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## Talk and Let Talk: The Effects of Language Proficiency on Speaking up and Competence Perceptions in Multinational Teams

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## Abstract

Collaboration within multinational teams necessitates the adoption of a common language, typically English, which often leads to significant differences in language proficiency across members. We develop and test a multilevel model of the effects of language proficiency within multinational teams. An experimental study of 51 teams (102 American and 102 Chinese participants) revealed that, at the individual level, members with higher levels of language proficiency were more likely to speak up, which led to more positive perceptions of their competence. At the team level, greater dispersion in language proficiency across members was associated with less accurate competence recognition, which, in turn, led to lower overall team performance. Moreover, communication medium moderated these relationships, such that the effects of language proficiency were more potent in face-to-face than in computer-mediated teams. We discuss the implications of these findings for future research and for managing participation, competence, and technology in multinational teams.

## Keywords

team, language proficiency, speaking up, competence perception, computer-mediated communication

## Disciplines

Business and Corporate Communications | Human Resources Management | Performance Management

## Comments

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# Talk and Let Talk: The Effects of Language Proficiency on Speaking up and Competence

## Perceptions in Multinational Teams

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Abstract

Collaboration within multinational teams necessitates the adoption of a common language, typically English, which often leads to significant differences in language proficiency across members. We develop and test a multilevel model of the effects of language proficiency within multinational teams. An experimental study of 51 teams (102 American and 102 Chinese participants) revealed that, at the individual level, members with higher levels of language proficiency were more likely to speak up, which led to more positive perceptions of their competence. At the team level, greater dispersion in language proficiency across members was associated with less accurate competence recognition, which, in turn, led to lower overall team performance. Moreover, communication medium moderated these relationships, such that the effects of language proficiency were more potent in face-to-face than in computer-mediated teams. We discuss the implications of these findings for future research and for managing participation, competence, and technology in multinational teams.

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## Talk and Let Talk: The Effects of Language Proficiency on Speaking up and Competence Perceptions in Multinational Teams

Multinational teams are becoming an increasingly prevalent and important part of the global economy (Kozlowski & Bell, 2013). These teams, often enabled by technology, allow organizations to bring together the diverse capabilities needed to accomplish a variety of critical tasks (Connaughton & Shuffler, 2007; Wilson & Doz, 2012). Although multinational teams offer numerous benefits, they also face some significant challenges. In particular, the different national languages spoken by team members can create barriers to effective communication and decision making (Harzing, Köster, & Magner, 2011). Multinational teams typically adopt a common language, most often English, which can lead to significant differences in language proficiency between native and non-native speakers.

Although language and communication processes are critical to information processing within teams (Harzing & Feely, 2008), differences in language proficiency have received limited research attention within the teams literature (Brannen & Doz, 2012; Harzing, et al., 2011). However, several recent studies, most of which have been qualitative or descriptive in nature, have provided initial evidence that asymmetries in language proficiency may have important effects within multinational teams, including contributing to sub-grouping or clustering (Hinds, Neeley, & Cramton, 2014), shaping status and power dynamics (Neeley, 2013; Neeley & Dumas, 2016), and undermining trust formation (Tenzer, Pudelko, & Harzing, 2014). There remain, however, many important, yet unexplored, questions about whether and how language differences influence important team processes and outcomes.

In the current article, we use a multi-level, experimental approach to examine the effects of language proficiency on information exchange within multinational teams. In order to leverage

their broad pool of resources, multinational teams must not only encourage information sharing but also develop an accurate understanding of what knowledge and competence exists within the team (van Knippenberg, De Dreu, & Homan, 2004; Ren & Argote, 2011). Extending expectation states theory to multinational collaboration (Berger, Wagner, & Zelditch, 1985; Berger, Webster, Ridgeway, & Rosenhotz, 1986), we argue that at the individual-level, language proficiency may influence the extent to which an individual speaks up within a team, which in turn may shape how other team members perceive his or her competence. We extend these relationships to the team-level by examining how the dispersion of language proficiency across the members of a team influences patterns of speaking up, and how these patterns influence the recognition of competence within the team and team performance. Moreover, given that multinational teams often rely on communication technology (Mathieu, Maynard, Rapp, & Gilson, 2008), we examine these relationships in teams operating either face-to-face or through computer-mediated communication to determine whether communication medium moderates the effects of language proficiency on competence judgment and performance within multinational teams.

This study makes several important theoretical and practical contributions. First, it offers fine-grained insights into the effects of language proficiency, which has received only minimal attention within the teams literature. As Hinds et al. (2014, p. 536) stated, “Despite the central role of a lingua franca in global work, a gap remains in our understanding of how language affects work and workers in international organizations.” We address this problem by examining whether and how language proficiency adds a unique layer of complexity to team dynamics and effectiveness, above and beyond culture. Specifically, this study aims to examine the impact of language proficiency on both the team-level and the individual-level processes of speaking up, competence perceptions, and task performance.

Second, this study helps extend expectation states theory into the domain of both multinational and computer-mediated teams (e.g., Bazarova & Yuan, 2013; Yuan et al., 2013). In doing so, it helps to address our currently limited understanding about the processes through which multinational teams develop competence recognition. Research on expectation states theory has mainly studied pre-existing (i.e., gender, age, race, and education) and task-related characteristics (i.e., task-relevant statements, Berger et al., 1986). Recent work, however, increasingly recognizes the role of dynamic and interactive factors in forming expectations and competence recognition (Treem, 2012; Liao, Bazarova, & Yuan, in press). Still, factors that are unique and prevalent in multinational teams and computer-mediated teams, such as language proficiency and communication technology, need to be better understood. This study examines the role of language proficiency and speaking up in competence perception and recognition and also how their influence varies across face-to-face and computer-mediated teams.

Finally, this study contributes to our understanding of the role of media, such as face-to-face and text-based computer-mediated chat, in multinational team collaboration (Connaughton & Shuffler, 2007). It is crucial to explicitly examine the contextual influence of the communication medium when examining the impact of language proficiency on multinational collaboration since these interactions often involve computer-mediated communication. The conceptual model proposed in this study is presented in Figure 1 and discussed below.

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## **Theoretical Framework and Hypotheses**

### **Language in Multinational Teams**

Companies are increasingly stipulating common language policies to expand their global reach and to facilitate team collaboration (Crystal, 2007; Neeley, 2013). When team members possess different native languages, common language proficiency, defined as the ability to communicate information in a certain language to fulfill a social function (Jones, 1975), naturally varies among team members, potentially resulting in barriers that undermine team processes. For instance, team members with lower levels of language proficiency may avoid speaking English and making speech mistakes due to performance anxiety or job insecurity (Neeley, Hinds, & Cramton, 2012). They may also risk losing status, become less influential, lower their anticipation of career advancement, and even feel demotivated and inferior (Neeley et al., 2012; Neeley & Dumas, 2016). Thus, although intended to increase efficiencies of team work, common language mandates may inadvertently introduce inefficiencies and even lead to losses in productivity (Neeley et al., 2012).

In multinational teams, the challenge in realizing the performance benefits of a broader knowledge and competence pool lies in encouraging information sharing (van Knippenberg, De Dreu, & Homan, 2004) and facilitating competence recognition within teams. Adequate information sharing and accurate competence recognition do not occur automatically (Pieterse, van Knippenberg, van Dierendonck, 2013). Differences in language proficiency among team members may prevent some from contributing actively to discussions, and thus disrupt competence recognition and team performance. In the following section, we consider how language proficiency may influence the tendency for team members to speak up and how this relationship may differ depending on whether a team operates face-to-face or through computer-mediated communication.

### **Language Proficiency and Speaking up: Communication Medium as a Moderator**



In face-to-face teams, low language proficiency may inhibit one's speaking up due to various factors, such as the restriction of language ability, self-censoring, and being offered fewer opportunities to speak up. First, there are cognitive costs associated with processing a foreign language (Takano & Noda, 1993) and expressing oneself with restricted linguistic resources (Wang, Fussell, & Setlock, 2009). Low language proficiency slows down communication and makes it more challenging and frustrating for both native and non-native speakers (Wang et al., 2009; Takano & Noda, 1993). Second, individuals with lower language proficiency might avoid speaking up because they are afraid to make mistakes, fear discrimination due to their accent (Gluszek & Dovidio, 2010), worry about having to defend their position in their non-native language, or assume others will not appreciate their input (Neeley et al., 2012). In organizational settings, due to performance anxiety or job insecurity, many non-native speakers, even those who are confident and vocal in their native language, are reluctant to speak up in English (Neeley et al., 2012). Finally, individuals with lower language proficiency might be allocated fewer opportunities to talk because intergroup biases may lead other team members to view their contributions as less valuable (Hinds et al., 2014). Based on the above reasoning, we expect that individuals with higher levels of language proficiency will speak up more often than individuals with lower language proficiency.

However, the relationship between language proficiency and speaking up may be influenced by whether a team operates face-to-face or through computer-mediated communication. Under the realm of computer-mediated communication, a wide range of communication media may be used, such as chat (i.e., instant messaging), e-mail, and tele- or video-conferencing (Baltes, Dickson, Sherman, Bauer, & LaGanke, 2002). In this study, we chose to focus on *chat*, a non-anonymous, synchronous, text-based form of computer-mediated communication, for three

reasons. First, we argue that differences in the availability of important cues in face-to-face versus text-based communication may have implications for the effects of language proficiency on individual and group processes in multinational teams. In particular, the restriction in social cues in a text channel can relax some of the cognitive and social constraints that prevent members with low language proficiency from speaking up. Second, the majority of studies to date on computer-mediated communication have used synchronous text-based systems (Baltes et al., 2002), so we adopted chat to provide a common baseline for comparison. Third, synchronous text-based communication is prevalent in organizations, and thus is practically important (Charlier, Stewart, Greco, & Reeves, 2016).

By reducing social cues, text-based computer-mediated communication may influence members' participation rate through two related effects: equalization (Dubrovsky, Kiesler, & Sethna, 1991) and empowering (Amichai-Hamburger, McKenna, & Tal, 2008). The *equalization* effect emphasizes reductions in social status differentiation, which should lead to more equal participation from all group members (Dubrovsky, et al., 1991; Kiesler & Sproull, 1992; Weisband, 1992). Whereas face-to-face team members tend to conform to the expected social order determined by language proficiency levels (Hinds et al., 2014; White & Li, 1991), differences in social attributes matter less in computer-mediated communication due to the absence of contextual and nonverbal cues (Dubrovsky et al., 1991; Kiesler & Sproull, 1992). In particular, text can help reduce nonnative speakers' communicative inefficiencies (e.g., lack of fluency or a heavy accent), which are most often associated with stigma and self-censoring (Gluszek & Dovidio, 2010). Therefore, the relaxed social constraints of a text chat can stimulate more contributions from members with low language proficiency by reducing social status differentiation due to differential language proficiencies.

Text-based computer-mediated communication also has an *empowering* effect (Amichai-Hamburger et al., 2008), which refers to decreased apprehension in revealing one's authentic self in the absence of visual and audio cues (Baltes et al, 2002; Bargh, McKenna, & Fitzsimons, 2002). Lowered social expectations and reduced risks of social sanctions make people feel more comfortable to be themselves in computer-mediated communication, which can encourage more open and active group participation (e.g., High & Caplan, 2009). This could be particularly helpful for individuals with low language proficiency, who may feel empowered in this channel compared to face-to-face communication in which they tend to worry about making mistakes and being judged for language incompetence.

Finally, text-based chat enables different interactional norms from face-to-face conversations (Herring, 1999) that can further help people with lower language proficiency to speak up in group discussions. Whereas face-to-face speakers are expected to take turns in an orderly fashion with minimal gap and overlap, computer-mediated communication exchanges are characterized by conversational discontinuity, gaps, and overlaps within turn sequences (Herring, 1999). Individuals with low language proficiency can take advantage of these interactional possibilities offered by text-based chat. They can participate in overlapping exchanges and easily jump into a conversation rather than having to wait for a turn to speak. Taken together, this evidence suggests that text-based computer-mediated communication may serve to reduce the gap in speaking up between members with high and low language proficiency. Thus, we expect language proficiency will have a greater influence on speaking up behavior in face-to-face teams than in computer-mediated teams.

*Hypothesis 1a:* Communication medium moderates the relationship between individuals' language proficiency and speaking-up, such that the relationship is stronger (more

positive) in face-to-face teams than in text-based computer-mediated teams.

At the team level, varying levels of language proficiency among team members may manifest itself in different language proficiency dispersions, which, in turn, might affect speaking turn dispersion. Woolley et al. (2010) define speaking turn dispersion as “the variance in the number of speaking turns by group members” (p. 688) and provide evidence that more effective teams tend to exhibit a more equal distribution of speaking turns (Engel, Woolley, Jing, Chabris, & Malone, 2014). In contrast, less effective teams tend to have a few people who dominate the conversation. What is less clear, however, is what factors influence the variability of speaking turns in teams. In the context of multinational teams, we focus on language proficiency as a potentially important predictor of members’ participation in group discussions (Neeley, 2013). The language proficiency within a team can be characterized in two ways: mean and dispersion. Language proficiency mean refers to the average level of language proficiency among team members, while language proficiency dispersion refers to the variation or standard deviation of language proficiency across the members of the team. Thus, low language proficiency dispersion indicates that members are relatively consistent in their language proficiency, whether it is low, average, or high. In contrast, high language proficiency dispersion indicates a wider range of language proficiencies across team members.

Within a face-to-face team, increased variability in language proficiency is likely to lead to greater speaking turn dispersion because the constraints associated with language proficiency are experienced unequally among group members. That is, when team members all have equally low language proficiency (i.e., low language proficiency dispersion), they are likely to have equal chances of speaking up in a team, thus resulting in low speaking turn dispersion. Similarly, if all members have equally high language proficiency (i.e., low language proficiency dispersion), the

team is also likely to have low speaking turn dispersion. In contrast, when team members possess varying levels of language proficiency (i.e., high language proficiency dispersion), their experience of constraints associated with language proficiency (e.g., cognitive costs, self-censoring, and restricted opportunities to talk) will also vary. Accordingly, this should lead to greater differences in speaking turns across team members, resulting in high speaking turn dispersion. Thus, in face-to-face teams we expect language proficiency dispersion to positively influence speaking turn dispersion, over and above the mean level of language proficiency within the team. In contrast, the equalization and empowering effects of text-based computer-mediated communication, as described earlier, may reduce the salience and impact of differences in language proficiency, thus weakening the relationship between the dispersion of language proficiency and the speaking turn dispersion within a group. Thus, we propose that language proficiency dispersion will have a stronger influence on speaking turns when teams communicate face-to-face than when they use text-based computer-mediated communication.

*Hypothesis 1b:* Communication medium moderates the relationship between dispersion of language proficiency and speaking turn dispersion, such that the relationship is stronger (more positive) in face-to-face teams than in text-based computer-mediated teams.

### **Speaking Up and Competence Perception and Recognition**

It is important to understand the dynamics of speaking up behaviors in a team because speaking up may influence competence perception and recognition. Competence perception and competence recognition are substantively different, as competence perception captures others' subjective impressions of a focal person's competence level, while competence recognition reflects the accuracy of others' competence evaluations measured against an objective

benchmark of actual competence level (Yuan et al., 2013). In this study, as detailed below, they are conceptualized at different levels: at the individual level, we are theoretically interested in the perceptions of an individual's competence, because people make decisions according to their perceptions regardless of their accuracy; at the team level, we are theoretically interested in the ability of the team as a whole to accurately recognize competence, because inaccuracy in competence recognition will result in inadequate usage of a team's intellectual resources and potentially undermine team performance.

Competence perception is important at the individual level because perceived experts, regardless of their actual level of competence, can have greater influence on decision-making relative to other members and may enjoy more favorable career consequences. Previous work has drawn on expectation states theory to understand the role of interaction processes in shaping competence perceptions within teams (e.g., Littlepage, Robinson, & Reddington, 1997). According to this theory, team members draw on a variety of *cues* to develop *expectations* about others' competence and contributions (Berger et al., 1985; Berger et al., 1986). These expectations are heuristic and affect performance evaluation and social influence in a team (Kalkhoff & Thye, 2006). They are based on cues - the social information and salient observations drawn from group interactions. They can be obvious or subtle, conscious or unconscious, and categorical (e.g., gender, race, and occupation) or task-related (e.g., task-relevant statements, Berger et al., 1986). Among categorical cues, speech cues appear to be particularly important. For example, speech speed, volume, and hesitancy are often used as cues in competence perceptions (Berger et al., 1986). We propose that the number of times each member speaks up may represent a salient cue that shapes expectation states in team interactions. If individuals are differentiated in terms of a competence cue, in this case the number of times

they speak up, perceptions of their competence should be differentiated accordingly (Berger et al., 1985; Berger et al., 1986). Thus, we propose,

*Hypothesis 2a:* A group member's speaking up is positively related to others' perceptions of his/her competence.

At the team level, competence recognition is essential for teams to achieve top performance (Ren & Argote, 2011), which is especially important for multinational teams that offer a broader pool of information and competence. While even culturally homogeneous teams often have difficulties recognizing and utilizing competence (e.g., Bottger & Yetton, 1988; Littlepage et al., 1995), multinational teams face even bigger challenges due to cultural stereotypes and intercultural miscommunication (Yoon & Hollingshead, 2010). Hence, at the team level of analysis, we focused on competence recognition.

Expectation states theory also helps to understand how speaking turn dispersion may relate to competence recognition at the team level, which is conceptualized as overall accuracy of all members' competence evaluations or the consistency between all members' perceived and actual competence levels. Speaking up is a highly observable cue that will influence perceptions of an individual's competence. When the speaking turn dispersion in a team is low, or in other words, when every member in the team talks roughly the same number of times, speaking up as an expectation-inducing cue becomes undifferentiated and less salient. Instead, team members can base their competence judgments on cues, such as the content of one's speech, which better reflect members' actual competence levels. In contrast, when the speaking turn dispersion is high, the number of times a member speaks up will become a very salient competence cue. When competence judgments are formed more on the basis of heuristic cues, such as speaking turns, rather than the actual content of discussion, actual competence is less likely to be recognized.

Thus, we expect that teams with greater dispersion in speaking turns experience greater difficulty in accurately recognizing competence within the team.

*Hypothesis 2b:* Speaking turn dispersion is negatively related to competence recognition within the team.

When speaking turns are more equally distributed within a team, all members have an opportunity to contribute their knowledge to the team discussion, which should result in higher quality team solutions. For example, teams are more creative when all members have opportunities to express their views and when they feel comfortable doing so (Edmondson, 1999). A more even distribution of speaking turns should also enhance overall team effectiveness by promoting competence recognition, which in turn can further enhance knowledge sharing within groups (Yuan, Fulk, & Monge, 2007). Teams that exhibit greater specialization and coordination of expertise tend to perform better and make more effective decisions (Ren & Argote, 2011; Hollingshead, Brandon, Yoon, & Gupta, 2011; Lewis & Herndon, 2011). Thus, we expect that competence recognition serves as a mechanism through which speaking turn dispersion impacts team performance.

*Hypothesis 3:* Competence recognition mediates the negative relationship between speaking turn dispersion and team performance.

### **Language Proficiency and Team Performance: A Moderated Mediation Model**

Taken together, we lay out the full model from language proficiency to the outcomes at both the team (i.e., competence recognition and team performance) and individual levels (i.e., competence perception) to provide a comprehensive depiction of the role of language proficiency in multinational teams. At the individual level, as argued above, we expect that individuals with higher language proficiency will be more likely to speak up, which in turn will lead to more



positive perceptions of their competence. In addition, we expect that the positive relationship between language proficiency and speaking up will be stronger in face-to-face teams than computer-mediated teams. Accordingly, we propose a first stage moderated mediation model (Edwards & Lambert, 2007), in which communication medium moderates the effect of language proficiency on perceived competence level via speaking up behavior. Specifically, we expect the positive indirect relationship between language proficiency and competence perceptions via speaking up to be stronger in face-to-face than computer-mediated teams.

*Hypothesis 4:* The indirect relationship between one's language proficiency and others' perceptions of his/her competence via speaking up is moderated by communication medium, such that the positive indirect relationship is stronger in face-to-face teams than text-based computer-mediated teams.

Similar to the individual level, where speaking up serves as the link between one's language proficiency and perceived competence, at the team level we propose that speaking turn dispersion acts as a mechanism that explains the relationship between a team's language proficiency dispersion and competence recognition, which in turn eventually leads to team performance. Thus, the effects of language proficiency dispersion on ultimate team performance go through two stages, namely speaking turn dispersion and competence recognition (as illustrated in Figure 1). Below, we develop two hypotheses that focus on the mechanisms and boundary conditions for how language proficiency dispersion influences (a) competence recognition and (b) team performance.

At the team level, we expect that greater dispersion of language proficiency will lead to greater speaking turn dispersion, which in turn will exhibit a negative relationship with competence recognition. As argued earlier, we also expect communication medium to moderate

this relationship, such that the positive relationship between language proficiency dispersion and speaking turn dispersion will be stronger in face-to-face teams than in text-based computer-mediated teams. Therefore, we propose a first stage moderated mediation model (Edwards & Lambert, 2007), in which communication medium moderates the influence of language proficiency dispersion on competence recognition via speaking turn dispersion. Specifically, we expect the indirect relationship between language proficiency dispersion and competence recognition via speaking turn dispersion will be stronger (or more negative) in face-to-face than computer-mediated teams.

*Hypothesis 5:* The indirect relationship between language proficiency dispersion and competence recognition via speaking turn dispersion is moderated by communication medium such that the indirect relationship is stronger (or more negative) in face-to-face teams than text-based computer-mediated teams.

Finally, at the team level we examine the indirect effect of language proficiency dispersion on team performance through competence recognition. We chose to test competence recognition as the mediator for two reasons. First, as reviewed above, existing research shows that it is a strong predictor of team performance. Second, there is also likely to be a direct relationship between language proficiency dispersion and competence recognition, not functioning through speaking turn dispersion. According to expectation states theory (Berger et al., 1985; Berger et al., 1986), team members may draw from a focal person's language proficiency as a status and performance expectation cue to infer his or her competence level. When this cue is differentiated among members and salient in teams, language proficiency dispersion could directly hinder competence recognition in a team. Again, we propose a first-stage moderated mediation model (Edwards & Lambert, 2007), in which communication medium moderates the influence of

language proficiency dispersion on team performance via competence recognition. Specifically, we expect the indirect relationship between language proficiency dispersion and team performance via competence recognition to be stronger (or more negative) in face-to-face teams than in computer-mediated teams.

*Hypothesis 6:* The indirect team-level relationship between language proficiency dispersion and team performance, via competence recognition, is moderated by communication medium, such that the indirect relationship is stronger (or more negative) in face-to-face teams than in text-based computer-mediated teams.

## **Method**

### **Sample and Procedure**

Participants in this study were 204 graduate students (51 teams) from different fields of study at a university in the northeastern United States. Our participants were recruited from the university-managed participant pool of current students. The data used in this study were part of a larger dataset. Participants were invited to sign up for our study via email. Each group contained four members; two positions were reserved for non-Asian American participants and two were reserved for Chinese participants. Only those Chinese students who had lived in the United States for less than five years were eligible to participate in this study, which was consistent with other studies of intercultural communication (e.g., Bazarova & Yuan, 2013; Diamant, Fussell, & Lo, 2009), because lengthier socialization in a Western country could change their communication styles. The age of the participants ranged from 20 to 50, with a mean 25.63 (SD = 4.36), and 106 (52%) were male. The means and SDs of the age of Americans were 24.34 and 3.28 respectively (N=102) and those of the Chinese were 26.82 and 5.09 respectively (N=102). Individuals were compensated \$20 for their participation in the study. As

an additional stimulus, participants were informed prior to the experiment that each member of the five top-performing teams would receive a \$30 gift certificate to a popular local restaurant.

Each team was randomly assigned to either a face-to-face or a computer-mediated condition, which we informed the participants about when they arrived at our laboratory. When members of the computer-mediated condition arrived, they were put into 4 separate rooms without meeting each other in person, whereas members of the face-to-face teams were put into the same room. In the computer-mediated communication condition, the experimenters also took a headshot photo of each team member, who was referred to as “Member 1”, “Member 2”, “Member 3”, or “Member 4” in the online chat system. Participants’ first and last names and a photograph corresponding to their member number were displayed in a shared online document that was open and visible to all group members throughout the discussion. To parallel this in the face-to-face condition, members of the face-to-face teams were placed at a round table, with the 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.

We used an intellectual problem-solving task that consisted of 4 questions. We first asked our participants to complete the four questions individually and told them that all questions had correct answers. Then we collected their individual answers, after which they worked as a group to reach a collective decision for each question. We did not, at any point, tell them the correct answers or anyone’s scores (or answers). Consistent with prior research (Woolley et al., 2010), the problem-solving task used in the current study required logic reasoning and was not reading-intensive. In a pilot study with 52 participants, we found no significant difference in performance on the task between Chinese and American students. Please see Appendix A for a sample task question. Upon finishing the group task, each participant individually completed an online

questionnaire assessing ratings of other members' language proficiencies and competence levels.

## Measures

Unless otherwise noted, all items were measured on a 7-point Likert type scale (1= strongly disagree, 4= neither agree nor disagree, 7= strongly agree).

**Team performance.** As there were correct answers to the four questions that the teams completed, a team's performance score was the number of questions that a team solved correctly.

**Language proficiency.** We used five items adapted from the Interagency Language Roundtable scale (2014) to assess language proficiency. The Interagency Language Roundtable scale was standardized and validated over the years by government agencies with the assistance of the Educational Testing Service and has a long history of wide use in academia (e.g., second language teaching and testing researchers), U.S. government (e.g., the American Council on the Teaching of Foreign Languages), and private organizations (e.g., health care providers). Each participant was rated by his or her team members. The scale tends to be used by professional evaluators in more systematic and time-consuming evaluations than a laboratory experiment setting, thus we adapted it to be context-relevant, within a reasonable length, and easily accessible to our participants, while choosing items that collectively capture the domain of the construct. Sample items included "This person had trouble finding the right words to express him/ herself (reverse-coded)" and "This person mispronounced / misspelled a lot of words (reverse-coded)." Cronbach's alpha was .77.

We used group members' judgments to assess one another's language proficiency for three reasons. First, prior research has found others' evaluations of language proficiency to be reliable (Cucchiarini, Strik, & Boves, 2002). In the current study we found adequate inter-rater agreement among members' ratings of the same focal person's language proficiency, as rwg<sub>j</sub>

= .82. Second, very high correlations have been found between others' ratings and objective language proficiency criteria, such as speech rate, mean length of utterances, phonation/time ratio, and the duration and number of pauses per minutes (e.g., Cucchiarini, Strik, & Boves, 2000:  $r$ 's between 0.77 and 0.91). Finally, this approach is widely used in language and communication characteristics research (e.g., Gluszek, Newheiser, & Dovidio, 2011). To verify that participants' ratings of each other's language proficiency levels were not biased by task performance, we hired two professional English-as-a-second-language teachers, both of whom had more than 10 years of experience in English instruction and evaluation, to rate participants' language proficiency levels. Correlating their ratings with participants' ratings, the results showed that participants' ratings of their team members' language proficiencies were unlikely to be influenced by the members' task competence and performance.<sup>1</sup>

**Language proficiency dispersion.** Consistent with the recommendations of Roberson, Sturman, and Simons (2007), we used the standard deviation of members' language proficiencies as an index for the dispersion of language proficiency in a team. Standard deviation outperforms other representations of variation in group members' responses, such as awg, rwg, and average deviation index, when there is an interaction effect, and is also relatively easy to calculate and to

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<sup>1</sup> Both teachers were blind to our hypotheses and rated the participants' language proficiency levels independently, using the same scales that the participants had used in the study. They were instructed to focus on the first half of the video recordings of face-to-face teams or the first half of the transcripts of group discussions of computer-mediated teams, which aimed to ensure that their evaluations of the participants' language proficiency were not influenced by ultimate performance on the task. After they each spent around 6 hours to rate 6 face-to-face teams and 6 computer-mediated teams, we calculated inter-rater reliability (Cronbach's alpha is .87). After confirming that both professional raters had high agreement in their evaluations, Rater 1 spent an additional 16 hours and finished rating the remaining teams. Given the high inter-rater reliability between the two professional raters, we only compared Rater 1's ratings to those of the participants and found that they correlated significantly with each other, which suggests that it is unlikely that participants' ratings of their team members' language proficiencies were influenced by the members' task competence and performance.

understand relative to other measures of dispersion (Roberson et al., 2007).

**Speaking up.** Group discussions in the face-to-face condition were video recorded and then transcribed. Conversations in the computer-mediated communication condition were automatically archived by the chat system. To measure speaking up, in both conditions we used the transcripts to count the number of times each member of the team contributed to the team discussion. To facilitate between-team comparisons and interpretation of results, we divided this number by the total number of speaking-up instances in a team to obtain a percentage for each team member.

**Speaking turn dispersion.** Consistent with Engel et al.'s (2014) operationalization, we used the standard deviation of the speaking up variable within each team as the measure of speaking turn dispersion.

**Competence perception.** Consistent with previous research (e.g., Thomas-Hunt & Phillips, 2004), competence perceptions were measured using the mean of other group members' rankings of a focal person's task competence within the team (1 = most expert, 4 = least expert). To simplify interpretation of the results, we then reverse-coded this measure, so that a higher score indicates a higher competence perception. Before calculating each member's score, we tested the inter-rater agreement among members' perception ratings to the same focal person's competence. The average Cohen's Kappa was .27 ( $p < .05$ ; Cohen, 1968), indicating a moderate degree of agreement among team members (Altman, 1991; Landis & Koch, 1977).

**Competence recognition.** Consistent with Littlepage et al. (1997), we operationalized competence recognition as the Spearman's rank correlation between rankings of team members' perceived competence and their rankings of actual competence (determined by individual task scores). An individual's perceived competence was captured as the other three group members'

ratings of the focal person's competence ranking (e.g., member A was rated by B, C, and D; B rated by A, C, and D, etc.). An individual's actual competence was a rank score of the individual's actual score from working on the task individually. We reverse coded both, so that higher scores indicate a higher level of actual and perceived competence. The competence recognition score for each group is the Spearman correlation coefficient of 12 pairs of ranking scores (with 3 pairs of scores for each of the four members). Using Spearman's rank correlation is appropriate because, unlike regression, Spearman's correlation does not require independence or homoscedasticity of observations. In addition, the nested structure of the data does not influence the Spearman's rank correlation. In theory, competence recognition (as the correlation between members' actual and perceived competence) ranges from -1 to 1, with -1 indicating total inaccuracy, and 1 indicating perfect accuracy. In the current sample, the competence recognition of the teams ranged from -0.71 to 0.92 (mean = 0.05, SD = 0.39), demonstrating considerable variability across teams. In 20 (out of 51) teams this correlation was negative. The median rank order correlation is .09.

**Control variables.** In the individual and cross-level analyses, we controlled for group members' *gender* (0=Female and 1=Male), *age*, and *citizenship* (0=American, 1=Chinese), which is also often a proxy for cultural background, to ensure the effects were due to language proficiency, not other characteristics. Moreover, we measured the most widely examined cultural dimensions of *collectivism* and *individualism* using 8 self-report items for each (Triandis & Gelfand, 1998), which allowed us to further demonstrate the effect of language proficiency over and above that of culture. Example items measuring collectivism and individualism were respectively "If a coworker gets a prize, I would feel proud" and "I'd rather depend on myself than on others." Cronbach's alphas for collectivism and individualism were .70 and .76,



respectively. We also controlled for *actual competence* levels, measured by individual task scores (i.e., the number of questions an individual solved correctly), to isolate the effects of speaking up on competence perceptions, over and above actual competence.

Moreover, we controlled for *speech content quality*, measured by other team members, to isolate the effects of speaking up on competence perceptions, above and beyond the quality of contribution. As one's speech content quality naturally influences others' perceptions of one's competence level, especially in multi-national teams (Yuan et al., 2013), controlling for it allows us to assess more clearly the unique effect of speaking up as our core construct. Sample items were "He/she was thoughtful when making an argument" and "He/she was capable of showing the logical connections among the different parts of his/her arguments" (adapted from de Vries, Bakker-Pieper, Siberg, van Gameren, & Vlug, 2009). Cronbach's alpha was .77. Before calculating each individual's score, we verified the adequate inter-rater agreement among members' ratings to the same focal person's speech content quality, as  $rwg.j = .87$ .

In the team-level analyses, we controlled for the time (in minutes) each team took to finish the task. To test the effects of language proficiency dispersion and speaking turn dispersion on other team-level variables, we controlled for the mean level of language proficiency, following the recommendation of Roberson et al. (2007). To test the effect of competence recognition on team performance, we also controlled for the mean level of actual competence, and the mean and dispersion (i.e., standard deviation) of speech content quality.<sup>2</sup>

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<sup>2</sup> We also tested models with word count and number of thoughts conveyed by participants as control variables. Number of thoughts was the mean number of thought units calculated by two trained independent coders (inter-rater reliability = .998). At both the individual and the group level, speaking up variables (i.e., individual level score, group mean and group SD) were moderately correlated with word count and number of thoughts, which were themselves highly intercorrelated ( $r > .95$ ,  $p < .05$ ). For example, group mean word count and group mean number of thoughts were correlated .97 but they only correlated .35 and .34 with group mean speaking

## Analytic Strategy

Our data contained a hierarchical structure in which the individual-level (Level 1) variables were nested within teams (Level 2). Hierarchical linear modeling was performed using Mplus 7.2 (Muthén & Muthén, 2012). This method partitions the variances of Level-1 outcome variables into within and between group components and then explores how Level-1 and Level-2 predictor variables can help explain these variances. Level-1 variables included individual's language proficiency, speaking up, competence perception, and relevant control variables discussed above. Level-2 variables included team performance, communication medium (i.e., face-to-face versus computer-mediated communication), language proficiency dispersion, speaking turn dispersion, competence recognition, and relevant control variables.

To test random slope models (i.e., models in which the relationship between Level-1 variables varies across teams) for H1a and H4, we used the raw scores of the Level-1 predictor (i.e., language proficiency), which results in statistically equivalent models as using grand-mean-centered random slope models (Enders & Tofighi, 2007; Snijder & Bosker, 2012). We did not use group-mean-centering after careful considerations and following Snijder and Bosker's (2012: 88) recommendation that "one should be reluctant to use group-mean-centered random slope models unless there is a clear theory (or empirical clue) that not the absolute level of  $X_{ij}$  (i.e., one's actual language proficiency in this case<sup>3</sup>) but rather the relative score ( $X_{ij} - X_j$ ) (i.e., one's language proficiency compared to group mean) is related to  $Y_{ij}$  (i.e., one's speaking up)."

Nevertheless, similar cross-level interaction (i.e., H1a) and cross-level moderated mediation (i.e.,

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turns ( $p < .05$ ). For all hypotheses, controlling for word count or number of thoughts did not change our results and the effects of word count or number of thoughts were not significant. This suggests that it is the frequency of speaking up, not simply talking more or expressing more thoughts, that matters for the individual and team processes under consideration.

<sup>3</sup> Texts in these parentheses were added by us.

H4) results were obtained when we used group-mean-centered language proficiency (cf. Hofmann, Griffin, & Gavi, 2000). Finally, although it is difficult to estimate precise effect sizes in cross-level models, we report Snijders and Bosker's (1999) overall pseudo  $R^2$ , which estimates the proportional reduction of errors owing to predictors. Further details of model specification procedures are presented in the next section.

### Results

Table 1 displays means, standard deviations, and bivariate correlations among all study variables. At the team level, competence recognition was positively related to team performance ( $r = .46, p < .01$ ) and negatively related to speaking turn dispersion ( $r = -.32, p < .05$ ). At the individual level, citizenship was unrelated to actual competence or speech content quality ( $r = .09$  and  $r = -.12, p > .05$ ). Citizenship was related to language proficiency and speaking up such that scores were lower for Chinese participants than for American participants ( $r = -.43, p < .01$ ;  $r = -.40, p < .05$ , respectively). Speaking up and speech content quality were positively related to others' perceptions of one's competence ( $r = .32$  and  $.37$ , respectively,  $p < .01$ ).

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 Insert Table 1 about here  
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Hypothesis 1a predicted that communication medium moderates the relationship between language proficiency and speaking up, such that the positive relationship would be stronger in face-to-face teams than in text-based computer-mediated teams. To test this hypothesis, we estimated the cross-level moderating effect of communication medium (i.e., face-to-face and computer-mediated communication) on the relationship between language proficiency and speaking up. As seen in Table 2, in support of H1a, the multilevel modeling results demonstrated a positive effect of face-to-face communication (versus computer-mediated communication) on

the random slope between language proficiency and speaking up ( $b = 2.61$ ,  $SE = 1.31$ ,  $p < .05$ ). To establish the nature of this interaction, we performed simple slopes analysis (Aiken & West, 1991). In computer-mediated teams, language proficiency was not significantly related to speaking up ( $b = .15$ ,  $SE = .09$ ,  $p = .13$ ), whereas in the face-to-face condition, language proficiency was significantly and positively related to speaking up ( $b = .35$ ,  $SE = .14$ ,  $p < .01$ ). Following Cohen, Cohen, West, and Aiken's (2003) recommendations, we plotted this interaction at the two values of communication medium. As shown in Figure 2, in the face-to-face condition, the positive relationship between language proficiency and individual speaking up was stronger.

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 Insert Table 2 about here  
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 Insert Figure 2 about here  
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In Hypothesis 1b we argued that communication medium moderates the team-level relationship between language proficiency dispersion and speaking turn dispersion, such that the positive relationship would be stronger in face-to-face teams than in text-based computer-mediated teams. To test this hypothesis, we estimated the team-level moderating effect of communication medium (i.e., computer-mediated communication and face-to-face) on the relationship between language proficiency dispersion and speaking turn dispersion. As seen in Table 3, failing to support H1b, the interaction between team members' language proficiency dispersion and communication medium on speaking turn dispersion was not significant ( $b = 4.38$ ,  $SE = 4.28$ ,  $p > .05$ ).

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 Insert Table 3 about here  
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Hypothesis 2a predicted that speaking up in a team would be positively related to other members' competence perceptions. To test H2a, we estimated the relationship between one's speaking up and perceived competence. As seen in Table 2, in support of H2a, speaking up was positively related to others' perceptions of a team member's competence ( $b = .02$ ,  $SE = .01$ ,  $p < .01$ ).

In Hypothesis 2b we predicted that at the team level, speaking turn dispersion would be negatively related to competence recognition within the team. To test H2b, we estimated the relationship between speaking turn dispersion and competence recognition. As seen in Table 3, in support of H2b, speaking turn dispersion had a negative effect on competence recognition ( $b = -.03$ ,  $SE = .02$ ,  $p < .05$ ).

Hypothesis 3 stated that competence recognition would mediate the negative relationship between speaking turn dispersion and team performance. To test H3, we estimated the indirect relationship between speaking turn dispersion and team performance via competence recognition, following the procedures of Hayes (2008). In support of H3, there was a negative indirect effect of speaking turn dispersion on team performance via competence recognition (Estimate =  $-.02$ , 95% bias-corrected 5000-time bootstrap CI  $[-.07, -.00]$ ,  $p < .05$ ), while controlling for task time, communication medium, the mean level of members' actual competence, and the mean and dispersion of speech content quality .

In Hypothesis 4 we argued that the indirect relationship between language proficiency and competence perceptions via speaking up would be moderated by communication medium, such that the indirect relationship would be stronger (or more positive) in face-to-face teams than

computer-mediated teams. To test H4, we estimated the indirect relationship between language proficiency with perceived competence via speaking up in both the computer-mediated communication and face-to-face conditions using Bauer, Preacher, and Gil's (2006) method, which is for multi-level mediation models and accounts for team membership. Our model reflects Edwards and Lambert's (2007) first stage mediated moderation model. That is, speaking up mediated the relationship between language proficiency and perceived competence, and communication medium moderated the path from language proficiency to speaking up.

The proposed conditional indirect relationship was significant (Estimate = .11, SE = .06, 95% bias-corrected 5000-time bootstrap CI [.00, .21],  $p < .05$ ), such that the indirect effect of language proficiency on competence perceptions was higher in the face-to-face condition (Estimate = .18, SE = .03, 95% bias-corrected 5000-time bootstrap CI [.04, .32],  $p < .05$ ) than in the computer-mediated communication condition (Estimate = .07, SE = .03, 95% bias-corrected 5000-time bootstrap CI [.01, .14],  $p < .05$ ), supporting H4.

Hypothesis 5 stated that the indirect relationship between language proficiency dispersion and competence recognition via speaking turn dispersion would be moderated by communication medium, such that the negative indirect relationship would be stronger in face-to-face teams than computer-mediated teams. To test H5, we estimated the conditional indirect effect of language proficiency dispersion on competence recognition through speaking turn dispersion under different communication media (i.e., face-to-face or computer-mediated communication). This model reflects Edwards and Lambert's (2007) first stage moderation model. Using the bootstrapping method of Preacher, Rucker, and Hayes (2007), we found that the indirect effect of the interaction of language proficiency dispersion with communication medium on competence recognition through speaking turn dispersion was not significant (Estimate = -.12, 95% bias-

corrected 5000-time bootstrap CI [-.51, .04],  $p > .05$ ), failing to support H5. For competence recognition, the indirect effect of language proficiency dispersion via speaking turn dispersion was not significant in either the face-to-face condition (Estimate = -.06, 95% bias-corrected 5000-time bootstrap CI [-.27, .06],  $p > .05$ ) or the computer-mediated communication condition (Estimate = .07, 95% bias-corrected 5000-time bootstrap CI [-.03, .34],  $p > .05$ ). Using the Preacher and Hayes (2008) method, the model explained significant variance ( $R^2 = .27$ ,  $p < .05$ ), suggesting that the overall model was significant, but the conditional indirect effect was not. This unexpected finding might be due to a power issue stemming from the small sample size (i.e., 27 computer-mediated teams and 24 face-to-face teams), since this is a conditional (i.e., interaction) effect that generally requires greater power to detect.

Our final hypothesis, Hypothesis 6, predicted that the indirect relationship between language proficiency dispersion and team performance via competence recognition would be moderated by communication medium, such that the negative indirect relationship would be stronger in face-to-face teams than in computer-mediated teams. To test H6, we estimated the conditional indirect effect of language proficiency dispersion on team performance through competence recognition under different communication media (i.e., face-to-face or computer-mediated communication). Our model reflects Edwards and Lambert's (2007) first stage moderated mediation model and we used the bootstrapping method of Preacher et al. (2007). The indirect effect of the interaction of language proficiency dispersion with communication medium on performance through competence recognition was significant. The proposed conditional indirect relationship was also significant (Estimate = -.75, SE = .50, 95% bias-corrected 5000-time bootstrap CI [-1.81, -.12],  $p < .05$ ). Specifically, the indirect effect was significant in the face-to-face condition (Estimate = -.61, 95% bias-corrected 5000-time bootstrap CI [-1.40, -.13],  $p < .05$ ),

but not in the computer-mediated communication condition (Estimate = .14, 95% bias-corrected 5000-time bootstrap CI [-.31, .64],  $p > .05$ ), supporting H6. Using the Preacher and Hayes (2008) method, the model explained significant variance ( $R^2 = .24$ ,  $p < .01$ ).

In sum, the results showed that at the individual level, team members with higher language proficiency were more likely to speak up, which in turn increased other team members' perceptions of their competence. The indirect relationship between language proficiency and competence perceptions via speaking up was moderated by communication medium, such that the positive indirect relationship was stronger in face-to-face teams than in text-based computer-mediated teams. At the team level, greater dispersion of language proficiency across a team, above and beyond mean language proficiency level, led to greater difficulty in recognizing competence within the team and lowered overall team performance. Moreover, the indirect team-level relationship between language proficiency dispersion and team performance, via competence recognition, was moderated by communication medium, such that the negative indirect relationship was stronger in face-to-face teams than in computer-mediated teams.

## **Discussion**

### **Theoretical Implications**

The potential implications of language proficiency have received only minimal attention within the literature on work groups and teams. Yet, our study showed that language proficiency adds a unique layer of complexity to multinational team dynamics and effectiveness, above and beyond the impact of ethnic background, culture, and actual competence levels. In the current study, language proficiency influenced both the team-level and the individual-level processes of speaking up, competence perception and recognition, and task completion, above and beyond cultural values (which were included as controls in the analyses). Our findings help explain past



research that has reported impoverished and silenced discussions in board meetings within multinational corporations that switch to English as the working language (Piekkari, Oxelheim, & Randøy, 2015). Our finding that speaking-up mediates the relationship between language proficiency and competence perception helps to explain why non-native speakers in multinational teams often fail to adequately communicate their professional competence (Piekkari, Vaara, Tienari, & Säntti, 2005) and go through “the subjective experience of a decreased professional regard” (Neeley, 2013: 476).

We also found that when members base competence recognition on language proficiency cues, team performance suffers. What might seem like a harmless (at least to members with high language proficiency) judgment tendency at the individual level is detrimental to the effectiveness of the entire team. According to our findings, substantial language proficiency dispersion across team members makes it difficult for them to form accurate interpersonal perceptions of competence, which likely contributes to the organizational factions induced by language proficiency asymmetries (Hinds et al., 2014) and the common social divisions between native speakers and non-native speakers within groups (Steyaert, Ostendorp, & Gaibrois, 2011). As collaboration via a common language becomes a reality in more and more work teams, our findings suggest that greater attention needs to be devoted to the effects of language on team dynamics and performance. While language has been the omitted variable in most studies of multinational teams, we recommend taking language into consideration explicitly, at least as a control variable, to avoid model misspecification, biased results, and inconsistent cross-study comparisons.

This study also has the potential to contribute to expectation states theory in two ways. First, it is one of the few studies that has tested the theory in the context of intercultural collaboration.

Our results show that, regardless of actual competence, drawing on language and speaking up as performance expectation cues could potentially hinder competence recognition and team performance. Second, the current study also extends expectation states theory to computer-mediated teams in that the results showed that, in both face-to-face and computer-mediated teams, members from different national backgrounds all highly value other members' speaking up. Our research addresses the currently limited understanding about the processes through which multinational teams develop accurate competence recognition.

Finally, this study contributes to our understanding of the role of communication media, such as face-to-face and text-based computer-mediated chat, in multinational team collaboration. As discussed earlier, few existing studies have explored how language proficiency may influence competence judgments in intercultural collaboration. Even fewer studies have considered how these effects may differ across various types of communication media. Consistent with previous arguments that a text-based computer-mediated communication creates possibilities for compensation and adaptation by reducing cognitive load, lowering social risks, and motivating efforts (Amichai-Hamburger et al., 2008; Herring, 1999; Walther, 1996; Walther & Burgoon, 1992), our results support the idea that reduced social cues in computer-mediated communication relax constraints and help individuals with low language proficiency to speak up. This study contributes to the growing stream of research within both the team and international business literatures and offers a critical reflection on the interplay between language and technology use in organizations.

### **Limitations and Future Research Directions**

It is important to note a few limitations of the current study. First, more definitive inferences about the causal effect of language proficiency on speaking up could be made through future

studies that manipulate language proficiency levels. However, we found that, in both face-to-face and computer-mediated teams, participants' ratings of language proficiency correlated significantly with the ratings of professional ESL teachers who reviewed only the first half of the team discussions. In addition, there was a non-significant correlation between members' ratings of language proficiency and competence perception (as shown in Table 1). Together, these findings suggest that it is unlikely that participants' ratings of their team members' language proficiency were skewed by the members' competence and performance. Future research could also examine the possibility of a reciprocal and dynamic relationship between language proficiency and speaking up over time, in which speaking up among non-native speakers increases their language proficiency over time, which may in turn influence future speaking up. But within the timeframe examined in the current study, the direction of the relationship is likely to be from language proficiency to speaking up. Moreover, failing to support for H5, our results showed that the indirect effect of the interaction of language proficiency dispersion with communication medium on competence recognition through speaking turn dispersion was not significant. This may indicate that other team processes mediate the effect of language proficiency dispersion on team competence recognition, such as grouping or clustering (Hinds, Neeley, & Cramton, 2014), status and power dynamics (Neeley, 2013; Neeley & Dumas, 2016), and trust formation (Tenzer, Pudelko, & Harzing, 2014). This finding may also indicate that language proficiency dispersion and its interaction with communication medium had a direct effect on competence recognition that did not function through speaking turn dispersion. In teams with high language proficiency dispersion, where language proficiency serves as a salient status and performance expectation cue, competence recognition should be less accurate. Lending support to this reasoning, the direct negative effect of language proficiency dispersion

on competence recognition was significant (Estimate =  $-.44$ , 95% bias-corrected 5000-time bootstrap CI [ $-.78, -.11$ ],  $p < .05$ ).

Second, to strengthen the external validity of this study, data should be collected from employees working in multinational teams. Nevertheless, the lab setting utilized in the current study offered a number of advantages, including being able to control for alternative explanations and to record conversations. Also, testing the current hypotheses with a student sample likely yields more conservative results. First, in this study all participants are university students who are functional in English, familiar with working with people from different national backgrounds, and generally identify with the norm of valuing diversity and inclusion. Second, in workplace multinational teams, power dynamics may be more salient and there may be more at stake, both for the individuals and the team. Accordingly, the effects of language proficiency may be even more pronounced in organizations, where there is likely to be not only greater dispersion among member's language proficiencies but also higher risk of social sanction for language incompetence and stronger status differentiation. Future research could study how these factors shape the effects of language barriers on work team processes.

Third, future research should consider teams at various points along the virtuality continuum, as work teams are rarely exclusively face-to-face or exclusively communicating with text. Future research should also examine the effects of other types of communication media, such as e-mail and tele- or video-conferencing. These technologies might have different effects from the text-based chat examined in this study, depending, for example, on task-technology fit (Maruping & Agarwal, 2004). In tele- or video-conferencing, the cognitive and social constraints of low language proficiency might be higher than in text-based chat, thus the relationship between language proficiency and speaking up might more closely mirror what we observed in the face-

to-face teams. In contrast, e-mail might help equalize the participation of members with different levels of language proficiency, because of the lowered cognitive constraints and social cues for status differentiation. Future research should also examine the increasingly common mixed-mode form of communication (e.g., multinational teams using different media for different tasks).

Finally, some related and important questions remain unanswered. For example, although our findings reveal that speaking up (i.e., “quantity”) has a significant effect on competence perceptions above and beyond the effect of speech content (i.e., “quality”), they also make it clear that both the quantity and quality of speech are important in determining how others evaluate someone’s competence. Accordingly, future research may explore the boundary conditions that shape the relative importance of these two factors. For example, characteristics of both the task (e.g., whether there are objectively correct answers) and team members (e.g., expertise, functional diversity, and cultural backgrounds) may determine whether the quantity or quality of speech plays a greater role in determining competence perceptions. Another future research direction is to understand how perceptions of competence evolve over time, and how past experiences of working together and judging one another’s competence transfer to future group collaborations. Finally, future research should explore the potential cross-level effects of the language and speaking turn variables. For example, individuals with higher levels of language proficiency may be more likely to speak up, or even dominate group conversations, when there is significant dispersion of language proficiency within a team. Similarly, speaking up may have a greater influence on perceptions of an individual’s competence when speaking turns are more unevenly distributed within a team. We were unable to detect these effects within our data, but a more systematic examination of these effects would benefit our understanding of how to effectively manage participation and competence recognition in multinational teams.

## **Practical Implications**

Our study offers insights into how organizations can proactively respond to the growing utilization of multinational teams and harvest the performance benefits of their talents. In many organizations, the official language is given without any explicit strategies for managing people from different linguistic backgrounds. The support available to help both native and non-native speakers raise awareness of language-related issues, develop effective team communication, or support organizational language mandates is often weak or non-existent. Beyond providing language training to non-native speakers or recruiting only employees with higher levels of language proficiency, which might be practically difficult to implement, we offer some suggestions to leaders and members of multinational teams that may be more immediately actionable.

First, managers should make sure that high- and low-language proficiency members are given equal chances to speak up and contribute. They could gently remind members who tend to dominate group conversations to be more cognizant of how broader contributions might benefit team performance. They should also encourage members with low language proficiency to speak up during group discussions. Managers could actively solicit the input of members with low language proficiency through text messages, emails or other communication media that allow them more time to compose and reflect on their responses. To encourage participation, managers should also cultivate a psychologically safe (Edmondson, 1999) and inclusive (Nishii, 2013) team climate. Second, managers should consciously invest time and effort in accurately recognizing each member's competence and be cautious not to let differences in speaking up unduly bias their perceptions. In particular, they should remind team members to draw on the quality rather than the quantity of speaking up as cues to develop expectations about others'

competence.

Members of multinational teams, both native and non-native speakers of English, need to recognize that their active participation is important for the team to benefit from their talents. Team members with low language proficiency or a tendency to withhold opinions at meetings also need to realize that if they do not speak up, they will be seen as less competent, which can have adverse career implications (Littlepage & Mueller, 1997). In order to contribute more during team meetings, members with low language proficiency may contribute more actively through other channels, such as one-on-one discussions, emails, reports, and presentations (Bazarova & Yuan, 2013). Team members who tend to dominate group conversations could practice distilling key messages into concise points and active listening skills. All members of multinational teams need to contribute to inclusive meetings in order to advance team competence recognition and performance.

Human resource practitioners can also play a role in helping to facilitate active contribution, inclusion, and appreciation in multinational teams. When composing multinational teams, for example, it may be important to select employees that possess an adequate level of language proficiency, cultural sensitivity, and flexibility in communicating with people. Information technology (IT) departments in organizations might also provide multinational teams with computer-mediated communication technologies to facilitate task performance. For tasks that require information sharing and logic reasoning, text-based computer-mediated communication may help to lower cognitive constraints, mask status differentials, and reduce the risks of social sanctions, thereby equalizing the distribution of speaking turns (Baltes et al., 2002). It should also be noted that text-based computer-mediated communication may not be an appropriate fit for all types of tasks, as previous research has found that the effect of using communication

technology depends on the type of task being performed and decision processes (Goodhue & Thompson, 1995; Maznevski & Chudoba, 2000). For example, emotion-laden negotiations and relationship building tasks may be better carried out face-to-face than via computer-mediated chat. Emerging technologies are also being introduced that can visualize team members' differences in speaking turns in real time, thus stimulating reflection and inviting more equal participation (Leshed, Cosley, Hancock, & Gay, 2010). IT departments can also provide multinational or virtual teams with knowledge management technologies for team members to exchange ideas, document knowledge, and solve problems. Such tools have been found to provide virtual spaces or "virtual water coolers", which help overcome knowledge sharing challenges and encouraging spontaneous communication (Ellison, Gibbs, & Weber, 2015). They may also help build trust, identification, psychological safety, and perceived proximity (Ellison et al., 2015). Organizations could use these computer-mediated communication technologies to facilitate information sharing, accurate competence recognition, and task accomplishment in multinational teams.

## **Conclusion**

This research provides insight into the effects of differences in language proficiency, a largely ignored yet increasingly important phenomenon in global organizations. Our findings demonstrate that language proficiency influences the extent to which individuals speak up within a team, which in turn may influence how other team members perceive their competence. We also extend these relationships to the team level and reveal that the language proficiency dispersion across a team influences the recognition of competence within the team, and overall team performance. Moreover, differences in language proficiency are more salient when team interactions occur face-to-face than through text-based computer-mediated communication. This



study underscores the challenges members of multinational teams face when adopting a common language and highlights the need for future research to more explicitly consider language proficiency configurations among team members.

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**Table 1**

Descriptive Statistics, Correlations, and Reliabilities for Study Variables.

Team Level Variables <sup>a</sup>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Team performance	1.88	.79									
2. Mean actual competence	1.13	.48	.00								
3. Task time (in minute)	46.73	18.45	.10	.18							
4. Speech content quality mean	4.93	.47	.26	-.04	.02						
5. Speech content quality dispersion	.64	.31	.15	-.07	.08	-.25					
6. Communication medium <sup>c</sup>	.47	.50	.09	-.26	-.46	.31	-.01				
7. Language proficiency mean	5.59	.51	.25	-.10	-.23	.43	-.02	.55			
8. Language proficiency dispersion	.67	.29	-.06	-.09	.01	-.11	.18	.17	-.26		
9. Speaking turn dispersion	9.68	3.87	-.10	-.06	.08	.10	-.04	.23	.12	.02	
10. Competence recognition	.02	.40	.46	.01	-.21	.00	.12	-.08	.09	-.21	-.32
Individual Level Variables <sup>b</sup>	Mean	SD	1	2	3	4	5	6	7	8	9
1. Competence perception	2.50	.86									
2. Gender (0=F and 1=M)	.48	.50	.15								
3. Age	25.58	4.45	-.04	.13							
4. Citizenship (0=U.S., 1=Chinese)	.50	.50	-.07	.00	-.28						
5. Collectivism	5.15	.42	.05	-.05	-.08	-.06	(.70)				
6. Individualism	4.62	.49	.02	-.08	.01	.01	.05	(.76)			
7. Actual competence	1.13	.96	.08	.13	.01	.09	-.01	.09			
8. Speech content quality	4.93	.78	.37	-.02	.20	-.12	.12	.08	.10	(.77)	
9. Language proficiency	5.59	.81	.12	-.04	.14	-.43	.07	-.08	-.08	.44	(.77)
10. Speaking up	24.44	9.05	.32	.14	.13	-.40	.03	-.01	-.01	.34	.28

Note. <sup>a</sup> *N* = 51, <sup>b</sup> *N* = 204. <sup>c</sup> 0 = computer-mediated-communication, 1 = face-to-face. \* *p* < .05, \*\* *p* < .01, two-tailed tests. Numbers in parentheses are Cronbach's alphas.

**Table 2**

Results of Multi-level Regression.

Variable	Speaking up		Speaking up		Competence perception		Competence perception	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Level 1 Controls								
Gender (0 = F, 1 = M)	2.36	1.33	2.52	1.34	.18	.13	.18	.13
Age	-.07	.13	-.02	.13	-.02	.01	-.02	.01
Citizenship (0=U.S., 1=Chinese)	-5.81 <sup>***</sup>	1.53	-4.82 <sup>**</sup>	1.54	-.07	.13	-.03	.13
Collectivism	-.84	.96	.23	.22	-.15	.08	-.11	.08
Individualism	-.17	.90	.44	.50	-.10	.09	-.07	.09
Actual competence	.07	.59	.04	.06	.01	.05	.01	.05
Speech content quality					.38 <sup>***</sup>	.09	.38 <sup>***</sup>	.08
Level 1 Main effects								
Language proficiency	2.22 <sup>***</sup>	.62			-.14 <sup>**</sup>	.08	-.12 <sup>*</sup>	.08
Speaking up					.02	.01	.03	.01
Level 2 Main effect								
Communication medium (CM) <sup>a</sup>			-15.3 <sup>*</sup>	7.68	-.13	.08	.42 <sup>*</sup>	.21
Cross-level interaction								
Language proficiency * CM			2.61 <sup>*</sup>	1.31			2.38 <sup>*</sup>	1.32
Akaike (AIC)		1308.34		1312.00		1798.26		1887.32
Bayesian (BIC)		1340.49		1357.01		1871.26		1993.50
Sample-Size Adjusted BIC		1308.82		1312.67		1801.56		1892.11
Pseudo R <sup>2</sup>		.18		.23		.22		.22

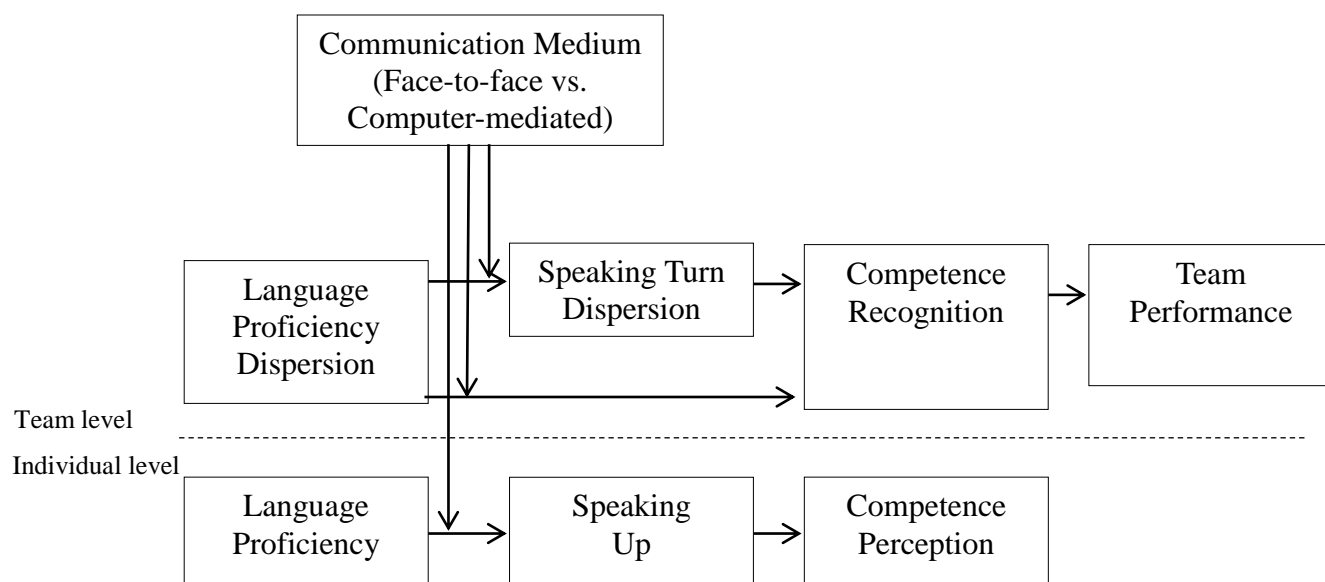
Note.  $N = 204$ . Coefficients listed in the table are unstandardized coefficients. <sup>a</sup> 0 = computer-mediated-communication, 1 = face-to-face. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , one-tailed tests.

**Table 3**

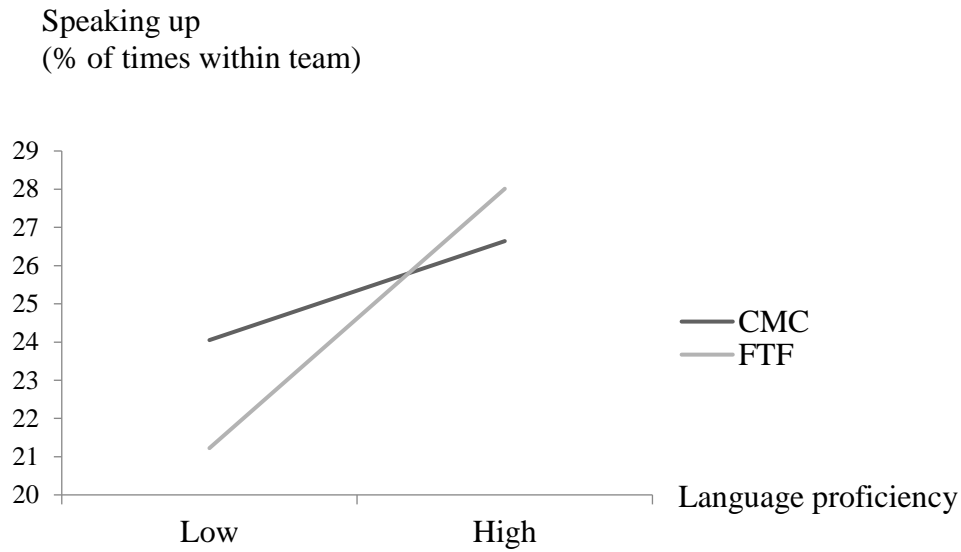
Results of Team Level Regressions.

Variables	Speaking turn dispersion		Competence recognition		Team performance	
	Est.	SE	Est.	SE	Est.	SE
Controls						
Language proficiency mean	-.53	1.57	-.06	.15	.15	.30
Mean actual competence	.48	1.33	.01	.12	.11	.24
Task time	.04	.04	-.01	.00	.01	.01
Speech content quality mean			.12	.14	.28	.29
Speech content quality dispersion			.34	.18	.30	.39
Main effects						
Language proficiency dispersion	-.87	2.33	-.37	.21	.08	.45
Communication medium (CM) <sup>a</sup>	2.87	1.75	-.15	.17	.11	.35
Speaking turn dispersion			-.03	.02	-.01	.03
Competence recognition					.78	.35
Interaction						
Language proficiency dispersion * CM	4.38	4.28				
R <sup>2</sup>	.11		.29		.28	
Adjusted R <sup>2</sup>	.00		.13		.08	

Note.  $N = 204$ . <sup>a</sup>0 = computer-mediated-communication, 1 = face-to-face. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Fig. 1.** Theoretical model.



**Fig. 2.** Cross-level interaction in which communication medium moderates the effect of language proficiency on speaking up. (FTF = face-to-face; CMC = computer-mediated-communication)



**Appendix A. Sample Task Question.**

Quantum, a restaurant, is open for business every Monday through Saturday but is closed Sundays. Lunch is the only meal served on Mondays, Tuesdays and Thursdays. Dinner is the only meal served on Wednesdays, Fridays and Saturdays. The restaurant's floors are polished and its plants are watered only on days that Quantum is open for business, according the following policies:

- Plants are watered two days each week, but never on consecutive days and never on the same day that floors are polished.
- Floors are polished on Monday and two other days each week, but never on consecutive days and never on the same day that plants are watered.

If dinner is served on a day that plants are watered, which of the following must be true?

- A. Plants are watered on Tuesday.
- B. Floors are polished on Thursday.
- C. Plants are watered on Wednesday.
- D. Floors are polished on Wednesday.