for studies related to emotions and risk attitudes of Chinese adults. Nevertheless, limitations exist in this study: the findings may not be broadly representative due to variables such as the number, age, geography and educational background of participants. Further studies are recommended to refine the findings of this study by incorporating other age groups, geographies, or populations with lower levels of education.

In conclusion, this study establishes a stronger risk preference among college students in southern China after receiving positive emotion induction, which offers valuable insights for subsequent research on Chinese emotion and decision-making, as well as psychological and business counselling practices.

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