ATTENTIONAL CHARACTERISTICS OF CHINESE COLLEGE STUDENTS RECEIVING SOCIAL THREAT CUES IN REJECTION SITUATIONS

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We investigated the attentional characteristics of 98 Chinese college students when they received social threat cues in explicit and ambiguous rejection situations, and further examined the moderating effect of degree of rejection sensitivity. Participants were instructed to play an interactive game in pairs, after which they completed the Rejection Sensitivity Questionnaire for College Students and, finally, a dot-probe task. The results showed that all participants had an attentional bias toward social rejection cues in both social rejection and general situations. In the ambiguous rejection situation, highly rejection-sensitive individuals showed attentional bias and tended to avoid social threat cues and nonsocial negative cues. Degree of rejection sensitivity moderated the relationship of ambiguous rejection, influencing individuals’ attentional processing of threat cues. We sought to develop some specific interventions that could be used to alert highly rejection-sensitive college students to the characteristics of the attentional processing strategies they use for social avoidance.

Keywords: rejection sensitivity, attentional bias, attention orienting, attention maintenance, social threat cue.

Human beings are fundamentally and pervasively motivated by a need to belong. They fear being rejected by others (Baumeister & Leary, 1995). Perceived social rejection can trigger affective and behavioral responses ranging from social withdrawal to aggression, and can result in compromised social relationships and reduced individual well-being (Kawamoto, Nittono,
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& Ura, 2014). However, people differ in their readiness to perceive and react to rejection. Some readily perceive intentional rejection in minor situations or imagine insensitivity shown by their significant others and overreact in ways that compromise their relationships and adversely impact their well-being. Others interpret undesirable interpersonal events benignly and maintain their equanimity (Downey & Feldman, 1996).

This difference in individuals’ readiness to perceive and react to rejection is termed rejection sensitivity (RS), defined as the disposition to anxiously expect, readily perceive, and intensely react to rejection (Downey & Feldman, 1996). Therefore, individuals described as high in RS (HRS) are highly anxious when being rejected, whereas low in RS (LRS) people are those who tend to be calm when being rejected. Individuals react to socially threatening information according to their level of RS. In general, HRS individuals perceive rejection when receiving ambiguous cues more readily than do LRS individuals (Downey & Feldman, 1996). Ayduk et al. (2008) found that HRS individuals were more inclined to avoid social situations in which they risked being rejected. Gleason, Iida, Shrout, and Bolger (2008) found that HRS individuals become off balance when they suffer rejection in intimate relationships, are more inclined to evaluate interpersonal relationships negatively, and show a greater tendency to break up with their romantic partner or spouse. Therefore, during social interactions, HRS individuals face the disadvantage of readily perceiving and overreacting to rejection, and the perception and the overreaction are both facilitated by their tendency to be anxious and to expect rejection by the significant others in their life (Downey & Feldman, 1996). When presented with ambiguous information, HRS individuals are likely to focus their attention on information related to threat, whereas they focus little attention on external information that could produce less threatening interpretations (Liu et al., 2015). In addition, in the condition of a neutral social cue, some people, such as socially anxious or shy individuals, overinterpret this as a threat cue (Heeren, Coussement, & McNally, 2016). Therefore, we inferred that HRS individuals might react very sensitively to neutral social cues and might even overinterpret them as threat cues.

It has been reported that people with specific personality traits showed obvious attentional bias to threat cues. For example, people who are highly narcissistic demonstrated a processing bias toward negative information and showed great sensitivity to threat cues while reacting intensively to both social cues and cues that were not related to social interactions (Zhang, Liu, Xie, & Li, 2015). HRS individuals belong to a specific group and have a high degree of anxiety, low self-esteem, and display symptoms of neuroticism (Liu et al., 2015). Therefore, we inferred that HRS individuals might display attentional bias toward threat cues. Furthermore, previous researchers have investigated the effects of RS on individuals’ reactions in different rejection situations. For example, Liu et al. (2015) found that RS moderated the impact of explicit and ambiguous rejection
situations on the level of negativity of individuals’ emotions, in that, the higher the individual’s level of RS, the more negative were the emotions that he or she experienced. Therefore, we further inferred that HRS individuals might show attentional characteristics toward threat cues in explicit and ambiguous rejection situations that were different from the characteristics shown by LRS individuals. In summary, we proposed the following hypotheses:

**Hypothesis 1:** Highly rejection-sensitive individuals will be sensitive in their reaction to neutral social cues and will overinterpret them as threat cues.

**Hypothesis 2:** Highly rejection-sensitive individuals will show attentional sensitivity toward threat cues.

**Hypothesis 3:** Highly rejection-sensitive individuals will display different attentional characteristics toward threat cues in explicit rejection situations from the characteristics they display toward threat cues in ambiguous rejection situations.

### Method

**Participants**

We randomly recruited 98 individuals who were students at Ningbo University (44 men, 54 women) with a mean age of 20.4 years (range = 19 to 23 years; \( SD = 0.92 \)). All participants had normal or corrected-to-normal vision and were familiar with computer operations. Each participant gave us written consent to use their test results in our experiment and they were each paid RMB10 (US$1.50) as compensation. The Human Research Ethics Committee of Ningbo University approved this study.

**Procedure**

Participants were first instructed to play an interactive game in pairs, following which their interactive status and their impression of their partner were evaluated in the first stage. The experimenter, who was a postgraduate student at Ningbo University, pretended to score the participants for their results in the interactive game while actually completing the Rejection Sensitivity Questionnaire for College Students (Zhao, Li, & Zhang, 2012). Thereafter, the participants were instructed to enter another room and each sit in front of a computer screen, seated opposite to each other. After the participants had received feedback, they were asked to complete a dot-probe task (Dandeneau & Baldwin, 2004). Among the students, 34 received explicit rejection feedback, 31 received ambiguous rejection feedback, and 33 received control feedback. For the explicit rejection group, the experimenter told the participants that their partner was not willing to cooperate with him or her in the computer games to be played later, and that he or she could participate only in the computer experiments in which he or she would be working on his/her own. For the ambiguous rejection group, the experimenter
told the participants that they had no chance to participate in the computer games, and that they could only participate in the computer experiments in which they would be working on their own. For the control group, the experimenter told the participants that there was something wrong with the game programs and that they could participate in the computer experiments with their partner.

Before the commencement of the dot-probe task, 12 practice trials were presented to familiarize the participants with the task. Finally, the rationale of this study was explained to the participants and they were asked not to discuss the content of the study with anyone.

Measures

Rejection Sensitivity Questionnaire for College Students. We used the revised Rejection Sensitivity Questionnaire for College Students (Zhao et al., 2012), which is an 18-item measure of the tendency to experience anxiety or concern about the possibility of being rejected, and the extent to which an individual expects to be rejected (Feldman & Downey, 1994; Zhao et al., 2012). Respondents are presented with 18 brief scenarios and asked to provide answers to the following two questions for each scenario: to what degree they believe that they are likely to be rejected (1 = very unlikely to 6 = very likely), and how concerned they are about the potential rejection (1 = very unconcerned to 6 = very concerned). Scores for each response are averaged across the scenarios to create two subscale scores, which are then averaged together to create a single mean score (Peters, Eisenlohr-Moul, & Smart, 2016). In the current study, this questionnaire was shown to have good internal consistency (α = .84).

Materials used in the dot-probe task. According to the method set out by Dandeneau and Baldwin (2004) when using a dot-probe task, we selected social rejection and nonsocial negative words to represent social threat and nonsocial negative cues. First, we preselected 23 social rejection and nonsocial negative words, commonly used in everyday situations. Next, we invited 20 college students to rate these words for level of arousal, intensity, familiarity, and valence. On the basis of the students’ ratings, we selected eight social rejection words and eight nonsocial negative words from the original list of 23 that had a high level of correlation. Neutral words (tea, hoe, soy, coach, mouse, eraser, chair, and number) were selected from those used in previous studies (Zhang et al., 2015) and these were also rated by the students. Results indicated that these eight words met the requirement of being neutral in terms of negativity and social threat.

Experimental Design

A 3 (experimental condition: explicit rejection group, ambiguous rejection group, control group) × 3 (type of words: social rejection words, nonsocial negative words, neutral words) mixed design was used. Experimental condition
was considered as the between-subjects variable, word type was considered as a within-subjects variable, and the index of the dependent variable was the length of reaction time participants took in distinguishing the position of the target words. According to the method used by Zhang et al. (2015), we adopted the following calculations:

In order to assess attention orienting, participants were instructed to determine as quickly as possible the position of the target stimuli of social rejection and nonsocial negative words (no time limit was imposed), with neutral words acting as interference in the participants’ reaction to the target words. Participants’ reaction time and hit rate were recorded in order to determine the characteristics of their attentional sensitivity to the social rejection words and nonsocial negative words. To assess attention maintenance, participants were instructed to determine the position of target stimuli of neutral words as quickly as possible with the social rejection words and nonsocial negative words acting as the interference. Participants’ reaction time and hit rate were recorded.

Results

Descriptive Statistics

Data from practice and filler trials were removed, and trials with errors were discarded (2% of data). In accordance with a previous study in which the dot-probe task was used (Zhang et al., 2015), trials with response latencies < 200 ms or > 1,500 ms, and trials with latencies more than 2 standard deviations above the participant’s mean latency were then excluded as outliers (2% of data). We also excluded one participant with an exceptionally high error rate (91.4%).

We compared the reaction time of participants in the three experimental conditions we had used for detecting the four types of target words (social rejection words, neutral words paired with social rejection words, nonsocial negative words, and neutral words paired with nonsocial negative words). The results indicate that, compared to the reaction time of the ambiguous rejection group ($M = 382.39$, $SD = 51.99$; $M = 390.08$, $SD = 47.61$; $M = 391.15$, $SD = 43.83$; $M = 390.10$, $SD = 46.18$) and the control group ($M = 386.25$, $SD = 51.83$; $M = 386.42$, $SD = 51.70$; $M = 381.48$, $SD = 52.85$; $M = 387.59$, $SD = 56.43$), the reaction time of the explicit rejection group was longer for social rejection words ($M = 384.24$, $SD = 40.49$), for neutral words paired with social rejection words ($M = 398.17$, $SD = 47.03$), for nonsocial negative words ($M = 393.96$, $SD = 49.16$), and for neutral words paired with nonsocial negative words ($M = 394.30$, $SD = 51.50$). These results also indicate that the reaction time of the participants to neutral words paired with nonsocial negative words was the longest in all three of the experimental conditions (longest time $= 394.30$ ms, $SD = 51.50$; shortest time $= 382.39$ ms, $SD = 51.99$).
Participants’ Attentional Characteristics in Regard to Threat Cues in Different Rejection Situations

In accordance with the method used by Dandeneau and Baldwin (2004), we analyzed the attentional characteristics of the participants in regard to threat cues in the different rejection situations. Results showed that the reaction time for the attentional bias of the explicit rejection group when viewing social rejection words was -13.93 ($SD = 6.54$) and the reaction time for attentional bias of the ambiguous rejection group was -7.69 ($SD = 4.38$). By contrast, the reaction time for attentional bias of the explicit rejection group when viewing nonsocial negative words was -3.15 ($SD = 7.67$) and the reaction time for attentional bias of the ambiguous rejection group was -6.14 ($SD = 2.98$).

We then performed a 2 (experimental condition: explicit rejection, ambiguous rejection) × 2 (type of words: social rejection words, nonsocial negative words) × 2 (probe position: congruent, incongruent) analysis of variance. There were no significant main effects of experimental condition, $F(1, 89) = 0.27$, $p = .726$, type of words, $F(1, 89) = 0.55$, $p = .628$, or probe position, $F(1, 89) = 0.11$, $p = .865$, although there was a significant interaction between experimental condition and type of words, $F(1, 89) = 9.65$, $p < .01$, $\eta^2_p = 0.102$. A least significant differences (LSD) test was used to clarify the degree of difference among the groups in the different conditions. The results of the LSD test revealed that the reaction time of the explicit rejection group was longer than that of the ambiguous rejection group when the cues were of the social threat type, $t(42) = 2.88$, $p < .01$. This indicates that the explicit rejection group was more sensitive than the ambiguous rejection group was to social-threat cues, whereas there was no significant difference in the length of reaction time between the explicit rejection group and the ambiguous rejection group with regard to nonsocial negative cues, $t(36) = 1.65$, $p < .01$. These results indicate that all participants showed attentional bias to social threat cues irrespective of whether they were in a social rejection situation or general situation.

Highly Rejection-Sensitive Participants’ Attentional Characteristics in Regard to Social Rejection Cues in Ambiguous Rejection Situations

In the case of participants’ attentional sensitivity in regard to social rejection cues, there was a significant interaction between experimental condition and RS ($\beta = -8.19$, $p < .05$), indicating that RS moderated the impact of ambiguous social rejection on participants’ attentional sensitivity to social rejection cues. In accordance with the method followed by Liu et al. (2015), we performed a simple slope test on the moderating effect of RS. The results indicate that the different experimental conditions marginally predicted attentional sensitivity to social rejection cues among HRS individuals ($b_{\text{simple slope}} = -93.68$, $t = -1.94$, $p = .051$).
By contrast, experimental condition did not significantly predict attentional sensitivity to social rejection cues among LRS individuals \((b_{\text{simple slope}} = -35.89, t = -1.57, p = .082)\). Therefore, these results indicate that HRS individuals were more sensitive to social rejection cues in ambiguous rejection situations in comparison to those in the control condition (see Figure 1).

![Figure 1](image_url)

**Figure 1. Interaction of experimental condition, attentional bias, and rejection sensitivity in an ambiguous rejection situation.**

In the case of attentional disengagement in regard to social rejection cues, there was a significant interaction between experimental condition and RS \((\beta = -8.09, p < .05)\), indicating that RS moderated the impact of ambiguous social rejection on participants’ attentional disengagement from social rejection cues. We performed a simple slope test on the moderating effect of RS and the results indicate that experimental condition marginally predicted attentional disengagement from social rejection cues among HRS individuals \((b_{\text{simple slope}} = -93.68, t = -1.94, p = .051)\). By contrast, experimental condition did not significantly predict attentional disengagement from social rejection cues among LRS individuals \((b_{\text{simple slope}} = -86.23, t = -1.86, p = .069)\). Moreover, experimental condition did not significantly predict attentional disengagement from social rejection cues among LRS individuals \((b_{\text{simple slope}} = -29.14, t = -1.32, p = .199)\). These results indicate that HRS individuals deviated their attention deviation from, and avoided, social rejection cues in ambiguous rejection situations (see Figure 2).
With respect to attentional sensitivity to nonsocial negative cues, there was a significant interaction between experimental condition and RS ($\beta = -8.29$, $p < .05$), indicating that RS moderated the impact of ambiguous social rejection on participants’ attentional sensitivity to nonsocial negative cues. We performed a simple slope test on the moderating effect of RS and the results indicate that experimental condition marginally predicted attentional sensitivity to nonsocial negative cues among HRS individuals ($b_{\text{simple slope}} = -76.50$, $t = -1.64$, $p = .051$). Moreover, experimental condition did not significantly predict attentional sensitivity to nonsocial negative cues among LRS individuals ($b_{\text{simple slope}} = -17.69$, $t = -0.81$, $p = .420$). These results indicate that HRS individuals were more sensitive to nonsocial negative cues in ambiguous rejection situations in comparison to those who were in the control conditions (see Figure 3).

With regard to attentional disengagement from nonsocial negative cues, there was a significant interaction between experimental condition and RS ($\beta = -8.60$, $p < .05$), indicating that RS moderated the impact of ambiguous social rejection on participants’ attentional disengagement from nonsocial negative cues. We performed a simple slope test on the moderating effect of RS and the results indicate that experimental condition marginally predicted attentional disengagement from nonsocial negative cues among HRS individuals ($b_{\text{simple slope}} = -87.36$, $t = -1.84$, $p = .052$). By contrast, experimental condition did not
significantly predict attentional disengagement from nonsocial negative cues among LRS individuals ($b_{\text{simple slope}} = -86.23$, $t = -1.86$, $p = .069$). Moreover, experimental condition did not significantly predict attentional disengagement from nonsocial negative cues among LRS individuals ($b_{\text{simple slope}} = -28.82$, $t = -1.28$, $p = .207$). These results indicate that HRS individuals deviated their attention deviation from, and avoided, nonsocial negative cues in ambiguous rejection situations (see Figure 4).
In addition, we found that RS did not moderate the impact of explicit social rejection on participants’ attentional sensitivity to ($\beta = -2.58, p = .063$) and attentional disengagement from ($\beta = -1.02, p = .072$) social rejection cues. Moreover, we also found that RS did not moderate the impact of explicit social rejection on participants’ attentional sensitivity to ($\beta = -1.99, p = .066$) and attentional disengagement from ($\beta = -2.67, p = .075$) nonsocial negative cues.

**Discussion**

According to the sociometer theory of self-esteem (Liu & Zhang, 2016), monitoring the need for belongingness is a function inherent in the evolutionary process, and social rejection poses a threat to one’s need to belong (Liu, Zhao, & Zhang, 2016). Therefore, individuals might show a cognitive bias toward information containing social norms when suffering from social rejection, and they might be more sensitive to rejection cues and even have a cognitive bias toward all threat cues. Previous researchers have indicated that HRS individuals tend to interpret, or imagine, as rejection other people’s behaviors that might be neutral in the eyes of individuals who are not HRS (Dandeneau & Baldwin, 2004). Thus, when such interpretation or imagining occurs, the responses and reactions of HRS individuals might be negative, and might undermine their interpersonal relationships and, in turn, result in the outcome that they feared. We found that HRS individuals had attentional bias toward social rejection cues irrespective of whether the situation was one of social rejection or a general situation. RS, as a defensive motivational system, is developed as a result of rejection experiences. In the later stages of social intercourse, RS makes individuals react to rejection cues and then avoid these cues in order to protect themselves (Liu et al., 2016).

We found that RS moderated the impact of ambiguous rejection on individuals’ attentional sensitivity to, and disengagement from, social rejection cues. Compared to the group of participants in the control condition, HRS individuals showed greater sensibility to social rejection cues in ambiguous situations. Moreover, HRS individuals underwent a rapid attention focus shift from cues when detecting rejection, that is, they showed a tendency to avoid social rejection cues in order to protect themselves from being hurt further. Previous researchers have revealed that HRS individuals either avoid social cues (Downey, Feldman, & Ayduk, 2000) or behave more aggressively, violently, or destructively (Downey & Feldman, 1996) to avoid rejection; however, it was this very behavior that made other people actually reject them. We also found that HRS individuals were more sensitive to nonsocial negative cues than were LRS individuals, and tended to avoid these cues in ambiguous rejection situations. When individuals used RS as a defensive motivational processing system they monitored all possible threatening signals in the environment and, accordingly, quickly adopted
protective strategies when they detected threatening signals. Therefore, HRS individuals had an attentional processing bias toward all threatening information in ambiguous situations. However, we found that the level of RS did not moderate the impact of explicit rejection on individuals’ attentional processing. We reasoned that this could be because of the high degree of explicit rejection, and that it had the same negative influence on all individuals regardless of the level of their sensitivity to rejection (Kawamoto et al., 2014).

Due to a lack of similar studies in the literature, we have not only enriched knowledge on attentional bias to social threat cues of college students who are HRS in a range of rejection situations, but have also added information to the field of research about RS. Furthermore, studying attentional bias toward social threat cues of HRS college students helps in understanding the reasons for the development of attentional bias. Moreover, targeted interventions and training would help HRS college students develop a habit of positive attentional bias that would further enhance their mental health. We sought to develop some specific interventions that could be used for alerting HRS college students to the attentional processing characteristics of the social avoidance strategies they use. Current interventions to remedy social avoidance of college students with HRS are mostly based on political dogma (Gao & Geng, 2016), and there are few training strategies targeting psychological characteristics of college students with HRS. In addition, some researchers have indicated that HRS individuals often lack emotional adjustment skills. Therefore, if these individuals were taught how to reevaluate rejection situations, it could help in reducing their sensitivity. For example, they could receive training in strategies that could be adopted in allocating their attention and controlling the focal point of their attention. To be more detailed, these students should be shown some positive and happy stimuli repeatedly (Li & Feng, 2013).

Some limitations to this study should be addressed. First, interactive activities were not standardized. For the purpose of simplifying procedures and improving the feasibility, future researchers should standardize the simulation situation, such as fixing the number of interactive partners. Second, we focused only on the attentional processing characteristics of HRS individuals in social rejection situations. Future researchers should also focus on memory bias and interpretive bias in social rejection situations; this would enrich the field of research on cognitive bias of specific groups of people, such as those who are shy or narcissistic.

References


