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Risk preferences of self-esteem levels in monetary auction tasks under self-esteem threat

Jia, Xun and Hsieh, Tsung Shun*

Krirk University. Philosophy in Educational Administration, Krirk University, Thanon Ram Intra, Khwaeng Anusawari, Khet Bang Khen, Krung Thep Maha Nakhon 10220, Thailand

Abstract:

In this study, we chose monetary auction as a decision-making task, used “instructions” and “feedback” tests to put participants under two different self-esteem threat conditions. The aim was to find people’s risk preferences of self-esteem levels under self-esteem threat. In the first experiment, two instructions of the auction were used to give different self-esteem threats to the participants. In the second experiment, two creativity tests with different difficulty levels were given to the participants before the auction game, and different self-esteem threats were given through feedback after the test. Before the two self-esteem threat tests, the participants would fill in the SES questionnaire to measure the participants the level of self-esteem. At the end of the experiment process, participants were given a self-esteem threat check, utilized to detect the effects of instructions and feedback tests. Furthermore, to examine whether the effects are mainly from self-esteem threats not emotions, the participants were given the PANASemotion scales after the self-esteem threat tests. The results suggested that: in risk decision-making tasks, participants with moderate self-esteem had the highest risk preference. It was found that under the self-esteem threat conditions, decision-makers took more risks than any other group. Whereas the moderate self-esteem group tended to invest more money in monetary auction games than the high and low self-esteem groups. Emotion had no significant effect on risk preferences. Findings supported previous research results on the effect of moderate self-esteem, and the conclusion that people are riskier when faced with a self-esteem threat. It also revealed that participants with moderate self-esteem had the highest risk preference under self-esteem threat conditions. The self-esteem threat from one task would affect the decisions made to another task, thus reflecting real life conditions which is that when an individual’s self-esteem is threatened by one thing, it would affect their decision making process as a whole.

Keywords: self-esteem level, self-esteem threat, monetary auction, risk preference, emotion **Introduction**

Why would people prefer a bird in the hand over many birds in the bush? Why do people tend to choose certain known outcomes over risky options, even if they have chances to obtain more? By answering these questions, we can figure out how people make decisions in daily life, especially when at risk. Ackert, Deaves, Miele and Nguyen (2020) found that both cognitive and emotional intelligence have important effects on people's risk preference. Frederick (2005) found in a sample of subjects from several universities in the United States, that those with higher cognitive abilities were more patient and chose high risk situations. Dohmen, Falk, Huffman and Sunde (2010) support the aforementioned study as their research also found that the higher the level of cognitive ability one has, there is a higher chance that an individual is risk prone. Recent research also demonstrated a correlation between emotional intelligence and a key risk preference parameter (Charupat, Deaves, Derouin, Klotzle & Miu, 2013). Moreover, according to the value function of Kahneman and Tversky (1979), people's risk preference is related to the framework of decision- making tasks: people tend to be conservative under the gain situation (positive frame), and tend to take risks under the loss situation (negative frame). However, when an offensive demand is offered at the negotiating table, even expert negotiators may prefer to terminate negotiations rather than accept it. These seemingly irrational decision-making behaviors from an economic perspective, do not come from people's lack of rationality. Under some task frameworks people consider not only the gain or loss of money, but also the importance of capital, self-esteem. This shows that in a game situation the relationship between money and self-esteem affects individuals' risk preference and decision-making.

The influence of self-esteem level on risk decision making and monetary auction game

In economic competitive tasks people are often willing to risk losing money in order to win over their rivals (Shubik, 1971; Zhang, 2009). Marin Shubik's (1971) experiment of $1 auction is a classic example of such research evidence. Shubik found that people would rather spend far more than $1 to win a $1 bid in an auction situation. Based on the money-self-esteem exchangetheory in economic decision-making tasks, researchers generally believe that both money and self-esteem are the key points that people need to consider when making decisions, and try to reveal the complex exchange relationship between them by means of concepts such as enhancing, complementary and competition (Zhang, 2009). A few studies discuss the important role of an individual's self-esteem level in monetary self-esteem exchange, which used a dichotomy approach to focus on the two extreme levels of high and low self-esteem. However, the approach does not consider the decision-makers of moderate self-esteem level. The population has a high proportion of moderate self-esteem level individual's, thus it is necessary to focus on the moderate self-esteem groups and the effects on their risk decision-making processes.

A review of the effects of self-esteem threat and emotion on risk decision preference

In recent years, the basic theories of risk decision making mainly include: Asymmetric risk relativity, new prediction of empirical behavior and the risk tripartite method (Komaki , Mohamed&Camelia, 2021). Numerous studies have revealed the important effects from moderate self-esteem people on risky decision-making tasks. In the study of Duan (2013), a risk preference questionnaire was used to test the risk preference of participants and the risk preference of people with high, moderate and low self-esteem. The results showed that: On the loss task, those with high and low self-esteem levels took more risks than those with moderate self-esteem levels, and on the gain task those with moderate self-esteem levels took more risks than those with high and low self-esteem levels. In Zhong and Liu's (2013) study, it is shown that the self-esteem level has a significant effect on the risk preference in the monetary auction tasks. The participants with a moderate self-esteem level showed higher risk preference in the monetary auction tasks.

As to the emotion effect, researchers have previously concluded that emotions are critical to good decision-making in social settings.Emotions can influence decision-making in different ways, but mainly through three ways: expected emotions, emotions during the making of a decision and emotions after a decision. Wang (2009) found that emotions had a significant impact on the results of intertemporal decision-making, and different emotional priming conditions would also lead to different decision results.

Materials and Methods

Research hypothesis

Do different levels of self-esteem affect the outcome of risky decisions? Do their decisions change when their self-esteem is threatened? Zhang (2008) found in her study that people were more inclined to take risks in a threatening situation during a decision-making task, but there was no significant difference between those with high and low self-esteem. Could it be that people with moderate self-esteem, who make up the majority of the population, take more risks in threatening situations? This study intends to take this as its main perspective to conduct research, aiming to study the difference in people's decision making, in regard to the different levels of self-esteem and under the self-esteem threatened condition, thus formulating the following research hypotheses:

H1: In risk decision-making tasks, people with moderate self-esteem took more risks than those with high and low self-esteem.

H2: Individuals are more inclined to take risks when their self-esteem is threatened.

H3: Under the self-esteem threat condition, those with moderate self-esteem took more risks than any other group.

H4: Emotions have no significant influence on individual risk preference.

Study Design

In this study, we chose monetary auction as a decision-making task, “instructions” and “feedback” tests were used to put participants under two different self-esteem threat conditions: threatened and non-threatened; in order to study the difference in decision-making among people with different levels of self-esteem, when their self-esteem is under threat. All participants were randomly and equally assigned to the two aforementioned groups. In the first experiment, participants were given different self-esteem threats with two sets of instructions before the auction game. In the second experiment, participants were presented with two creativity tests unrelated to the auction game on a computer (Baumeister, Heatherton, & Tice, 1993). The participants were asked to complete the two tests within 6 minutes. The difficulty level of the two tests was different. The participants who were threatened by self-esteem were presented with a more difficult task, while those who were not threatened by self-esteem were presented with an easier task. At the end of the test, the experimenter gave the participants a feedback score. The participants who were threatened by their self-esteem were given low scores, and the participants who were not threatened by their self-esteem were given higher scores. In the second experiment, the feedback tests could also be used to investigate whether the self-esteem threat from other tasks would migrate to the decision-making task. That is, whether an individual’s self-esteem threatened by one thing would affect their decision making process as a whole.

Self-Esteem Scale (SES) was filled out before the two self-esteem threat experiments, to measure the self-esteem level of the participants. After the auction game and at the end of the experiment, the subjects would also fill in the self-esteem threat verification questionnaire, which was used to detect whether the self-esteem of the subjects was threatened, and to test the effectiveness of the instruction and feedback tests threat. Furthermore, to examine whether the effects are mainly from self-esteem threats not emotions, the participants were given thePositive Affect and Negative Affect Scale (PANAS) after the self-esteem threat tests, to validate the influence of emotion on the experiment results. All experiments were conducted in an undisturbed laboratory environment, and all the participants were college students who had no previous knowledge of the study.

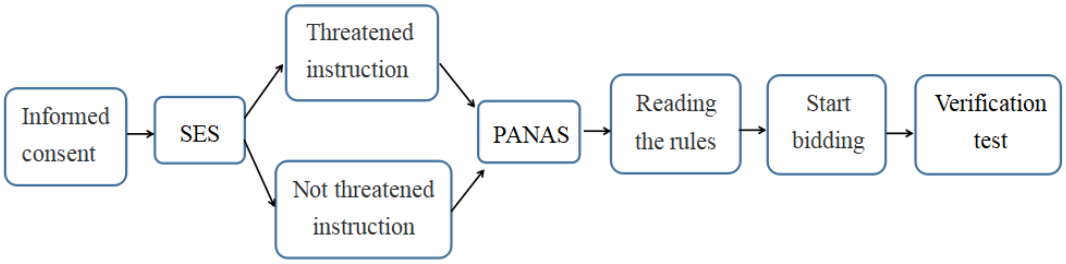

Fig 1. The first experiment procedure figure

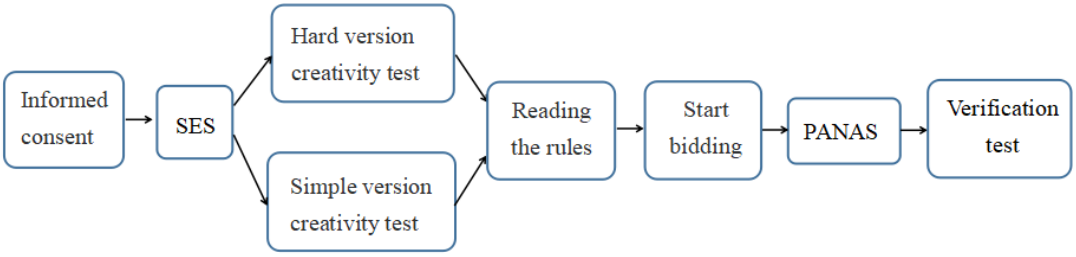

Fig 2. The second experiment procedure figure*Research tool*

The informed consent form of the participants was the final version approved by the Human Ethics Committee of East China Normal University. The self-esteem level is measured by Rosenberg (1965) 's SES scale, which is currently the most widely used tool for measuring overall self-esteem. We used the version translated by Yang and Zhang (1997). The internal consistency α

coefficient is 0.842, and the reliability is good. The scale consists of 10 questions, a scoring method proposed by Tian (2006). Each question uses a four-level scoring standard. Questions 3, 5, 9, 10 are scored in reverse. The calculated score is the participant's explicit self-esteem score. The higher the scores a participant has, the higher their explicit self-esteem is.

The verification test of self-esteem threat uses 11 points: -5 (extremely threatens self-esteem), -4 (strongly threatens self-esteem), -3 (seriously threatens self-esteem), -2 (threats self-esteem), and -1 (slightly threatens self-esteem), 0 (no effect), 1 (slightly enhance my self-esteem), 2 (improve my self-esteem), 3 (seriously improve my self-esteem), 4 (strongly enhance my self-esteem), 5 (extremely enhance my self-esteem).

Emotion was measured by PANAS scale. In this study, a revised version of Zhang, Diao and Constance (2004) was adopted. The PA and NA subscales in the Chinese scale have high inherent consistency and reliability, and meet the requirements of psychometrics. The scoring method is divided into two parts: positive emotion and negative emotion. Each question uses a five-point scoring standard, and the emotional level of 1-5 gradually increases. The score for questions 1, 3, 5, 9, 10, 12, 14, 16, 17 and 19 is the positive emotion score, and the scores of questions 2, 4, 6, 7, 8, 11, 13, 15, 18 and 20 is the negative emotion score. Decision-making experiments were monetary auction tasks, the auction game was programmed with visual basics and presented to the participants on the computer.

The first experiment

Experimental Design

3 (self-esteem: high/moderate/low) ×2 (self-esteem threat: threatened/not threatened) was used in the experimental design of the participants. The dependent variable is the amount of money spent on the auction task.

Participant

A total of 118 college students were recruited to participate in the experiment. Excluding 8 invalid participants, the effective participants were 110, and the effective rate was 93.22%. There were 50 boys and 60 girls. The participants were randomly assigned to one of two groups: one of which was threatened by self-esteem, and one of which was not. None of the participants had previously participated in similar experiments.

Experimental Process

1. The experimenter guides the participant into the independent laboratory. The first part is the participant’s informed consent procedure. The participant is required to read the participant’s informed consent and patiently answer all questions about the research, to make sure the participant understands all the experimental procedures and volunteers to participate in the experiment. After confirming to participate, participant’s fill in the informed consent form. Then the participants are informed that this experiment is divided into two parts: a personality test and auction games. First, participants are required to fill out the personality test questionnaire, which is the SES self-esteem scale.

2. Participants were then required to read a set of instructions before starting the experiment. The participants who were threatened by self-esteem read the instructions as follows:

Instructions

Here is 30 yuan as a reward for your participation in this experiment, but you must participate in the next auction game as required, and the funds obtained from the auction will be owned by you. If you usually feel suffocated under pressure, or if you don't think you have the ability to win money, then you may choose to play conservatively in the next auction game. For example, there must have been a lot of difficulties or frustrations in your past experience. When you face pressure several times, there will

be situations where you can't handle them. In the end, you may find some of the conditions challenging. The results of those tests may have a certain impact on your heart, change some of your habits, and you will be more conservative and cautious in making many decisions. However, the next game you choose, whether it is adventure or conservative, is up to you.

Participants who were not threatened by self-esteem read the instructions as follows:

Instructions

Here is 30 yuan as your reward for participating in this experiment, but you have to participate in the next auction game as required, and your final reward depends on your auction results. After the auction, all the funds you have obtained and the remaining funds will belong to you.

After reading the instructions, participants should complete the PANAS scale.

3. Participants were asked to read the auction game rules:

The rules of the game

This is an online auction game. There are three participants who will conduct the auction at the same time as you online. The auction item is Ren Min Bi(RMB). Each of you has 30 yuan as the starting capital, and each time has equal bid conditions. After the auction starts, the program will report the low price and increase specifications of each auction "item". Please bid according to the requirements. When a bidder reports a certain price, the system will start timing. Continue to increase the price, the system will start counting three times, after 3 counts no one bids, it is considered a transaction. After the auction is completed, the two bidders with the highest bids will have to pay the amount of cash, and only the bidder with the highest bids can get the "items" of the auction. Everyone can stop the auction at any time, or until the 30 Yuan base is exhausted. After the auction, all the funds you get and the rest will belong to you.

The experimenter must repeatedly confirm that the participants clearly understand the rules of the game.

4. Start bidding on the game.

The auction process is divided into four rounds of bidding. The bidding items are 5 Yuan, 10 Yuan, 20 Yuan and 50 Yuan. The whole monetary auction game is conducted on the computer. The bidding software adopts a visual basic program. In fact, there are no other three participants, they are just hypotheticals. The system will automatically bid on behalf of the other three people. The auction item obtained by the bidder will be accumulated in the bidder’s fund and can be used in the auction. When the participant decides to withdraw or runs out of 30 Yuan, the bidding game ends. The system will accumulate the bidding cost of participant in the four rounds of bidding.

Verification Test

Because we cannot directly ask whether the participants in the experiment were affected by the instructions, are they affected by threats to their self-esteem or did it stimulate their self-esteem. Therefore, it is necessary to add a verification study on the effect of the instructions, and judge with the real feelings of the subjects:

After the participants have completed all the experimental procedures, the participants will be required to fill in an assessment scale, which is the "Guideline" assessment scale allowing the participants to carefully recall their true feelings after reading the instructions.

Self-esteem threatened participants ($M = 0.44$, $SD = 2.04$) were worse than self-esteem non threatened participants ($M = 1.60$, $SD = 2.10$). $F(1, 37) = 8.691$, $p = 0.004$. Therefore, it is verified that the threat is effective.

Table 1. Self-perception in different threat groups

Threatening or not	N	Mean ± standard deviation	95%CI		minimum value	maximum value
			lower limit	Upper limit		
Threatened	55	0.44±2.04	-0.12	0.99	-5	4
Not threatened	55	1.6±2.1	1.03	2.17	-3	6
Total	110	1.02±2.14	0.61	1.42	-5	6

Results and Analysis

Division of Self-esteem

The normality test was performed on all self-esteem scores, and the significant levels were P = 0.094> 0.05 and Z = 0.081. According to the results of the K-S test, the self-esteem scores were consistent with the normal distribution.

After descriptive analysis, the mean of the overall self-esteem score was 27.84, and the standard deviation was 4.51. Participants with a self-esteem score above the average, plus one standard deviation, were defined as those with a high self-esteem level. Participants with a score less than the average, minus one standard deviation, were defined as those with a low self-esteem level and the remaining participants were those with a moderate self-esteem level. Using the analysis of variance to test the SES self-esteem scores of the three self-esteem levels, we obtained F (2,54) = 176.547, p = 0.000 <0.001, and high and moderate (p <0.001), high and low (p <0.001). There were significant differences in the self-esteem scores between the moderate and low (p <0.001) self-esteem groups, indicating that the differences between the groups were extremely significant, and the division of self-esteem levels was effective.

Amount of Bidding Expenses Under Different Experimental Conditions

Table 2. Bidding costs under different experimental conditions

Group	Self-esteem		
	High self-esteem （n=36）	Moderate self-esteem （n=40）	Low self-esteem （n=34）
Threatened by self-esteem（n=55）	28.26（5.38）	30.24（1.78）	25.20（1.96）
Not threatened by self-esteem（n=55）	26.74（7.82）	27.95（2.16）	21.32（5.58）

This research uses spss19.0 statistical software. The mean comparison of multiple groups of data uses random block analysis of variance. The pairwise comparison of the two groups of data uses LSD tests. The normality test uses KS method $\alpha = 0.05$.

After descriptive analysis, the average of the total auction spend was 27.78, and the standard deviation was 4.24. Using the self-esteem level and the threat of self-esteem as independent variables, and the amount of participants' expenditure on auction tasks as the dependent variable; a randomized block analysis of variance was performed.

The main effect of self-esteem level is extremely significant, F (2,54) = 23.497, p = 0.000 <0.001, partial η^2 = 0.494, the amount of bids for moderate self-esteem level is significantly higher than that of the high self-esteem group (P <0.001) and the low self-esteem group (P <0.001). The amount of bids spent by the participants was higher in the high self-esteem group than in the low self-esteem group (P <0.001). The main effect of the self-esteem threat is significant, F (1,55) = 32.546, p = 0.000 <0.001, partial η^2 = 0.248, indicating that the self-esteem threat group spends more money on auction tasks than the self-esteem non-threat group, thus, the self-esteem is a threat. The participants spent more money on auction tasks than those whose self-esteem was not threatened. The interaction between the self-esteem threat and the self-esteem group was F (2,54) = 3.648, p = 0.672, partial η^2 = 0.004. As shown in figure 3:

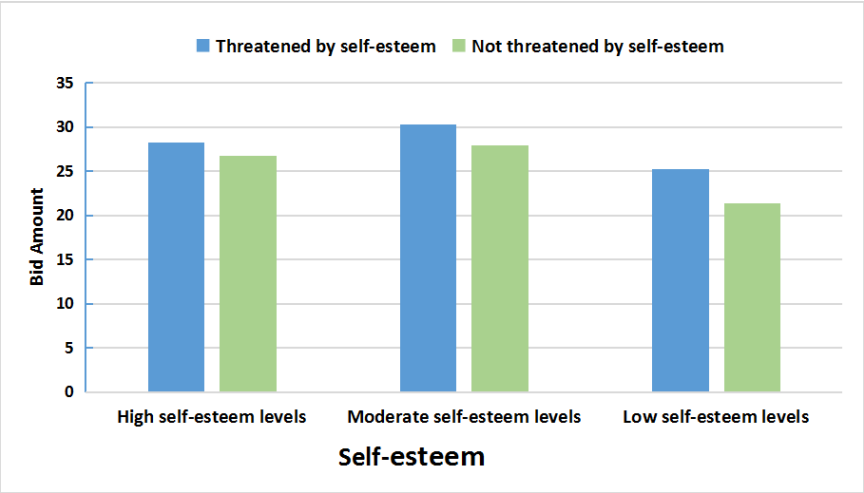

Fig 3. Interaction between self-esteem level and self-esteem threat in the first experiment

Finally, using the amount of bidding as the dependent variable and the self-esteem score as the independent variable, a square term regression analysis was performed. It was found that the square term of the self-esteem score was significant, β = -2.330, t = -2.695, P <0.01, r2 = 0.214. This result shows there is an inverted U-shape trend between the self-esteem score and the amount of bids spent, which proves that those with moderate self-esteem level have the tendency to take high risks.

Emotional Test

The PANAS scale is divided into two parts: positive emotion and negative emotion (Watson *et al*., 1988).

In terms of negative emotions, the emotions of participants threatened by self-esteem (M = 13.92, SD = 3.56) were worse than the emotions of participants who were not threatened by self-esteem (M = 12.26, SD = 2.72), t = -2.07, p <0 .05;

In terms of positive emotions, participants who were threatened by self-esteem (M = 24.47, SD = 6.28) showed less positive emotions than participants who were not threatened by self-esteem (M = 27.69, SD = 7.59) t = 2.33, p < 0.02.

Table 3. Comparison of emotions under different self-esteem threats

Emotion	Self-esteem threat		t	P
	Threatened（55）	Not threatened（55）		
Negative emotion	13.92（3.56）	12.26（2.72）	-2.0722	0.0408
Positive emotion	24.47（6.28）	27.69（7.59）	2.3343	0.0216

As can be seen from the table above, the threat of self-esteem has a certain effect on emotions. When being threatened by self-esteem, negative emotions increase extensively, and positive emotions decrease. The difference is statistically significant ($P < 0.05$).

Pearson correlation analysis was performed on the bid amount, positive emotions and negative emotions and their correlation coefficients were $r1 = 0.035$, $p = 0.25 > 0.05$; $r2 = 0.415$, $P = 0.075 > 0.05$. This indicates that there is no correlation among the score of positive emotions, negative emotions and the bidding amount. Therefore, emotion has no influence on the bidding amount and it's not the main effect in the bidding game.

Although the threat operation may affect the participants' emotions, the positive emotion score and negative emotion score were not significantly related to the bidding amount. Therefore, emotion is not the main effect in the monetary auction game.

The second experiment

Experimental Design

3 (self-esteem: high/moderate/low) ×2 (self-esteem threat: threatened/not threatened) was used in the experimental design of the participants. The dependent variable is the amount of money spent on the auction task.

Participant

A total of 113 college students were recruited to participate in the experiment. One invalid participant was eliminated, 10 invalid participants were deleted from the self-esteem group, and the number of valid participants was 102. There are 50 boys and 52 girls. The participants were randomly assigned to two groups for experiments, one group was threatened by self-esteem, and the other was not threatened by self-esteem.

All participants have not participated in similar experiments before.

Experimental Process

1. The experimenter guides the participant into the independent laboratory. The first part is the participant's informed consent procedure. The participant is required to read the participant's informed consent document and patiently answer all the questions about the research. In order to make sure the participant understands all the experimental procedures, and thus deciding to voluntarily participate in this experiment. After confirming to participate in the experiment, the participants must fill in an informed consent form.

The participants are then made aware that this experiment is divided into three parts: personality test, creativity test and a decision-making game. First, the participants are asked to fill out the personality test questionnaire, which is the SES self-esteem scale.

2. It is required by the participants to complete the creativity test in 6 minutes. After that, each participant will get a feedback score given by the experimenter. Participants threatened by self-esteem receive a difficult version of the creativity test and eventually get a low feedback score;participants not threatened by self-esteem receive a simpler version of the creativity test and get a higher feedback score.

The Creativity Test includes two questions:

Topic 1: Please list the many uses of a ring. (difficult version, used by participants threatened by self-esteem)

Please list the many uses of a brick. (simple version, not threatened by self-esteem)

Topic 2: Imagine the potential problems if people could fly.

After finishing the questions, the participants were asked to take a break and come back 3 minutes later. The experimenter gave the participants feedback and grades and continued the experiment as follows. All the following steps are the same as experiment one.

Verification Test

As in the experiment, the experimenter cannot directly ask whether the participants in the experiment were affected by the feedback score. Thus, there is a need to add a verification study on the effect of the feedback experiment, and use the participants' real feelings to judge.

After the participant has completed all the experimental procedures, the participant will be required to fill in an evaluation scale, which is the "feedback" evaluation scale, allowing the participant to think carefully about the time when they took the creativity test, and reflect on their feelings when seeing the feedback score given by the experimenter.

Self-esteem threatened participants (M = 0.3137, SD = 2.06) were worse than self-esteem threatened participants (M = 1.76, SD = 1.87). F (1, 37) = 13.831, p = 0.000. Therefore, it is verified that the threat is effective.

Table 4. Self-perception in different threat groups

Threatening or not	N	Mean ± standard deviation	95%CI		minimum value	maximum value
			Lower limit	Upper limit		
Threatened	51	0.31±2.06	-0.27	0.89	-5	4
Not threatened	51	1.76±1.87	1.24	2.29	-3	5
Total	102	1.04±2.09	0.63	1.45	-5	5

Results and Analysis

Division of Self-esteem

The normality test was performed on the self-esteem scores of all the participants, and the significance level was P = 0.131> 0.05, Z = 0.078. According to the results of the K-S test, it showed that the division of self-esteem level was in accordance with the normal distribution.

After descriptive analysis, the mean of the overall self-esteem score was 28.60, and the standard deviation was 4.77. Participants with a self-esteem score above the average plus one standard deviation, were defined as those with a high self-esteem

level, participants with a score less than the average minus one standard deviation were defined as those with a low self-esteem level, and the remaining participants were those with a moderate self-esteem level. Using the analysis of variance to test the SES self-esteem scores of the three self-esteem participants, F (2,54) = 140.597, p = 0.000 <0.001, high and moderate (p <0.001), high and low (p <0.001), the self-esteem scores were significantly different between the middle and low (p <0.001) self-esteem groups. Thus, indicating that the differences between the groups were extremely significant and the division of self-esteem levels was effective. Seventeen participants were randomly selected from the participants labelled as high, moderate, and low self-esteem, and a total of 102 participants were used as formal experimental participants.

Amount of Bidding Expenses Under Different Experimental Conditions

Table 5. Bidding costs under different experimental conditions

Group	Self-esteem		
	High self-esteem （n=34）	Moderate self-esteem （n=34）	Low self-esteem （n=34）
Threatened by self-esteem（n=51）	28.76（0.75）	32.53（2.29）	25.18（1.78）
Not threatened by self-esteem（n=51）	24.94（0.83）	27.88（1.62）	22.12（1.36）

The normality test was performed on the bid amounts of all valid participants, and the significant levels were P = 0.094> 0.05, Z = 0.081. According to the results of the K-S test, it was shown that the bidding amount conformed to the normal distribution.

After descriptive analysis, the average bid spend amount was 26.90 and the standard deviation was 3.95. Using the self-esteem level and the threat of self-esteem as independent variables, and the amount of participants' expenditure on auction tasks as the dependent variable, a randomized block analysis of variance was performed. The main effect of self-esteem level is extremely significant, F (2,54) = 155.187, p = 0.000 <0.001, partial η^2 = 0.334, the amount of bids for the middle-self-esteem group is significantly higher than that of the high self-esteem group (P <0.001) and low self-esteem group. The amount of bids spent in auctions (P <0.001), is higher in the high self-esteem groups than the amount of bids spent in the low self-esteem groups (P <0.001). The main effect of self-esteem threat F (1,55) = 159.817, p = 0.000 <0.001, partial η^2 = 0.087 has significance, indicating that the self-esteem threat group spends more money on auction tasks than the self-esteem non-threat group. The self-esteem threat and self-esteem Group interaction F (2,54) = 2.776, p = 0.108, partial η^2 = 0.007 were not significant. As shown in Figure 4:

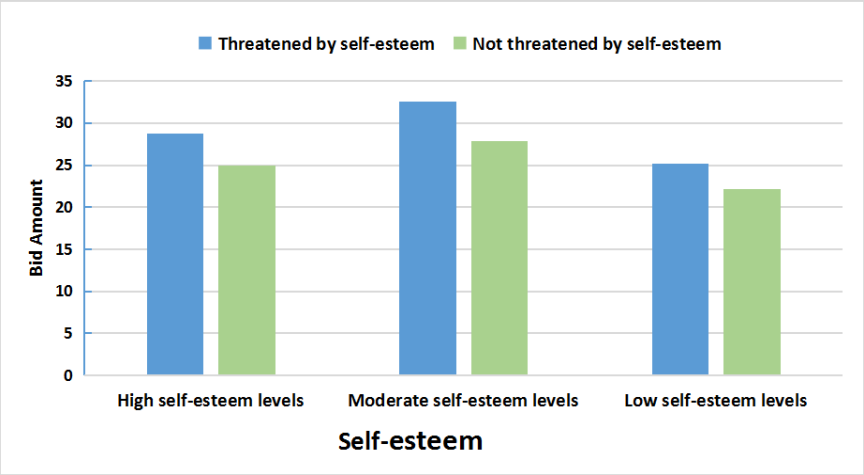

Fig 4. Interaction between self-esteem level and self-esteem threat in the second experiment

Finally, using the amount of bidding as the dependent variable and the self-esteem score as the independent variable, a square term regression analysis was performed. It was found that the square term of the self-esteem score was significant, $\beta = -0.800$, $t = -2.050$, $P < 0.05$, $r2 = 0.165$. This result shows there is an inverted U-shape trend between the self-esteem score and the amount of bids spent, which indicates that the moderate self-esteem level has a high risk trend.

Emotional Test

The PANAS scale is divided into two parts: positive emotion and negative emotion (Watson *et al.*, 1988).

In terms of negative emotions, the emotions of participants threatened by self-esteem ($M = 14.26$, $SD = 3.38$) were worse than those of participants not threatened by self-esteem ($M = 12.17$, $SD = 2.34$), $t = -3.63$, $p < 0.001$;

Whereas that of positive emotions, participants who were threatened by self-esteem ($M = 24.25$, $SD = 6.62$) showed less positive emotions than participants who were not threatened by self-esteem ($M = 27.94$, $SD = 7.47$) $t = 2.64$, $p < 0.001$.

Table 6. Comparison of emotions under different self-esteem threats

Emotion	Self-esteem threat		t	P
	Threatened (51)	Not threatened (51)		
Negative emotion	14.26 (3.38)	12.17 (2.34)	-3.6307	0.0004
Positive emotion	24.25 (6.62)	27.94 (7.47)	2.6401	0.0096

As can be seen from the above table, the threat of self-esteem has a certain effect on emotions. When the threat of self-esteem is threatened, there is an extensive increase in negative emotions but a significant decrease in positive emotions. Therefore, the difference is statistically significant ($P < 0.001$).

The self-esteem threat procedure in the second experiment is more effective than the self-esteem threat in the first experiment, and the effect on the emotions and feelings of the participants are apparent.

Pearson correlation analysis was performed on the bid amount, positive emotions and negative emotions, and their correlation coefficients were r1 = 0.405, p = 0.109> 0.05; r2 = 0.225, P = 0.064> 0.05, this indicates that there is no correlation among the score of positive emotions, negative emotions and the bidding amount. This is not the main effect in the monetary auction game.

Although the threat operation may affect the participants' emotions, the positive emotion score and negative emotion score were not significantly related to the bid amount. Therefore, emotion is not the main effect in the monetary auction game.

Discussion

In this study, it was found that individuals with threatened self-esteem tended to take more risks compared with those without threatened self-esteem. This phenomenon was also found in the study of Zhang *et al.* (2008). In the second experiment, participants were given a score after the creativity test to which the self-esteem threatened group was given a low score. Subsequent validation tests confirmed that this had an effect on their self-esteem, meaning that their self-esteem had been threatened, but then the risk decision task and the creativity test were completely unrelated. In other words, when people are threatened by their self-esteem in one test, the effect of the threat is extended to the other tests and is thus reflected in everyone who is threatened by their self-esteem. Therefore, their decision-making behavior is influenced by the creativity test in terms of taking more risks.

Zhang's *et al.* (2008) study has found that individuals prefer to go to take risks after being threatened by self-esteem, but high and low self-esteem individuals had no significant difference. This paper focuses on the characteristics of people with moderate self-esteem on risky decision-making tasks, the results of this study confirm the hypothesis that people with high self-esteem are activated and motivated after being threatened by their self-esteem, thus driving their own positivity, and then they are more willing to take risks and pay more money for self-esteem in decision-making tasks. Whereas people with low self-esteem are insensitive to the needs of self-esteem because of the bottom effect, and there is little difference between those who are threatened by self-esteem and those who are not. There is no significant difference in the decision making tasks.

People with moderate self-esteem are in the middle and not as strong as those with high self-esteem, but they don't have the bottom effect of people with low self-esteem. It takes more time for their self-esteem to be enhanced and activated. Therefore, when people with moderate self-esteem are threatened by self-esteem their self-esteem will be vigorously activated and enhanced, thus having a greater need to satisfy their self-esteem without being hurt, be willing to take risks in decision-making tasks, and pay more money to gain self-esteem. The previous study of Zhong and Liu (2013) also found that people with moderate self-esteem showed a higher risk preference in monetary auction tasks.

Conclusion

1. In risk decision-making tasks, those with moderate self-esteem are more risky than those with high and low self-esteem;

2. In risk decision-making tasks, individuals are more inclined to take risks in situations where self-esteem is threatened;

3. In the risk decision-making task, in the situation of self-esteem threat the moderate self-esteem is riskier than the high and low self-esteem;

4. In risk decision-making tasks, emotion has no significant effect on individual risk preferences.

The results support the moderate self-esteem effect found in previous studies (Zhong & Liu, 2013), and the conclusion that people are more willing to take risks in situations of self-esteem threats derived by Zhang *et al.* (2008). The results show that

people with different levels of self-esteem made different decisions when their self-esteem was threatened. People with moderate levels of self-esteem showed a tendency of willingness to take risks. The threat of self-esteem from other tasks migrate to affect the decision-making task. Therefore, the results provide external validity as it reflects that when a person is threatened with self-esteem on one task, it will affect their decision process as a whole.

Deficiencies and Future Outlook

Self-esteem can be divided into explicit self-esteem and implicit self-esteem. In this study, only the explicit self-esteem of the individual is involved and the individual's implicit self-esteem is not studied. In future experimental research, the level of implicit self-esteem should also be considered. A more complete discussion of the impact of self-esteem on risky decisions will be needed.

Regarding the impact of emotions on risk decision-making, this study is a threat to the self-esteem of the participants on the monetary auction task. If the emotions of the participants are affected, the emotional activation at this time comes from the instructions and creativity tests. The results of this study fully prove that the self-esteem threat in this study is effective, and that emotion is not the main influencing factor of the experimental results. However, it is not ruled out that other decision-making tasks or other emotional priming conditions may be biased.

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