Member Heterogeneity, Communication Skills and Leadership:

Impact on the Quality of Multicultural Virtual Team Performance

Carol Scovotti, D.P.S.
Associate Professor & Fulbright Scholar
University of Wisconsin-Whitewater
Whitewater, Wisconsin, USA
scovottc@uww.edu

Susann Kowalski, Ph.D.
Faculty of Economics & Business Administration
Cologne University of Applied Sciences
Cologne, Germany
susann.kowalski@fh-koeln.de

Please direct all communications to:
Carol Scovotti, D.P.S.
Visiting Professor
Faculty of Economics & Business Administration
Cologne University of Applied Sciences
Room 305A
Gustav-Heinemann-Ufer 54
50968, Köln, Germany
Cell: +49 (0)176 5366 1025
Email: scovottc@uww.edu

Prepared for
5th Annual Global Advances in Business Communications Conference
Antwerp, Belgium

May 2013

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INTRODUCTION

Diversity in teams has long been considered as a source of competitive advantage for the firm (Johnson, 1991; Shepherd, 1964). Interaction among divergently thinking individuals provides a means by which previously disconnected information can be joined to creatively address business problems and stimulate innovation (Berg & Holtbrügge, 2010; Cummings, 2004).

Diversity involves interactions among people who have perceptible differences. Such differences can be demographic (age, gender, etc.), professional (skills, expertise, etc.), and/or cultural (family heritage, country of origin, etc.) (See Jehn, Northcraft & Neale, 1999; Lauring & Selmer, 2013; Millikin & Martins, 1996; Watson, Straus & McEvily, 2006 for examples of categories in the diversity literature.)

Considerable attention in the team literature has focused on cultural diversity and its impact on interactions, processes and performance, specifically in the area of virtual teamwork (e.g. Levasseur, 2012; Mukherjee et al., 2012; Shachaf, 2008). This study focuses on cultural diversity at the national level. Culture represents the long-lasting, deeply imbedded guidelines that individuals use to interpret and interact with each other. Such rules are developed early in life and are based on values, norms, priorities, and beliefs that other members of their social system share (e.g. Hofstede, 2001; House et al., 2004; Trompenaar & Hampden-Turner, 1998). As that which shapes thought processes and behaviors, national culture impacts approaches to

work, desired roles within organizations, and interpersonal communication (e.g. Gabrielsson, Seristo & Darling, 2009; Hofstede, 2001).

Cultural diversity affords many advantages to teamwork in organizations. Research on both face-to-face (F2F) and virtual teams with culturally diverse members demonstrate more flexibility, creativity and innovativeness than those that are more homogeneous in nature (e.g. Cox & Blake, 1991; Gibson, 1999). Virtual teams with culturally diverse members respond better to specific needs of local markets by combining proximity to customers with access to distant expertise (Horwitz, Bravington & Silvis, 2006). Culturally diverse teams also display the positive level of task conflict needed to resist the trap of groupthink (Turner & Pratkanis, 1997).

However, while some see dispersion and cultural diversity as advantageous, others consider it a challenge. Spatial elements such as multiple time zones and member distance, as well as technology dependence further complicate interpersonal encounters and adversely influence performance in culturally diverse teams. Creativity and innovativeness may be stifled when diverse team members lack the shared perspectives and common language needed to understand the ideas of others (Cramton, 2001; Gibson & Cohen, 2003; Kayworth & Leidner, 2001). For example, Gibson and Gibbs (2006) found that the more national cultures represented in virtual teams, the more geographic dispersion and computer-mediated communication (CMC) dependence negatively impacted overall results. CMC can also facilitate social loafing, a condition whereby team members can "hide" within cyberspace and purposely reduce their contributions to team tasks (Latane, 1981). While social

loafing is problematic in culturally homogeneous as well as F2F teams, evidence suggests that cultural diversity intensifies the issue in the virtual environment (Blaskovich, 2008). For example, there is no way to tell if a remote member's silence is because he has nothing to contribute or if he has opted to disassociate himself with the team (Bosch-Sijtsema, Ruohomäki & Vartiainen, 2009).

These findings support the claim that cultural diversity impacts virtual team performance. However conflicting results suggest a much bigger question has yet to be addressed; that is how much cultural heterogeneity is too much or two little? Managers face a perplexing combination of factors that cause some teams to perform better than others when assigned similar tasks and provided the same training and communication tools. The purpose of this exploratory study is to examine how team performance is impacted by the team's degree of cultural heterogeneity as well as the role that communication skills have on the emergence of leadership and how such skills affect both perception as well as actual team performance. Using a case study involving virtual teams within a market research company, this study addresses several related questions. What impact does the degree of cultural heterogeneity among team members have on team performance? What impact does a member's communication skills have on the likelihood of becoming a team leader? To what degree do communication skills impact perceived individual as well as actual team performance?

This study makes several contributions to the literature. First, it advances a theory on the impact of diversity on team performance, identifying an "optimum zone" where virtual teams benefit from cultural heterogeneity but don't get distracted

by it. Additionally, it demonstrates how communication skills affect emergent leadership and the perception of involvement and contribution among members. Emergent leadership refers to one or more members of a self-managed team who through team interaction, assumes leadership responsibilities (Glueckler & Schrott, 2007). Understanding the complex interplay of these organizational, individual, and team process variables is vital to both researchers and practitioners to better understand how the combination of personal traits and team formation decisions made by management cause some virtual teams to perform more effectively than others. Figure 1 summarizes the hypothesized relationships tested using results collected from several virtual teams within a multinational market research firm.

The remainder of the paper is organized as follows. First, a conceptual framework that positions this study in the context of the broad virtual team/team performance literature base is developed. We review relevant literature on cultural heterogeneity, communication skills and emergent leadership to identify and isolate important concepts that we use to develop our hypotheses. In the main sections of the paper, the methodology and findings of the study are presented and discussed. The paper concludes with a summary of its main contributions, limitations, and implications for future research.

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CONCEPTUAL FRAMEWORK & HYPOTHESIS DEVELOPMENT

Study Context

The nature of teamwork in organizations has changed, in part, because a growing number of teams consist of members from multiple cultures who rarely, if ever, physically meet (Tannenbaum et al., 2012). The term multicultural virtual teams refer to sets of interdependent individuals with diverse cultural backgrounds connected, to some degree, via CMC technologies across geographic, organizational, and/or functional boundaries where their combined knowledge and skills are required to accomplish some goal(s) determined within the organization (Garrison et al., 2010; Jarvenpaa & Leidner, 1999; Kayworth & Leidner, 2001; Martins, Gilson & Maynard, 2004).

The conceptual framework for this study, as illustrated in Figure 1, is based on the input-process-output (IPO) model (introduced later), and involves many distinct, yet related dimensions. Multicultural team dynamics change, depending on the function(s) teams must perform, how long members have worked together, prior history, proximity of members to each other and the opportunity to meet periodically face to face (Snow et al., 1996). Extending Snow, et al. into the virtual environment, Connaughton and Shuffler (2007) suggest that team dynamics are impacted by the degree of virtuality of the team, distribution and permanence of its members, task complexity, as well as the history of the team. Interestingly, despite the wealth of literature on virtual teamwork, an overarching framework that clearly positions the vast number of studies and meta-analyses within the literature has yet to be developed. While undoubtedly worthwhile, it is beyond the scope of this study to

develop such a topology. Instead, as seen in Figure 2, we take the themes identified by several authors to indicate where this study fits within a series of virtual team classification continua (e.g. Connaughton & Shuffler, 2007; O'Leary & Cummings, 2007; Snow et al., 1996).

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Team members participating in this study were located at either the company's US or German facility. Local managers selected a pool of participants based on expertise and current workload. They allowed us, the researchers, to configure the teams as long as the combined expertise within each team fulfilled the project requirements. All teams were self-managed, meaning they had the opportunity to determine who would be responsible for specific tasks, when and how output would be shared. Local members had the opportunity to interact among themselves using both F2F and CMC, but relied exclusively on CMC to communicate with distant members. Ocker, Huang and Benbunan-Fich (2011) consider this type of team to be partially distributed. Teams were formed to complete a reasonably complex knowledge creation task in a short timeframe, with the understanding that the groups would be disbanded at the conclusion of the project. Only a couple of the team members knew each other prior to the start of the project. Dispersed members never had an opportunity to meet F2F and future collaboration possibilities were never discussed. Given their proximity, it was likely that members in the same office would work together again.

The IPO Model

The IPO model was first introduced by McGrath (1964) about 50 years ago to examine how antecedents (inputs) affect interactions (processes) and subsequent consequences (outcomes) in a team setting. Since then, it has become a popular framework to examine numerous attributes, factors, and conditions that impact team performance. For an extensive explanation of the origins, criticisms, and development of the IPO model, see Mathieu et al. (2008). We use the IPO model to frame the relationship of the organizational team configuration decision and individual communication skills to determine their impact on performance. Emergent leadership is the focal team process variable.

Organizational Input: Cultural Heterogeneity in Team Configuration

A key decision in team establishment is who should serve on it. When the need for a team is identified at the managerial level, those responsible seek the optimal configuration of participants who have the skills, knowledge and commitment necessary to accomplish the objectives. In today's global work world, it is likely that the portfolio of possible participants will be distributed across multiple locations in different countries.

It has already been established that having different national cultures represented on the same team is a form of diversity that impacts performance. The organizational demographic literature suggests that external, observable traits, referred to as salient variables, serve as surrogates for internal, mediating psychological states (Lawrence, 1997). Self-categorization theory posits that people

use salient variables to affiliate themselves with others who share certain characteristics. Affiliation with others promotes a self-identity and is a source of status, power, and prestige (Anne, Terri & O'Reilly, 1992). National culture is considered a salient variable in multicultural teams (Connaughton & Shuffler, 2007). In the virtual environment, that suggests that members with the same national cultures may form subgroups within the larger team (Cramton, 2001; O'Leary & Mortensen, 2009).

The cultural diversity team literature also suggests that the formation of subgroups inside larger groups promotes in-group/out-group relationships, where actions of out-group members are not trusted and competence is questioned (e.g. Boros et al., 2010; Garrison et al., 2010; Jiang et al., 2011). Fault lines refer to the salient variable(s) that form the basis of subgroup formation (Lau & Murninghan, 1998).

Conflict and fault lines are closely associated (Abdi & Aulakh, 2012; Lauring & Selmer, 2013). For example, Polzer et al. (2006) identified a linear relationship between number of team locations, number of members per location, and performance. Team size was held constant while the number of members at each of six locations varied. They found that the more members at a given location, the more conflict the team experienced. Teams with an equal number of members at two locations demonstrated the weakest performance while the most productive teams were those where each member was at a different location. When co-located teammates shared the same national heritage, conflict intensified.

However, fault lines are not always detrimental. Specifically, Lau and Murninghan (2005) found that fault lines, to a certain degree, can positively impact group learning and promote psychological safety. This suggests that rather than the linear relationship found by many, including Polzer, et al., cultural diversity in teams would have a curvilinear relationship with performance. We propose that having a teammate who shares the same (or similar) national culture provides a feeling of safety that positively impacts total team cooperation and results. As membership within a subgroup increases, it will create an imbalance that inhibits the cohesiveness needed for strong team performance. Therefore, we hypothesize:

H_1: Teams that have a moderate level of cultural heterogeneity will outperform more homogeneous and heterogeneous teams.

Intrapersonal Input: Communication Skills

Global businesses are increasingly adopting a *lingua franca,* or common language, to facilitate collaboration among employees who speak different native languages. Crystal (2003) found that the more global the organization, the more likely it will establish a single business language policy. English is the typical selection (e.g. Nickerson, 2005; Seidlhofer, 2002). This decision seems logical given that over one-third of all *Global 500* companies are headquartered in English-speaking countries (Murphy, 2012). Multiple languages in the business environment inhibit spontaneous interaction among employees, while a *lingua franca* simplifies and expedites communication (Köster, 2010). Having integrated technology systems that serve entire organizations further supports the decision for a common language policy (Feely & Harzing, 2003).

While a *lingua franca* is considered a communication enabler, such policies have also been found to have negative consequences on the perceptions, attitudes, and actions of non-native speakers. Language fluency is one means by which group members determine status (Bourdieu, 1991). When non-native speakers struggle with message articulation, it reduces both self and peer perceptions of the value they provide to the organization. Status loss refers to a self-evaluation in which one's professional experience has somehow been decreased by a change in one or more environmental factors (Magee & Galinski, 2008; Neeley, 2013). In this context, status loss is not a formal positional change, but rather a subjective feeling that the individual has somehow become inferior compared to the other group members. Status loss leads the teammate to think that he or she suffers a disadvantage and will be excluded from desirable experiences attained by other members of the group, which in turn, impacts behavior (Pearce, 2011).

Neeley (2013), for example, found that individuals who considered their language skills to be lower than others in a group were reticent to share their concerns with more fluent speakers, choosing instead to withdraw from group processes and tasks. They experienced more status loss, resentment, and distrust of more fluent speaking group members while simultaneously becoming more comfortable with other nonnative speaking colleagues. Likewise, several have identified that a lack of trust causes fear of ridicule that inhibits nonnative speakers within multicultural teams from sharing their diverse insights (Kramer, Brewer & Hanna, 1996; Nemeth, 1986). As previously mentioned, silence of a distant team

member can be interpreted as social loafing, thus affecting performance. Therefore, we hypothesize:

H_2: Individuals who consider their English skills to be strong will have a more positive impact on overall team performance than those who consider their English skills to be weak.

H_3: Individuals who consider their English skills to be strong will outperform team members who consider their English skills to be weak.

Some studies have identified a high correlation between willingness to speak and emergent leadership (e.g. Anderson & Wanberg, 1991; Glueckler & Schrott, 2007). The more a person is willing to speak in a group, the more likely that person will become one of its leaders. For example, Carte, Chidambaram and Becker (2006) found that members who demonstrated high communication skills, were most likely to become a leader. Therefore, we expect:

H_4: Individuals who consider their English skills to be strong are more likely to assume team leadership responsibilities than those who consider their English skills to be weak.

Process: Emergent Leadership

All teams have their own internal boundaries, resulting from the intra and interrelationships of each member's background, experience, and current work situation (Cascio & Shurygailo, 2003). It is important that a team have the opportunity to establish its own work rhythm. Emergent leadership deals with the perception of leadership in an initially leaderless group (Anderson & Wanberg, 1991). When management offers a team the autonomy to determine its own work structure, it is common for one or more members to assume roles and responsibilities associated with leadership. Facilitating emergent leadership in virtual teams is important as it

promotes stronger ownership among team members and keeps it focused on what needs to be accomplished (Cascio & Shurygailo, 2003).

Carte et al. (2006) examined the relationship between emergent leadership and team performance. Basing their work on that of Zigurs (2003), they determined that the more people who shared leadership responsibilities, the better the overall team performed. Likewise, Glueckler and Schrott (2007) found that better performing virtual teams were those where multiple members considered themselves to be a leader. Based on these findings, we expect:

H_5: The more members who consider themselves to be leaders within a team, the better the overall performance of the team.

The literature on leadership is vast and diverse. In the virtual team context, Kayworth and Leidner (2001) identified that team members perceive other members to be emergent leaders based, to a significant extent, on behavioral traits. Given the lack of social cues available in F2F teams, virtual teams must rely on that which is discernable from a distance. Facilitating communication among multiple members, coordinating tasks, and serving as a focal point for team decision making are identifiable behaviors beyond task completion that impacts team member opinions about superior commitment and performance. In this context, members who take leadership responsibilities are perceived by their peers to contribute more to the project than non-leaders (Wickham & Walther, 2007). Thus, we propose:

H_6: Individuals who accept leadership responsibilities are perceived by their team members to outperform members who do not.

Outcomes: Individual Performance

Team performance results from the compilation of individual contributions (Garrison et al., 2010). Numerous studies support the proposition that teams with stronger trust and cohesion in the group will perform better than those that operating in uncertainty and conflict (e.g. Carron & Brawley, 2000; Ellemers, De Gilder & Haslam, 2004; Guo et al., 2009; Lurey & Raisingham, 2001; Martins et al., 2004). While input by members vary by project needs and expertise, the perception that all members are contributing what is expected of them reduces social conflict (De Dreu & Weingart, 2003; Jehn & Mannix, 2001), and enables the entire team to focus its efforts on performance. Thus, we propose the following:

H_7: The more individuals perceive themselves and fellow team members to have participated equally and produced similar quality work, the better the performance of the team.

PROJECT BACKGROUND & DATA COLLECTION METHODOLOGIES

A multinational market research company with offices in the US and Germany was commissioned by a client to complete export opportunity assessments for several food products in the organic/bio category. Data requirements were established in September 2012 with delivery of final reports due at the end of the calendar year. Three managers, one from each country office and an overall account manager, oversaw the project.

The managers selected the pool of 54 qualified participants, but allowed us to configure the teams. Their only requirement was that all teams had the full complement of skills and expertise needed to complete the project. We designed a brief questionnaire that the pool of participants completed prior to the formation of

the teams. Professional expertise and current work commitments, as well as the country in which they were born, native language, English fluency, preferred working style and role preference were identified. Demographic information including age, gender, and educational background was also collected. In addition to home country nationals, about half of the participants in each country office were foreign to that country. This provided significant cultural heterogeneity within each office. Most were relatively new hires and as a result, had no previous experience working with local colleagues. None of the distant colleagues had ever worked together. The topics for each report were arbitrarily assigned to the teams as all projects were considered equal in task complexity. In total, seven teams were created, each having between six and nine members.

Work began in early October with videoconference "kick off meetings" for each team with the managers. Project requirements and introductions were made to prepare the teams for the collaborative work they were expected to perform. The managers also created a series of videos to provide additional project details. A document template was designed and loaded onto a Google Drive, which reduced formatting concerns. Decisions about leadership, distribution of tasks, communication methods, and interim milestones were left to the groups. Managers established only two milestones – submit a first draft of the report by mid-November and a final report that was suitable to share with the client by the end of December. Managers were available to any participant to answer questions throughout the process. Managers also initiated an open videoconference forum that participants could choose to join. The company used WebEx for video and audio conferencing.

In November, managers independently assessed the quality of the drafts; then met to share their assessments and determine the feedback to be given to each team. They also created a rank order of team output from best (1) to worst (7). Some teams tied in rank order. Managers then met once again via videoconference with each team to discuss issues and provide guidance to ensure timely and successful project completion. Following the submission of the draft and before manager feedback was provided, team members completed a brief survey to assess the level of participation and output quality of themselves and fellow teammates.

In December, the managers followed a similar assessment procedure. As with the draft, they created a rank order of reports from best to worst. At that time managers also indicated whom they perceived to be team leader(s). Once again all team members independently completed a survey to assess team member participation and output quality. At the conclusion of the project they also indicated the degree to which they considered themselves to be a team leader.

Four of the 54 original participants left their teams before the end of the project. Table 1 shows the number of participants and countries represented in each team when the project concluded. In total, data used for the following analysis was collected from the managers and team members on two and three occasions, respectively. All participants who remained active in the project completed the surveys, effectively providing us with a 100 percent response rate. In the next section, we discuss the methodology used to test each hypothesis and share the results.

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MEASURES & RESULTS

Hypothesis 1 posits that teams with a moderate level of cultural heterogeneity will outperform more homogeneous and heterogeneous teams. We executed both linear and quadratic regression analyses to compare the number of countries represented in each team with the rank order of team output determined by the managers. We compared the number of countries to the number of team members to establish their heterogeneity factor to generate a variable that was greater than zero but less than or equal to one. The F-test of the linear model resulted in $p=0.150$, while the same test in the quadratic model produced a parabolic curve with a significance of $p=0.051$ with R^2 coefficient of 0.862. These results demonstrate the quadratic model better explains the relationship between heterogeneity and team performance than the linear model.

Using the equation generated for the parabola curve, we find that teams with heterogeneity of about 0.750 rank the best in terms of performance quality, which equates to approximately 1.3 members per country of origin. When heterogeneity is higher or lower, team output is worse. Thus, H1 is supported. Figure 3 compares the results of the linear and quadratic model tests.

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Communication competence can be measured in different ways, including objective observation, subjective observation, receiver report, and self-evaluation. While the self-reporting method admittedly has built-in bias, it is a useful method

when researchers want to know how competent a team member thinks s/he is (McCroskey & McCroskey, 1988). In this study communication skills were assessed through a 5-item scale where participants assessed their skills from no fluency (1) to native fluency (7) regarding reading, writing, speaking, understanding, and presenting in English.

Again the manager-provided team performance rankings served as the independent variable. To facilitate comparison, the scale data collected for communication skills was also averaged and turned into rank order, facilitating the use of Kendall tau-b (τ_b) to determine variable correlations. Kendall tau-b is useful for comparing rankings and is considered a good estimator with smaller sample sizes.

Hypothesis 2 suggests that those who consider their English skills to be strong will have a positive impact on overall team performance. This hypothesis was only weakly supported with a $\tau_b = 0.118$; $p = 0.099$ after the draft, but not for the final ($\tau_b = 0.085$; $p = 0.480$).

To test Hypothesis 3, individual performance scores had to be determined and ranked. Group members were asked via surveys after the submission of the draft and the final report to rate all group members based on two criteria: (1) level of participation, and (2) quality of output. Each team member could allocate *10x* points where *x* represents the total number of members of the team. If a member considered all on the team to contribute equally, s/he would give each member a score of 10. If a member thought that one or two members contributed more than others, s/he could allocate more points to them and reduce the points to other members. Likewise, if a member thought that a peer didn't contribute what was expected, a low score (the

minimum was 1 per person) could be given with the remaining points allocated among the rest of the team. Using this process makes peer evaluations scale data. We also checked to determine if someone gave himself or herself an inordinately high score. In the event that the rest of the group did not confirm that excessive self-evaluation, we planned to eliminate that member's input and use only the remaining members of the team. However, the issue didn't arise so we didn't have to implement the contingency plan. We used the average scores for subsequent calculations.

Hypothesis 3 states that those who consider their English skills to be strong would outperform those who consider their skills to be weak. Our analysis did not support this hypothesis ($\tau_b = 0.144$; $p = 0.116$ after the draft and $\tau_b = 0.128$; $p = 0.268$ after the final).

Hypothesis 4 focuses on communication skills and emergent leadership. Specifically, we expected that members who considered their English skills to be strong were more likely to assume team leadership responsibilities than those who considered these skills to be weak. We determined emergent leadership through both self-evaluation and manager assessment. In the survey following the submission of the final report, team members were asked to what degree they served as a team leader. Additionally, we asked the managers to rank the members in each team based on their perceptions of leadership. This hypothesis was supported by the self-evaluation and assessment by the managers ($\tau_b = 0.240$; $p = 0.010$ in the self evaluation and $\tau_b = 0.346$; $p = 0.011$ in the manager ratings). Table 2 recaps the results for hypotheses 2, 3 and 4.

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To test Hypothesis 5, we compared the self-evaluated as well as manager emergent leadership findings with the managers' rank order of the group performance. The hypothesis was that as more members considered themselves to be leaders, overall team performance would improve was not supported (τ_b = -0.111; p = 0.318 in the self evaluation and τ_b = -0.071; p = 0.560 in the manager ranking).

Hypothesis 6 suggests that individuals who are the emergent leaders are perceived by their teammates to be superior individual performers. Once again we used the emergent leadership findings, comparing it to the rank order of individual contribution to team work and output quality as determined through the peer evaluations. Those who considered themselves a leader were rated significantly higher in contribution and quality at both the time of the draft and the final, strongly supporting this hypothesis (τ_b = 0.389; p = 0.000 after the draft and τ_b = 0.405; p = 0.000 after the final report). Table 3 provides the results for hypotheses 5 and 6.

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Finally, hypothesis 7 considers the relationship between individual and team performance. To test, we compared the standard deviation among each team's peer assessment with the manager's rank order of the draft and final reports. A low standard deviation among teammate peer assessments indicates that members contributed what was expected of them. As peer assessments are scale data, the results could be used as rankings and Kendall tau-b applied. While one of the scale

items was not significant for the final version, overall, the correlations for ranks after the draft and final are strong, supporting the hypothesis ($\tau_b = 0.505$; $p = 0.000$ after the draft and $\tau_b = 0.207$; $p = 0.038$ after the final report). The results for hypothesis 7 are found in Table 4.

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DISCUSSION

Multicultural virtual team success depends on effective management of many complex interactions involving organizational decisions, member traits, task variables and processes in a dynamic environment. The purpose of this investigation was to discover how team performance is impacted by such factors. To accomplish our objective, we looked at the degree of cultural heterogeneity among its members. We also examined the role that communication skills play in the emergence of leadership as well as ultimate performance. Results indicate that a moderate degree of heterogeneity can have a positive impact on results and that communication skills strongly indicate who will emerge as a leader in a self-managed team. While some of the relationships identified in the hypothesized model did not perform as expected, we found strong relationships between inputs, process, and outcomes. Our final model is illustrated in Figure 4.

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Our first question addressed the impact of cultural diversity within the team. Based on our results, we suggest that the foundation of the team environment is established by the organization long before work actually begins, and affects the work that follows. Mathieu et al. (2008) refer to this foundation as the emergent state of the team. In multinational organizations, optimizing 'human capital' involves managers choosing the right people for the job regardless of where they are located. When the constraint of geography is removed, the potential for cultural diversity within the team intensifies. Culture impacts what we value and how we behave. In the group setting, it is a salient variable that causes subgroups and fault lines to develop.

We identified an optimum amount of cultural diversity that positively affects team performance. The best performing teams were those where several cultures were represented, but with a moderate degree of overlap. These teams were able to quickly develop a work rhythm and focus on the task more so than more and less heterogeneous teams. One explanation is that team members who affiliate with a colleague with the same (or similar) country background establish a level of psychological safety needed to reduce inhibitions and uncertainties about participating with a group of strangers, whereas extremely homogeneous and heterogeneous teams did not. While all teams had a comparable balance of expertise and skill sets, the less heterogeneous teams seemed to develop an 'us-versus-them' relationship between the country offices while the extremely heterogeneous teams, struggled with assigning tasks, agreeing upon team norms, and social loafing.

Interestingly, the curvilinear relationship we found is opposite of the findings of Earley and Mosakowski (2000). Their study on multicultural teams found that the

more homogeneous or heterogeneous the team, the better the performance. They suggest that over time, both extremes tend to establish a strong hybrid culture within the team while moderately heterogeneous teams do not. There are important contextual differences between their study and ours. Although both focus on cultural diversity, teams in their study were co-located and were able to meet regularly F2F. Teams in our study were partially distributed and had to rely more so on CMC. Several participants in the exploratory portion of their study had a prior working relationship while those in ours did not. Additionally, the work conducted by their teams took 50 percent longer than in ours, suggesting that time changes the working dynamics of the team. These differences support the need for a contextual framework to classify multicultural virtual team research.

The second question we addressed was how self-perceived communication skills impact the team dynamics and results. We found strong correlations between communication skills and emergent leadership from self-evaluations as well as the managers. Our findings are comparable to those of other studies on emergent leadership where "the talker" becomes a leader (Anderson & Wanberg, 1991; Cascio & Shurygailo, 2003; Wickham & Walther, 2007). Leaders are the focal point within the team, the people others turn to for direction, support, and feedback. On the other hand, self-perceived inferior *lingua franca* skills cause members to withdraw, not become a team's focal point. They turn to leaders; they do not become one.

The direct relationships between communication skills and individual, as well as team performance were not supported by the data. Finding no correlation between communication skills and individual performance is actually good news. This suggests

that self-assessed inferior *lingua franca* skills do not necessarily affect peer judgment about that member's contribution to team efforts. Likewise, the lack of correlation between communication skills and overall team performance supports that a broader combination of skills and expertise impacts performance. Whereas organizational decisions about who should serve on a team have a direct impact on ultimate performance, communication skills alone do not.

Our third question focused on the impact of emergent leadership on individual and team performance. We found a very strong correlation between those who considered themselves to be a leader and how other teammates perceived their participation level and output quality. Leaders were seen as superior performers among all teammates. The managers confirmed team perceptions as well. While the team established its perceptions throughout the process, manager perceptions developed as a result of who spoke the most during videoconference meetings and how many members within a team contacted them with questions. Interestingly, our findings did not support the hypothesis that more perceived leaders positively impacts team performance. We were relieved to see this as it demonstrates that the single item used to measure emergent leadership wasn't misinterpreted to mean amount of personal effort devoted to the project.

The final issue we addressed was how the continuity of peer evaluation related to overall team performance. We found that the teams who rated member contribution comparably performed better than those where peer evaluations varied. If all contribute equally, overall team results should be positively affected. While this surface level explanation seems logical, we suggest that something other than equal

contribution is at work here. In the context of a complex, knowledge creation task, the nonnative speaker is at a disadvantage. Difficulties with speaking and writing lead to less participation in meeting and less direct input in the creation of the final product. Yet, in the better performing teams, these limitations did not impact peer evaluations. We submit that it is a result of role clarity, respect for team norms, and focus on task. The better performing teams utilized their portfolio of resources and did not judge peer contribution by the quality or quantity of their writing or speaking.

LIMITATIONS, IMPLICATIONS & FUTURE RESEARCH OPPORTUNITIES

There are several limitations with our study that should be highlighted. The most glaring is that it is exploratory in nature, relying on 50 members on only seven teams. Focusing on only one company and one project raises concerns about task complexity and impact of organizational culture differences between the offices. Within its limited context, results are interesting and reasonably strong. However, generalizability is limited. Extending the study to additional companies in more countries with similar task complexity is an important step needed to provide more generalizable results on the impact of cultural heterogeneity, communication skills, and emergent leadership on performance.

A second limitation is that using only one scale item to determine emergent leadership is problematic. An important question not addressed is how team members define leadership. Asking if they thought they were a leader doesn't identify the criteria they use to make that determination. While manager input provides another perspective with which to confirm results, a more developed multi-item scale

could provide valuable information about the nature of leadership and improve reliability. This is also an opportunity for future research.

Third, while there are strong correlations among the model components, the strength of the overall model has yet to be determined. Identifying the variance explained is an important step to understand the impact of the model as a whole. The variables we chose are far from exhaustive in the complex environment in which virtual teams operate. Just how important are they overall? Also, we did not operationalize concepts like psychological safety, trust, cohesion, conflict, etc, in our survey instruments. Our subjects were business people with jobs to do. To respect their time, we kept our questions to a minimum. Conducting a similar study in a laboratory or classroom setting where such dimensions could be explored rather than assumed would be beneficial.

Despite the limitations, this study offers several implications for theorists and practitioners. Undeniably, performance of multicultural virtual teams is complex, with dynamic interplay among organizational, individual and process factors. For the theorist, the curvilinear relationship between cultural diversity and team performance in short term projects completed by partially distributed teams provides an interesting perspective on team formation dynamics. It would be interesting to look at Hofstede's (2001) model of national culture to test if the curvilinear relationship between cultural diversity and team performance is supported. Additionally, our results support that communication skills impact establishment of emergent leadership and emergent leadership impacts peer perception of individual performance.

An unexpected discovery we made in the course of conducting the research was the difficulty we had in trying to position our study in the context of virtual team research. To date, there is no topology to classify the vast literature on virtual teamwork. With so many conflicting results in the literature, understanding the context of a study is vital. What works for a completely distributed team may not work for one that is partially distributed. The research community would benefit from a classification system so the contextual value of future studies can be identified. The ability to frame future studies using a common topology is vital in this fast growing and diverse research topic. This is another future research opportunity.

From the practitioner's perspective, this study identifies an optimum zone that managers can consider when forming multicultural virtual teams. Assuming that the necessary expertise and skill sets are present, a medium and relatively equal degree of cultural heterogeneity provides the psychological safety needed for cohesion and trust to develop among teammates, which in turn, impacts team performance. Understanding when people of different cultures are required to work in a team, the more talkative member(s) will emerge as the leader(s) also has team formation implications. Managers can use this to select members that not only have the needed expertise, but are most likely to work together well. Managers might also consider providing virtual team leadership training to help members who might become leaders better understand what to expect in that role. Just because self-managed teams assign their own roles doesn't minimize the importance of preparing participants for the challenges they will face in the virtual, multicultural work environment.

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Figure 1 – Hypothesized Conceptual Model

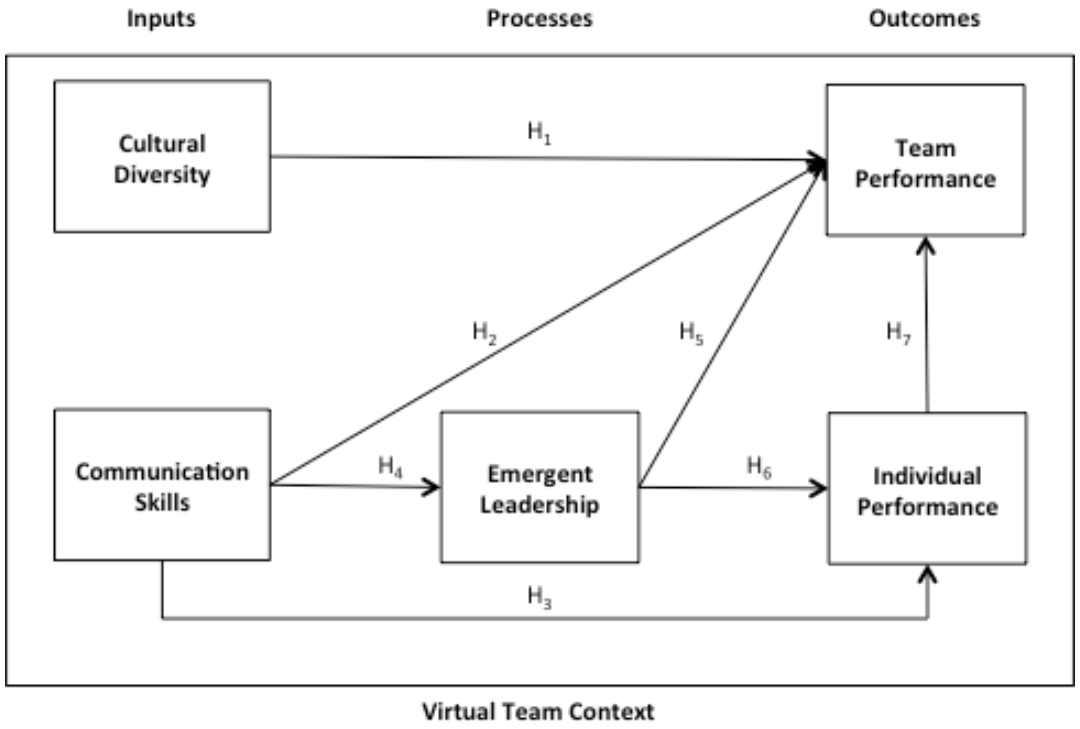


Figure 2 – Current Study Context

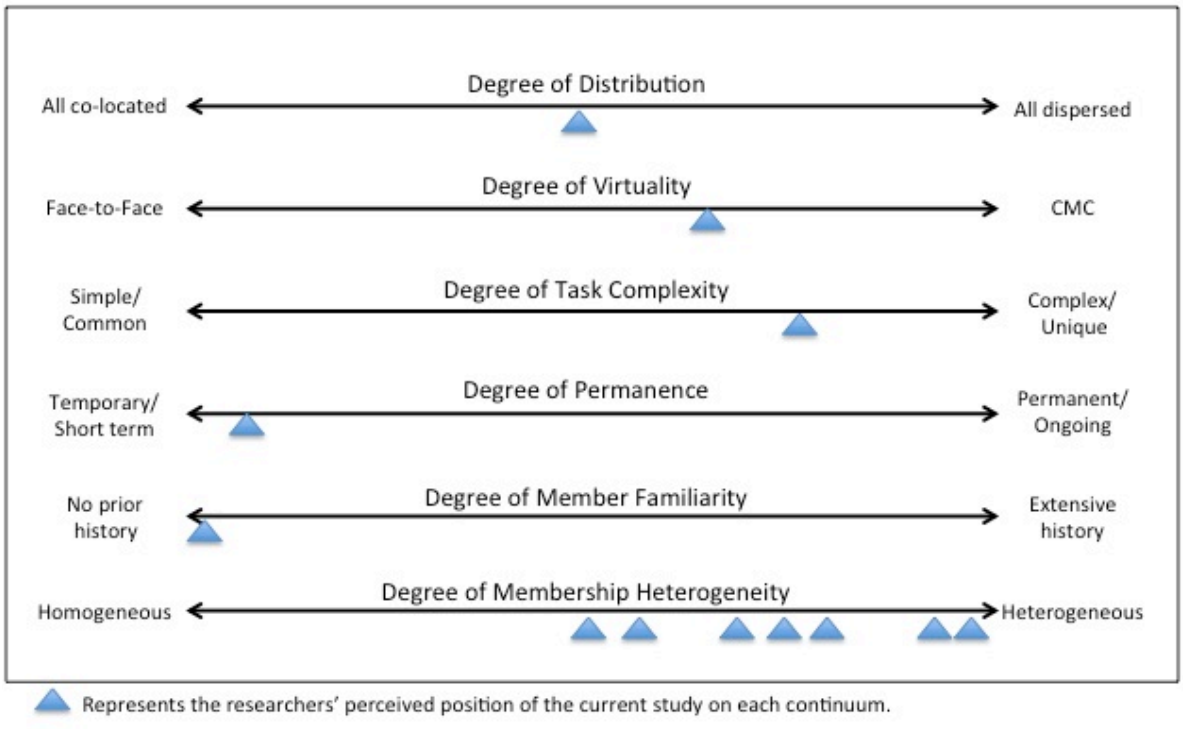


Table 1 – Team Configurations at Project Conclusion

Team	Participants	Countries
A	8	6
B	7	4
C	7	7
D	7	5
E	6	5
F	7	4
G	8	5

Figure 3 – Impact of Heterogeneity on Team Performance

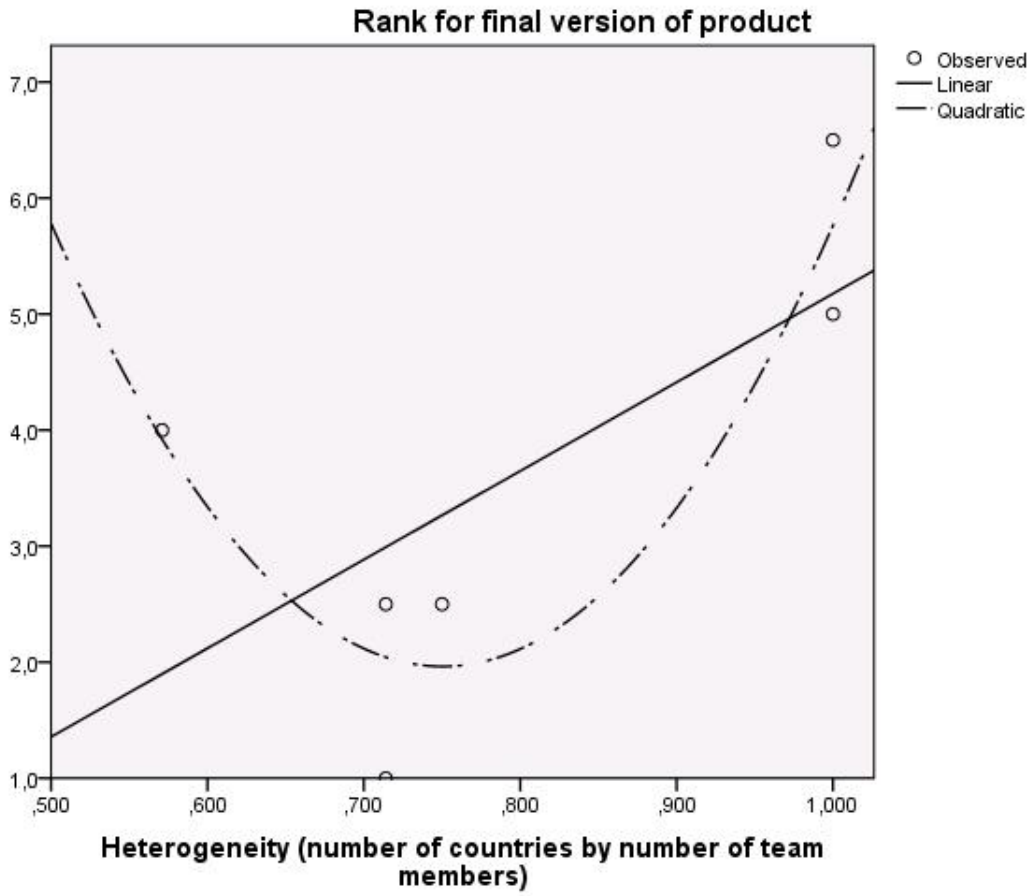


Table 2 – Impact of Communication Skills

Communication Skills				
	After Draft		**After Final**	
	τ_b	*Significance*	τ_b	*Significance*
Team Performance	0.188	0.099	0.085	0.480
Individual Performance	0.144	0.116	0.128	0.268
	Self-Evaluation		**Manager Rankings**	
	τ_b	*Significance*	τ_b	*Significance*
Emergent Leadership	0.240	0.010	0.346	0.011

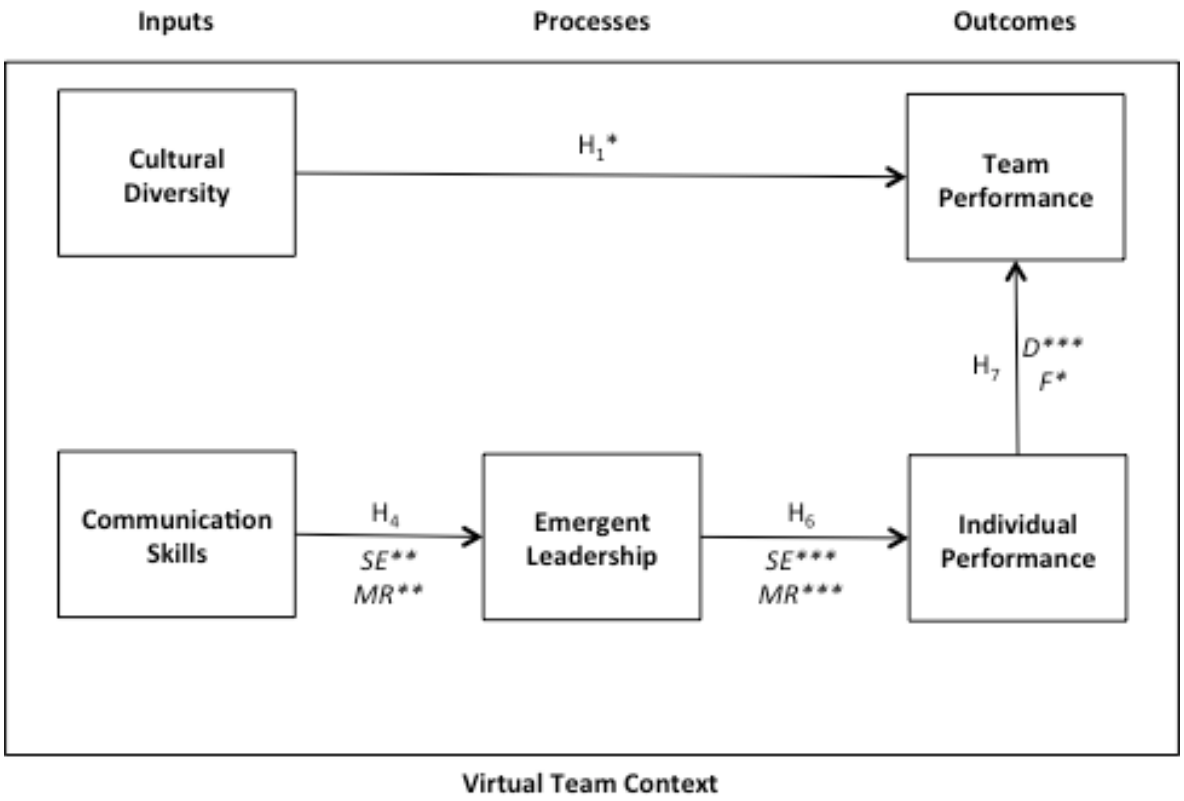
Table 3 – Impact of Emergent Leadership

Emergent Leadership				
	Self-Evaluation		**Manager Rankings**	
	τ_b	*Significance*	τ_b	*Significance*
Team Performance	-0.111	0.318	-0.071	0.560
Individual Performance	0.389	0.000	0.405	0.000
- Participation	0.402	0.000	0.423	0.000
- Output Quality	0.315	0.004	0.404	0.000

Table 4 – Impact of Individual Performance on Team Performance

Individual -> Team Performance				
	After Draft		**After Final**	
	τ_b	*Significance*	τ_b	*Significance*
SD Overall Team Performance	0.505	0.000	0.207	0.038
- SD Participation	0.429	0.000	0.124	0.271
- SD Output Quality	0.491	0.000	0.264	0.002

Figure 4 – Revised Conceptual Model



* p.< 0.001; ** p.< 0.01; *** p. < 0.05
D – Draft; F – Final; SE – Self-Evaluated; MR – Manager Rankings