ABSTRACT

We examined how Chinese participants reacted to hypothetical problems of managerial decision-making. We demonstrated in the study that the gain-loss situation and the information framing of choice separately affected risk preference of the participants. In addition, we examined the relationship between risk perception and goal-settings (achievement motives) of the participants.
INTRODUCTION

Confronted with a sure option and a gamble of equivalent expected value, one may either choose
the sure option as a result of being risk averse or choose the gamble by being risk-taking.
Among various findings of risky choice, reflection effects and framing effects have drawn a
great deal of attention following the seminal work by Kahneman and Tversky and Kahneman
(1981). Reflection effects refer to the findings that people tend to be risk averse in gain situations
but risk seeking in loss situations. Accordingly, one would prefer a sure $100 to a gamble with a
50% chance of getting $200 and 50% chance of getting nothing. Framing effects, on the other
hand, refer to the change or even reversal in risk preference as a result of how the same choices
are described, or framed. When an expected outcome is framed as-if it is a gain, one tends to be
risk averse. However, when the same outcome is framed as-if it is a loss, one often inconsistently
becomes risk seeking.

The situational (gain-loss) reflection effects and the informational framing effects are often been
confounded with each other in the decision-making literature (also see Fagley, 1993; Wang,
1996, on this issue). We argue that the two effects are conceptually distinct and thus empirically
separable. Reflection effects and framing effects are conceptually distinctive; the former is
situational, but the latter is informational. Reflection effects are not only found in hypothetical
situations but also in real gain-loss situations. Firms in loss situations were more risk taking than
those in gain situations, and vice versa (see March, 1988, for a review).
Recent studies suggest that two mediating factors of both reflection and framing effects are the opportunity-threat perception (e.g., Highhouse & Paese, 1996) and motivation of the decision-maker (e.g., Levin, Schneider, & Gaeth, 1998; Lopes, 1988). In this study, we explored how these two mediating factors influence risk choice in gain-loss situations. Perceiving risky events as either threats or opportunities may be, in part, a function of personality. One dispositional difference that may reflect the differential attentions to opportunity and to treat is the balance between the motive to achieve and the motive to avoid failure. In his pioneering work, Atkinson (1957) linked the literature of motivation with the literature of risky choice. Atkinson distinguishes the motive to achieve (achievement motive) from the motive to avoid failure (avoidance motive) and explains risk-taking behavior in terms of the dynamics between these two motives.

We argue that achievement motive and avoidance motive influence risk-taking behavior by means of risk perception, where achievement motive directs attention to opportunities and avoidance motive directs attention to threats. It is conceivable that in a gain situation, even the individuals who have a lower achievement motive would be able to see more opportunities than threats. Therefore, the difference in the achievement motive would be most likely to be observed in a loss situation where low-achievement motive individuals would see more threats and high-achievement motive individuals would still see opportunities. For the same token, in a loss situation, even the individuals who have a lower avoidance motive would be able to see more threats than opportunities. Therefore, the avoidance motive would exhibit its effects most significantly in a gain situation where individuals low in avoidance motive would see more opportunities and individuals high in avoidance motive would still see threats.
The preceding conceptual analysis led to the following hypotheses. Hypothesis 1. Reflection effects and framing effects can be separated using hypothetical managerial tasks. This is, the participants are expected to be more risk averse given a gain scenario but more risk seeking given a loss scenario. Independent of gain-loss situation, participants were expected to be more risk averse when the outcomes are framed in terms of chance of failure (a threat frame) but more risk seeking when the outcomes are framed in terms of chance of success (an opportunity frame).

Hypothesis 2. The opportunity perception should be stronger in the domain of gains whereas the threat perception should be stronger in the domain of losses.

Hypothesis 3. However, the participants who have a higher achievement motive should see a greater opportunity at risk even when things are going badly (in losses) than those with a lower achievement motive. In contrast, the participants who have a higher avoidance motive should see a greater threat at risk even when things are going well (in gains) than those with a lower avoidance motive.

METHOD

Two hundred and seventy six volunteer students (120 females and 156 males) recruited from three universities in Beijing and Chongqing areas of China participated in this study. The average age of the participants was 21.4 years of age.
In accordance with a two (gain and lose situations) by two (positive and negative frames) design, each participant was presented with two managerial decision scenarios with a counterbalanced framing condition. One decision scenario was presented in a gain situation and the other in a loss situation. The participants were asked to imagine themselves in the role of a newly appointed vice-president of a large multinational corporation. The instructions emphasized that the vice-president must make the decision alone, given only the information available. The scenarios presented participants with correspondence from the head of a special team assigned to investigate the prospects of a project in a Chinese business context. The memo was basically the same as that used by MacCrimmon and Wehrung (1986, p. 310), except that we had two versions of the letter, differing only in the framing of the estimated chance of success or failure of getting a large market share.

The gain (ATC) scenario under opportunity frame (chance of success) read as follows: "Our new analysis indicates that, if we choose to compete with ATC, capturing a large market share would give us an after-tax return on investment of 22%, while capturing a small market share would give us a return of only 10%. We estimate a 1 in 3 chance of getting a large market share. If we were to team up with ATC on the terms proposed, our return would be 14% after tax, with the same total investment."

The gain (ATC) scenario under threat frame (chance of failure) read as the same as the above, except the chance estimate was framed as "We estimate a 2 in 3 chance of getting a small market share". The loss scenario was presented in memo about a lawsuit. The memo was submitted to
the vice president (assumed role by the participant) from the director of a subsidiary describing a
dilemma concerning whether to fight an impending patent violation suit or settle out of court.

The loss (PMG) scenario under opportunity frame (chance of success) read as following: "If we
do not agree to this proposal, PMG will file their suit. If we lose in court, we will incur about
1,100,000 Yuan in damages, including cash payment, the loss of dropping a production line, and
all the legal expenses. On the other hand, if we win in court, we will incur only a small sum for
legal expenses. Our corporate lawyer estimates that we have a 1 in 3 chance of winning the case".
The loss (PMG) scenario under threat frame (chance of failure) read as the same as the above,
except the last sentence was replaced by "Our corporate lawyer estimates that we have a 2 in 3
chance of losing the case".

Following each individual case, participants were asked to indicate on a 7-point scale how
agreeable they were to each of the choice alternatives, with 1 representing completely disagree
and 7 representing completely agree. For the ATC case, the risk averse choice (to team up with
ATC) is denoted ATCra; and the risk seeking choice (to compete with ATC) is denoted ATCrs.
Similarly, for the PMG case, PMGra represents the risk-averse choice (to settle out of court) and
PMGrs represents the risk-seeking choice (to engage in a lawsuit). In all these cases, higher
number indicates a stronger preference, either risk averse or risk seeking. Each participant
received both the ATC case and the PMG case, with balanced framing conditions. For each
participant, one case was framed positively and one case was framed negatively.
A second measure was used to assess the perceived opportunities and threats. The measures were adopted from the opportunity-threat perception scale used in the Highhouse and Paese study (1996). The measure contained five threat-items and five opportunity-items. The opportunity-related items included "Positive", "May gain and unlikely to lose", "Success is likely", "You have control", and "Opportunity". The threat-related items included "Negative", "May lose and unlikely to gain", "Personal loss involved", "Your actions constrained", and "Threat". Participants were asked to indicate the degree to which each item was descriptive of each decision problem (ATC or PMG), on a seven-point scale that ranged from (1) "Not appropriate at all" to (7) "Completely appropriate".

A third measure used was the Organizational Behavior Motive Scale for Managers (OBMS) designed for Chinese subjects by Guo, et al (1998). Each participant was given two sub-scales from the OBMS for measuring achievement motive and avoidance motive of the participant. There were 18 items designed to measure achievement motive, 16 items to measure avoidance motive, and 8 items for validity control. Each item was a statement, such as "I often feel nervous when performing a task that has no certainty of success" or "I like to try the tasks that others fail to complete." Both achievement motive and avoidance motive measures used a 1 to 5 scale, representing completely disagree, mostly disagree, neither disagree nor agree (hard to say), mostly agree, and completely agree, respectively.

RESULTS AND DISCUSSION
Hypothesis 1: Separate Reflection and Framing Effects

The risk preference varied across the gain-loss dimension. For the risk-aversion measures, PMGra (M = 2.91, SD = 2.24) was significantly lower than ATCra (M = 3.45, SD = 2.29); t (2-tailed, 1, 275) = 2.865; p < .004. For the risk-seeking measures, PMGrs (M = 3.82, SD = 2.12) was significantly higher than ATCrs (M = 3.45, SD = 2.29); t (2-tailed, 1, 275) = 1.978; p < .049. Both measures showed that the participants were more risk seeking in the loss (PMG) situation but more risk averse in the gain (ATC) situation.

The framing effect was partially found. Of the four risk preference mean scores, the predicted framing effect was significant only in the PMGra measure (M = 2.64 under opportunity frame and 3.25 under threat frame, t[2-tailed] = 2.25, p = .025). The participants were less risk averse under the opportunity frame than under the threat frame. The data showed that the reflection effects and framing effects were separable.

Hypothesis 2: Opportunity-Threat Perception in Gains and Losses

Hypothesis 2 was supported. The participants saw greater opportunities in the gain (ATC opportunity score = 5.44) situation than in the loss (PMG opportunity score = 4.73) situation, p < .0001. However, the participants saw greater threats in the loss (PMG threat score = 3.43) situation than in the gain (ATC threat score = 2.86) situation, p < .0001.
Hypothesis 3: Gain-Loss Dependent Effects of Achievement and Avoidance Motives on Risk Perception

The two predictions from Hypothesis 3 received a strong support. Using the SPSS cluster analysis, we classified the participants, on the basis of their Ach scores, into either the high Ach or the low Ach group. As predicted, in the PMG situation but not in the ATC situation, the participants in the high achievement motive group had a significantly higher mean score of opportunity perception (PMGoppt = 4.92, SD = 1.09) than those in the low achievement motive group (PMGoppt = 4.38, SD = 0.99, t = 4.10, p < .000). However, no significant difference in threat perception was found between the two groups of participants. Using the SPSS cluster analysis, we then classified the participants, on the basis of their Avo scores, into either the high Avo or the low Avo group. Again as predicted, in the ATC situation but not in the PMG situation, the participants in the high avoidance motive group had a significantly higher mean score of threat perception (ATCthreat = 2.98, SD = 0.98) than those in the low avoidance motive group (ATCthreat = 2.74, SD = 0.89, t = 2.15, p = .032). However, no significant difference in opportunity perception was found between the two groups of participants. Although the achievement motives had significant effects on opportunity-threat perception, no effects of the achievement motives on risk preference was found. It appeared that the choice preference of the participants was largely determined by the situational variable (i.e., ATC vs. PMG).

CONCLUSIONS
In our study, a significant reflection effect was found. Participants were more risk averse in the gain situation but more risk seeking in the loss situation. The reflection effects were empirically dissociated from the framing effects. The direction of the framing effect was, as predicted, opposite to the direction of typical framing effects. Our participants were more risk taking under the positive opportunity frame than under the negative threat frame, and vice versa. This result suggests that the gain-loss framing and opportunity-threat framing may activate different strategies of risk management.

The achievement motives was proven to be another dimension underlying risk perception. In this study, we demonstrated a gain-loss situation-dependent effect of dispositional motives. The achievement motive was most effective in the domain of losses, where the individuals with higher achievement motive were more likely to see risks as opportunities than those with lower achievement motive. In contrast, the motive to avoid failure had its strongest effects in the domain of gains, where the individuals with higher avoidance motive were more likely to see risks as threats than those with lower avoidance motive.

The different effects of achievement motive and avoidance motive on risk perception call attention to the role of enduring personal characteristics in managerial decision-making, as suggested by Lopes (1987). The two types of motives may also serve as a motivational basis for goal setting. As suggested by March and Shapira (1992), managerial decision making can often be better understood in a two-reference-points model (e.g., March’s variable risk preference model, 1988). March’s model assumes that risk preference of a decision-maker is constrained by two reference points, one for "success" and one for "survival". Our results suggest that
achievement motive influences the goal setting for "success" and the avoidance motive regulates the minimum requirement for "survival".

REFERENCES


Levin, I. P., Schneider, S., & Gaeth, G. J. 1998. All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76: 149-188.


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