

Expertise Recognition and Influence in Intercultural Groups: Differences Between Face-to-Face and Computer-Mediated Communication

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Expertise recognition is challenging in teamwork, particularly in intercultural collaboration. This research seeks to investigate how cultural differences in communication styles may affect expertise recognition and influence in face-to-face (FtF) versus text-based computer-mediated communication (CMC). Using experimental intercultural groups, we found that in FtF groups East Asian experts had a lower participation rate, and were perceived as less competent, less confident, and less influential than experts from Western culture. No such differences occurred in CMC. The results support mediated moderation effect of perceived confidence on expert influence such that changes in perceptions of Chinese and American experts' confidence accounted for their different levels of influence in CMC versus FtF. No such effect was found with participation rate.

Key words: intercultural groups, expertise recognition, expert influence, computer-mediated groups, transactive memory

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Introduction

Supported by communication technology, global collaboration has become more common in contemporary organizations. One of the advantages of such collaboration is the increased access to expertise from across the globe, but expert resources can remain untapped in intercultural collaboration because cultural differences between group members and technological mediation can create difficulties for successful group work (Gibson & Gibbs, 2006). Thus, the goal of this research is to examine the joint effects of culture and technology on expertise recognition and expert influence in intercultural groups.

Although expertise recognition is essential to knowledge coordination, task assignments, and effective performance (e.g., Moreland, 1999; Yuan, Fulk, & Monge, 2007), groups often have difficulties recognizing and utilizing expertise, even in culturally homogeneous groups (e.g., Bottger & Yetton, 1988; Littlepage, Schmidt, Whisler, & Frost, 1995). Considerable research efforts have been directed towards understanding the type of social information that people use to infer expertise. Most of this research, however, is concerned with surface characteristics and associated social stereotypes (e.g.,

Bunderson, 2003; Yoon & Hollingshead, 2010). Much less attention has been given to the role of communication in expertise recognition, with Littlepage and colleagues' works (Littlepage & Mueller, 1997; Littlepage et al., 1995) among the few exceptions. However, Littlepage et al.'s studies focused on culturally homogeneous FtF groups. Thus, this research seeks to make two contributions: first, to study of the role of communication behaviors in expertise recognition in intercultural collaboration; and second, to explore the impact of FtF vs. CMC on this process.

Recent research in intercultural collaboration has shifted attention from the question of whether culture matters for intercultural group work to when and how it matters (Gibson, Maznevski, & Kirkman, 2009). Specifically, situational characteristics are recognized as key factors that moderate the extent to which culture has an impact on people's behaviors (Maznevski & Peterson, 1997). In the context of this research, we approach communication technology as one situational factor that would impact "if" and "how" culture influences expertise recognition in group collaboration.

In the following section of the paper, we first review research on how cultural differences influence communication styles, and how a communication medium moderates the relationship between culture and communication styles. We then discuss how cultural differences in communication styles mediate the moderation effects between communication medium and culture on expertise recognition and perceived influence (the mediated moderation hypothesis). Hypotheses were tested using experimental groups composed of American (as representatives of Western culture) and Chinese (as representatives of East Asian culture) graduate students. The paper ends with a discussion of theoretical and practical implications of the results.

Literature Review

The Impact of Culture on Communication Styles

Cultural differences refer to "general patterns of cultural values, attitudes, and communication behaviors associated with specific sets of individuals" (Oetzel, Burtis, Sanchez, & Perez, 2001, p. 242). Previous research has identified a set of cultural values that lead to differences in communication styles, as well as preferences for effective communication styles, between members of Western and East Asian cultures (M. S. Kim, 1999; Oetzel, 1998). One such difference is individualistic versus collectivistic cultural value orientation. Individualism fosters a cultural value on the self, personal autonomy, personal goals, and individual uniqueness and control (Hofstede, 1991; Triandis, 1989). Collectivism, in contrast, cultivates a social orientation that focuses on social roles, values, norms, and expectations (Oyserman, Coon, & Kemmelmeier, 2002). Whereas people from Western culture have a stronger orientation toward self, East Asians, particularly Chinese people (Oyserman et al., 2002), have a stronger predisposition to a social or collectivist orientation (Hwang, 1987). Such differences in individualist versus collectivist orientations affect intercultural communication among people from different cultural backgrounds (Oetzel et al., 2001).

Influenced by a high social orientation of collectivistic values, East Asians are more attentive to social concerns and situational expectations than people from Western culture (Hofstede, 1991; Markus & Kitayama, 1991). In order to preserve their positive social image, as well as group harmony and solidarity, East Asians may intentionally suppress the expression of their authentic selves by exercising restraint in the expression of personal opinions and feelings (Menon & Fu, 2005). East Asians also tend to adopt a more passive communication style and are less motivated to communicate compared to people from Western cultures (M. S. Kim, 1999). In explaining inequity in the amount of conversational contributions in intercultural groups, Oetzel (1998) wrote, "It is possible that the individualistic members in these groups dominated the discussion in part because the collectivistic

members focused on listening and supporting the others . . . The individualistic members may have expected the other members to ‘jump into’ the conversations, while the collectivistic members waited to be invited” (p. 140).

In addition to participation rate, people from East Asian and Western cultures vary in their perceptions of appropriate communication styles, which, in turn, affect their own communication behaviors (M. S. Kim, 1999). Whereas Westerners consider communication apprehension as a weakness, East Asians do not think of it as negatively because of their intrinsic de-emphasis on self-expression and individual uniqueness (Zhang, Butler, & Pryor, 1996). The differences in beliefs about communication appropriateness result in East Asians’ scoring higher on communication apprehension, as well as adopting a less assertive, less self-confident, and less argumentative communication style compared to Westerners (M. S. Kim, 1999).

The Moderation Effect of Communication Medium on the Relationship Between Culture and Communication Styles

Because much of intercultural collaboration is supported by communication technology, it is important to examine the impact of communication medium on group communication and outcomes. Comparing broad bandwidth (e.g., FtF) with narrow bandwidth (e.g., text-based CMC) media, previous research has documented the “equalization phenomenon” (Dubrovsky, Kiesler, & Sethna, 1991) of text-based CMC on reducing differences in participation rate between group members of different status. Whereas FtF group members attend and conform to “the expected social order” (Dubrovsky et al., 1991, p. 137), social differences and attributes matter less in text-based CMC because group members are less concerned about being evaluated in the absence of contextual and nonverbal cues. As a result, more equal participation may result across the whole team.

In addition to the equalization effect, text-based CMC may facilitate the “empowering effect” (Amichai-Hamburger, McKenna, & Tal, 2008) such that CMC lowers social expectations and related costs/risks of social sanctions, and can thereby serve as a catalyst to stimulate participation and reduce apprehension in revealing an “authentic self” (Bargh, McKenna, & Fitzsimons, 2002; McKenna, 2007). This effect is especially potent for people who have high concerns about social constraints and situational expectations (Amichai-Hamburger et al., 2008). Research showed that individuals who scored high on communication apprehension communicated more actively and confidently, and felt more comfortable arguing their opinions in CMC than FtF (e.g., High & Caplan, 2009). Extending the “equalization effect” and the “empowering effect” to intercultural collaboration, reduced social constraints of CMC may help East Asians assume a more active and assertive role in online discussion, despite their communication apprehension and/or concerns for social sanctions in offline communication.

In addition to reducing social and situational constraints, CMC also facilitates reallocation of cognitive resources, which enhances people’s self-presentation through strategic message construction (Walther, 1996). According to the hyperpersonal theory, when nonverbal cues and situational context are filtered out in CMC, individuals can “recapture cognitive resources that would normally be allocated to FtF nonverbal processes and apply them instead to message creation” (Walther, 2006, p. 465). As a result, CMC can not only allow for a greater control over self-presentation in order to project oneself as a confident communicator, but also help conceal nonverbal cues that give off contradicting information. For example, in High and Caplan’s (2009) study, nonconfident communicators in FtF discussions were perceived as more confident in text-based CMC. Furthermore, because East Asians are usually more context-sensitive (Hall, 1976) and have greater difficulties in thinking out loud than Westerners as a result of cultural differences in cognitive styles (H. S. Kim, 2002), a reallocation of cognitive resources from contextual factors to the message creation could be especially beneficial. Taken together, because

of the removal of nonverbal cues and distractions, and the greater allocation of cognitive resources for structuring communication, East Asians can assume a more active communication role and be perceived as more confident in CMC than in FtF discussions. We predict that although in FtF groups East Asians would participate less and be perceived as less confident than their Western counterparts (i.e., the main effect of culture on communication styles as discussed in the previous section), such differential effect of culture on communication styles will be reduced in CMC settings for the reasons reviewed above.

H1: Communication medium moderates the effect of an expert's culture on his/her participation rate such that East Asian experts participate less actively than Western experts in FtF discussions, but not in CMC text-based discussions.

H2: Communication medium moderates the effect of an expert's culture on his/her perceived confidence such that East Asian experts are perceived as less confident than Western experts in FtF discussions, but not in CMC text-based discussions.

Communication Styles as Mediators of the Moderation Effect of Medium on the Impact of Culture on Expertise Recognition and Influence

Both field and experimental research have repeatedly demonstrated that groups have difficulty accurately recognizing and using their members' expertise (e.g., Bottger & Yetton, 1988; Littlepage et al., 1995). Because expertise is not always observable, errors in expertise recognition can occur when group members use wrong cues to infer expertise, including gender (e.g., Hollingshead & Fraidin, 2003; Thomas-Hunt & Phillips, 2004), social status and age (Bunderson, 2003), and race (e.g., Yoon & Hollingshead, 2010). In addition to personal characteristics and related social stereotypes, people infer others' expertise based on characteristics of their communication styles, which may also lead to inaccurate expertise judgments if they do not comport with true expertise.

Previous research identified participation rate and expressions of confidence as key communication cues used to infer task expertise in Western culture. For instance, Littlepage and Mueller (1997) found that participation rate related to both expertise recognition and influence because talking made expertise available and apparent to other group members. Other research has related the amount of group participation to members' opinions about quality of ideas (Bavelas, Hastorf, Gross, & Kite, 1965), social influence (Sorrentino & Boutillier, 1975), creativity (Regula & Julian, 1973), and inferred dominance (Mast, 2002). In Littlepage et al.'s (1995) research, participation rate was the most important predictor of perceived expertise, even though participation rate was not significantly correlated with actual expertise in their study.

In addition to participation rate, people also rely on expressions of confidence as an expertise proxy, known as "confidence heuristics" (Thomas and McFayden, 1995). Confident members, who argue assuredly, rather than tentatively and reservedly, have greater influence on group decisions because other members anticipate that they exert the level of influence compatible to their confidence level. Also, confident expressions convey a sense of certainty and commitment (Keren & Teigen, 2001). As a result, members are more likely to make judgments about information reliability based on the confidence with which this information is expressed.

To sum up, research using culturally homogeneous groups lends strong support to the relationship between participation rate and confidence in communication on the one hand and expertise recognition and perceived influence on the other. In intercultural collaboration, because cultural differences and

communication medium can exert contextual influences on communication dynamics, we anticipate that changes in these process factors (i.e., participation rate and perceived confidence), in turn, bring about changes in the outcome variables, (i.e., recognition of expertise and perceived influence). As argued in the preceding sections, text-based CMC reduces situational constraints and social expectations, which could bolster participation rate and confidence of East Asians, who tend to suppress self-expression and seek group solidarity and conformity in FtF situations. As a result, East Asian participants' expertise may be better recognized in CMC than in FtF, and they may also have a better chance to exert greater influence in CMC conditions.

Thus, we propose a mediated moderation effect (Baron & Kenny, 1986; Muller, Judd, & Yzerbyt, 2005), which is concerned with how the overall moderation effect is mediated by a third variable (Baron & Kenny, 1986; Muller, Judd, & Yzerbyt, 2005). Testing this effect requires first establishing the moderation effect (i.e., the magnitude of the culture effect on expertise recognition and influence depends on the moderator—communication medium), and then the mediation effect (i.e., experts' communication styles—participation rate and perceived confidence—are responsible for the overall moderation effect).

H3: Communication medium moderates the effect of experts' culture on expertise recognition such that East Asian experts are recognized less than Western experts in FtF discussions, but not in CMC text-based discussions.

H4: Communication medium moderates the effect of experts' culture on their perceived influence such that East Asian experts are perceived as less influential than Western experts in FtF discussions, but not in CMC text-based discussions.

H5: (a) Participation rate and (b) perceived confidence mediate the proposed moderation effect of communication medium on cultural differences in expertise recognition.

H6: (a) Participation rate and (b) perceived confidence mediate the proposed moderation effect of communication medium on cultural differences in perceived influence.

Methods

Participants

One hundred and thirty-four graduate students from different fields of study at a university in the northeastern U.S. were recruited to participate in this study. Sixty-seven of them were Americans of Western family backgrounds, and 67 were Chinese. For the Chinese participants, their length of stay in the US was restricted to less than 5 years because a longer socialization in a Western country could change their original communication style. The age of the participants ranged from 19 to 42, with a mean 26.4 ($SD = 3.9$). Participants were compensated \$20 each for their participation in the study. As an additional stimulus, each member of the five top performing groups received a \$30 gift certificate to a local restaurant.

Experimental Design and Procedure

We adapted the moon survival task frequently used for group decision simulations (e.g., Bottger & Yetton, 1988). The task presents a scenario of stranded astronauts on the moon, who need to rank a set

of items (e.g., water, star chart) in the order of their importance for survival. The task has an objective solution, against which individual expertise can be evaluated.

Participants initially volunteered through an online sign-up system. After receiving their demographics, researchers randomly assigned them to either the FtF or the CMC condition controlling for gender and culture. Because previous research identified a gender effect on expertise recognition and influence (Thomas-Hunt & Phillips, 2004), only all-male ($N = 16$) or all-female ($N = 23$) groups were used in the study. All the groups were culturally heterogeneous, varying in size from 3 members (2 Americans and 1 Chinese, or 2 Chinese and 1 American) to 4 members (2 Americans and 2 Chinese). In total, there were 17 groups with 4 members, and 22 groups with 3 members, randomly assigned into 19 FtF groups and 20 CMC groups.

In most cases only one group participated in the study at a time. In cases when two groups were scheduled for the same time slot, participants were escorted to separate rooms. Upon arrival, each member received hard copies of the instructions about the general purpose of the study—"to understand how people work in teams" and a description of the task. Participants were instructed to first rank items from the moon survival task individually, and then discuss them with members of their group and rank them as a group. Group discussions in FtF condition were video-recorded and later transcribed. Group discussions in the CMC condition were automatically archived by the chat system, the Online Institute's synchronous text chat software.

In the CMC condition, the computer screen showed an online chat program and a shared online document with task-related information, which participants also used to rank the survival items. In the chat program, each person was referred to as "Member 1," "Member 2," "Member 3," and "Member 4"; participants' first and last names corresponding to their member number were displayed in the shared online document open and visible to all the group members throughout the discussion. To parallel this in the FtF condition, members of FtF groups were placed at a round table, with labels "Member 1," "Member 2," "Member 3," and "Member 4" on the tabletop; group members' names, along with their member numbers, were written on a whiteboard visible to the group. In both conditions, each participant individually filled out an online questionnaire upon completion of the group task.

Measures

Individual expertise was determined by comparing each individual participant's ranking of the survival items to the correct rankings (Littlepage & Mueller, 1997). Following the example of Thomas-Hunt & Phillips (2004), we used only the top four and bottom four ranks when summing up the deviation scores as they represent the most important survival choices. Higher values indicated a greater deviation from the correct scores, and hence a lower level of expertise. Members with the best two scores in each group were deemed as experts.

Expertise recognition was derived as the difference between an expert's actual expertise ranking in the group and the average expertise rankings she/he received from other group members (with negative numbers representing underestimation; positive numbers representing overestimation of expertise; and zero, perfectly accurate evaluation). Because the analyses were run on the top two experts for each group (i.e., their actual expertise rankings were 1 and 2 in the group), the difference in scores between actual and perceived expertise primarily reflected expertise underestimation rather than its overestimation; the difference score was multiplied by -1 to facilitate result interpretation such that higher values represent greater expertise underestimation in the analyses.

Perceived influence was measured using two items adapted from Thomas-Hunt and Phillips (2004). Participants were asked to evaluate other group members on (a) how influential each of them was during the discussion, and (b) how important that person was to the success of the group. The two items correlated significantly with each other: $r(190) = .415, p < .01$.

To calculate *participation rate*, discussions in FtF groups were first transcribed. Both FtF transcripts and CMC chat records were unitized using Holsti's (1969) definition of an utterance as "a single assertion about some subject" (p. 116). Two coders jointly unitized 18% of all CMC and FtF transcripts, with the intercoder unitization agreement of .01 per the Guetzkow's (1950) method. Upon confirming high intercoder agreement, the task of unitizing the remaining transcripts was divided between the two coders.

Finally, the measure of *perceived confidence* was adapted from Norton's (1978) communication style questionnaire by asking group members to rate one another on how confident, tense, relaxed, and nervous they were during the discussion. Each item was measured on a 7-point Likert scale, with 1 = "Strongly Disagree" and 7 = "Strongly Agree," $\alpha = .71$; $M = 5.44$, $SD = .93$.

Results

Moderation Effect of Technology on the Impact of Culture on Communication Behaviors

Participation rate

Hypothesis 1 predicted a moderation effect of communication medium on the impact of experts' cultural background on their participation rate such that Chinese experts would participate less than their American counterparts in FtF, but not in CMC groups. Because participation rate was not normally distributed, H1 was tested with a Poisson log-linear regression model on the number of utterances for each group member, while adjusting for potential nonindependence of data coming from members of the same group (Kenny, 1995). The model had experts' cultural background as a level-1 predictor (an attribute of a member nested within a group), communication medium as a level-2 predictor (each group's experimental condition), and the log-transformed count of total utterances in the group as an offset term (to control for differences in the discussion length across groups). Participation rate had an intraclass correlation of .41; group-level variance was significant, $\chi^2(1) = 6.18$, $p = .01$, based on a likelihood ratio test which compares deviances between the model with a random intercept and the model without a random intercept (Hayes, 2006).

Both main effects were significant: for communication media, $\chi^2(1) = 5.29$, $p = .02$, and for experts' culture, $\chi^2(1) = 15.33$, $p < .01$, but the main effects were qualified by a significant interaction effect, $\chi^2(1) = 7.22$, $p < .01$. The interaction effect suggests that whereas there were significant differences in participation rate between American and Chinese experts in FtF groups, $p < .01$ (mean difference in log estimates = .51, $SE = .13$), their participation rate was approximately equal in CMC groups, $p = .24$ (mean difference in log estimates = .10, $SE = .08$). This results support the moderation effect of communication medium in equalizing participation rate between Chinese and American members in CMC settings (Figure 1).

Perceived confidence

Because each participant rated all other group members on their respective confidence levels, ratings coming from the same rater could be potentially nonindependent (Kenny, 1995). Therefore, the analyses on perceived confidence controlled for nonindependence of observations coming from both common group membership and a common rater. Intraclass correlation was .47, out of which variance attributable to differences between raters was .44, $\chi^2(1) = 13.22$, $p < .01$, and variance attributable to differences between groups was .03, $\chi^2(1) = .26$, $p > .05$. Therefore, the random effect of group was dropped from the model, but the random effect of rater was still included.

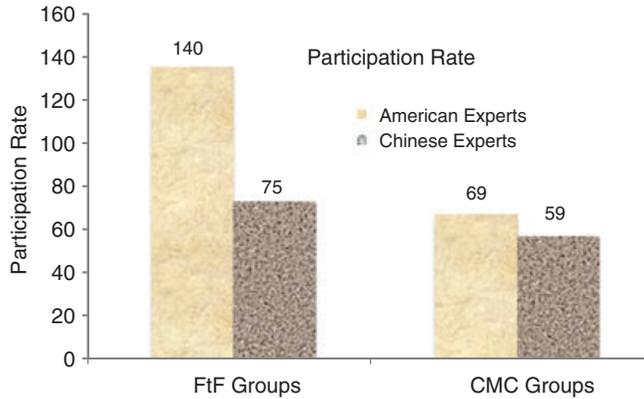


Figure 1 Participation rate expressed in the original units for American and Chinese experts in FtF and CMC groups.

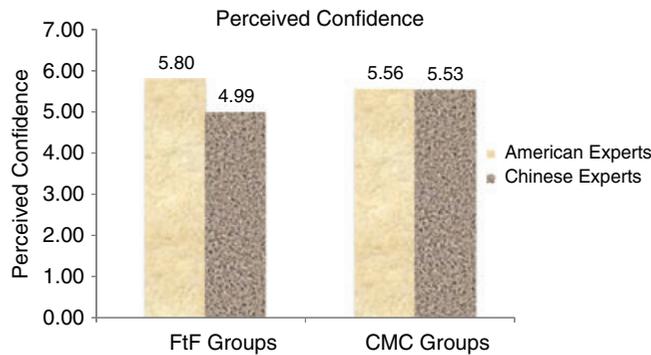


Figure 2 Perceived confidence of American and Chinese experts in FtF and CMC groups

H2 predicted that Chinese experts would be perceived as less confident than American experts in FtF groups, but not in CMC groups. The main effect of experts' culture was significant, $F(1, 120) = 17.05$, $p < .01$, suggesting that American experts were judged as more confident overall than Chinese experts. The main effect of communication medium was not significant, $F(1, 136) = 1.17$, $p = .28$. Supporting H2, there was a significant interaction effect between medium and expert's culture, $F(1, 120) = 15.11$, $p < .01$ (see Figure 2): Whereas Chinese experts were perceived significantly less confident than American experts in FtF settings, $p < .01$ (mean difference = $-.81$, $SE = .14$), no significant difference between Chinese and American experts was detected in CMC settings, $p = .87$ (mean difference = $-.03$, $SE = .15$).

Mediated Moderation Effects

Individual performance baseline

To ensure that any potential differences in expertise recognition and perceived influence between Chinese and American members would not be due to their actual differences in expertise, we first analyzed their individual performance on the task. Following the example of Thomas-Hunt & Phillips

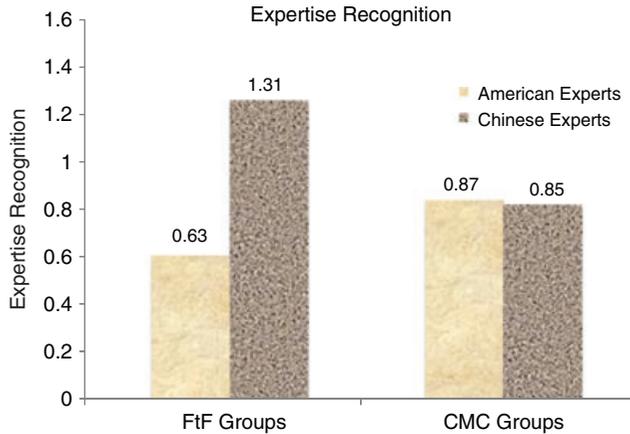


Figure 3 Recognizing American and Chinese experts' expertise in FtF and CMC groups
Note. Higher values indicate a greater underestimation of expertise.

(2004), we calculated their individual scores using the top 4 and bottom 4 ranks. The results showed that American and Chinese members had similar levels of actual expertise, $t(75) = .07, p > .05$, mean difference = .08, $SE = 1.23$.

Expertise recognition

After confirming equivalent levels of expertise between American and Chinese top performers, the next question of interest was to examine whether they were perceived as equally competent after the group discussion of the task. Intraclass correlation attributable to differences between groups was negligible (.001), $\chi^2(1) = .001, p > .05$, and, therefore, the random effect of group was dropped from the model.

The main effect of experts' culture was not significant, $F(1, 187) = 3.13, p = .08$. The main effect of communication medium was not significant either, $F(1, 187) = .39, p = .54$. Consistent with the prediction of H3, there was a significant interaction effect between medium and experts' culture on expertise recognition, $F(1, 187) = 4.07, p < .05$. Chinese experts were underestimated compared to American experts in FtF groups, but not in CMC groups (see Figure 3). In FtF groups, the mean difference in expertise recognition between Chinese and American experts was .68, $SE = .26 (p < .01)$; in contrast, in CMC groups the mean difference between American and Chinese experts was .02, $SE = .26 (p = .94)$. Thus, although American and Chinese experts had similar levels of actual expertise, their expertise was not recognized equally in FtF groups, but the difference leveled out in CMC groups.

Perceived Influence

H4 predicted that Chinese experts would be perceived as less influential compared to American experts in FtF groups, and that there would be no such difference in CMC groups. Intraclass correlation for perceived confidence was .28, out of which .26 was attributable to differences between raters, $\chi^2(1) = 45.68, p < .01$, and .02, $\chi^2(1) = .33, p > .05$, was attributable to differences between groups. Therefore, a random effect of group was dropped from the model, but a random effect of rater was still included.

The medium effect was not significant, $F(1, 139) = 2.60, p = .11$. The main effect of experts' culture, $F(1, 149) = 7.14, p = .01$, was significant, but this difference was qualified by a significant interaction effect between medium and experts' culture, $F(1, 161) = 6.59, p = .01$. Chinese experts

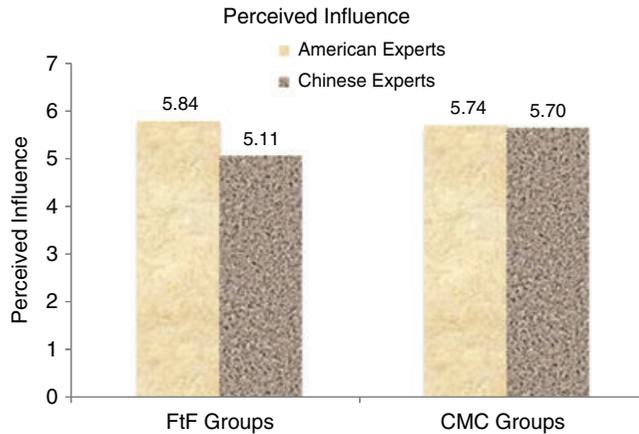


Figure 4 Perceived influence of American and Chinese experts in FtF and CMC groups.

were perceived as less influential than American experts in FtF groups (mean difference = $-.73$, $SE = .20$, $p < .01$). In contrast, Chinese and American experts were judged equally influential in CMC groups (mean difference = $-.04$, $SE = .20$, $p = .86$) (see Figure 4).

Finally, hypotheses H5 and H6 predicted mediated moderation, which refers to the mediating process responsible for the overall moderation effect (Baron & Kenny, 1986). The mediating process is established by showing that the moderation effect declines (partial mediator) or disappears (full mediation) after controlling for the mediator (Baron & Kenny, 1986; Muller et al., 2005). To establish the mediation effect we followed a set of analytical procedures laid out in Baron & Kenny (1986). The first step was to establish that potential mediators—participation rate and perceived confidence—had a significant effect on expertise recognition and perceived influence. The analyses showed that neither participation rate, $F(1, 57) = 1.49$, $p = .23$, nor perceived confidence, $F(1, 188) = 1.70$, $p = .19$, had a significant effect on expertise recognition. Therefore, H5a and H5b were not supported.

The analyses on perceived influence showed that participation rate did not influence perceived influence, $F(1, 59) = .07$, $p = .79$, therefore, rejecting H6a. Perceived confidence, however, had a significant effect on perceived influence, $F(1, 178) = 42.46$, $p < .01$. Therefore, the next step was to regress perceived influence on communication medium, experts' culture, and the interaction between communication medium and experts' culture, as well as perceived confidence. The moderated effect of communication medium and experts' culture ceased to be significant, $F(1, 164) = 1.57$, $p = .21$, while perceived confidence remained significant, $F(1, 170) = 29.21$, $p < .01$. This provides support for the mediated moderation effect: Perceived confidence accounted for the differences in the effects of experts' cultural backgrounds on their perceived influence in FtF versus CMC discussions.

Discussion

The present study explored how communication in FtF and CMC impacted expertise recognition and perceived influence in intercultural collaboration. This is one of the few studies that examined the role of communication processes in expertise recognition in groups of any kind (but see Littlepage et al., 1995; Littlepage & Mueller, 1997), and one of the first to explore this question in intercultural groups. The results reveal that the impact of cultural backgrounds is moderated by communication medium on experts' participation rate and their perceived confidence in communication, as well as the extent

to which their expertise and influence are recognized in intercultural collaboration. In FtF groups, despite having comparable levels of task expertise, experts from East Asian culture participated less, were perceived as less confident, less competent, and less influential in comparison to experts from Western culture. In contrast, differences in communication styles between experts from East Asian and Western cultures, as well as perceptions of their expertise and influence, leveled off in text-based CMC groups. Furthermore, the difference in perceived influence between East Asian and Western experts disappeared with increase in perceived communication confidence of East Asian participants, supporting the mediation role of confidence on the moderation effect of communication medium in predicting how an expert's perceived influence varies between cultures.

Conceptual Contributions

Culture and expertise recognition

Although expertise recognition is a major topic of interest, especially in research concerned with transactive memory (TM) theory (Wegner, 1986), most existing studies focus on the impact of TM on group collaboration (see for review, Ren & Argote, 2011). Considerably less attention has been paid to factors that influence accuracy of expertise recognition, which is central to the development of TM systems. The few exceptions include studies about the impact of collective training (Moreland, 1999), gender and stereotypes (Hollingshead & Fraidin, 2003; Yoon & Hollingshead, 2010), and social network ties (Yuan, Fulk, Monge, & Contractor, 2010). Our study contributes to this line of research by examining communication processes underlying expertise recognition in group collaboration, as influenced by the effects of culture and communication technology. It also contributes to a growing body of research on the effects of culture on communication processes in different media (e.g., Setlock, Fussell, & Neuwirth, 2004; H-C. Wang, Fussell, & Setlock, 2009) by showing how communication mediates the impact of culture and medium on group outcomes.

As mentioned above, we found across-the-board moderation effects of communication technology on reducing differences between experts from East Asian and Western cultures in participation rate and confidence in communication (the communication process variables), as well as expertise recognition and influence (the group outcome variables). Using the two communication process variables as mediators to explain the observed moderation effects related to the two group outcome variables, four combinations (2 x 2) are possible. Among these combinations, however, only perceived confidence mediated the moderation effect of communication medium on cultural background leading to expert influence link. In regard to participation rate, Littlepage et al. (e.g., Littlepage et al., 1995; Littlepage & Mueller, 1997) found that in groups with members from Western culture, participation rate was significantly associated with both expertise recognition and influence. In contrast, our results show that participation rate had no significant mediation effect on either of the moderation effects related to the two group outcome variables. This difference in results suggests that people from different cultural backgrounds may draw on dissimilar heuristics cues to infer expertise, and participation rate may not be associated with judgments of competence and influence in East Asian culture as much as it is in Western culture.

Interview data from twelve Chinese and American students appear to support the above proposition (Yuan & Bazarova, n.d.). We found that participation rate was a stronger indicator of expertise for Western participants than for East Asian participants, and that a quiet team member was much more likely to be judged incompetent by Westerners than East Asians. East Asian and Western interviewees seemed to value confidence in communication, and indicated that they were more likely to yield to confident communicators (even when they didn't judge them competent). It seems plausible that for communication styles to serve as mediators between cultural/contextual factors and expertise

recognition/influence, they need to be valued equally by members of different cultures in intercultural collaboration.

Communication medium as a moderator of cultural effects on communication and expertise recognition/influence

To explain the role of communication medium as a moderator on the impact of culture, we have drawn on several CMC theories, including equalization effect (Dubrovsky et al., 1991), empowerment effect (Amichai-Hamburger et al., 2008), and hyperpersonal theory (Walther, 1996). Whereas the equalization effect provides a general framework for understanding how differences in participation rate can be equalized due to reduced social constraints and sanctions, its fundamental assumption is that text-based CMC filters out social cues and thereby renders group members relatively anonymous and depersonalized. As a result, they experience reduced evaluation anxiety and increased social inattention, and either or both of these psychological effects can lead to equal participation across the whole team (Dubrovsky et al., 1991). In contrast to the equalization effect, the empowerment effect and the hyperpersonal theory emphasize the role of interpersonal processes in how people can take advantage of unique characteristics of text-based CMC to reveal their true identity and increase self-efficacy (Amichai-Hamburger et al., 2008), as well as to exercise greater control over their self-presentation and cognitively focus on verbal exchange in order to achieve interpersonal goals (Walther, 1996). Although future research will need to examine specific mechanisms that change how people from different cultures communicate in text-based CMC compared to FtF, the present findings suggest that the high abundance of both verbal and nonverbal cues in FtF communication media might not always lead to the most desirable results in intercultural collaboration. In intercultural groups, using “lean” media to reduce such nonverbal and contextual cues may be in some cases more desirable for effective collaboration.

Another CMC theory relevant to explaining the effect of culture on group behaviors is the social identity model of deindividuation effects (SIDE) (Lea & Spears, 1992). According to SIDE, a lack of individuating information in CMC diminishes reliance on interpersonal cues, but instead prompts stereotypical behaviors and perceptions based on gender, cultural, and other social stereotypes. There are, however, certain conditions that need to be met to produce SIDE effects of culture-based stereotyping, including (a) a salience of a social identity and scarcity of individuating information (e.g., the use of a nickname “Woman 1” instead of an individuating name, as in Postmes & Spears, 2002), (b) the fit of a social identity to the task (e.g., stereotypically fitting expertise in math and martial arts to East Asians, as in Yoon & Hollingshead, 2010). When individuating information is exchanged either prior to or during a group interaction, or when people work on tasks that do not fit cultural stereotypes as in the present study, social judgments are more likely to be based on interpersonal perceptions rather than on social categories predicted by SIDE theory (e.g., Z. Wang, Walther, & Hancock, 2009).

To conclude, although few studies have investigated or theorized about the interaction effect between culture and technology on expertise recognition and influence in intercultural groups, it is clear that more evidence needs to be accumulated. The present findings suggest a possible boundary condition for the usefulness/need of technology to support all types of social cues in that members’ cultural backgrounds can serve as a contingency condition determining when rich media that support higher social presence is desirable.

Directions for Future Research

This study reveals several areas of research that deserve further attention. First, in this paper, we focused mainly on two characteristics of communication styles as heuristic cues to judge expertise:

participation rate and confidence. Future research should also explore whether other characteristics of communication, such as openness, assertiveness, use of reason, and attentiveness, can have similar impact. In addition, while it is important to explore what characteristics of communication styles are used universally across cultures to judge expertise, it is equally important to explore cultural differences in expertise perceptions because people from different cultures may draw on different heuristics to infer expertise.

Future research also needs to examine the combined effects of culture and gender on expertise recognition and influence in computer-mediated versus F-t-F groups. Whereas our study controlled for the effects of gender by using all-male and all-female groups¹, intercultural groups often have a mixed-gender composition. Based on studies of FtF mixed-gender culturally homogeneous groups (Thomas-Hunt & Phillips, 2004), male and female experts differ in the amount of participation, communication confidence, the level of influence on group decision, and the extent to which their expertise is recognized. Although text-based CMC may help equalize some communication differences between genders, others still persist. For example, whereas males and females participated equally in mixed-gender CMC groups, males displayed a more dominant communication style (e.g., using a more confident, forceful, and assertive language) than females (Postmes & Spears, 2002). Similarly, research in CMC naturalistic settings shows that males and females differ in communication styles, as well as in their perceptions of communication appropriateness (Herring, 2003; Kapidzic & Herring, 2011).

Practical Implications

Results from this study show that despite having an identical level of actual expertise, Chinese experts were undervalued in their expertise level, confidence, and perceived influence in FtF groups. The results also revealed the potential danger of using communication styles as heuristic cues to judge expertise in intercultural collaboration. Therefore, when group members come from different cultural backgrounds, both management and group members themselves need to be mindful of the difference in communication styles. Knowing, for example, that regardless of the actual level of expertise, East Asian members may talk less than participants from Western cultures, both management and group members would be able to avoid rushing to a conclusion that quieter and “less confident” East Asian participants are less competent. Instead, conscious effort should be made to solicit input from them to make sure that all members’ expertise is incorporated, despite differences in their communication styles. Conversely, knowing that in the Western culture, participation and confidence in communication are key indicators of expertise, group members from East Asian countries should make extra effort to participate actively in discussion and communicate in a more assertive fashion. In addition, our results showed support for the “empowering” capability of CMC for Chinese participants. This finding implies that using multiple media could be beneficial for intercultural collaboration. The ultimate goal is to provide all group members an equal opportunity to participate in group decision-making, regardless of their communication styles. As intercultural collaboration becomes more common, more attention is needed to explore the mechanisms through which cultural differences may compromise effectiveness in collaboration, and what situational factors can moderate the effects of culture on group processes and outcomes.

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Endnote

- 1 We probed for differences between the male-only and female-only groups by comparing them overall and separately in FtF and CMC conditions. There was neither a main effect of gender nor an interaction effect between gender and communication technology for participation rate, perceived confidence, and expertise recognition. There was a marginally significant interaction of communication technology and gender, $F(1, 137) = 3.92, p = .05$, suggesting that overall, experts were perceived as more influential in CMC than FtF in all-female groups ($p = .02$), but not in all-male groups ($p = .62$).

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