A Cross-Cultural Study of Schizotypy and Trait Judgments

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Abstract

Rapid and accurate judgments of social traits from faces are indispensable to successful interpersonal interactions. Anomalous trait judgment has been observed in the schizophrenia spectrum and may lead to delusion formation and reduced social functioning. Furthermore, individual differences in social trait judgments are likely to be influenced by culture and gender. The current study investigated the role of culture and schizotypal personality traits on rapid trait judgments from faces in age-matched college student samples from China and the US using a trait judgment task and a battery of self-report questionnaires. We found no relationship between schizotypy and trait judgments. However, positive schizotypy, disorganized schizotypy, cognitive empathy, and affective empathy were higher in Chinese students than in American students. We also found lower level of consummatory interpersonal pleasure among Chinese students. These findings indicated that individuals from Chinese and North American cultures differ in their tendency to make mental inferences during social interactions, as well as in how much they enjoy social interactions. These differences potentially pointed to the relative cultural specificity of the schizotypal personality construct, as well as the need for culturally specific symptom measures and diagnostic criteria.

Introduction

The idea that personality can be judged from one's face is not novel. Rather, it could be found in many ancient or modern cultures, with its culmination being the 19th century physiognomy, the pseudoscience of reading one's personality from facial features. Even though the pseudoscience of physiognomy and its prescriptive value have since been discredited, and correctly so, modern empirical studies have shown that people do make judgments about certain personal characteristics of unfamiliar faces even after only minimal exposure. In one study conducted by Willis and Todorov (2006), participants were shown unfamiliar neutral faces for 100ms, 500ms, or 1000ms, and were asked to rate their impressions of these faces on various traits such as trustworthiness and aggressiveness. Results from this study showed that as short as 100ms of exposure to an unfamiliar face is more than enough for the viewer to form a reliable impression, and judgments made after 500ms or 1000ms of exposure only differed from minimal exposure judgments with respect to viewers' confidence levels. Later studies have not only replicated this finding, but also found that people are able to form an impression regarding traits (or judge traits) of a face after 34 ms, suggesting that automatic processes were likely involved in these evaluations and that such a phenomenon was potentially evolutionarily rooted (Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015).

In support of this hypothesized involvement of rapid automatic processes, it has been shown that one important contributing factor to the rapid formation of trait inferences is the faces' structural resemblance to emotional expressions. In one study (2009), Said, Sebe, and Todorov asked participants to rate emotionally neutral faces on a set of fourteen traits such as "sociable", "attractive", "trustworthy", and "aggressive". The researchers then trained a Bayesian Network classifier to categorize, or "recognize", emotional expressions by comparing a set of

landmarks from each face to a prototypical neutral face created from averaging 1000 frontal neutral faces. The face stimuli used in the behavioral task were then submitted to this classifier, and the output posterior probabilities of each face to be a certain emotion given by the classifier were used in a correlational analysis with the trait judgment scores given by the human subjects in the behavioral task. Results from this analysis showed that judgment scores on positively valenced traits such as "responsible" and caring were positively correlated with the probabilities of the faces to be classified as happy, whereas scores on negatively valenced traits such as "mean" and "weird" were positively correlated with the probabilities of the faces to be classified as disgust or fear, and scores on "threatening" and "dominant" were positively correlated with the probabilities of an anger classification. These findings went to show that a similar process might be underlying rapid trait judgments and emotion recognition from faces, as well as to suggest the possibility that deficits in one of these tasks implicated similar deficits in the other.

One population that has been consistently and robustly shown to exhibit deficits in facial emotion recognition is patients with schizophrenia. One study (Kohler et al., 2003) found patients to be significantly impaired in the recognition of all emotional expressions, and that patients benefited less from increased intensity of the expressions than healthy controls did. Furthermore, it was also found in this study that such a facial emotion recognition deficit was particularly pronounced for negative emotions such as fear and disgust. Another study, which purported to examine the progression of facial emotion recognition deficits throughout the course of schizophrenia, found the deficits in recognizing negative emotions to be present in prodromal, first episode, as well as multiple-episode schizophrenic patients (Comparelli et al., 2013). Moreover, even though all clinical groups performed significantly worse when compared to healthy controls, there was no significant difference among the clinical groups. This finding was

interpreted as an indication that emotion recognition deficits are present early and remain stable throughout the course of schizophrenia. More comprehensively, a recent meta-analysis of eighty six studies on the topic concluded that there are large deficits of emotion perception in schizophrenia regardless of the types of task used (Kohler, Walker, Martin, Healey, & Moberg, 2010).

It could be predicted, therefore, that patients with schizophrenia would also exhibit patterns of rapid trait judgments that differ from the healthy population. Such a problem is not only scientifically intriguing, but also has significant clinical importance. Schizophrenia has recently been assessed as one of the world's most debilitating disorders (Salomon et al., 2012). A portion of the impairment in functional outcomes could be attributed to the well-established deficits in social cognitive functions in patients with schizophrenia. One social cognitive process that potentially contributes to mitigated social outcome is the rapid formation of first impression, as trait inferences have been shown to have important social consequences. In the realm of political decisions and leadership selection, one review reported that electoral preferences and appearance-based judgments of competence and dominance were robustly correlated across different countries including the US, France, Japan, New Zealand, and the UK (Olivola & Todorov, 2010). Appearance–based judgments of trustworthiness have also been shown to impact economic and judicial decision making. In laboratory studies using economic games, people were less likely to trust and invest in people who were judged to be less trustworthy based on appearance, even when records of trustworthy behaviors were presented. Moreover, the same kind of influence seems to appear in the courtroom. Defendants with faces rated as untrustworthy were shown to be more likely to receive guilty verdicts even when evidence suggested otherwise. Outside of these two domains, social-trait judgments from faces were also shown to influence

mating preferences -- even beyond perceived attractiveness (Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). A better understanding of how patients with schizophrenia make rapid trait judgments differently from the healthy population could help researchers further decipher the origin of social functional deficits in schizophrenia, and potentially inform future developments of behavioral interventions.

Indeed, researchers have recently begun to study rapid social-trait judgment in schizophrenic patients. Most of the studies have hypothesized that under a short period of exposure, patients with schizophrenia will rate faces differently than healthy controls. Even though such a hypothesis seemed reasonable given schizophrenic patients' established deficits in emotion recognition and, more broadly, socio-cognitive functions in general (Pinkham, Penn, Perkins, & Lieberman, 2003), the results have been inconclusive. In one study, individuals with schizophrenia and healthy controls were asked to rate the trustworthiness of 120 grayscale faces. The results from this study indicated that patients, when compared with healthy controls, tended to rate faces as more trustworthy, especially those faces rated as untrustworthy by the controls. Moreover, the same pattern of bias was also present in healthy siblings of schizophrenic patients, albeit to a lesser extent (Baas, van't Wout, Aleman, & Kahn, 2008). However, in a replication study conducted by the same research team, researchers failed to find significant difference between the trustworthiness rating obtained from patients and controls (Baas et al., 2008). Some researchers proposed that these mixed findings are due to the heterogeneity of schizophrenic symptoms, and that researchers should therefore focus on the relation between social judgment and specific symptoms rather than the diagnostic category, per se. In support of this claim, McIntosh et al. (2014) found that social trait judgment correlates with delusional ideations differently in patients and controls. In patients, the higher the level of delusional ideations, the

more trustworthy the faces were rated, while the opposite pattern was observed in healthy controls. This finding suggests that the formation of rapid first impression might only covary with the severity of some aspects of schizophrenia, and that future studies should test hypotheses pertaining to specific symptom dimensions rather than overall diagnostic status.

While the studies of social-trait judgment in schizophrenia reviewed above introduced intriguing results, there are two main limitations that need to be addressed. The first limitation is that most of these studies focused solely on trustworthiness, while people have been shown to generate judgments on a much wider range of social traits such as attractiveness, likability, threat, and aggressiveness. Although these measures have been shown to correlate highly with each other in healthy participant samples, such intercorrelations should not be assumed in patients with schizophrenia. For instance, one study (Haut & MacDonald III, 2010) showed that the correlation between ratings of trustworthiness and attractiveness is moderated by persecutory delusions in schizophrenia. Patients with a comparatively low level of persecutory delusions were shown to exhibit the same strength of intercorrelations as healthy controls, whereas such intercorrelations were significantly lower in patients with higher levels of persecutory delusions. The moderation effect of symptoms on the correlation among different trait judgments could itself provide important insights into how the pattern of social trait judgments in patients with schizophrenia could translate eccentric social behaviors. To address this limitation the current study collects judgment ratings on four different social traits: aggressiveness, approachability, attractiveness, and trustworthiness. Specifically we hypothesize that approachability, attractiveness, and trustworthiness ratings for each face will positively correlate with each other, whereas aggressiveness rating will be orthogonal to all three. We also hypothesize that the strength of these correlations will be moderated by symptom severity.

The second limitation was that past studies on the subject have recruited rather small samples, likely due to the inaccessibility of patients that met the inclusion criteria. While this phenomenon is inevitable from a practical point of view, overly small sample size could negatively affect the statistical power of the studies and the interpretability of the results (Button et al., 2013). To address this issue, the current study uses a larger non-clinical sample instead of a patient sample, where sub-clinical levels of schizophrenic symptoms are measured as schizotypal personality traits (schizotypy). Schizophrenia-related symptoms could be conceptualized in a continuous fashion and studied using non-clinical samples because the validity of the relationship between schizotypy and schizophrenia have been empirically supported. Schizotypal personality traits, constructed as trait-like liability for developing schizophrenic spectrum disorders, have well established dimensional links with the diagnostic categories. First of all, the three main categories of symptoms normally seen in psychotic disorders (positive symptoms, negative symptoms, and disorganized symptoms) correspond to the three-factor structure of schizotypy: cognitive-perceptual, interpersonal, and disorganized. Both the factor structure and the parallelism have received considerable amount of evidence from a wide range of paradigms and demographics, ranging from first biological relatives to community adolescents (Raine, 2006).

Second of all, schizotypy has been shown to be predictive of later diagnoses in the schizophrenic spectrum disorders category. In one ten year longitudinal study of 534 individuals with psychometrically defined high schizotypy individual, both the positive and the negative factors were predictive of later diagnosis in the schizophrenia spectrum disorders category (Kwapil, Gross, Silvia, & Barrantes-Vidal, 2013).

Third of all, schizotypy has shown good construct validity. Psychometrically assessed schizotypy was associated with symptom ratings made in accordance with diagnostic tools (Barrantes-Vidal et al., 2013a). More specifically, in another study that employed the experience sampling methodology, psychometrically assessed positive schizotypy was found to be associated with psychotic-like symptoms and paranoid experiences, whereas negative schizotypy was associated with negative symptoms. These findings also demonstrated that schizotypy exhibited dimension-specific correlations with distinct symptom categories, and could be utilized in studies with dimension-specific hypotheses. Particularly relevant to the subject of the current study, negative schizotypy, but not positive, was shown to correlate with increased activity in brain areas associated with empathy and mentalizing during relevant tasks. Based on the abovementioned rationales, we hypothesize that ratings for attractiveness, approachability, and trustworthiness will correlate negatively with participants' scores on the interpersonal factor, whereas ratings for aggressiveness would show a positive correlation.

Last but not least, the current study explores cultural and gender differences in schizotypal personality and social trait judgments, as well as how these differences modulate the relationship between the two. On one hand, cultural differences have been shown in the extent to which participants make spontaneous trait judgments, as well as how these judgments were made. In one study, participants were asked to memorize pairs of faces and trait-implying behaviors. The participants were then primed with previously memorized faces before they were asked to complete a lexical decision task with trait words implied by behaviors in previous pairings. Such priming showed a large effect for European American participants whereas no effect was found for Asian American participants, indicating that participants from European American culture but not Asian American culture made spontaneous inferences of personality

traits for the face stimuli (Na & Kitayama, 2011). In another study, Western participants were shown to be better and faster at identifying faces with enhances salience on personality trait dimensions such as trustworthiness or aggressiveness (Walker, Jiang, Vetter, & Sczesny, 2011). On the other hand, there are well characterized gender difference in schizotypal traits. Females have been shown to score higher on the positive dimensions, whereas males scored higher on the negative dimensions (Raine, 1992). We thus hypothesize that culture and gender would interact to predict scores on schizotypal personality traits, as well as ratings on the trait judgment task.

Methods

Participants

College students were recruited from Beijing, China and Nashville, TN, US. 54 Chinese students (39% female) and 39 US students (62% female) participated in the study. Among the American participants, 23 were Caucasian, 5 were African American, 6 were Asian or Pacific Islanders, 2 were Hispanic, 2 identified as multiracial, and one was Southeastern Asian. The mean age was 20.92 in the Chinese sample and 20.33 in the US sample. The two samples did not differ significantly on age ($p > .05$).

Procedures

Participants were recruited through an online research study management system and invited to the laboratories. Informed consent was obtained, and the participants were asked to fill out the battery of questionnaire. Participants were then asked to complete the computerized task, debriefed, and awarded course credits for their participation.

Materials

Trait Judgment Task

All participants were asked to complete a computerized social trait judgment task. The task was divided into four blocks. In each block, the same eighty pictures of face stimuli were presented. The participants were asked to judge all faces within the same block on one of the four social traits: aggressiveness, attractiveness, approachability, or trustworthiness. Each of the 320 trials consisted of a fixation point (1s), presentation of the face stimulus (1s), and a response slide with a picture of the scale. All judgments were made on a ten point scale from zero to nine, with zero representing the lowest value on the characteristic being rated, and nine the highest. For example, when the participants were asked to rate the faces on aggressiveness, zero was labeled "very unaggressive", three was labeled "somewhat unaggressive", six was labeled "somewhat aggressive", and nine was labeled "very aggressive". Participants were instructed to select any number from zero to nine as a response and not necessarily only the labeled numbers. Participants were also asked to make rapid responses based on their own understanding of the trait words and their first reactions when they see the faces.

Pictures of eighty emotionally neutral faces were used as stimuli in this task. Forty of the pictures were of Caucasian faces, and forty were of Asian faces. Each ethnic category contained twenty male faces and twenty female faces. The Caucasian faces were randomly selected from the neutral category of the Karolinska Directed Emotional Faces (KDEF; Lundqvist et al., 1998), whereas the Asian faces were randomly selected from neutral category of the CAS-PEAL database. All faces were applied with a standard gray scale filter, cropped into the same elliptical shape, and adjusted to the same level of brightness. In the final stimuli used in the social judgment task, no hair, clothes, or other ornamentation could be seen.

Self-report Questionnaires

Participants were also asked to fill out a battery of questionnaires.

The Schizotypal Personality Questionnaire (SPQ; Raine, 1991) was a 74-item questionnaire modeled on DSM-III-R criteria used to assess schizotypal personality traits. It was used in both the Chinese sample and the US sample to assess schizotypal traits. The Chinese version of the SPQ has been previously validated and shown to have good internal consistency and reliability (Chen, Hsiao, & Lin, 1997). Confirmatory factor analysis has also shown the Chinese version to have the three-factor structure seen in the original version.

The 17-item Anticipatory and Consumatory Interpersonal Pleasure Scale (ACIPS) was used in both samples as a complementary measure of the social anhedonia dimension of schizotypy (Gooding & Pflum, 2014). Hypohedonia, especially in the social domain, has been considered one of the hallmarks of schizotypal personality. The ACIPS was designed to measure the extent to which individuals look forward to interacting with each other, as well as their ability to derive pleasure from social and interpersonal experiences.

The Questionnaire of Cognitive and Affective Empathy (Reniers, Corcoran, Drake, Shryane, & Völlm, 2011) was a 31-item questionnaire designed to assess both the cognitive and the affective aspects of empathy. Cognitive empathy comprised two components: perspective taking and online simulation. The perspective taking component measured the individuals' ability to work out others' beliefs, knowledge, and intentions, and therefore see things from their perspectives. The online simulation component measured the extent to which individuals engaged in the kind of effortful cognitive inference that perspective taking required. Affective empathy, on the other hand, had three components. The emotion contagion component assessed the individuals' automatic mirroring of others' affective states, the proximal responsivity

measured the emotional responsiveness to others' affective states, and the peripheral component evaluated how much individuals dealt with others' emotions in a detached manner.

Results

Self-report Questionnaires

First, two-way MANOVA was conducted to test for cultural and gender differences in all questionnaire measures. All means and standard deviations from the self-report questionnaire measures are reported in Table 1 - 3.

Schizotypy (SPQ): There was a main effect of culture on the total SPQ score (F (1, 89) = 12.48, p = 0.001, η_p^2 = 0.19). Chinese students scored significantly higher than American students. There was no main effect of gender on total SPQ scores (F (1, 89) = 2.01, p = 0.160, η_p^2 = 0.19). There was no significant interaction between culture and gender (F (1, 89) = 12.48, p = 0.001, η_p^2 = 0.02).

Then we examined the effects of culture and gender on the three sub-scales of the SPQ. There was a main effect of culture on the cognitive-perceptual (F (1, 89) = 25.52, $p < 0.001$, η_p^2 = 0.22) and the disorganized factor (F (1, 89) = 6.45, p = 0.013, η_p^2 = 0.07) but not the interpersonal factor (F (1, 89) = 1.02, p = 0.315, η_p^2 = 0.01).

There was no main effect of gender on any of the sub-scales, and there was no interaction between gender and culture for the cognitive-perceptual and interpersonal factors. There was, however, an interaction of gender and cultural group on the disorganized score ((F (1, 89) = 5.42, p = 0.022, η_p^2 = 0.06, Graph 1). Males did not differ on disorganized scores across groups whereas females showed a large difference.

Interpersonal pleasure (ACIPS): for the ACIPS, there was a main effect of culture on the total score (F (1, 89) = 5.13, p = 0.026, η_p^2 = 0.06). There was no main effect of gender on total

ACIPS scores (F (1, 89) = 1.31, p = 0.256, η_p^2 = 0.01). There was no significant interaction between culture and gender (F (1, 89) = 1.90, p = 0.171, η_p^2 = 0.02).

There was a main effect of culture on consummatory interpersonal pleasure (F (1, 89) = 9.50, p = 0.003, η_p^2 = 0.10) but not anticipatory interpersonal pleasure (F (1, 89) = 0.80, p = 0.374, η_p^2 = 0.01), whereas main effect of gender was not found for either consummatory (F (1, 89) = 1.01, p = 0.318, η_p^2 = 0.011) or anticipatory interpersonal pleasure (F (1, 89) = 1.51, p = 0.222, η_p^2 = 0.02). There was no significant interaction between culture and gender on either consummatory (F (1, 89) = 1.94, p = 0.167, η_p^2 = 0.02) or anticipatory (F (1, 89) = 1.50, p = 0.224, η_p^2 = 0.02) pleasure, either.

Cognitive and affective empathy (QCAE): There was a main effect of culture on total QCAE scores (F (1, 89) = 103.51, p < 0.001, η_p^2 = 0.54). Significant main effect of gender was not found for total QCAE score (F (1, 89) = 1.39, p = 0.242, η_p^2 = 0.02), and there was no significant interaction between culture and gender (F (1, 89) = 1.00, p = 0.323, η_p^2 = 0.01).

For the perspective taking component of cognitive empathy, there was a main effect of culture (F (1, 89) = 63.61, p < 0.001, η_p^2 = 0.42). However, there was no main effect gender (F (1, 89) = 2.67, p = 0.106, η_p^2 = 0.03), and there was no significant interaction between culture and gender (F (1, 89) = 0.01, p = 0.913, η_p^2 = 0.00).

There was a main effect of culture on the online simulation component (F (1, 89) = 100.16, p < 0.001, η_p^2 = 0.53), but no main effect of gender (F (1, 89) = 2.08, p = 0.153, η_p^2 = 0.02). There was no significant interaction effect between culture and gender (F (1, 89) = 1.92, p = 0.169, η_p^2 = 0.02), either.

There was a main effect of culture on the emotion contagion component of affective empathy (F (1, 89) = 8.62, p = 0.004, η_p^2 = 0.09), but there was no main effect of gender (F (1, 89) = 0.00, p = 0.964, η_p^2 = 0.00) or significant interaction between culture and gender (F (1, 89) = 0.30, p = 0.584, η_p^2 = 0.00).

For the proximal responsivity component, there was a main effect of culture (F (1, 89) = 47.17, p < 0.001, η_p^2 = 0.35), but not gender F (1, 89) = 0.72, p = 0.399, η_p^2 = 0.01). Neither was there a significant interaction between culture and gender (F (1, 89) = 0.13, p = 0.715, η_p^2 = 0.00).

For the peripheral response component, there was no significant effect of culture (F (1, 89) = 0.00, p = 0.948, η_p^2 = 0.00), gender (F (1, 89) = 0.03, p = 0.864, η_p^2 = 0.00), or culture-gender interaction (F (1, 89) = 1.07, p = 0.305, η_p^2 = 0.01).

Trait Judgment Task

We then conducted two-way MANOVA to test for the effect of culture and gender on all four trait judgment ratings: aggressiveness, approachability, attractiveness, and trustworthiness. All means and standard deviations of task performance are reported in Table 4 – 6. Main effects of culture were found for the ratings of aggressiveness (F (1, 89) = 4.13, p = 0.045, η_p^2 = 0.04) and trustworthiness (F (1, 89) = 8.86, p = 0.004, η_p^2 = 0.09). There was no significant main effect of gender on any of the four ratings, and neither was there significant interaction between culture and gender.

Correlational Analyses

Next, Spearman's rho was calculated to investigate the relationships among different questionnaire measures, among the four trait judgment ratings, as well as between questionnaire measures and trait ratings.

Correlations among the self-report questionnaire measure are reported in Table 7. The three factors of the SPQ were significantly correlated with each other, with effect sizes comparable to those shown in previous literature (Reynolds, Raine, Mellingen, Venables, & Mednick, 2000). Anticipatory scores and consummatory scores from the ACIPS were also significantly and positively correlated. The two components of cognitive empathy were positively and strongly correlated with each other, while both of these components were also significantly correlated with the proximal responsivity component of affective empathy. The emotion contagion component correlated positively with online simulation and proximal responsivity, whereas the peripheral responsivity component only correlated with proximal responsivity.

Across the three questionnaires the cognitive-perceptual factor of the SPQ was positively correlated with all components of the QCAE except for peripheral response, whereas neither the disorganized nor the interpersonal factor showed any of these correlations. On the other hand, both the interpersonal and the disorganized factor of the SPQ correlated with both anticipatory and consummatory scores on the ACIPS, whereas the same correlations were not found for the cognitive-perceptual factor. Between the ACIPS and the QCAE, the consummatory scores were negatively correlated with both components of cognitive empathy, but not affective empathy. The anticipatory scores were not correlated with either cognitive or affective empathy.

For trait judgment ratings, trustworthiness, approachability, and attractiveness all significantly and positively correlated with each other, whereas aggressiveness did not correlate

with any of the other three (Table 8). This result was consistent with previous studies demonstrating that trait judgments from faces can be best accounted for with a two-dimension model, with the two orthogonal dimensions being valence and threat (Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). In the study by Todorov et al., aggressiveness was found to correspond to the threat dimension, whereas attractiveness, approachability, and trustworthiness corresponded to the valence dimension. This two dimensional structure was replicated in this study.

Contrary to our hypothesis about the dimensionally specific relationship between schizotypal personality and trait judgment, no correlation was found between trait ratings and any of the three SPQ factors (Table 9). Further exploratory analysis showed that there was no significant correlation between trait judgments and any of the questionnaire measures. Due to the low correlation between social trait judgments and schizotypal personality trait found in this sample, no further analysis was carried out for testing the hypothesis that schizotypal traits and social trait judgments correlate differently in the two cultures.

Discussion

In this study, we set out to investigate the relationships between schizotypal personality traits, social trait judgments from faces, and culture. Several hypotheses were made, and the results regarding these hypotheses were mixed.

We first hypothesized that the cultural group and gender would interact to influence how participants rate images of face on four personality traits: aggressiveness, approachability, attractiveness, and trustworthiness. We found that main effect of culture was significant for ratings of trustworthiness and aggressiveness but not approachability or attractiveness. Chinese subjects on average rated the face stimuli as more trustworthy then did American subjects. One

possible explanation for this finding is that there is a stronger tendency to see others as trustworthy in the Chinese culture. One 2007 poll done by the Pew center showed that 79 percent of the Chinese respondents agreed with the statement that most people in the society are trustworthy. This tendency to trust was linked to low perception of crime. This evidence should, however, be taken with a grain of salt, as lower tendency to trust was also linked to higher perceived level of political and economic corruption. China has consistently ranked relatively low on the perceived corruption index (perceived to be more corrupt) produced by transparency international, which would contradict the Pew center's finding. Interestingly, the Pew center poll included questions about perceived level of corruption, which were not asked in their Chinese poll.

On the other hand, Chinese participants on average rated the faces as more aggressive than did American participants. This finding is not very well explained by the current literature, as research on cross-cultural differences in the perception of aggression is limited. One potential interpretation of this finding comes from the well-established notion of outgroup derogation, where members of one group perceive outgroup individuals as more threatening (Hewstone, Rubin, & Willis, 2002). The Chinese sample was ethnically homogeneous and therefore could on average perceive the Caucasian faces among the stimuli as more threatening or more aggressive. Meanwhile, the American sample consisted of multiple ethnicity ranging from Caucasians to Asian Americans, and might not exhibit overall outgroup bias towards the stimuli faces of either Asian or Caucasian ethnicity.

Based on previous research on schizophrenic symptoms and social trait judgments, we also hypothesized that negative schizotypal traits would negatively correlate with ratings on approachability, attractiveness, and trustworthiness, as well as positively with aggressiveness.

However, very weak correlations were found between all trait ratings and all factors of the SPQ, refuting our hypothesis. Furthermore, exploratory analyses revealed similar lacks of relationship between trait judgments and all other questionnaire measures. Findings from previous researches on the topic had returned inconclusive results. On one hand, studies with patients tend to have smaller samples and therefore less power for detecting existing effect, but on the other hand, the size of the relationship being small could also have contributed to the inconsistency in replication. Since schizotypal personality has been constructed as a subclinical continuation of schizophrenic symptoms, it is not entirely surprising that a weak relationship in the clinical population can go undetected in the general populations, especially given that our sample consisted of highly functional college students. Moreover, the SPQ has traditionally been used as a screening tool. It was usually applied to large groups, and the top and bottom ten percent of the group would be selected as the samples. Using the whole scale in correlational analyses could also have led to lack of power in the design.

In previous research, cognitive empathy has been shown to correlate negatively with negative schizotypy, as well as partially mediate the relationship between negative schizotypy and poorer social functioning (Henry, Bailey, & Rendell, 2008; Wang et al., 2013). This finding was not replicated in the current sample. Rather, a significant positive correlation was found between positive schizotypy and components of both cognitive and affective empathy, including perspective taking, online simulation, emotion contagion, as well as proximal responsivity. These correlations were stronger than previously reported relationship between positive schizotypy and other measures of empathy, but such a finding was in line with the idea that positive symptoms or cognitive-perceptual distortions in schizotypy are related to the over-attribution of mental states (Brüne, 2005). It was also found among the results of correlational

analyses across questionnaires a significant negative correlation between consummatory interpersonal pleasure and cognitive empathy, but not affective empathy. This finding seems to suggest that the more you effortfully infer others' mental state (or try to) during social interactions, the less you would actually enjoy them. Though prior demonstration of such a relationship was not found in the literature reviewed, it was not too surprising of an effect. It is possible that higher tendency to infer others' mental states is related to excessive worrying about the judgments from others, and therefore reduced pleasure from interpersonal interactions. This explanation is unlikely, however, given the findings of the current study. The interpersonal factor of the SPQ, which explicitly measures social anxiety, was not found to correlate with cognitive empathy, and was unlikely to be the mediating variable. An alternative interpretation is that individuals who perform more mentalizing during social interactions, by focusing more on the thoughts and feelings of others, carry out less active pleasure seeking. Further research is needed, however, to explicate what mediates the relationship between cognitive empathy and social pleasure.

Last but not least, cross cultural comparisons showed interesting differences on questionnaire measures. Chinese participants scored higher than American participants on both cognitive and affective empathy except the peripheral responsivity component. These results seem to be consistent with the notion that East Asian cultures are more collectivistic whereas American/Western cultures are more individualistic (Markus & Kitayama, 1991). These cultural differences manifest in how people from these cultures construe their "self" differently. American individuals proposedly do not value overt connectedness with others, but rather focus on the self and value the discovery and expression of their own unique attributes. On the other hand, individuals from Asian cultures construe the self in its relationship to others in their social

vicinity and place more value on interdependence. Such a cultural orientation would require individuals from Asian cultures to direct more of their attention to others and put more effort into mentalizing, which is in accordance with our findings that Chinese participants had a higher tendency to effortfully simulate others' mental states. Chinese participants also reported significantly lower level of consummatory interpersonal pleasure, as comsummatory pleasure was negatively correlated with cognitive empathy in the current sample. This finding suggests that the maintenance of a collectivistic community is not necessarily based on increased enjoyment of social interaction but might be a normatively learned and reinforced practice, as well as that depriving pleasure in social contexts might require a higher level of focus on one's self.

Group differences in measures of schizotypal personality were also found between Chinese and American participants. Chinese participants scored higher on total scores of schizotypy, whereas a closer look at the three factors showed that Chinese participants reported higher levels of cognitive-perceptual distortions and disorganized thoughts and behaviors. This finding seems to point to the relative cultural specificity of the schizotypy construct. As the conception of schizotypal personality as a construct and the creation of the SPQ as a measure were both carried out in western culture, it is possible that Chinese participants scored higher on the cognitive-perceptual distortion factor as a manifestation of the existing cross-cultural differences in how much individuals are normatively required to utilize their theory-of-mind. What might be deemed as a hyperactive attribution of mental states in a more individualistic western culture might be entirely normal and even necessary in a more collectivistic culture such as that of China. Findings like this have potentially important implications for the diagnosis of psychopathology disorders in general. When attempting to set diagnostic criteria for mental

illnesses in a certain population, it is important to take into account the cultural practices, values, orientations, as well as how they might relate to certain behavioral markers or criteria that are deemed most informative or diagnostic in another place of practice. Allowing diagnosis and treatment to be informed by social norms is particularly important if the goal of certain treatments were to increase the patients' level of social functioning. In the American society, it might be beneficial to reduce positive schizotypal traits, whereas doing the same in the Chinese society might move the individuals social functioning in the opposite direction.

Limitations

There are several limitations to the current study.

First of all, the current study proposed to investigate cultural differences in trait judgments and schizotypal traits. However, cultural values and orientations were not measured in the current study. Instead, participants were divided into group based on their country of residence, and cultural values and orientations were assumed on this basis alone. Without measuring cultural values and orientations, it is difficult to conclude whether the current findings were produced by cultural differences or other confounding variables. Furthermore, the current data were collected from college students. College students as a group is not necessarily representative of the general population, which calls into question whether the current findings could be generalized to larger scale cultural differences. This problem is particularly salient in social psychological studies like the current one, as social cognition is complexly situated in social contexts, and an unrepresentative sample could severely mitigate the validity of the findings. To address these issues, future studies on similar subjects should employ valid measures of cultural values when possible, as well as collect and analyze data from a more representative sample.

Secondly, although interesting between-group differences were found in the ACIPS and the QCAE, it is important to note that these two measures have not been validated in the Chinese population. Therefore, cautions should be taken whether to interpret our findings as valid differences or potentially confounded by differences in the factor structures of the measures in the two groups. Another problem with utilizing self-report measures in cross-cultural studies is that the assumption that the response set is consistent across groups has to be made. It is possible that Chinese participants reported higher levels cognitive empathy because that's what is valued in the Chinese culture, whereas the two groups do not actually differ in their tendencies to utilize their theory-of-mind.

Last but not least, the behavioral task used to assess trait judgments was potentially flawed by using faces randomly selected from databases. While the face images used as stimuli were balanced by stimuli ethnicity and stimuli gender, and effort was made to standardize the images to the same size and level of brightness, the images across different groups were not necessarily matched in terms of their emotional valence or emotion-resembling structures. Thus, it cannot be ruled out that there were systematic variations between face stimuli of different ethnicity or of different gender, and these variations may have contributed to the cross-culture differences in trait judgments as confounding variables. Future studies should attempt to achieve more control over the stimuli. One way in which this has been achieved in previous studies is to parametrically manipulate features of computer-generated faces (Todorov, Dotsch, Porter, Oosterhof, & Falvello, 2013). Researchers achieved this by collecting large amount of trait judgment data from a certain population and building statistical model for the relationship between facial features and trait rating outcome. These models were then used to generate face stimuli of desired values along certain trait dimensions. This approach could be employed in

cross-cultural studies of trait judgments by looking at how ratings from a "test population" differ from the projected rating based on models established in another population.

Conclusions

Although the current study has several limitations as listed above, we conclude based on the current finding that in the non-clinical population there is no relation or a very weak relation at best between schizotypal traits and impression formation from faces. We also conclude that individuals from Chinese and American cultures differ in their tendency to utilize cognitive empathy during social interactions as well as how much they find such social interactions to be enjoyable. Furthermore, Participants from Chinese cultures tended to judge faces as more trustworthy but also more aggressive, whereas male and female participant did not differ on how they rate faces. Future studies on the topic of cross-cultural differences in trait judgments should aim to utilize more controlled stimuli and develop more sophisticated statistical analyses in order validate the current findings.

References

Baas, D., van't Wout, M., Aleman, A., & Kahn, R. S. (2008). Social judgement in clinically stable patients with schizophrenia and healthy relatives: behavioural evidence of social brain dysfunction. *Psychological Medicine*, *38*(5), 747–54. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1017/S0033291707001729

Baas, D., Aleman, A., Vink, M., Ramsey, N. F., de Haan, E. H. F., & Kahn, R. S. (2008). Evidence of altered cortical and amygdala activation during social decision-making in schizophrenia. *NeuroImage*, *40*(2), 719–727. http://doi.org/10.1016/j.neuroimage.2007.12.039

Barrantes-Vidal, N., Gross, G. M., Sheinbaum, T., Mitjavila, M., Ballespí, S., & Kwapil, T. R. (2013). Positive and negative schizotypy are associated with prodromal and schizophrenia-spectrum symptoms. *Schizophrenia Research*, *145*(1–3), 50–55. http://doi.org/10.1016/j.schres.2013.01.007

Brüne, M. (2005). "Theory of Mind" in Schizophrenia: A Review of the Literature. *Schizophrenia Bulletin*, *31*(1), 21–42. http://doi.org/10.1093/schbul/sbi002

Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., & Munafò, M. R. (2013). Power failure: why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience*, *14*(5), 365–376. http://doi.org/10.1038/nrn3475

Chapman, L. J., Chapman, J. P., & Miller, E. N. (1982). Reliabilities and intercorrelations of eight measures of proneness to psychosis. *Journal of Consulting and Clinical Psychology*, *50*(2), 187–195. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1037/0022-006X.50.2.187

Chen, G.-H. (2007). Evaluating the individualism and collectivism scale for use in mainland china. *Psychological Reports*, *101*(1), 93–99. http://doi.org/10.2466/pr0.101.1.93-99

Chen, W. J., Hsiao, C. K., & Lin, C. C. (1997). Schizotypy in community samples: the three-factor structure and correlation with sustained attention. *Journal of Abnormal Psychology*, *106*(4), 649–654.

Comparelli, A., Corigliano, V., De Carolis, A., Mancinelli, I., Trovini, G., Ottavi, G., … Girardi, P. (2013). Emotion recognition impairment is present early and is stable throughout the course of schizophrenia. *Schizophrenia Research*, *143*(1), 65–69. http://doi.org/10.1016/j.schres.2012.11.005

Gao, W., Cao, B., Shan, S., Chen, X., Zhou, D., Zhang, X., & Zhao, D. (2008). The CAS-PEAL Large-Scale Chinese Face Database and Baseline Evaluations. *IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans*, *38*(1), 149–161. http://doi.org/10.1109/TSMCA.2007.909557

Haut, K. M., & MacDonald III, A. W. (2010). Persecutory delusions and the perception of trustworthiness in unfamiliar faces in schizophrenia. *Psychiatry Research*, *178*(3), 456–460. http://doi.org/10.1016/j.psychres.2010.04.015

Henry, J. D., Bailey, P. E., & Rendell, P. G. (2008). Empathy, social functioning and schizotypy. *Psychiatry Research*, *160*(1), 15–22. http://doi.org/10.1016/j.psychres.2007.04.014

Hewstone, M., Rubin, M., & Willis, H. (2002). Intergroup Bias. *Annual Review of Psychology*, *53*(1), 575–604. http://doi.org/10.1146/annurev.psych.53.100901.135109

Kao, Y.-C., Wang, T.-S., Lu, C.-W., Cheng, T.-H., & Liu, Y.-P. (2011). The psychometric properties of the Peters et al. Delusions Inventory (PDI) in Taiwan: reliability, validity,

and utility. *Social Psychiatry and Psychiatric Epidemiology*, *47*(8), 1221–1234. http://doi.org/10.1007/s00127-011-0428-y

Kohler, C. G., Turner, T. H., Bilker, W. B., Brensinger, C. M., Siegel, S. J., Kanes, S. J., … Gur, R. C. (2003). Facial Emotion Recognition in Schizophrenia: Intensity Effects and Error Pattern. *American Journal of Psychiatry*, *160*(10), 1768–1774. http://doi.org/10.1176/appi.ajp.160.10.1768

Kohler, C. G., Walker, J. B., Martin, E. A., Healey, K. M., & Moberg, P. J. (2010). Facial Emotion Perception in Schizophrenia: A Meta-analytic Review. *Schizophrenia Bulletin*, *36*(5), 1009–1019. http://doi.org/10.1093/schbul/sbn192

Kwapil, T. R., Gross, G. M., Silvia, P. J., & Barrantes-Vidal, N. (2013). Prediction of psychopathology and functional impairment by positive and negative schizotypy in the Chapmans' ten-year longitudinal study. *Journal of Abnormal Psychology*, *122*(3), 807–815. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1037/a0033759

Lundqvist, D., Flykt, A., & Öhman, A. (1998). The Karolinska Directed Emotional Faces - KDEF, CD ROM from Department of Clinical Neuroscience, Psychology section, Karolinska Institutet, ISBN 91-630-7164-9.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. http://doi.org/http://dx.doi.org/10.1037/0033-295X.98.2.224

McIntosh, L. G., & Park, S. (2014). Social trait judgment and affect recognition from static faces and video vignettes in schizophrenia. *Schizophrenia Research*, *158*(1–3), 170–175. http://doi.org/10.1016/j.schres.2014.06.026

Na, J., & Kitayama, S. (2011). Spontaneous Trait Inference Is Culture-Specific Behavioral and Neural Evidence. *Psychological Science*, *22*(8), 1025–1032. http://doi.org/10.1177/0956797611414727

Olivola, C. Y., & Todorov, A. (2010). Elected in 100 milliseconds: Appearance-Based Trait Inferences and Voting. *Journal of Nonverbal Behavior*, *34*(2), 83–110. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1007/s10919-009-0082-1

Overall, J.E., Gorham, D.R., 1962. The Brief Psychiatric Rating Scale. Psychol. Rep. 10 (3), 799–812

Peters, E., Joseph, S., Day, S., & Garety, P. (2004). Measuring Delusional Ideation: The 21-Item Peters et al. Delusions Inventory (PDI). *Schizophrenia Bulletin*, *30*(4), 1005–1022.

Pinkham, A. E., Penn, D. L., Perkins, D. O., & Lieberman, J. (2003). Implications for the neural basis of social cognition for the study of schizophrenia. *The American Journal of Psychiatry*, *160*(5), 815–824.

Raine, A. (1991). The SPQ: A Scale for the Assessment of Schizotypal Personality Based on DSM-III-R Criteria. *Schizophrenia Bulletin*, *17*(4), 555–564. http://doi.org/10.1093/schbul/17.4.555

Raine, A. (1992). Sex differences in schizotypal personality in a nonclinical population. *Journal of Abnormal Psychology*, *101*(2), 361–364. http://doi.org/10.1037/0021-843X.101.2.361

Raine, A. (2006). Schizotypal Personality: Neurodevelopmental and Psychosocial Trajectories. *Annual Review of Clinical Psychology*, *2*(1), 291–326. http://doi.org/10.1146/annurev.clinpsy.2.022305.095318

Reniers, R. L. E. P., Corcoran, R., Drake, R., Shryane, N. M., & Völlm, B. A. (2011). The QCAE: A Questionnaire of Cognitive and Affective Empathy. *Journal of Personality Assessment*, *93*(1), 84–95. http://doi.org/10.1080/00223891.2010.528484

Reynolds, C. A., Raine, A., Mellingen, K., Venables, P. H., & Mednick, S. A. (2000). Three-factor model of schizotypal personality: Invariance across culture, gender, religious affiliation, family adversity, and psychopathology. *Schizophrenia Bulletin*, *26*(3), 603–618.

Said, C. P., Sebe, N., & Todorov, A. (2009). Structural resemblance to emotional expressions predicts evaluation of emotionally neutral faces. *Emotion*, *9*(2), 260–264. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1037/a0014681

Salomon, J. A., Vos, T., Hogan, D. R., Gagnon, M., Naghavi, M., Mokdad, A., … Murray, C. J. (2012). Common values in assessing health outcomes from disease and injury: disability weights measurement study for the Global Burden of Disease Study 2010. *The Lancet*, *380*(9859), 2129–2143. http://doi.org/10.1016/S0140-6736(12)61680-8

Todorov, A., Dotsch, R., Porter, J. M., Oosterhof, N. N., & Falvello, V. B. (2013). Validation of data-driven computational models of social perception of faces. *Emotion*, *13*(4), 724–738. http://doi.org/http://dx.doi.org.proxy.library.vanderbilt.edu/10.1037/a0032335

Todorov, A., Olivola, C. Y., Dotsch, R., & Mende-Siedlecki, P. (2015). Social Attributions from Faces: Determinants, Consequences, Accuracy, and Functional Significance. *Annual Review of Psychology*, *66*(1), 519–545. http://doi.org/10.1146/annurev-psych-113011-143831

Todorov, A., Said, C. P., Engell, A. D., & Oosterhof, N. N. (2008). Understanding evaluation of faces on social dimensions. *Trends in Cognitive Sciences*, *12*(12), 455–460. http://doi.org/10.1016/j.tics.2008.10.001

Walker, M., Jiang, F., Vetter, T., & Sczesny, S. (2011). Universals and Cultural Differences in Forming Personality Trait Judgments From Faces. *Social Psychological and Personality Science*, *2*(6), 609–617. http://doi.org/10.1177/1948550611402519

Wang, Y., Neumann, D. L., Shum, D. H. K., Liu, W., Shi, H., Yan, C., … Chan, R. C. K. (2013). Cognitive empathy partially mediates the association between negative schizotypy traits and social functioning. *Psychiatry Research*, *210*(1), 62–68. http://doi.org/10.1016/j.psychres.2013.03.015

Willis, J., & Todorov, A. (2006). First Impressions Making Up Your Mind After a 100-Ms Exposure to a Face. *Psychological Science*, *17*(7), 592–598. http://doi.org/10.1111/j.1467-9280.2006.01750.x

Table 1. Self-report questionnaire measures by culture

Measure	China		US		F (1, 89)	p	η_p^2
	Mean	Std.	Mean	Std.			
SPQ total	26.52	10.46	17.67	11.19	12.48	.001	0.12
Cognitive-Perceptual	11.76	5.50	6.08	4.34	25.52	.000	0.22
Interpersonal	10.96	5.97	9.15	7.09	1.02	.315	0.01
Disorganized	6.39	3.65	4.26	3.42	6.45	.013	0.07
ACIPS Total	80.17	13.08	86.46	9.07	5.13	.026	0.05
ACIPS Anticipatory	33.43	5.30	34.69	4.55	0.80	.374	0.01
ACIPS Consummatory	46.74	8.23	51.77	4.96	9.50	.003	0.10
QCAE Total	85.57	10.27	63.21	9.42	103.51	.000	0.54
QCAE Perspective Taking	27.81	4.95	19.23	4.54	63.61	.000	0.42
QCAE Online Simulation	26.56	3.91	17.23	4.15	100.16	.000	0.53
QCAE Emotion Contagion	10.30	2.52	8.85	1.89	8.62	.004	0.09
QCAE Proximal Responsivity	11.00	2.07	8.00	2.06	47.18	.000	0.35
QCAE Peripheral Responsivity	9.91	1.63	9.90	1.23	0.00	.948	0.00

Table 2. Self-report questionnaire measures by gender

	Male		Female				
Measure	Mean	Std.	Mean	Std	F (1, 89)	p	η_p^2
SPQ total	24.94	11.16	20.53	11.70	2.01	.160	0.02
Cognitive-Perceptual	10.21	6.05	8.49	5.35	0.27	.605	0.00
Interpersonal	11.04	6.09	9.31	6.85	1.66	.201	0.02
Disorganized	6.04	3.66	4.91	3.68	1.71	.195	0.02
ACIPS Total	81.08	11.18	84.64	12.54	1.31	.256	0.01
ACIPS Anticipatory	33.31	4.59	34.64	5.41	1.51	.222	0.02
ACIPS Consummatory	47.77	7.10	50.00	7.70	1.01	.318	0.01
QCAE Total	79.58	14.31	72.58	14.72	1.39	.242	0.02
QCAE Perspective Taking	25.90	6.28	22.42	6.06	2.67	.106	0.03
QCAE Online Simulation	24.15	5.69	21.04	6.47	2.08	.153	0.02
QCAE Emotion Contagion	9.81	2.26	9.56	2.51	0.00	.964	0.00
QCAE Proximal Responsivity	9.88	2.59	9.60	2.51	0.72	.399	0.01
QCAE Peripheral Responsivity	9.85	1.62	9.96	1.30	0.03	.864	0.00

Table 3. Self-report questionnaire measure by culture-gender interaction

	Chinese Male		Chinese Female		US Male		US Female				
Measure	Mean	Std.	Mean	Std	Mean	Std.	Mean	Std.	F (1, 89)	p	η_p^2
SPQ total	26.18	10.85	27.05	10.05	22.20	11.71	14.83	10.07	3.23	.076	0.03
Cognitive-Perceptual	11.79	6.02	11.71	4.70	6.73	4.61	5.67	4.22	0.20	.652	0.00
Interpersonal	10.76	5.44	11.29	6.86	11.67	7.50	7.58	6.49	2.79	.099	0.03
Disorganized	6.09	3.69	6.86	3.62	5.93	3.69	3.21	2.83	5.42	.022	0.06
ACIPS Total	80.39	12.41	79.81	14.39	82.60	8.00	88.88	9.00	1.90	.171	0.02
ACIPS Anticipatory	33.42	4.78	33.43	6.17	33.07	4.28	35.71	4.51	1.50	.224	0.02
ACIPS Consummatory	46.97	7.99	46.38	8.78	49.53	4.32	53.17	4.90	1.94	.167	0.02
QCAE Total	85.73	11.51	85.33	8.22	66.07	9.99	61.42	8.79	0.99	.323	0.01
QCAE Perspective Taking	28.42	5.28	26.86	4.33	20.33	4.53	18.54	4.51	0.01	.913	0.00
QCAE Online Simulation	26.58	4.62	26.52	3.72	18.80	3.91	16.25	4.07	1.92	.169	0.02
QCAE Emotion Contagion	10.18	2.42	10.48	2.71	9.00	1.65	8.75	2.05	0.30	.584	0.00
QCAE Proximal Responsivity	10.79	2.23	11.33	1.80	7.87	2.20	8.08	2.02	0.13	.715	0.00
QCAE Peripheral Responsivity	9.76	1.77	10.14	1.39	10.07	1.28	9.79	1.22	1.07	.305	0.01

Table 4. Trait judgment ratings by culture

Measure	China		US		F (1, 89)	p	η_p^2
	Mean	Std.	Mean	Std			
Aggressiveness	4.40	0.82	4.08	0.75	4.13	.045	0.04
Approachability	4.62	0.76	4.57	0.72	0.20	.657	0.00
Attractiveness	4.32	1.09	4.26	1.01	0.27	.606	0.00
Trustworthiness	4.83	0.87	4.39	0.76	8.86	.004	0.09

Table 5. Trait judgment ratings by gender

Measure	Male		Female		F (1, 89)	p	η_p^2
	Mean	Std.	Mean	Std			
Aggressiveness	4.24	0.91	4.30	0.67	0.76	.387	0.01
Approachability	4.55	0.72	4.66	0.76	0.46	.498	0.01
Attractiveness	4.16	1.05	4.43	1.05	1.54	.218	0.02
Trustworthiness	4.57	0.86	4.73	0.84	3.33	.071	0.04

Table 6. Trait judgment ratings by culture-gender interaction

Measure	Chinese Male		Chinese Female		US Male		US Female		F (1, 89)	p	η_p^2
	Mean	Std.	Mean	Std	Mean	Std.	Mean	Std.			
Aggressiveness	4.36	0.90	4.47	0.70	3.97	0.92	4.16	0.63	0.05	.826	0.00
Approachability	4.53	0.71	4.77	0.83	4.59	0.77	4.57	0.70	0.63	.429	0.01
Attractiveness	4.17	1.10	4.54	1.05	4.14	0.95	4.34	1.06	0.13	.715	0.00
Trustworthiness	4.81	0.78	4.87	1.00	4.03	0.79	4.61	0.66	2.28	.135	0.02

Table 7. Correlations of questionnaire measures

		Cog Per	Interpersonal	Disorganized	ACIPS Anticipatory	ACIPS Consummatory	QCAE Perspective Taking	QCAE Online Simulation	QCAE Emotion Contagion	QCAE Proximal Responsivity	QCAE Peripheral Responsivity
Cog Per	Correlation	1.000	.454**	.498**	.109	.051	.329**	.305**	.282**	.408**	-.020
	Sig. (2-tailed)		.000	.000	.298	.625	.001	.003	.006	.000	.846
Interpersonal	Correlation	.454**	1.000	.628**	-.423**	-.391**	.080	-.025	.066	.043	-.120
	Sig. (2-tailed)	.000		.000	.000	.000	.447	.815	.531	.684	.254
Disorganized	Correlation	.498**	.628**	1.000	-.332**	-.310**	.117	.177	.038	.121	-.106
	Sig. (2-tailed)	.000	.000		.001	.002	.263	.090	.718	.250	.310
ACIPS Anticipatory	Correlation	.109	-.423**	-.332**	1.000	.831**	-.069	-.035	.195	.095	.074
	Sig. (2-tailed)	.298	.000	.001		.000	.512	.741	.061	.367	.481
ACIPS Consummatory	Correlation	.051	-.391**	-.310**	.831**	1.000	-.252*	-.260*	.082	-.046	.114
	Sig. (2-tailed)	.625	.000	.002	.000		.015	.012	.435	.661	.277
QCAE Perspective Taking	Correlation	.329**	.080	.117	-.069	-.252*	1.000	.748**	.187	.621**	.111
	Sig. (2-tailed)	.001	.447	.263	.512	.015		.000	.073	.000	.291
QCAE Online Simulation	Correlation	.305**	-.025	.177	-.035	-.260*	.748**	1.000	.287**	.661**	.104
	Sig. (2-tailed)	.003	.815	.090	.741	.012	.000		.005	.000	.323
QCAE Emotion Contagion	Correlation	.282**	.066	.038	.195	.082	.187	.287**	1.000	.534**	.211*
	Sig. (2-tailed)	.006	.531	.718	.061	.435	.073	.005		.000	.043
QCAE Proximal Responsivity	Correlation	.408**	.043	.121	.095	-.046	.621**	.661**	.534**	1.000	.228*
	Sig. (2-tailed)	.000	.684	.250	.367	.661	.000	.000	.000		.028
QCAE Peripheral Responsivity	Correlation	-.020	-.120	-.106	.074	.114	.111	.104	.211*	.228*	1.000
	Sig. (2-tailed)	.846	.254	.310	.481	.277	.291	.323	.043	.028	

Table 8. Correlations between trait judgments

		Agg	App	Att	Trust
Aggressiveness	Correlation Coefficient	1.000	-.007	.179	.092
	Sig. (2-tailed)		.950	.086	.380
Approachability	Correlation Coefficient	-.007	1.000	.415**	.573**
	Sig. (2-tailed)	.950		.000	.000
Attractiveness	Correlation Coefficient	.179	.415**	1.000	.479**
	Sig. (2-tailed)	.086	.000		.000
Trustworthiness	Correlation Coefficient	.092	.573**	.479**	1.000
	Sig. (2-tailed)	.380	.000	.000	

Table 9. Correlations between trait judgments and questionnaire measures

		Cog Per	Interpersonal	Disorganized	ACIPS A	ACIPS C	QCAE Perspective Taking	QCAE Online Simulation	QCAE Emotion Contagion	QCAE Proximal Responsivity	QCAE Peripheral Responsivity
Aggressiveness	Correlation Coefficient	.023	.039	-.023	-.040	-.086	.079	.075	.112	.077	-.014
	Sig. (2-tailed)	.824	.707	.828	.701	.412	.450	.474	.287	.463	.890
Approachability	Correlation Coefficient	-.116	-.133	-.065	.044	.034	-.160	-.043	-.008	-.113	-.126
	Sig. (2-tailed)	.268	.205	.537	.674	.746	.126	.679	.936	.282	.228
Attractiveness	Correlation Coefficient	-.005	-.014	-.020	-.001	.053	-.154	-.080	.024	-.066	-.097
	Sig. (2-tailed)	.960	.895	.851	.991	.616	.142	.447	.819	.527	.356
Trustworthiness	Correlation Coefficient	-.012	-.057	-.029	.069	.043	.032	.069	.016	.111	-.108
	Sig. (2-tailed)	.912	.591	.785	.509	.684	.758	.513	.881	.291	.303

Graph 1. Group by gender interaction on SPQ-Disorganized