Collaborating across Cultures:

Cultural Metacognition and Affect-Based Trust in Creative Collaboration

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Abstract

We propose that managers' awareness of their own and others' cultural assumptions (cultural metacognition) enables them to develop affect-based trust in their relationships with people from different cultures, enabling creative collaboration. Study 1, a multi-rater assessment of managerial performance, found that managers higher in metacognitive cultural intelligence (CQ) were rated as more effective in intercultural creative collaboration by managers from other cultures. Study 2, a social network survey, found that managers lower in metacognitive CQ engaged in less sharing of new ideas in their intercultural ties but not intracultural ties. Study 3 required participants to work collaboratively with a non-acquaintance from another culture and found that higher metacognitive CQ engendered greater idea sharing and creative performance, so long as they were allowed a personal conversation prior to the task. The effects of metacognitive CQ in enhancing creative collaboration were mediated by affect-based trust in Studies 2 and 3.

Key Words: Intercultural Relations, Creativity, Trust, Culture, Metacognition

Introduction

Research in management and organizational behavior has increasingly focused on individual differences that enable managers to succeed in intercultural interactions (e.g., Ang & Van Dyne, 2008; Earley & Ang, 2003; Imai & Gelfand, 2010; Johnson, Lenartowicz, & Apud, 2006; Shapiro, Ozanne, & Saatcioglu, 2008; Thomas, 2006). One long-standing theme is that intercultural success accrues from being mindful of one's own and others' assumptions when interacting with individuals from different cultures (Johnson, Cullen, Sakano, & Takenouchi, 1996; LaBahn & Harich, 1997). This skill in reflecting on cultural assumptions in order to prepare for, adapt to, and learn from intercultural interactions is increasingly referred as cultural metacognition (Earley & Ang, 2003; Earley, Ang, & Tan, 2006; Klafehn, Banerjee, & Chiu, 2008; Thomas, 2006; Van Dyne, Ang, Ng, & Koh, 2008). Under the rubric of cultural intelligence or CQ, instruments have been developed to measure individual variations in cultural metacognition in terms of self-reported awareness of one's cultural assumptions and tendencies to plan for upcoming intercultural activities, check the applicability of and adjust one's assumptions during a given interaction, and update assumptions after each experience (Ang, Van Dyne, & Tan, 2011; Earley & Ang, 2003).

In this research, we explore the role of cultural metacognition in intercultural creative collaboration. Although collaboration can occur in larger groups, we focus for the sake of clarity on dyadic collaboration. Just like scientists, businesspeople often share ideas and brainstorm solutions to a problem with others in their professional network. Innovative products and deals are developed when such conversations bring together disparate ideas that have never previously been combined, for example using materials developed by bicycle racers to develop lighter wheelchairs, or finding a market for South Pacific coconut juice among American urban

professionals (Sutton & Hargadon, 1996). Accordingly, creative potential in a collaborative dyad comes from the differences between the two people—surface demographic differences such as nationality or ethnic background correspond to deeper differences in people's knowledge of the world, their capabilities, and connections. Interactions with people from different cultures can expose one to ideas that are not redundant with one's own; the exchange of ideas in the conversation could result in a novel combination of ideas.

The creative potential in cross-cultural relationships, however, often goes unrealized. Sharing one's knowledge and insights with another person, an inherent aspect of creative collaboration, entails making oneself vulnerable to the other and thus requires trust—the extent to which a person is confident in and willing to act on the basis of the words, actions, and decision of another (Luhmann, 1979; McAllister, 1995). New ideas that one shared could be stolen if they are good or ridiculed if they are bad (Diehl & Stroebe, 1987, 1991). Hence, sharing new ideas hinges on feelings of concern for the other and on the other's concern for oneself. This set of sentiments is called affect-based trust (McAllister, 1995) and has been long been studied by researchers interested in trust as a feeling (Lewis & Weigert, 1985; Rempel, Holmes, & Zanna, 1985). While collaboration on a mundane task simply requires sharing the labor, creative collaboration involves the exchange of ideas to develop a novel solution that neither person in the dyad would have crafted on their own. Affect-based trust lubricates the exchange of new ideas that propels creative collaboration. In sum, the creative potential of cross-cultural interaction is potentiated by affect-based trust.

We propose that individuals higher in cultural metacognition are more likely to develop affect-based trust in their intercultural interactions and relationships. When getting to know a person from a different culture, the other may misunderstand comments, misconstrue jokes, and

decline invitations because of cultural differences. Reflective thinking about cultural differences enables one to interpret these awkward moments for what they are and not let them be impediments to closeness. The habit and skill of thinking about one's own and other's culturally based assumptions presumably enables individuals to communicate better, to put people at ease, and to avoid misunderstandings and tensions. Affect-based trust is distinguished from cognition-based trust, defined as the perception of the other's reliability and competence (Butler,1991; Cook & Wall, 1980; Zucker, 1986). Cognition-based trust is grounded more on rational evidence-based assessments of the other's ability and track record. Both kinds of trust may be more difficult to develop in intercultural relationships (Branzei, Vertinsky, & Camp, 2007; Rockstuhl & Ng, 2008). Cognitive processes such as stereotyping can undermine positive judgments about competence, whereas affective processes such as anxiety can hinder emotional openness and sharing (Gelfand, Erez, & Aycan, 2007; Mackie & Hamilton, 1993). For reasons that we shall elaborate, we contend that affect-based trust is more pivotal in the link between individual differences in cultural metacognition and creative collaboration.

We examined these hypotheses using multiple research methods. Study 1 used a multi-rater survey to assess managers' intercultural collaboration from the perspective of work colleagues from different cultures. We tested whether managers with high (vs. low) cultural metacognition achieve more creative collaboration in their intercultural relationships. In Study 2, we surveyed managers about their professional networks, assessing creative collaboration in terms of their creativity-related communication (sharing of new ideas) in all their key professional relationships. An important feature of Study 2 is that we explicitly compare the effects of cultural metacognition on trust and creative collaboration between intracultural relationships (with someone of the same cultural background) and intercultural relationships

(with someone of different cultural background). This approach allows us to examine whether cultural metacognition taps mental habits specific to bridging cultural differences or perspective taking habits that help relationships in general. Study 3 used a laboratory experiment to manipulate the conditions that facilitate the development of the mediating mechanism—affect-based trust. Our objective is to show that the effects of cultural metacognition depend on conditions that enable affect-based trust; even if individuals have this important strength they will not develop creative collaboration if the conditions do not facilitate affect-based trust.

Taken together, these studies make several contributions. First, we present evidence that individuals' cultural metacognition is linked to success in intercultural creative collaborations. This basic finding contributes to the growing literature on cultural intelligence by showing how specific aspects of intercultural competence impacts creative performance in a global workplace. Second, we explicate a key psychological mechanism that underlies the relationship between cultural metacognition and creative collaboration—intercultural affect-based trust. This finding pushes theoretical boundaries in creativity research through its direct focus on intercultural creative collaboration at a dyadic level of analysis. Recent research has called for more in-depth theorizing on how individuals might capitalize on interpersonal processes to reap creativity (George, 2007). Yet little extant research has examined creativity at the dyadic level, especially across cultural lines. Our research fills this gap, leading the way on how scholars might go about studying creativity at the dyadic level. Third, the present research expands on emerging literature that connects cultural diversity with creativity (Leung, Maddux, Galinsky, & Chiu, 2008) by investigating the conditions that allow people from different cultures to collaborate creatively. We elaborate on these and other contributions in the discussion section.

Cultural Metacognition and Intercultural Collaboration

Scholars have long studied factors that foster intercultural interactions and collaborations (Gertsen & Søderberg, 2011; Irani & Dourish, 2009; Johnson et al., 2006; LaBahn & Harich, 1997). One strategy has been to look for individual characteristics that predict the success of expatriate managers or international students, such as personality (Caligiuri, 2000), values (Kagan & Cohen, 1990), self-efficacy (Palthe, 2004), and interpersonal skills (Hechanova, Beehr, & Christiansen, 2003). Earley and Ang (2003) integrated many of these ideas in positing multiple dimensions of CQ, including knowledge, motivation, behavioral flexibility, and metacognitive awareness. Although there is now evidence that each of these dimensions affects some kinds of intercultural interactions (Ang & Van Dyne, 2008; Imai & Gelfand, 2010), theory about which dimensions are critical for which kinds of interactions is still developing. Furthermore, it is still unclear how these different dimensions of CQ interact with one another or combine into an aggregate construct (Thomas, 2010). Hence, rather than studying all CQ dimensions simultaneously, we focused our investigation on a single dimension—cultural metacognition—which Thomas and colleagues (2008) proposed to be a central linking mechanism among the various dimensions of CQ as it regulates cognition and behavior.

Metacognition may be the least obvious dimension of CQ, yet it follows a tradition of research emphasizing the importance of self-awareness and sensitivity toward others when adjusting to new environments (Mendenhall & Oddou, 1985). Cognitive psychologists typically characterize metacognition as thinking about thinking, comprising the processes of monitoring and adjusting one's thoughts and strategies as one learns new skills (Langer, 1989; Winn & Synder, 1996). Expanding this line of theorizing, Ang et al. (2007) defined cultural metacognition as mental processes directed at acquiring, comprehending, and calibrating cultural

knowledge. According to these researchers, cultural metacognition increases intercultural effectiveness by promoting (a) contextualized thinking (i.e., heightened sensitivity to the fact that individuals' motivations and behaviors are invariably shaped by the cultural contexts in which they are embedded) and (b) cognitive flexibility (i.e., discriminative use of mental schemas and behavioral scripts when interacting across cultures). Other scholars have also invoked ideas related to cultural metacognition in intercultural collaboration. For example, Johnson et al. (1996) emphasized the importance of self-awareness and awareness of others' responses in managing international collaborative alliances. Similarly, LaBahn and Harich (1997) emphasized the importance of cultural sensitivity in international collaborative ventures.

Cultural metacognition may be especially critical to collaborative relationships because of its effects on communication quality and ultimately intercultural trust. Individuals from different cultures are likely to interpret and represent the same problem in different ways, according to the cultural knowledge and beliefs that they respectively hold. Prior research argued that gaps in problem representation (Cronin & Weingart, 2007) inhibit collaboration because they increase misunderstanding and conflicts. Mere knowledge about the traditional practices of another culture, without accompanying metacognitive awareness, will not necessarily help in the collaborative work with a colleague from that culture. These preconceptions, if applied inappropriately, could even alienate associates from other cultures, making them feel stereotyped and decreasing trust. As the saying goes, "a little bit of knowledge is a dangerous thing." Metacognitive awareness enables individuals to adjust their behavior to the particular audience, increasing rapport during interaction, thereby helping to build trust (Ang et al., 2007). A recent study by Gertsen and Søderberg (2011) on intercultural collaboration stories highlighted that the ability to adjust and learn during communication across cultures helps build mutual

understanding, respect, and trust. High quality interpersonal communication and trust are especially critical for creative collaboration because unlike noncreative collaboration that involves just sharing of labor to implement preconceived ideas, partners in creative collaboration constantly grapple with uncertainty and new ideas and thus can easily feel vulnerable (Diehl & Stroebe, 1987, 1991; Rubenson & Runco, 1995). Effective interpersonal relationships smooth this difficult process. Initial evidence that cultural metacognition may promote intercultural creative collaboration comes from research by Crotty and Brett (2009). In a study of multicultural teams, these researchers found that team members with high cultural metacognition were more likely to report that their teams engaged in "fusion" teamwork, suggesting effective intercultural creative collaboration.

Hypothesis H1*: Individuals' cultural metacognition is positively associated with effectiveness in their intercultural creative collaborations.*

Intervening Processes: Affect- Versus Cognition-Based Trust

We propose that the effect of cultural metacognition runs through affect-based trust, which arises proximally out of communication experiences. In a recent study, Liu, Chua, and Stahl (2010) found evidence that feelings that one's communication with another person is clear, comfortable, and responsive are particularly predictive of success in intercultural as opposed to intracultural negotiations. This is consistent with the view that there are challenges distinctive to intercultural relationships that cultural metacognition may ameliorate. Our argument involves two more specific claims. First, the level of affect-based trust that one establishes in relationships to people of different cultures is a function of one's cultural metacognition. Second, affect-based trust in an intercultural relationship determines the success of creative collaboration.

Regarding the first claim, we argue that cultural metacognition affects managers' interaction by enabling them to adapt their styles appropriately, taking into account cultural differences, yet not assuming more differences than truly exist. This adaptation creates the feeling of meshing—of being "on same wavelength"—with the other person, which is otherwise known as rapport. Rapport is a state of mutual positivity and interest that arises from communication experiences featuring coordination and synchrony of the expression of positive emotion (Bernieri, 1988; Tickle-Degnen & Rosenthal, 1990) and statements by the other that resonate with one's assumptions (Bernieri & Gillis, 1995; Gillis, Bernieri, & Wooten, 1995). Personal conversations, in which people share positive feelings, experiences, and values, are the seedbed of rapport and affect-based trust. However, with cultural differences, tensions can arise in personal conversation due to misunderstood references, misconstrued humor, and so forth. If an intercultural dyad has a member who can adapt to the other person, the dyad is more likely to have a resonant ("same wavelength") conversation that results in mutual affect-based trust. To give a concrete example of this dynamic, when A has high cultural metacognition, he or she is likely to effectively adapt to B during conversations. In other words, A will avoid misunderstanding or offense and the strain and guardedness that ensues in intercultural interactions. This conversational meshing leads B to feel that A is on the same wavelength, A gets him or her, and A can be trusted at a more personal level. At the same time, A also feels in sync with B and develops affect-based trust. A's trust would be further reinforced as B shows signs of affect-based trust in his or her interaction in A such as empathy or personal interest. This process begins with A's effective adaption to B yet becomes a mutually reinforcing trust between the two parties.

Evidence also supports our second claim that affect-based trust enables creative collaboration. Recent research linking social network and creativity has emphasized that creativity is a social process (Burt, 2004; Perry-Smith, 2006) and that fluency and openness in the sharing of diverse and novel ideas is a key to creative performance (Albrecht & Hall, 1991; Perry-Smith, 2006). Several studies manipulating whether or not dyads engaged in personalized communication found that this factor increases mutual positive affect and thereby increases collaborative approaches to resolving a conflict (Argyle, 1990; Drolet & Morris, 2000; Moore, Kurtzberg, Thompson, & Morris, 1999). Chua et al. (2010) more directly showed that affect-based trust is a key predictor of new idea sharing in managers' professional networks. Affect-based trust may be particularly important in intercultural relationships as it buffers the intercultural anxiety that often inhibits close cooperation (Stephan, Helms, & Haynes, 1995; Stephan & Stephan, 1985; Thomas, Bonieci, Vescio, Biernat, & Brown, 1996) and, specifically, the sharing of new ideas (Stephan, Stephan, Wenzel, & Cornelius, 1991). Related to anxiety, managers often feel strain and stress in intercultural relationships in the workplace (Takeuchi, Wang, & Marinova, 2005). Because it is often affective anxiety that impedes communication and cooperation in intercultural relationships, it stands to reason that affect-based trust would be the key to opening up communication and the flow of new ideas.

Additionally, affect-based trust helps address the challenges of conflict and misunderstanding that arise from cognitive gaps in problem representation common in intercultural relationships. Affect-based trust can increase the motivation for the parties involved to carefully listen to and understand the other's alternative perspectives, as opposed to outright dismissing them. When individuals understand and appreciate perspectives that are different from their own, they can better manage the associated frictions, engage in constructive debate,

and harness the inherent differences to generate creative solutions to problems, processes sometimes referred to as "creative abrasion" by management scholars (Leonard & Swap, 1999; Nonaka, 1994). In sum, we posit that because affect-based trust opens up the conduit for frank two-way communication of new ideas and motivates individuals to better understand diverse perspectives, it enables creative collaboration between culturally different individuals.

Hypothesis H2*: The relationship between individuals' cultural metacognition and effectiveness in their intercultural creative collaborations is mediated by affect-based trust.*

An alternative account centers on predicting that cognition-based trust is a mechanism. That is, individuals with low cultural metacognition may rely on pejorative stereotypes about cultural out-groups. They might have simplistic routines or templates for engaging people of other cultures which limit their interactions and hence underestimate the competence and reliability of their colleagues from other cultures. While all of these may be true and may affect their interpersonal interactions, individuals' perceptions of colleagues' reliability and competence probably does not hinge as much on the quality of their interactions as does their affective feelings toward the colleagues. In the professional world, and even in the university, one's judgment of others' competence and reliability comes largely from their reputations and track records. They do not depend as much on one's first-hand interactions as do one's feelings of affect-based trust.

The second part of this alternative account involving a cognition-based trust mechanism would be that lower judgments of colleagues' competence and reliability would interfere with creative collaboration. This part is hard to dispute. Outside of the cultural psychology literature, studies of team interaction highlight the importance of cognitive perceptions of colleagues' capacities as opposed to affective bonds. Team performance on well-structured problems like

puzzles is fostered by group task training, which affords accurate perceptions of others' competencies (transactive memory), and not by team-building training, which instills affective bonds (Moreland, Argote, & Krishnan, 1996; Moreland & Myaskovsky, 2000). More generally, negative expectations of competence and reliability in culturally different others would reduce their attractiveness as exchange partners or "sounding boards" for new ideas. Low confidence in the competence of the other would also decrease one's willingness to listen to alternative ideas and perspectives from that person. These effects would in turn dampen creative collaboration. In sum, it is important to test an alternative account predicting that cognition-based trust is the mechanism for the effect of cultural metacognition on intercultural creative collaboration.

Empirical Approach

Our hypotheses specify how an individual level construct (cultural metacognition) gives rise to an event that occur in intercultural relationships (creative collaboration). This event is determined by two people and perceived by both of them; it can be measured with either of these perceptions or through an objective scoring of their work product. Across our studies we use all of these measures, although not all of them in every study. Our approach is to begin with a test of the link between the independent variable (cultural metacognition) and dependent variable (intercultural creative collaboration). Then we progressively unpack the causal chain by examining intervening mechanisms and limiting conditions. We did so using three different research methods that involve different ways of operationalizing the constructs.

Study 1 uses a multi-rater assessment to test whether a focal manager's cultural metacognition predicts his or her intercultural creative collaboration success as observed by associates from other cultures. By tapping other-culture associates for each of our focal respondents we seek to demonstrate that the effects of cultural metacognition on intercultural

creative collaboration are not merely imagined by the focal managers but rather are real and thus apparent to others.

Study 2 then tests the boundaries of this effect by comparing across the key relationships of a focal manager. Using an egocentric network survey, we ask each manager about the key relationships in his or her professional network, only at the end asking for the cultural background of each associate so that intra- and inter-cultural relationships can be compared. Trust and new ideas sharing (a behavior inherent to creative collaboration) are still conceptualized as interpersonal processes yet operationalized as perceptions from the focal manager's perspective. This approach of assessing interpersonal level variables from one member of the pair is common in organizational research, such as negotiations research (Overbeck, Neale & Govan, 2010) and relationship research (Kenny, 1996). A strength of Study 2 is the external validity—it captures the most important relationships of these manager's professional networks. We seek to demonstrate that the effects of cultural metacognition hold for relationships to different-culture alters but not same-culture alters.

The final study switches to the method of laboratory experiments, gaining internal validity. It examines the hypotheses by considering cultural metacognition on both sides of the intercultural pair concurrently. Because we do not have a-priori predictions on how two individuals with differing levels of cultural metacognition would interact, we conducted a pilot study to explore the dynamics. A key shift in this study is our measurement of the key variables at the dyadic level by considering the maximum, minimum, and average scores of these variables in each dyad. This approach is consistent with recommendations in the groups literature that considers different conceptualization of group constructs such as average, minimum, maximum, and variance (Barrick, Stewart, Neubert, & Mount, 1998; Brannick, Salas, & Prince, 1997).

Drawing on findings from the pilot study, Study 3 then provides a more formal test of our hypotheses with all variables conceptualized at the dyadic level. This combination of methods with complementary strengths provides a stronger test of the validity of the hypotheses than would be possible with one method alone.

Study 1

Participants and Procedures

A total of 43 middle-level managers (81% male, mean age 38) attending an executive MBA course at a large west coast U.S. university participated in this study. Of these, 51% were European-American, 35% East- or South Asian, and the rest were of other cultural backgrounds (e.g., European, Middle Eastern, etc.). These participants rated themselves on the cultural metacognition measures. Our dependent measure—managers' creative collaboration in intercultural relationships—was rated by individuals on the other end of those relationships, namely, people of *different* cultural backgrounds who had worked with the focal managers. Our focus is to get an overall assessment of each manager's creativity-related effectiveness in their range of dyadic working relationships with coworkers of other cultures.

As part of their course requirement, these participants were asked to nominate up to 10 people of *different* cultural backgrounds with whom they had previously worked professionally to provide them with feedback. We told participants that they would receive only aggregate feedback and would never learn which of their observers had filed reports. We checked that these nominated "observers" reported different cultural backgrounds than the focal manager. The observers identified included peers, bosses, and subordinates. On average, 4.37 observers responded for each focal manager, resulting in a total of 188 data points. Each participant was rated by multiple observers, but these observers are unique to each participant and do not rate

other participants. Observers were asked to rate the participant on an array of measures related to leadership development, including items tapping creative collaboration. Rather than asking observers narrowly about their own personal experiences with the focal manager, we asked observers for their general impressions based on what they have experienced and observed, in order to more broadly capture the manager's tendencies in intercultural interactions.

Key Measures

Cultural metacognition. Participants rated their own cultural metacognition using a six-item metacognitive CQ scale developed by Van Dyne and colleagues (Van Dyne, Ang, Ng, Rockstuhl, Tan, & Koh, 2011). These items tap (a) cultural awareness (e.g., "I am aware of how to use my cultural knowledge when interacting with people from different cultures"); (b) adjustment during intercultural interactions ("I adjust my cultural knowledge while interacting with people from a new or an unfamiliar culture"); and (c) planning before intercultural interactions (e.g., "I develop action plans for interacting with people from a different culture"). Cronbach's alpha for this scale is 0.88 for the current sample.

Intercultural creative collaboration. We used third-party observations to assess participants' behaviors in intercultural creative collaboration. Specifically, the dependent measures came from peers who were of different cultural backgrounds than the participants. These observers responded to two items designed to asses participants' effectiveness in interacting with people of other cultures: (a) "This person typically proposes win-win solutions when people from different cultural backgrounds have divergent ideas" and (b) "This person's working relationships with people of other cultural backgrounds help this person and the others do creative, innovative work." Respondents used a 7-point scale (1 = not at all, 7 = to a great extent). Correlation between these two items was 0.57. The *rwg* for the scale is 0.78, suggesting

adequate inter-rater agreement on the outcome variable. We averaged these two items to form our dependent variable.

Control variables

Because prior multicultural experience has been found to influence creative performance (Leung et al., 2008; Maddux & Galinsky, 2009), we controlled for related measures. Specifically, we assessed the number of languages the participants spoke and the number of countries where they have lived ("How many different countries [including the U.S.] have you lived in [for at least 6 months] over your lifetime?") and visited in the previous year ("How many different countries have you visited during the last year?"). We measure these two variables separately because Maddux and Galinsky (2009) found that living overseas for extended periods but not visiting foreign countries predicted creativity. Lastly, we also assessed the degree of participants' previous experiences in interacting with people from different cultures and countries using these items "your overall experience interacting with people who have different cultural backgrounds" and "your overall experience interacting with people from other countries." These items were rated on a 5-point scale ranging from 1 = no experience to 5 = very experienced. We combined these two items (correlated at 0.81) into a single indicator called "past foreign experiences." All responses on the control variables were reported by the participants themselves.

Analyses and Results

Our data involved hierarchically nested variables given that up to 10 observers are nested within a particular respondent. A methodological concern therefore was the non-independence of observations (Klein, Dansereau, & Hall, 1994). To address this data non-independence issue, we used the random-effects regression model (also known as the hierarchical linear model) to

control for the influence of a given participant on multiple dyadic observations (Hausman, Hall, & Griliches, 1984; Hoffman, Griffin, & Gavin, 2000). We chose the random-effects model because cultural metacognition is a participant-level variable; moreover, this model also allows estimates for other substantively interesting aggregate participant-level variables such as international experience and foreign language ability.

Table 1 shows the descriptive statistics and correlations among the key variables. Table 2 reports the results from the hierarchical linear model analyses of observers' rating of participants' intercultural innovation effectiveness. Model 1 contains the control variables whereas model 2 adds the predictor of self-reported cultural metacognition. Results indicate that cultural metacognition has a positive effect ($b = 0.19$, $p < 0.05$) on observers' ratings of participants' ability to engage in intercultural creativity-related work, controlling for prior multicultural experience and foreign language ability. Thus, there is support for hypothesis H1.

Discussion

A key contribution of Study 1 is disambiguating cultural metacognition from individual differences in experience as we controlled for dimensions of international and multicultural experience. While cultural metacognition may be in part a consequence of such experiences, we show that it is not simply a proxy for them—cultural metacognition predicts our effects even when levels of these experiences are controlled. Another important contribution is the use of independent ratings by coworkers from other cultures which provides further assurance that the findings reflect real (rather than imagined) collaborative success. In our next study, we aim to unpack the trust mechanism by measuring both affect- and cognition-based trust and testing their effects. Additionally, we go beyond the general assessment of collaboration effectiveness to measure a specific behavior of creative collaboration—new idea sharing (Albrecht & Hall, 1991;

Hennessey & Amabile, 2010; Taggar, 2002).

Study 2

Participants and Procedures

We surveyed 60 managers attending an executive MBA course in the U.S. (77% male, mean age 35). Of these managers, 66% were European-Americans, 19% East- or South-Asians, and the rest were of other cultural backgrounds (e.g., African-American, European, Middle Eastern, etc.). All had substantial careers as professionals, most as managers in private sector companies, with high-tech firms most commonly represented.

As part of their course requirement, participants completed a social network survey that allowed them to list up to 24 contacts (alters) they considered important members of their professional networks. Specifically, we asked participants to "list anyone that you feel is a significant part of your professional network. One way to identify these people is to go through your address book, and ask 'is this person significant in my professional network?' If you have more than 24 significant contacts, list the most significant 24." This method of surveying our participants' networks allowed us to identify key network members with whom they were likely to collaborate at work and yet not cue participants about the nature of our hypotheses.

On average, participants listed 22 contacts, resulting in a total of 1,219 dyadic participant-alter observations. For each alter listed, the participants provided details regarding their relationship (e.g., frequency of interaction and length of relationship). Also, they indicated whether the basic content of their tie included emotional, economic, task advice, and career advice exchange, which are standard categories in the study of professional networks. Our key criterion variable of sharing new ideas was measured after these relationship questions were completed. Participants finally indicated whether or not the listed contacts were themselves

connected.

Key Measures

Cultural metacognition. Several weeks prior to the network survey, participants completed the Ang et al. (2007) metacognitive CQ subscale. The four items include "I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds," "I am conscious of the cultural knowledge I apply to cross-cultural interactions," "I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me," and "I check the accuracy of my cultural knowledge as I interact with people from different cultures." Cronbach's alpha for this sample is 0.78.

Inter- versus intra-cultural relationships. We asked participants to indicate the cultural background of each listed contact. The categories, designed to fit the population, were European American, African-American, and Asian-American, as well as European, Asian, Middle Eastern, Latino, and other. We then matched the cultural background of the participants with each indicated response to derive a dummy variable, coded "1" if participant and alter's cultural backgrounds are different, "0" if otherwise.

Creative collaboration - Sharing of new ideas. We operationalize creative collaboration in terms of a critical specific behavior – new ideas sharing. After the questions regarding social networks, participants were asked a final query that focused on the exchange of *new* ideas and information with each contact. We measured the likelihood that participants discuss new ideas at work with each alter through the item: "How likely are you to share new insights or information with this person?" Responses were rated on a 5-point scale: 1 (not at all) to 5 (to a great extent). We used a single-item measure to minimize tedium in completing the survey because participants had to answer the same question for every contact they listed.

Single-item measures are commonly used in network research for this reason (Ferrin, Dirks, & Shah, 2006; Marsden, 1990; Umphress, Labianca, Brass, Kass, & Scholten, 2003). Prior research suggests that single-item measures are acceptable when it is impractical to use multi-item scales due to situational constraints (Wanous, Reichers, & Hudy, 1997).

We queried participants' practice of sharing new ideas, as opposed to their *retrospective* recall of sharing new ideas. This approach avoids some problems related to memory biases. Research on memory for relationships suggests that people can accurately recall tendencies (e.g., how often on average one talks to someone per week) but not specific interactions (Stafford, Burggraf, & Sharkey, 1987). In particular, the sharing of an idea that was new at the time might not be remembered as so upon retrospection, when the idea has become so familiar it seems obvious. Our approach of measuring idea sharing as a habitual practice skirts these problems.

Trust. We adapted measures of affect- and cognition-based trust from high factor-loading items (above 0.80) in McAllister's (1995) study. For affect-based trust, participants indicated on a 5-point scale (1 = not at all, 5 = to a great extent) the extent to which they felt comfortable going to each listed alter to share (a) their personal problems and difficulties and (b) their hopes and dreams. These items capture the extent to which participants are willing to make themselves vulnerable to their network alters by disclosing personal information. For cognition-based trust, participants indicated on the same 5-point scale the extent to which they could *rely* on each listed alter to (a) complete a task that alter has agreed to do and (b) have the knowledge and competence for getting tasks done. The correlation for the two affect-based trust items is 0.81, whereas that for the two cognition-based trust items is 0.65.

We conducted multilevel confirmatory factor analyses (CFA) using structural equation modeling (LISREL 8.80) to ensure that the three outcome variables (cognition- and affect-based

trust, and new idea sharing) are distinct. Results indicate that a three factor model where new ideas sharing, cognition-based trust, and affect-based trust items load into respective separate factors has a better fit to the data (χ^2 = 65.58, df = 10, RMSEA = 0.09) than a one factor model (χ^2 = 467.17, df = 10, RMSEA = 0.28) or a two factor model with items for affect-based trust and new idea sharing loading onto the same factor (χ^2 = 118.55, df = 11, RMSEA = 0.13).

Control Variables

Participants' tendency to share new ideas with alters may be influenced by the extent of exposure to people of different cultures. To control for cultural diversity in professional networks, we measured the degree of cultural diversity in participants' networks using Blau's (1977) heterogeneity index. A high score on this index indicates variability in the cultural backgrounds among network members. We also controlled for other attributes that could influence interpersonal trust and hence the sharing of new ideas. Specifically, we controlled for the size of participants' network (number of alters) because prior research suggests that people have limited capacity in maintaining relationships (Granovetter, 1973).

We also controlled for the degree to which alters are embedded (how connected a given alter is to the other alters in the participant's network) and the content of the relationship between participant and alter (e.g., friendship, economic exchange) because past research found that these factors differentially influence cognition and affect-based trust (see Chua, Ingram, & Morris, 2008 for details). Finally, we controlled for the job function that the participant was in given that different types of jobs may require different levels of creative collaborations. We coded the participant's job function based on eight categories: (1) finance/accounting, (2) sales/marketing, (3) operations, (4) general management, (5) technical, (6) business development, (7) research &

development, and (8) other. Dummy coding for these categories were used and entered as controls in the regression analyses.

Analyses and Results

Data non-independence is an issue with our dataset given that up to 24 dyadic relationships are nested within a single respondent. As in Study 1, we used random-effects models for our analyses. Although our analysis focus was on the dyadic relationships, the random-effects model allows for estimation and control of important participant-level variables such network size and the degree of cultural diversity in participants' networks.

Table 3 shows the descriptive statistics and correlations among key variables. Table 4 reports the results from hierarchical linear model analyses of participants' networks. Model 1 contains the control variables and the key predictors. Model 2 adds the interaction effect between participant-alter cultural difference and cultural metacognition. We found a significant interaction effect ($b = 0.21$, $p < 0.01$) such that participants' cultural metacognition predicts new idea sharing with alters of different cultural background ($b = 0.21$, $p = 0.05$) but not with alters of the same cultural background ($b = -0.07$, n.s.). This interaction is illustrated in Figure 1a.

Models 3 and 4 show results for affect-based trust. We observed the same pattern of results as that for sharing new ideas. In model 3, cultural metacognition and participant-alter cultural difference did not have any significant direct effect on affect-based trust. In model 4, the interaction involving these two variables is significant ($b = 0.26$, $p < 0.01$) such that a participant's cultural metacognition predicts his or her affect-based trust in alters of different cultural background ($b = 0.29$, $p < 0.05$) but not in alters of the same cultural background ($b = 0.00$, n.s.). As may be seen in Figure 1b, this interaction effect has the same form as that for new idea sharing. There is a deficit in affect-based trust for low metacognitive CQ managers in their

intercultural ties compared to intracultural ties, or compared to high metacognitive CQ managers in either type of ties. Models 5 and 6 show results for cognition-based trust. The key predictors and their interaction exert no significant effect on this type of trust.

Next, we examined both types of trust as mediators. Because the effect of cultural metacognition on new idea sharing occurs only when alters are culturally different from the participant, we focused on this subset of alters. Table 5 presents the mediation results. Following the Baron and Kenny (1986) procedure for mediation analyses, we first show in model 1 that cultural metacognition has a positive effect on affect-based trust ($b = 0.29$, $p < 0.05$). Model 2 indicates that cultural metacognition had no effect on cognition-based trust ($b = -0.08$, $p > 0.10$), ruling out the alternative explanation that cognition-based trust is a mediator. Model 3 shows the direct effect of cultural metacognition on likelihood to share new ideas ($b = 0.21$, $p < 0.05$). When we added affect-based trust in the analyses (model 4), the effect of cultural metacognition completely disappeared suggesting a mediation effect. The effect of affect-based trust on the dependent variable of idea sharing remains significant. For completeness, models 5 and 6 show effects of adding cognition-based trust and both types of trust. These two models show that controlling for cognition-based trust, adding affect-based trust causes the effect of cultural metacognition to disappear. Bootstrapping mediation analyses (Preacher & Hayes, 2004; Shrout & Bolger, 2002) using 5,000 iterations with 95% confidence interval (CI) indicated that the indirect effect through affect-based trust as mediator is significant (95% CI = 0.01 to 0.17; bias-corrected confidence interval excludes zero), but that for cognition-based trust is not (95% CI = -0.10 to 0.01). In sum, these results suggest that with low cultural metacognition, managers' reduced likelihood to share new ideas is mediated by affect-based trust but not cognition-based trust.

Discussion

Study 2 demonstrated that managers with lower cultural metacognition are less likely to have developed affect-based trust in their intercultural relationships and are thereby less likely to share new ideas in these relationships. A strength of the network survey method in Study 2 is specifying the scope of the effect: results showed that the deficits in trust and creativity-related communications associated with lower cultural metacognition appear solely in *inter*cultural relationships, not in *intra*cultural relationships. This finding assures that cultural metacognition is not simply a proxy for openness or creativity, but truly an individual capability specifically relevant to culture.

Although the egocentric network survey in Study 2 allows assessment of the mediating and dependent variables with respect to all of the important relationships in a manager's professional life, it has the limitation of relying on the respondent's self-report. Relatedly, all the responses in Study 2 were collected from the same source (i.e., the respondent). Although the key predictor of cultural metacognition was administered separately from the rest of the survey at a different point in time, ameliorating some concerns associated with common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), it would be valuable to replicate the key effects with independent and dependent variables collected from separate sources and at different points in time. In the next study, we do so.

Study 3

Our prior studies have surveyed executives and their associates about the important professional relationships in their career. The evidence these studies have provided for the link between cultural metacognition and creative collaboration is high in external validity; however, the purely associational nature of survey methods means that the evidence is lower in internal

validity. To know whether cultural metacognition causes affect-based trust and creative collaboration, rather than the causality flowing in the opposite direction, it is necessary to investigate the manifestation of trust in an interaction between people who do not already have a close working relationship.

A pilot study examined whether the relationships among cultural metacognition, trust, and creative collaboration hold in dyads assembled for a task who have no prior working relationship. The objective of this pilot study is to explore a method to study dyadic intercultural creative collaboration, helping to set the stage for Study 3. Seventy-six MBA students (58% male, mean age 28.6) were assigned into dyads for an in-class negotiation exercise. These 38 dyads were constructed such that each consisted of two students with different cultural backgrounds. These students did not know each other well prior to this exercise—a pre-negotiation survey found that students reported a low interaction frequency with their assigned partner both socially (average = 1.67) and professionally (average = 1.37) on a 7-point frequency scale (1 = never, 4 = two to three times a month, 7 = daily). Following a 5-minute ice-breaker where students talked about their experiences at the university, they were given 20 minutes to complete the negotiation. Students then completed a post-negotiation survey that, among other things, tapped their degree of trust and assessment on whether their partner would be a good partner for future creative collaboration, our criterion variable. The key measures in this pilot study are (a) *cultural metacognition*—measured using the same six-item scale as in Study 1; Cronbach's alpha for this scale is 0.88 for the current sample; (b) *intercultural trust*—measured with the question "Did the negotiation make you trust your counterpart? (1 = not at all, 4 = to some extent, 7 = to a great extent)"; and (c) *perception of the other as an effective partner for creative collaboration*—measured by the question: "Based on your interaction with your

counterpart in this negotiation exercise, to what extent is he or she a good partner to work with on future projects that require considerable innovation and creativity? (1 = not at all, 4 = to some extent, 7 = to a great extent)."

We analyzed our data at the dyadic level, computing dyad-level cultural metacognition, trust, and creative collaboration by taking the average of the two partners' ratings on these variables. We found that dyad-level cultural metacognition has a positive association with perceptions that the counterpart is an effective partner for creative collaboration ($b = 0.52$, $p < 0.05$). When trust was included in our analyses, this association disappeared ($b = 0.31$, $p = 0.14$), suggesting a mediation effect. Using 5,000 bootstrap re-samples with a 95% confidence interval in our analyses, we found a significant mediation effect—bias-corrected confidence interval for the indirect effect does not include zero (95% CI = 0.07 to 0.50). Average cultural metacognition had a positive relationship with trust ($b = 0.68$, $t = 2.19$, $p < 0.05$), which in turn had a positive relationship with the dependent variable ($b = 0.30$, $t = 2.90$, $p < 0.01$).

We further analyzed the dyad composition to better understand if it was the higher or lower of the dyads' cultural metacognition that drove this pattern of result. Thus, instead of using the average level of the partners' cultural metacognition ratings, we created two variables to denote the higher and the lower value of this variable in each dyad. We found that it was the person with the higher cultural metacognition in the dyad that is driving the relationship. Specifically, the maximum cultural metacognition in a dyad has a significant positive relationship with creative collaboration ($b = 0.42$, $p = 0.01$). When trust is included in the analyses, the effect of cultural metacognition on creative collaboration disappeared ($b = 0.19$, $p = 0.29$). Trust significantly predicts creative collaboration ($b = 0.29$, $p < 0.05$). Mediation analyses indicated significant mediation—bias corrected confidence interval for the indirect effect does

not include zero (95% CI = 0.07 to 0.50). The minimum cultural metacognition in a dyad did not have a significant relationship with creative collaboration (b = 0.21, p = 0.26).

The pilot experiment adds to the prior evidence by measuring trust in stranger dyads. Importantly, it shows that a dyad needs at least one person high in cultural metacognition to bridge the gap in intercultural creative collaboration. This pilot experiment, however, did not have any concrete measure of creative collaboration, relying on self-report of whether the other would be a good partner for future creative collaboration. Additionally, analyses using non-experimental data risk producing biased estimates of mediation effects because unobserved variables may cause the error terms of the mediator and outcome variables to co-vary (Bullock, Green, & Ha, 2010; Spencer, Zanna, & Fong, 2005). Various scholars have recommended using an experimental approach wherein the mechanism is manipulated to lend further credence to claims of mediation effects (Bullock et al., 2010). We next conducted a laboratory experiment to address these concerns. Rather than manipulating the mediator directly, we manipulated the context that influences affect-based trust, our mediator, to more incisively demonstrate the effect of this variable[1]. We also used third-party expert assessments to gauge creativity of products jointly created by dyads comprising individuals from different cultures.

Participants and Procedures

We recruited 236 students (45% male, mean age 21.3) from a large east coast university to complete a series of tasks. Upon arriving at our laboratory, participants independently completed a battery of individual differences questionnaires, including a measure of cultural metacognition. This was followed by a filler survey for an unrelated study and an individual task. In this task, participants were given a list of ingredients from different cultures (e.g., American,

[1] It is common practice in psychological research to manipulate antecedents to the psychological states of interests as opposed to the states themselves which are harder to directly access.

Chinese, Indian, Thai, etc.) and asked to generate a recipe for a new chicken dish for a soon-to-open restaurant. This task was adopted from one used by Cheng, Sanchez-Burks, and Lee (2008).

Next, we randomly *matched* each participant with another participant who is of a different cultural background, based on their self-report cultural backgrounds (including European-Americans, African-Americans, Asian-Americans, and international students from various countries). We checked with the participants in each dyad to ensure that they had no prior relationships. These dyads were then assigned into one of two experimental conditions (see below). Participants were told they were about to do a collaborative task, but we gave details of the joint task only after the experimental manipulation. After the manipulation, participants learned that the joint task was to collaboratively create a new chicken dish recipe. This joint task represents a scenario that an entrepreneurial team might face and that would reward creative collaboration. The joint recipe had to be different from the individual recipes created earlier. In both individual and joint tasks, we told participants that their recipes had to be creative—defined as "new, delicious, and popular with potential customers." Upon completing the joint task, participants independently completed a post-task survey on their collaboration experience.

Manipulation

About half of the 118 dyads (62) were randomly assigned to the "personal conversation" condition, and the rest to the "no-conversation" condition. In the "personal conversation" condition, similar to the paradigm used in the pilot study, participants in the dyad were required to have a personal conversation before the work task begin. The procedure required participants to share with each other important and meaningful personal moments that they had experienced at the university which have shaped their feelings toward the university community. Participants were cautioned by the experimenter to discuss only this topic and nothing else. In the "no-

conversation" condition, participants were simply introduced before receiving instructions for the problem solving task. This condition was designed to go beyond demonstration of the associational mediation effects in the prior studies and examine what happens when the preconditions for affect-based trust, the key mechanism in our thesis, are absent[2]. In sum, we were allowing participants to build affect-based trust prior to the joint task in one condition but not the other. Dyads who held an initial personal conversation should develop affect-based trust to varying degrees, depending on their levels of cultural metacognition. Hence, we expect our proposed mediation effect to hold in the personal conversation condition but not in the no-conversation condition because in the latter condition, there was no opportunity for the personal exchange that creates affect-based trust (dyads consist of strangers who just met). This design of comparing dyads with and without the history of a brief personal conversation follows in a tradition of such experimental comparisons (e.g., Mislin, Campagna, & Bottom, 2011; Moore et al., 1999).

Key Measures

Cultural metacognition. As in Study 1, participants rated their own cultural metacognition using the six-item metacognitive CQ scale (Van Dyne et al., 2011). Cronbach's alpha for this scale is 0.88 for the current sample.

Trust. We measured both cognition- and affect-based trust using three items each (adapted from McAllister, 1995) right before the participants began the joint task. For cognition-based trust (Cronbach's alpha = 0.89), participants rated the extent that they could rely on their assigned partners to (a) complete a task that they had agree to do, (b) have the knowledge and

[2] Any form of communication, even if it was about a non-personal topic like a current event, could induce affect-based trust if the participants discovered common personal attitudes, aspirations, and values during the conversation (Peters & Kashima, 2007; Pullin, 2010). Thus, to examine what happens when there is no opportunity to build affect-based trust, we designed a condition under which participants would launch into the collaborative task immediately without prior interactions.

competence for getting tasks done, and (c) approach their work with dedication and professionalism. For affect-based trust (Cronbach's alpha = 0.82), participants rated the extent that they felt comfortable going to their partners to (a) share their personal problems and difficulties, (b) share their hopes and dreams for the future, and (c) obtain constructive and caring feedback about problems they had. We aggregated the two partners' responses to derive dyad level measures for each type of trust.

Creative collaboration. We assessed effectiveness in intercultural creative collaboration with three measures. First, participants rated their counterparts using a 7-point scale to the extent that they were good partners for creative work. We used the following three items: (a) "How interested are you in working on another creativity task with your partner if given a chance to do so in the future?"; (b) "Overall, how would you rate your partner's creativity?"; and (c) "To what extent is he or she a good partner to work with on projects that require considerable innovation and creativity?" Cronbach's alpha for this scale is 0.92. Second, we measured participants' assessment of information and idea exchange during the joint task. The items were (a) "How forthcoming is your partner in sharing his or her ideas with you?" and (b) "How open is your partner in sharing information that he or she knows with you?" Correlation between these two items was 0.86. We aggregated the two partners' responses to derive dyad level measures for each of these criteria variables.

Our third measure involved third-party ratings of the joint recipes created by dyads. Two expert judges with culinary experience independently evaluated the recipes on five dimensions (delicious, popular, novel, unique, and creative); judges were told that a "creative" dish is one that is both new and tasty. Overall, this performance measure captured both the usefulness and novelty aspects of creativity. Cronbach's alpha for this scale is 0.95 and inter-rater reliability is

0.64; we thus aggregated the items across the two judges to create a composite score for joint creative performance. We also evaluated the individually created recipes in the same way.

Manipulation Checks

Analysis of variance indicated that, controlling for dyad level cognition-based trust, dyad level affect-based trust is higher in the personal conversation condition than in the no-conversation condition (personal conversation condition: $M = 3.57$, $SD = 0.76$; no-conversation condition: $M = 2.98$, $SD = 0.90$; $F(1, 115) = 12.17$, $p < 0.01$). Cognition-based trust did not differ significantly between these two conditions (personal conversation condition: $M = 4.95$, $SD = 0.94$; no-conversation condition: $M = 4.72$, $SD = 0.64$; $F(1, 115) = 0.35$, $p = 0.56$). These findings suggest that affect-based trust but not cognition-based trust was curbed in the no-conversation condition.

Preliminary Analyses

We first conducted analysis of variance on individual creative performance as measured by evaluations on the individual task and found no difference across the two conditions ($F(1, 231) = 0.85$; $p = 0.36$). This result assures that participants in the two conditions have comparable prior creative ability on the recipe task. Individuals' cultural metacognition did not predict their creative performance on the individual task ($b = 0.00$, $p > 0.10$). Further analyses found that joint creative performance (but not idea sharing or perceptions of counterparts as effective partners for creative work) was positively associated with the higher of the individual creative performance in a dyad ($b = 0.25$; $p < 0.05$), implying that a dyad's creative performance is in part driven by the more creative partner. Thus, we would further control for the influence of this factor in the subsequent analyses. Whether or not the dyads are of same or different gender did not impact trust or any of the outcome variables.

Analyses and Results

We analyzed our data at the dyadic level. Table 6 presents the correlations and descriptive statistics for the key variables in this study. Table 7 presents multivariate regressions on the three dependent variables. Because results from the pilot experiment suggested that it was the individual with the higher cultural metacognition in a dyad that primarily accounted for our proposed effects, we tested our hypotheses with this variable. For each dyad, we derive a new variable that takes the value of the higher of the two cultural metacognition scores. Model 1 shows that conversation manipulation had no main effect on the dependent variables ($p > 0.10$). Model 2 adds the higher of the two cultural metacognition scores in each dyad. Results indicate that cultural metacognition had a significant main effect on joint creative outcome ($b = 0.14$, $p < 0.05$) but not the other two variables. Model 3 adds the interaction term between cultural metacognition and the conversation manipulation, revealing significant interaction effects for all three dependent variables. The pattern of interaction is such that cultural metacognition had positive impact on the creative collaboration variables in the personal conversation condition ($p < 0.05$ for all three variables) but not in the no-conversation condition. The results remained significant even when the higher individual creative performance in the dyad was controlled for. We also analyzed the interaction effect between cultural metacognition and conversation manipulation on affect-based trust measures, controlling for cognition-based trust. A similar pattern of interaction effect emerged ($b = 0.26$, $p = 0.065$). Specifically, cultural metacognition predicted affect-based trust in the personal conversation condition ($b = 0.23$, $p < 0.05$) but not in the no-conversation condition ($b = - 0.03$, $p = 0.75$). The same set of analyses repeated using the average scores of the two partners' cultural metacognition or the lower of the two cultural metacognition scores did not yield any significant result.

Because we predicted the proposed affect-based trust mediation effect to hold in the conversation condition but not in the no-conversation condition, we tested this pattern of effect using the first stage moderated mediation model outlined by Edwards and Lambert (2007). In this model, the manipulation (personal conversation vs no-conversation) "moderates" the effect of cultural metacognition on affect-based trust, which in turn predicts the outcome variables related to intercultural creative collaboration. Using SPSS macros specified by Preacher, Rucker, and Hayes (2007), we tested the conditional indirect effects of cultural metacognition on the dependent variables for each level of the manipulation using the bootstrapping approach with 5,000 iterations. Results indicate that interaction effects between the manipulation and cultural metacognition were significant for all three outcome variables and affect-based trust ($p < 0.05$). The indirect effects in the personal conversation condition were significant in that the 95% bias-corrected confidence interval for these effects did not include zero (joint creativity performance: CI = 0.01 to 0.12; perception of other as effective partner for creative work: CI = 0.01 to 0.18; new idea and information sharing in dyad: CI = 0.01 to 0.13). Conversely, the indirect effects in the no-conversation condition were all non-significant in that the 95% bias-corrected confidence interval for these effects included zero (joint creativity performance: CI = - 0.07 to 0.06; perception of other as effective partner for creative work: CI = - 0.06 to 0.05; new idea and information sharing in dyad: CI = - 0.06 to 0.05). Further bootstrapping tests with 5,000 re-sampling to compare the two sets of indirect effects indicated that these effects are significantly different (95% bias-corrected CI excluded zero for all three outcome variables: joint creativity performance: CI = 0.01 to 0.22; perception of other as effective partner for creative work: CI = 0.01 to 0.19; new idea and information sharing in dyad: CI = 0.01 to 0.16).

Given that the effects of cultural metacognition on intercultural creative collaboration depended on the condition of personal interaction before the task, we focused our next analyses on the dyads in the personal conversation condition. Table 8 shows details of these mediation analyses. Model 1 shows that cultural metacognition predicts affect-based trust ($b = 0.24$, $p < 0.05$). Regression analyses in model 2 indicate that cultural metacognition had positive significant impact on all three outcome variables ($p < 0.05$). When affect-based trust was added to the analyses (model 3), the effects of cultural metacognition were either reduced or became non-significant. The effects of affect-based trust on the outcome variables were significant even when cultural metacognition was in the model ($p < 0.05$). Mediation analyses using the bootstrapping approach with 5,000 iterations indicated that affect-based trust partially mediates the effect of cultural metacognition on joint creative performance and perceptions of the other as effective partners for creative work; affect-based trust fully mediates the effect of cultural metacognition on idea sharing. Consistent with the results from moderated mediation analyses, all the indirect effects are significant with the 95% CI excluding zero. Cognition-based trust was not a viable mediator—when this variable was added in our analyses, all the effects of cultural metacognition on the outcome variables remained intact. None of these above reported mediation effects surfaced when we analyzed only data in the no-conversation condition.

Discussion

This study shows that when working with a stranger from a different culture on a task that rewards creative collaboration, high cultural metacognition in one of the two individuals gives the dyad the potential for affect-based trust and creativity. This potential, however, is only realized if the partners have a personal conversation to build affect-based trust. This finding is consistent with prior findings that rapport develops between strangers when they are asked to

have a personal conversation about feelings they have in common (e.g., Drolet & Morris, 2000). A key feature of Study 3 is the experimental manipulation of conditions that facilitate the mediating mechanism. This experimental approach to mediation provides further confidence for our proposed mediation argument. Additionally, this study adds to prior studies in this research by providing empirical evidence involving objective evaluation of creative outcomes, rather than merely self- or peer-reports.

General Discussion

Our research demonstrates that individual variations in cultural metacognition play a critical role in intercultural creative collaboration. Four studies collectively provided the first empirical evidence that individuals high in cultural metacognition are more effective in intercultural creative collaboration, in part because they develop higher affect-based trust in intercultural relationships.

Theoretical Implications

This research has several key theoretical implications. First, cultural metacognition appears linked to a certain type of trust. Affect-based trust, but not cognition-based trust, is positively associated with cultural metacognition. Why not cognition-based trust, i.e., individuals' expectations of the other's competence and reliability? Most likely, these expectations are less contingent on ones' personal interaction with a given colleague and more on objective indicators, such as the other's observable accomplishments and institutional affiliation. Put differently, individuals with low cultural metacognition may have just as much cognition-based trust in their intercultural ties as do individuals with high cultural metacognition, but they lack the affect-based trust that arises out of their personal experiences of meshing well through mindful intercultural interactions. Another explanation could be that the driving force

that underlies cultural metacognition is related to people's motivation to adapt and modify their cognitive schema during intercultural interaction. This motivation might have an affective root to the extent that people are more motivated to adjust their schemas if they are inclined to build stronger emotional bonds with their partners of different cultures and genuinely want their collaborative relationship to work[3].

Second, we extend existing research on culture and creativity (Goncalo & Staw, 2006; Leung et al., 2008). Several areas of psychology and organizational research have linked cultural diversity and creativity. At the individual level, performance on creativity tasks is higher for people with extended life experience in diverse cultures (Leung et al., 2008; Maddux & Galinsky, 2009). At the group level, cultural diversity is associated with increased creative problem solving, provided there is enough time to work through miscommunications and conflicts (Giambatista & Bhappu, 2010; Hackman, 1990; Swann, Kwan, Polzer, & Milton, 2003). Our research looks at the dyad level to explore creative collaboration between people of different cultures. Our findings join emerging psychological research (Cheng et al., 2008) in emphasizing the role of individual differences in harnessing the power of multiculturalism for creativity. Cheng and colleagues found that only bicultural individuals with integrated cultural identities tend to be creative on tasks calling for knowledge that draws on both identities; we show that individuals who are low in cultural metacognition are less likely to share new ideas in cross-cultural relationships and succeed in intercultural creative work. Hence, merely having access to multiple cultural knowledge sources seems insufficient for creativity and its related processes to flourish. Similarly, having multiple cognitive structures does not necessarily mean that one is able to recombine them creatively to suit new cultural challenges. Only individuals with the attributes needed for connecting the multiple knowledge sources or cognitive structures

[3] We thank an anonymous reviewer for this interesting insight.

gain an innovation advantage. Our finding therefore extends a growing area of organizational research that suggests that innovation can arise from having diverse social network ties in combination with a communication process that enables ideas to come together (Burt, 2004; Hargadon & Bechky, 2006).

Third, our research expands existing creativity research by focusing squarely on intercultural creative collaboration. Over the past decades, researchers have produced voluminous research on individual and group creativity, documenting effects of various antecedents (e.g., intrinsic motivation and team diversity, etc.) and contextual factors (e.g., leadership style, network structures, and organizational climate, etc.) (George, 2007). Surprisingly little research has been conducted on creativity at the dyadic level. In addition, it is only in recent years that scholars have begun to explore the effects of culture on creativity (Leung et al., 2008; Maddux & Galinsky, 2009). Given that global problems increasingly call for intercultural collaboration, it is important that researchers explicitly investigate antecedents and barriers to effective intercultural creative work. Our research represents an original effort in this direction.

Fourth, our research contributes to the growing body of research on CQ. Recent research by Imai and Gelfand (2010) found that in the context of intercultural negotiations, only minimum overall CQ and motivational CQ (the motivation and efficacy to engage culturally different others) predicted integrative behaviors, resulting in higher joint gains. Additionally, only behavioral CQ (behavioral flexibility during intercultural interactions), but not other dimensions of CQ, predicted sequences of cooperative strategies. Our research adds to this stream of findings by demonstrating the effects of metacognitive CQ on intercultural creative collaboration. These findings collectively suggest that different dimensions of CQ seem to have specific distinct

effects on interactions between individuals from different cultures. Thus, it is important that research on CQ be clear on what specific dimension of CQ is responsible for its predicted effects.

Our finding that it was the higher cultural metacognition in a dyad that matters more for creative collaboration differs from findings in Imai and Gelfand's (2010) recent research. These researchers found that it was the weaker link in the dyad (lower motivational CQ) that mattered most. We speculate that solving a negotiation exercise is a well-structured problem that primarily requires a certain level of motivation to persist and to cooperate with someone from another culture. Creative collaboration is a much more complex and less structured problem; collaboration requires that people share new ideas and try out new ways of combining ideas and hence requires trust. As affect-based trust is often lacking in intercultural interactions and relationships (Jiang, Chua, Kotabe, & Murray, 2011), the predictor of intercultural collaboration should be a CQ strength that enables people to develop affect-based trust with people from other cultures. A person with high metacognitive CQ can mesh conversationally with people from other cultures and thereby bring about affect-based trust and ultimately creative collaboration.

Is it possible that metacognitive CQ, besides enhancing intercultural interactions, can potentially help individuals draw on knowledge from other cultures more effectively and ultimately come up with more novel ideas? In Study 3, we were able to check for the influence of individuals' creativity and found that the effects of metacognitive CQ still hold even when the higher score of the two persons' creativity score was controlled for. Hence, while it is plausible that metacognitive CQ might enable individuals to come up with better ideas during collaboration, this individual level creativity process is unlikely to be the key driver to

intercultural creative collaboration, which we believe relies much more on the way the individuals interact with each other than the individuals' creativity per se.

Practical Implications

Findings from our research also have practical implications for promoting knowledge sharing and innovation in global teams and organizations. Global teams often face the challenge of getting members from different cultures and countries to work effectively with one another (Hagel & Brown, 2005). Research on teams and groups has been generally critical of training activities focused on affect and socio-emotional connections rather than on task-specific strategies (Moreland et al., 1996). However, our findings agree with recent integrative models suggesting that coaching designed to cultivate more emotional and personal connections may be particularly valuable early in a team's work together (Hackman & Wageman, 2005). Establishing affect-based trust increases the likelihood that new ideas will be shared, without which a global team has little chance of leveraging its diversity for innovation.

In addition, the present research highlights the importance of cultural awareness in intercultural interactions. As managers develop their intercultural skills, it is important to note that acquiring knowledge about other cultures, although important, may not be sufficient for effective intercultural work. Managers need to build metacognitive strategies for managing cultural knowledge, knowing how to learn about other cultures in anticipation of intercultural encounters, and checking and updating assumptions during interactions in relation to the cultural environment (Ang et al., 2007; Shapiro et al., 2008). Some ways to develop cultural metacognition include tactics such as deep reflection and development of generalizable lessons based on past intercultural experiences (Earley & Peterson, 2004; Ng, Van Dyne, & Ang, 2009). For instance, Ng and colleagues (2009) recommended that managers should actively reflect on

their intercultural experiences and systematically document their insights and lessons learned in a journal. Keeping a journal would help managers identify strengths and weaknesses in their past intercultural experiences, consider what they could have done differently and what they can do differently the next time, and hence cultivate the habit of cultural metacognition.

Limitations and Future Research

As with all research, there are limitations to the present studies. A key concern is that cultural metacognition was measured solely based on self-report. Given that individuals who are unskilled on a given dimension often lack awareness of this (Kruger & Dunning, 1999), an externally assessed measure of cultural metacognition would strengthen our studies. To our knowledge, no such assessment exists yet, but some CQ researchers are in the midst of developing ways to assess cultural metacognition as well as other dimensions of CQ using more objective tests. It would be interesting to see if these new forms of cultural metacognition assessment would yield similar results in future research.

Another limitation is that while we measured a specific behavioral aspect of creative collaboration, i.e., new idea sharing, there are likely to be other behavioral processes that might also be important. Thus, another direction for future research is to examine the specific behaviors of individuals with high versus low cultural metacognition during the intercultural creative collaboration process. Do people with high cultural metacognition conduct conversations differently than those with low cultural metacognition? One approach would be to videotape the intercultural meetings and systematically code the various types of verbal and nonverbal behaviors. Individuals with high cultural metacognition may hedge their statements more and ask clarifying questions rather than making presumptuous statements.

The individual studies reported in this research have specific limitations. In Study 1, where the creative collaboration measure was a perception from other-culture associates, the question was worded in a way that could be interpreted as asking about both working relationships and creative collaboration success, whereas it would be better if asked about creative collaboration in working relationships. We acknowledged that in Study 2 the correlation between the two cognition-based trust items ($r = 0.65$), while significant, was somewhat low. Prior research by Chua et al (2008), however, has found that this 2-item version of the cognition-based trust scale was highly correlated ($r = 0.95$) with the corresponding complete scale from the McAllister (1995) study. Thus, we are not overly concerned with the low correlation. In the pilot study preparing for Study 3, a simple general trust measure was used rather than more detailed affect- and cognition-based trust measures, as it was not aiming to test the hypothesis incisively but merely check the efficacy of the conversation manipulation. In Study 3, the two types of trust were measured as competing mechanisms. They cover the affective and cognitive dimensions of a nascent relationship that would drive creative collaboration success. Our results show that the affective dimension increases in the presence of personal communication and drives creative collaboration success, whereas the cognitive dimension does not. While the study provided a test between two theoretically plausible mediators and replicated the Study 2 findings in favor of the affective mechanism rather than the cognitive mechanism, it is always possible that there is some other intervening process that neither of our measured mediators captured, although it is not clear what it could be. Future research could attempt to rule out other mechanisms by measuring other dimensions of the relationship, beyond trust, and also by manipulating other conditions for the development of affect-based trust from cultural metacognition, besides personal communication. In sum, each of the individual studies has their limitations, and that is why we present four

studies with varying methods that have complementary strengths. While there might be alternative accounts for particular studies, no alternative account can survive all the studies. As is typical in social psychology and micro-organizational behavior research, it is the package of studies that is incisive with regard to our thesis rather than there being one definitive, critical experiment.

Beyond addressing limitations of the present research, future research could also further probe the cognitive processes associated with cultural metacognition. For example, one might use fMRI scans to distinguish brain regions that are activated when individuals with high cultural metacognition interact with someone of another culture. We expect activation in areas involved in checking for conflicts and less activation in areas associated with stereotype use (Kerns et al., 2004; Lieberman, 2003).

Finally, it is important to investigate what engenders cultural metacognition. To what extent is cultural metacognition a relatively stable trait? Can it be enhanced via specific interventions? Klafehn and colleagues (2008) suggested that the development of cultural metacognition could very well involve both stable individual differences such as personality and environmental exposure. Multicultural experiences such as living abroad can provide individuals with opportunities to interact with people from other cultures, helping them to develop their awareness and sensitivity toward cultures different from theirs. However, not everyone can harness these opportunities to the fullest extent. Individuals low in the personality trait of openness to new experiences, for example, might resort to cultural stereotypes to manage the uncertainties associated with interacting across cultures, preventing them from forming nuanced cognitive strategies for cross-cultural interactions. Although the argument that one's level of cultural metacognition depends on the interaction between personality traits and prior cultural

experiences seems plausible, it has not been empirically tested. Future research that tests this hypothesis would make a valuable contribution to the literature and help shed light on the nature of cultural metacognition.

Conclusion

The current research has clear theoretical and practical implications for understanding and promoting creativity, innovation, and problem solving in multicultural global contexts. Managers seeking creative collaborations from their relationships with people of different cultures should be advised to cultivate cultural metacognition. Such cultural metacognition guides individuals to better navigate intercultural interactions and serves to foster affect-based trust between people of different cultures, in turn smoothing the creativity process. To date, there has been little research that directly examines how creative work between people of different cultures can be enhanced. We believe our research serves as an important step toward stimulating investigations in this area.

References

Albrecht, T. L., & Hall, B. J. (1991). Facilitating talk about new ideas: The role of personal relationships in organizational innovation. *Communication Monographs, 58*, 273–288.

Ang, S., & Van Dyne, L. (Eds.). (2008). *Handbook of cultural intelligence: Theory, measurement, and applications*. Armonk, NY: M.E. Sharpe.

Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Templer, K. J., Tay, C., et al. (2007). Cultural intelligence: Its measurement and effects on cultural adaptation and task performance. *Management and Organization Review*, *3*(3), 335–371.

Ang, S., Van Dyne, L., & Tan, M. L. (2011). Cultural intelligence. In Sternberg, R. J., & Kaufman, S. B. (Eds.), *The Cambridge Handbook on Intelligence* (pp. 582-602). New York: Cambridge University Press.

Argyle, M. (1990). The nature of rapport. *Psychological Inquiry, 1*, 297–300.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology,* 51, 1173–1182.

Barrick, M.R, Stewart, G.L. Neubert, M.J., & Mount, M.K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology,* 83(3), 377-391

Bernieri, F. (1988). Coordinated movement and rapport in teacher-student interactions. *Journal of Nonverbal Behavior, 12*(2), 120–138.

Bernieri, F. J., & Gillis, J. S. (1995). The judgment of rapport: A cross-cultural comparison between Americans and Greeks. *Journal of Nonverbal Behavior, 19*, 115–130.

Blau, P. M. (1977). *Inequality and composition: A primitive theory of social structure*. New York: Free Press.

Brannick, M.T., Salas, E., & Prince, C. (1997). *Team performance assessment and measurement: Theory, methods, and applications*. Psychology Press, New York.

Branzei, O., Vertinsky, I., & Camp II, R. D. (2007). Culture-contingent signs of trust in emergent relationships. *Organizational Behavior and Human Decision Processes*, *104*(1), 61–82.

Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (Don't expect an easy answer). *Journal of Personality and Social Psychology*, *98*(4), 550–558.

Burt, R. S. (2004). Structural holes and good ideas. *The American Journal of Sociology*, *110*(2), 349–399.

Butler, J. K. (1991). Towards understanding and measuring conditions of trust: Evolution of a condition of trust inventory. *Journal of Management*, *17*, 643–663.

Caligiuri, P. M. (2000). The Big Five personality characteristics as predictors of expatriate's desire to terminate the assignment and supervisor-rated performance. *Personnel Psychology*, *53*(1), 67–88.

Cheng C. Y., Sanchez-Burks, J., & Lee, F. (2008). Connecting the dots within: Creative performance and identity integration. *Psychological Science*, *19*(11), 1177–1183.

Chua, R. Y. J., Ingram, P., & Morris, M. W. (2008). From the head and the heart: Locating cognition- and affect-based trust in managers' professional networks. *Academy of Management Journal*, *51*(3), 436–452.

Chua, R. Y. J., Morris, M. W., & Ingram, P. (2010). Embeddedness and new idea discussion in professional networks: The mediating role of affect-based trust. *Journal of Creative Behavior*, *44*(2), 85–104.

Cook, J., & Wall, T. (1980). New work attitude measures of trust, organizational commitment and personal need nonfulfilment. *Journal of Occupational Psychology, 53,* 39–52.

Cronin, M. A., & Weingart, L. R. (2007). Representational gaps, information processing, and conflict in functionally diverse teams. *Academy of Management Review, 32*(3), 761-773.

Crotty, S., & Brett, J. (2009). *Fusing creativity: Cultural metacognition and teamwork in multicultural teams* (Working Paper Series No. 09-05). Dubai School of Government.

Diehl, M., & Stroebe, W. (1987). Productivity loss in brainstorming groups: Toward the solution of a riddle. *Journal of Personality and Social Psychology*, *53*(3), 497–509.

Diehl, M., & Stroebe, W. (1991). Productivity loss in idea-generating groups: Tracking down the blocking effect. *Journal of Personality and Social Psychology*, *61*(3), 392–403.

Drolet, A. L., & Morris, M. W. (2000). Rapport in conflict resolution: Accounting for how face-to-face contact fosters mutual cooperation in mixed-motive conflicts. *Journal of Experimental Social Psychology*, *36*, 26–50.

Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Stanford University Press.

Earley, P. C., Ang S., & Tan, J. S. (2006). CQ: Developing cultural intelligence at work. Stanford University Press.

Earley, P. C., & Peterson, R. S. (2004). The elusive cultural chameleon: Cultural intelligence as a new approach to intercultural training for the global manager. *Academy of Management Learning & Education*, *3*(1), 100–115.

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, *12*, 1–22.

Ferrin, D. L., Dirks, K. T., & Shah, P. P. (2006). Direct and indirect effects of third-party relationships on interpersonal trust. *Journal of Applied Psychology, 91,* 870–883.

Gelfand, M., Erez, M., & Aycan, Z. (2007). Cross-cultural organizational behavior. *Annual Review of Psychology, 58,* 479–514.

George, J. M. (2007). Creativity in organizations. *Academy of Management Annals, 1*(1), 439–477.

Gertsen, M. C., & Søderberg, A. (2011). Intercultural collaboration stories. On narrative inquiry and analysis as tools for research in international business. *Journal of International Business Studies, 42*(6), 787–804.

Giambatista, R. C., & Bhappu, A. D. (2010). Diversity's harvest: Interactions of diversity sources and communication technology on creative group performance. *Organizational Behavior and Human Decision Processes, 111*(2), 116–126.

Gillis, J. S., Bernieri, F. J., & Wooten, E. (1995). The effects of stimulus medium and feedback on the judgment of rapport. *Organizational Behavior and Human Decision Processes, 63,* 33–45.

Goncalo, J. A., & Staw, B. M. (2006). Individualism—collectivism and group creativity. *Organizational Behavior and Human Decision Processes, 100*(1), 96–109.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology, 78*: 1360–1380.

Hackman, R. (1990). *Groups that work (and those that don't): Creating conditions for effective teamwork*. San Francisco, CA: Jossey-Bass.

Hackman R., & Wageman, R. (2005). A theory of team coaching. *Academy of Management Review, 30*(2): 269–287.

Hagel III, J., & Brown, J. S. (2005). *The only sustainable edge: Why business strategy depends on productive friction and dynamic specialization*. Boston: Harvard Business Press.

Hargadon, A. B., & Bechky, B. A. (2006). When collections of creatives become creative collectives: A field study of problem solving at work. *Organization Science*, *17*(4): 484–500.

Hausman, J., Hall, B. H., & Griliches, Z. (1984). Econometric-models for count data with an application to the patents–R and D relationship. *Econometrica*, 52: 909–938.

Hechanova**,** R., Beehr, T. A., & Christiansen, N. D. (2003). Antecedents and consequences of employees' adjustment to overseas assignment: A meta-analytic review. *Applied Psychology: An International Review*, *52*(2), 213–236.

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, *61*, 569–598.

Hoffman, D., Griffin, M., & Gavin, M. (2000). The application of hierarchical linear modeling to organizational research. In K. Klein & S. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 467–511). San Francisco: Jossey Bass.

Imai, L., & Gelfand, M. J. (2010). The culturally intelligent negotiator: The impact of cultural intelligence on negotiation sequences and outcomes. *Organizational Behavior and Human Decision Processes*, *112*, 83–98.

Irani, L., & Dourish, P. (2009, February). Postcolonial interculturality. International Workshop on Intercultural Collaboration, Stanford, CA.

Jiang, C., Chua, R.Y.J., Kotabe, M., & Murray, J (2011). Effects of cultural ethnicity, firm size, and firm age on senior executives' trust in their overseas business partners: Evidence from China. *Journal of International Business Studies* 42, 9, 1150-1173.

Johnson, J. L., Cullen, J. B., Sakano, T., & Takenouchi, H. (1996). Setting the stage for trust and strategic integration in Japanese–U.S. cooperative alliances. *Journal of International Business Studies, 27*(5), 981–1004.

Johnson, J. P., Lenartowicz, T., & Apud, S. (2006). Cross-cultural competence in international business: Toward a definition and a model. *Journal of International Business Studies, 37*(4), 525–543.

Kagan, H., & Cohen, J. (1990). Cultural adjustment of international students. *Psychological Science, 1*(2), 133–137.

Kenny, D. A. (1996). The design and analysis of social-interaction research. *Annual Review of Psychology,* 47, 59-86.

Kerns, J. G., Cohen, J. D., MacDonald, A. W., Cho, R. Y., Stenger, V. A., Carter, C. S. (2004). Anterior cingulate conflict monitoring and adjustments in control. *Science, 303*, 1023–1026.

Klafehn, J., Banerjee, P., & Chiu, C-y. (2008). Navigating cultures: The role of metacognitive cultural intelligence. In S. Ang & L. Van Dyne (Eds.), *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 318–331). New York: M.E. Sharpe.

Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review, 19*, 195–229.

Kruger, J., & Dunning D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology, 77*(6), 1121–1134.

LaBahn, D. W., & Harich, K. R. (1997). Sensitivity to national business culture: Effects on U.S.–Mexican channel relationship performance. *Journal of International Marketing*, *5*(4), 29–51.

Langer, E. (1989). *Mindfulness*. Reading, MA: Da Capo Books.

Leonard, D. A., & Swap, W. C. (1999). *When sparks fly: Igniting creativity in groups*. Boston: Harvard Business School Press.

Leung, A. K., Maddux, W. W., Galinsky, A. D., & Chiu, C. Y. (2008). Multicultural experience enhances creativity? The when and how. *American Psychologist*, *63*(6), 169–181.

Lewis, J. D., & Weigert. A. (1985). Trust as a social reality. *Social Forces*, *63*, 967–985.

Lieberman, M. D. (2003). Reflective and reflexive judgment processes: A social cognitive neuroscience approach. In J. P. Forgas, W. Williams, K. R. von Hippel (Eds.), *Social judgments: Explicit and implicit processes* (pp.44–67). New York: Cambridge University Press.

Liu, L. A., Chua, C. H., & Stahl, G. K. (2010). Quality of communication experience: Definition, measurement, and implications for intercultural negotiations. *Journal of Applied Psychology*, *95*(3), 469–487.

Luhmann, N. (1979). *Trust and power*. Chichester: Wiley.

Mackie, D. M., & Hamilton, D. L. (1993). *Affect, cognition and stereotyping: Interactive processes in group perception*. San Diego: Academic Press.

Maddux, M. W., & Galinsky, A. D. (2009). Cultural borders and mental barriers: The relationship between living abroad and creativity. *Journal of Personality and Social Psychology*, *96*(5), 1047–1061.

Marsden, P. V. (1990). Network data and measurement. In W. R. Scott & J. Blake (Eds.), *Annual Review of Sociology* (16th ed., pp. 435–463). Palo Alto, CA: Annual Reviews.

McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, *38*, 24–59.

Mendenhall, M., & Oddou, G. (1985). The dimensions of expatriate acculturation: A review. *Academy of Management Review*, *10*, 39–48.

Mislin, A., Campagna, R., & Bottom, W. P. 2011. After the deal: Talk, trust building, and the implementation of negotiated agreements. *Organizational Behavior and Human Decision Processes*, *115*, 55–68.

Moore, D. A., Kurtzberg, T. R., Thompson, L., & Morris, M. W. (1999). The long and short routes to success in electronically-mediated negotiations: Group affiliations and good vibrations. *Organizational Behavior and Human Decision Processes, 77*(1), 22–43.

Moreland, R. L., Argote, L., & Krishnan, R. (1996). Socially shared cognition at work: Transactive memory and group performance. In J. L. Nye & A. M. Brower (Eds.), *What's so social about social cognition? Social cognition research in small groups* (pp. 57–84). Thousand Oaks, CA: Sage.

Moreland, R. L., & Myaskovsky, L. (2000). Exploring the performance benefits of group training: Transactive memory or improved communication? *Organizational Behavior and Human Decision Processes*, *82*(1), 117–133.

Ng, K., Van Dyne, L., & Ang, S. (2009). From experience to experiential learning: Cultural intelligence as a learning capability for global leader development. *Academy of Management Learning & Education*, *8*(4), 511–526.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. Organization Science, 5, 14–37.

Overbeck, J.R., & Neale, M.A., & Govan (2010). I feel therefore you act: Intrapersonal and interpersonal effects of emotion on negotiation as a function of social power. *Organizational Behavior and Human Decision Processes*, 112(2), 126-139.

Palthe, J. (2004). The relative importance of antecedents to cross-cultural adjustment: Implications for managing a global workforce. *International Journal of Intercultural Relations*, *28*, 37–59.

Perry-Smith, J. E. (2006). Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, *49*, 85–101.

Peters, K., & Kashima, Y. (2007). From social talk to social action: Shaping the social triad with emotion sharing. *Journal of Personality and Social Psychology*, *93*(5), 780–797.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behaviors Research Methods, Instruments, and Computers*, *36*, 717–731.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Assessing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*, 185–227.

Pullin, P. (2010). Small talk, rapport, and international communicative competence. *Journal of Business Communication*, *47*(4), 455–476.

Rempel, J. K., Holmes, J. G., & Zanna, M. D. (1985). Trust in close relationships. *Journal of Personality and Social Psychology, 49*, 95–112.

Rockstuhl, T., & Ng, K. (2008). The effects of cultural intelligence on interpersonal trust in multicultural teams. In S. Ang & L. Van Dyne (Eds.), *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 206–220). Armonk, NY: M.E. Sharpe.

Rubenson, D. L., & Runco, M. A. (1995). The psychoeconomic view of creative work in groups and organizations. *Creativity and Innovation Management*, *4*(4), 232–241.

Shapiro, J. M., Ozanne, J. L., & Saatcioglu, B. (2008). An interpretive examination of the development of cultural sensitivity in international business. *Journal of International Business Studies, 39*, 71–87.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and non-experimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.

Spencer, J. S., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than meditational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89*(6), 845–851.

Stafford, L., Burggraf, C., & Sharkey, W. (1987). Conversational memory: The effects of time, recall, mode, and memory expectancies on remembrances of natural conversations. *Human Communicative Research, 14*, 203–229.

Stephan, C. W., Helms, M. M., & Haynes, P. J. (1995). Inter-cultural anxiety: Implications for improving expatriate selection for Japan. *Cross Cultural Management: An International Journal*, *2*(1), 25–32.

Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues*, *41*(3), 157–175.

Stephan, W. G., Stephan, C. W., Wenzel, B., & Cornelius, J. (1991). Intergroup interaction and self-disclosure. *Journal of Applied Social Psychology*, *21*(16), 1370–1378.

Sutton, R. I., & Hargadon, A. B. (1996). Brainstorming groups in context: Effectiveness in a product design firm. *Administrative Science Quarterly*, *41*, 685–718.

Swann, W. B. J., Kwan, V. S. Y., Polzer, J. T., & Milton, L. P. (2003). Fostering group identification and creativity in diverse groups: The role of individuation and self-verification. *Personality and Social Psychology Bulletin*, *29*, 1396–1406.

Taggar, S. (2002). Individual creativity and group ability to utilize individual creative resources: A multilevel model. *Academy of Management Journal*, *45*, 315–330.

Takeuchi, R., Wang, M., & Marinova, S. V. (2005). Antecedents and consequences of psychological workplace strain during expatriation: A cross-sectional and longitudinal investigation. *Personnel Psychology*, *58*(4), 925–948.

Thomas, D. C. (2006). Domain and development of cultural intelligence: The importance of mindfulness. *Group & Organization Management*, *31*, 78–99.

Thomas, D. C. (2010). Cultural intelligence and all that jazz: A cognitive revolution in international management research. *Advances in International Management*, *23*, 169–187.

Thomas, D. C., Stahl, G., Ravlin, E.C., Poelmans, S., Pekerti, A., Maznevski, M., Lazarova, M.B., Elron, E., Ekelund, B.Z., Cerdin, J.L., Brislin, R., Aycan, Z., & Au, K. (2008). Cultural intelligence: Domain and assessment. *International Journal of Cross-Cultural Management*, 8, 123-143.

Thomas W. B., Bonieci, K. A., Vescio, T. K., Biernat, M., & Brown, L. M. (1996). Intergroup anxiety: A person x situation approach**.** *Personality and Social Psychology Bulletin*, *22*(11), 1177–1188.

Tickle-Degnen, L., & Rosenthal, R. (1990). The nature of rapport and its nonverbal correlates. *Psychological Inquiry*, *1*, 285–293.

Umphress, E. E., Labianca, G., Brass, D. J., Kass, E., & Scholten, L. (2003). The role of instrumental and expressive social ties in employees' perceptions of organizational justice. *Organization Science*, *14*, 738–753.

Van Dyne, L., Ang, S., Ng, K. Y., & Koh, S. K. (2008). Cultural intelligence and international executive potential. *23rd Annual Conference of the Society of Industrial and Organizational Psychology*.

Van Dyne, L., Ang, S., Ng, K.Y., Rockstuhl, T., Tan, M.L., & Koh, C. (2011). Subdimensions of the four factor model of cultural intelligence: Expanding the conceptualization and measurement of cultural intelligence (CQ). *Social and Personality Psychology Compass*.

Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, *82*, 247–252.

Winn, W., & Snyder, D. (1996). Cognitive perspectives in psychology. In D.H. Jonassen (Ed.), *Handbook for research for educational communications and technology* (pp. 112–142). New York: Simon & Schuster Macmillan.

Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure. *Research in Organizational Behavior*, *8*, 53–111.

Table 1: Descriptive Statistics and Correlations (Study 1)

Variable	Mean	SD	Min	Max	1	2	3	4	5	6
1. Intercultural creative collaboration	5.74	1.02	1	7	1.00					
2. Cultural metacognition	4.92	0.99	2.5	6.5	0.09	1.00				
3. Number of language	2.02	1.08	1	7	-0.11	0.26*	1.00			
4. Number of countries lived	1.85	0.88	1	6	-0.01	0.22*	0.61*	1.00		
5. Number of countries visited	2.69	2.14	0	10	-0.04	0.27*	-0.08	0.01	1.00	
6. Past foreign experiences	3.99	0.79	2	5	-0.07	0.36*	0.28*	0.27*	0.21*	1.00

*$p<0.05$

Table 2: Hierarchical Linear Model Regression on Observer Reported Intercultural Creative Collaboration (Study 1)

	Model 1	Model 2
Key Predictors		
Cultural metacognition (self-reported)	-	0.19* (0.10)
Control Variables		
Number of languages known	-0.12 (0.11)	-0.15 (0.10)
Number of countries lived in (at least 6 months)	0.09 (0.13)	0.08 (0.12)
Number of countries visited last year	-0.02 (0.05)	-0.04 (0.04)
Past foreign experiences	-0.10 (0.13)	-0.15 (0.12)
Intercept	6.19** (0.48)	5.56** (0.54)
Number of dyadic observations	188	188
Overall R-squared	0.02	0.05
Chi-square change [a]	2.46	4.15

[a] Chi-square change for model 1 is with respect to a constant-only model. Chi-square change for model 2 is with respect to the previous model.

Notes:

1. *Numbers in parenthesis are standard errors*
2. *** p<0.01 * p<0.05*

Table 3: Descriptive Statistics and Correlations (Study 2)

Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9
1. Creative collaboration -Share new ideas	3.72	1.18	1	5	1.00								
2. Affect-based trust	3.18	1.34	1	5	0.58*	1.00							
3. Cognition-based trust	4.13	0.95	1	5	0.38*	0.41*	1.00						
4. Cultural metacognition	5.13	0.99	1.75	6.75	-0.03	-0.02	-0.06	1.00					
5. Participant-Alter different culture	0.39	0.49	0	1	0.01	-0.03	0.01	0.05	1.00				
6. Alter's embeddedness	0.29	0.25	0	1	0.13*	0.03	-0.03	-0.03	0.01	1.00			
7. Economic resource tie	0.23	0.42	0	1	0.04	-0.04	0.01	-0.03	-0.02	0.02	1.00		
8. Career-guidance tie	0.59	0.49	0	1	0.19*	0.17*	0.18*	-0.07*	-0.02	0.00	-0.02	1.00	
9. Task-advice tie	0.62	0.48	0	1	0.24*	0.11	0.15*	-0.06*	0.06*	0.08*	0.00	0.15*	1.00
10. Friendship tie	0.68	0.47	0	1	0.29*	0.46*	0.17*	0.02	0.03	-0.07*	-0.16*	0.11*	0.08*
11. Interaction frequency	2.37	1.00	1	4	0.25*	0.09*	0.08*	0.02	0.02	0.18*	0.12*	-0.11*	0.27*
12. Relationship duration	7.35	7.46	1	48	0.18*	0.34*	0.07*	-0.01	-0.10*	0.00	0.02	0.08*	-0.05
13. Cultural diversity in network	0.36	0.19	0	0.78	-0.03	-0.08*	-0.06*	0.13*	0.19*	-0.02	-0.01	0.03	0.03
14. Network size	21.79	4.10	4	24	0.15*	0.10*	0.14*	-0.06*	0.02	-0.04	0.01	0.04	0.12*
15. Alter is higher rank	0.42	0.49	0	1	-0.03	-0.11*	0.02	-0.06*	0.00	-0.03	0.15*	0.26*	0.05
16. Alter is lower rank	0.19	0.39	0	1	-0.01	0.02	-0.07	0.01	0.03	0.04	-0.10*	-0.28*	-0.03

	10	11	12	13	14	15	16
10. Friendship tie	1.00						
11. Interaction frequency	0.06*	1.00					
12. Relationship duration	0.24*	-0.05*	1.00				
13. Cultural diversity in network	-0.02	-0.03	0.04	1.00			
14. Network size	0.06*	-0.05	0.05	-0.18*	1.00		
15. Alter is higher rank	-0.20*	-0.14*	0.00	0.04	0.00	1.00	
16. Alter is lower rank	0.02	0.19*	-0.02	-0.03	-0.05	-0.40*	1.00

*$p<0.05$

Table 4: Hierarchical Linear Model Regression (Study 2)

	Dependent Variable		**Mediators**			
	Creative Collaboration – Likelihood to Share New Ideas		**Affect-based Trust**		**Cognition-based Trust**	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Key Predictors						
Participant's cultural metacognition	0.05 (0.11)	-0.03 (0.11)	0.06 (0.09)	-0.03 (0.10)	0.00 (0.08)	0.02 (0.08)
Alter is of different culture than participant	- 0.07 (0.07)	- 0.10 (0.07)	-0.05 (0.07)	-0.09 (0.07)	0.01 (0.05)	0.01 (0.05)
Participant's cultural metacognition X Participant-Alter of different culture interaction	-	0.21** (0.07)	-	0.26** (0.07)	-	-0.05 (0.06)
Control Variables						
Cognition-based trust	-	-	0.35** (0.04)	0.34** (0.04)	-	-
Affect-based trust	-	-	-	-	0.20** (0.02)	0.21** (0.02)
<u>Structural Attributes</u>						
Network size	0.06** (0.02)	0.06** (0.02)	0.01 (0.02)	0.01 (0.02)	0.04** (0.01)	0.04** (0.01)
Cultural diversity in network	0.25 (0.46)	0.29 (0.47)	-0.45 (0.42)	-0.47 (0.42)	0.08 (0.35)	0.08 (0.35)
Alter's embeddedness	0.08 (0.16)	0.08 (0.16)	0.04 (0.16)	0.04 (0.16)	-0.15 (0.13)	-0.15 (0.13)
<u>Relational Attributes</u>						
Economic-resource tie	0.07 (0.07)	0.08 (0.07)	0.01 (0.07)	0.01 (0.07)	0.08 (0.06)	0.08 (0.06)
Career-guidance tie	0.33** (0.06)	0.33** (0.06)	0.22** (0.06)	0.21** (0.06)	0.13** (0.05)	0.13** (0.05)
Task-advice tie	0.35** (0.06)	0.35** (0.06)	0.17** (0.06)	0.16** (0.06)	0.17** (0.05)	0.17** (0.05)

	Dependent Variable		Mediators			
	Creative Collaboration – Likelihood to Share New Ideas		Affect-based Trust		Cognition-based Trust	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Friendship tie	0.67**	0.67**	1.00**	1.00**	0.07	0.07
	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)
Interaction frequency	0.30**	0.30**	0.13**	0.13**	0.09**	0.09**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Relationship duration	0.02**	0.02**	0.04**	0.04**	-0.01*	-0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Alter is of higher rank	-0.03	-0.03	-0.20**	-0.19**	0.13**	0.13**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)
Alter is of lower rank	-0.06	-0.05	0.04	0.04	0.06	0.05
	(0.08)	(0.08)	(0.08)	(0.08)	(0.06)	(0.06)
Intercept	1.01	1.03	0.02	0.04	2.56	2.55
	(0.81)	(0.82)	(0.72)	(0.72)	(0.59)	(0.59)
Number of dyadic observations	1170	1170	1127	1127	1127	1127
Overall R-square	0.274	0.281	0.419	0.426	0.233	0.236
Chi-square change [a]	437.21**	11.97**	774.67**	19.62**	236.29**	0.35

[a] Chi-square change for models 1, 3, and 5 are with respect to a constant-only model. Chi-square change for models 2, 4, and 6 are with respect to the previous model.

Notes:

1. *Above analyses also control for participant's job function. These variables are not presented due to space constraints (seven dummy indicators were used to denote eight job function categories).*
2. *The cultural metacognition variable is mean-centered*
3. *Numbers in brackets are standard errors.*
4. *** p<0.01 * p<0.05*

Table 5: Mediation Analyses Involving Culturally Different Ties
(Study 2, N=472 Dyadic Observations)

Dependent Variables:	**Intercultural Affect-based trust**	**Intercultural Cognition-based trust**	**Creative collaboration – Likelihood to Share New Ideas**			
Predictors:	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Cultural metacognition	0.29* (0.12)	-0.08 (0.10)	0.21* (0.11)	0.14 (0.11)	0.21* (0.11)	0.09 (0.11)
Affect-based trust	-	0.23** (0.04)	-	0.46** (0.04)	-	0.45** (0.04)
Cognition-based trust	0.34** (0.06)	-	-	-	0.40** (0.06)	0.24** (0.05)
Overall R-squared	0.46	0.21	0.34	0.44	0.39	0.48

*Numbers in parenthesis are standard errors; ** p<0.01 * p<0.05*

Table 6: Descriptive Statistics and Correlations (Study 3)

Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8
1. Affect-based trust (dyad average)	3.29	0.88	1.33	6.00	1.00							
2. Cognition-based trust (dyad average)	4.83	0.80	2.33	7.00	0.57*	1.00						
3. Cultural metacognition (higher in dyad)	5.61	0.93	2.17	7.00	0.17	0.07	1.00					
4. Creative collaboration - Perception of partner	5.05	0.87	2.83	6.83	0.35*	0.29*	0.17	1.00				
5. Creative collaboration - Idea and information sharing in dyad	5.43	0.71	3.50	7.00	0.31*	0.18*	0.10	0.66*	1.00			
6. Creative collaboration – Third party rated joint creativity performance	4.09	0.67	1.90	6.40	0.21	-0.06	0.17	0.22*	0.29*	1.00		
7. Individual creativity performance (higher in dyad)	4.42	0.60	3.05	6.50	-0.12	-0.04	0.00	-0.09	0.00	0.23*	1.00	
8. Conversation manipulation 0=no-conversation; 1=personal conversation	0.53	0.50	0.00	1.00	0.34*	0.15	0.18	0.09	0.10	-0.09	-0.11	1.00

N=118 dyads; *p<0.05;

Table 7: Multivariate Regressions (Study 3, N=118 Dyads)

Dependent Variables	Independent Variables	Model 1	Model 2	Model 3
Creative collaboration – Third party rated joint creativity performance	Intercept	4.04** (0.09)	3.22** (0.40)	2.10** (0.56)
	Conversation manipulation	0.11 (0.12)	0.16 (0.12)	2.09** (0.75)
	Cultural metacognition (higher in dyad)	-	0.14* (0.07)	-0.01 (0.09)
	Interaction: cultural metacognition x conversation manipulation	-	-	0.34** (0.13)
	R-Square	0.01	0.04	0.10
Creative collaboration – Perception of other as effective partners for creative work	Intercept	5.12** (0.11)	4.25** (0.51)	2.99** (0.76)
	Conversation manipulation	-0.16 (0.16)	-0.11 (0.16)	2.06* (0.99)
	Cultural metacognition (higher in dyad)	-	0.15 (0.09)	-0.02 (0.11)
	Interaction: cultural metacognition x conversation manipulation	-	-	0.39* (0.17)
	R-Squared	0.01	0.03	0.08
Creative collaboration – Idea and information sharing in dyad	Intercept	5.50** (0.09)	5.13** (0.43)	4.07** (0.63)
	Conversation manipulation	-0.15 (0.13)	-0.13 (0.13)	1.71* (0.82)
	Cultural metacognition (higher in dyad)	-	0.06 (0.07)	-0.08 (0.10)
	Interaction: cultural metacognition x conversation manipulation	-	-	0.33* (0.14)
	R-Squared	0.01	0.02	0.06

** p < 0.05; ** p < 0.01*

Coefficients are unstandardized. Numbers in parenthesis are standard errors

Table 8: Mediation Analyses (Study 3: Personal Conversation Condition)

Dependent Variable:	**Affect-based trust**	**Creative collaboration – Perception of other as effective creative partner**	
Predictor:	**Model 1**	**Model 2**	**Model 3**
Cultural metacognition	0.24* (0.10)	0.39** (0.12)	0.30** (0.12)
Affect-based trust	-	-	0.36** (0.15)
Bias-corrected 95% confidence interval		Partial mediation 0.01 – 0.25	

Dependent Variable:	**Affect-based trust**	**Creative collaboration – Idea and information sharing in dyad**	
Predictor:	**Model 1**	**Model 2**	**Model 3**
Cultural metacognition	0.24* (0.10)	0.26* (0.10)	0.18 (0.11)
Affect-based trust	-	-	0.31* (0.13*)
Bias-corrected 95% confidence interval		Full mediation 0.01 – 0.19	

Dependent Variable:	**Affect-based trust**	**Creative collaboration – Third party rated joint creativity performance**	
Predictor:	**Model 1**	**Model 2**	**Model 3**
Cultural metacognition	0.24* (0.10)	0.30** (0.10)	0.21* (0.09)
Affect-based trust	-	-	0.38** (0.11)
Bias-corrected 95% confidence interval		Partial mediation 0.02 – 0.24	

*Numbers in parenthesis are standard errors; ** $p<0.01$ * $p<0.05$*

Figure 1A:

Interaction Effect Between Cultural Metacognition and Participant Alter Cultural Difference on Creative Collaboration – Participant's Tendency to Share New Ideas and Information with Alter (Study 2)

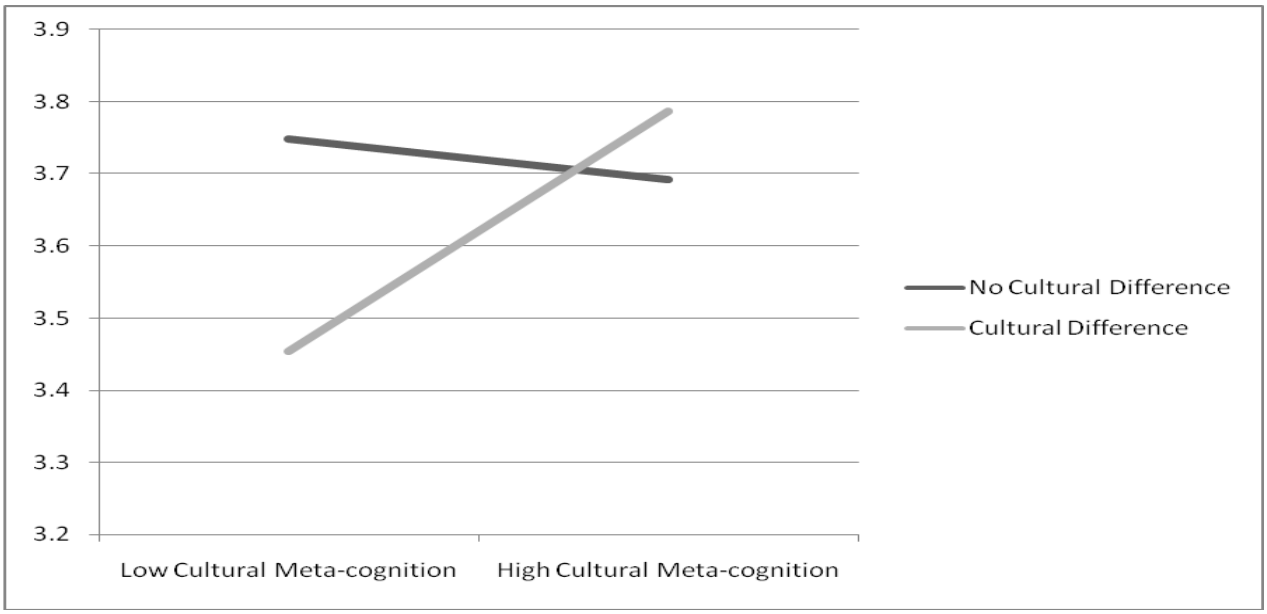

Figure 1B:

Interaction Effect Between Cultural Metacognition and Participant Alter Cultural Difference on Participant's Affect-Based Trust in Alter (Study 2)