

# **Communication in Virtual Teams: The Role of Emotional Intelligence**

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*Emotional intelligence (EI) has received increasing attention in recent years as a driver of team effectiveness. However, research has yet to address EI in virtual teams (VT). The purpose of our study was to examine EI as a predictor of VT effectiveness. Further, we investigated quality of communication as a mediator of the EI-team viability relationship. We employed a work simulation using 228 undergraduate students (57 teams). Multilevel modeling was used to test our hypotheses. Our results support that EI is a driver of team viability, and that quality of communication serves as one mechanism through which this influence exists.*

## **INTRODUCTION**

Growing attention has been given to the role that emotions play in driving organizational effectiveness (i.e., Ashkanasy, 2003; Barsade, Brief, & Spataro, 2003; Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009). The construct of emotional intelligence, in particular, has gained momentum in both research (e.g., Mayer, Roberts, & Barsade, 2008) and popular (e.g., Goleman, 1995) literatures in recent decades. Empirical research has shown that emotional intelligence, a person's ability to detect, understand, and manage the emotions of others (Mayer et al., 2008), is a significant predictor of team effectiveness in face-to-face teams (George, 2002). However, research has yet to address the role of emotional intelligence in one of the most prevalent work units of the 21st century (Lepsinger & DeRosa, 2010): virtual teams, which are comprised of geographically-dispersed employees who use technology to accomplish organizational tasks (Martins, Gilson, & Maynard, 2004).

Because they lack verbal and nonverbal cues which naturally exist in face-to-face teams, virtual teams are faced with unique obstacles toward effective communication (Martins et al., 2004). For example, compared to face-to-face teams, virtual teams demonstrate decreased social interaction, communication, and emotional expression (Jarvenpaa & Leidner, 1999). Research suggests that individuals high on emotional intelligence are effective at detecting and managing emotions (Mayer, Salovey, & Caruso, 2000), which are reduced in a virtual environment. Thus, emotional intelligence holds promise as a critical driver of effective communication and subsequent effectiveness outcomes (e.g., team performance, team members' attitudes) in virtual teams. Therefore, the purpose of our study was to

investigate the role of emotional intelligence as a driver of virtual team effectiveness. Specifically, we make a unique contribution to the literature by examining the extent to which emotional intelligence is a driver of team viability, defined as team members' assessments of their ability to work together as a unit in the future (Barrick, Stewart, Neubert, & Mount, 1998; Hackman, 1987), as an indicator of virtual team effectiveness. Additionally, we expand extant knowledge regarding virtual team effectiveness by exploring the extent that quality of team communication in virtual teams serves as a mechanism through which emotional intelligence facilitates team viability. Given the proliferation of virtual work in 21st century organizations, the need to identify employee attributes that drive effective performance is of paramount importance. To this end, we contribute to both practice and research by shedding light on emotional intelligence as a potential key factor in understanding virtual team effectiveness.

### **Communication in Virtual Teams**

Virtual teams are comprised of individuals who work interdependently using computer-mediated communication technology to accomplish a shared organizational objective (Martins et al., 2004). Virtual teams may interact using a variety of computer-mediated communication mechanisms, including teleconferencing, instant messaging, and e-mail (Bell & Kozlowski, 2002). Although virtual teams offer numerous benefits to organizations (i.e., reduced travel costs, increased worker flexibility), they face obstacles toward effective communication due to the reduced or completely lacking face-to-face cues, which are inherent in traditional team interactions (Jarvenpaa & Leidner, 1999; Martins et al., 2004). In face-to-face communication, verbal cues (i.e., tone of voice, voice inflections, verbal hesitations, and volume), as well as nonverbal cues (i.e., facial expressions and body movements), are important sources of both task and social information (Walther, 1997). In the virtual environment, these cues are reduced or even completely absent.

According to media richness theory (Daft & Lengel, 1986), this reduction or absence of social information (compared to traditional face-to-face teams) ultimately reduces the quality of communication among virtual team members. Consistent with media richness theory, empirical research investigating team functioning within virtual teams has shown that the lack of verbal and nonverbal cues in virtual teams results in reduced quality of communication, compared to traditional teams (Chidambaram, 1996; Martins et al., 2004), and subsequently hinders effective virtual team performance (Baltes, Dixon, Sherman, Bauer, & LaGanke, 2002). Additionally, research has shown that virtual teams communicate less information as compared to face-to-face teams (Martins et al., 2004), and that relationship development in virtual teams occurs at a slower rate (Chidambaram, 1996; Johnson, Bettenhausen, & Gibbons, 2009). Further, extent of virtual communication has been shown to be negatively related to both positive affect and affective commitment to the team (Johnson et al., 2009). Taken together, these findings suggest that communication in virtual teams is more difficult than in traditional teams.

Given evidence that effective communication is a critical element of team effectiveness, both in traditional and virtual teams (Furst, Blackburn, & Rosen, 1999; Mathieu, Maynard, Rapp, & Gilson, 2008; Jarvenpaa & Leidner, 1999), understanding drivers of communication quality in virtual teams is of great importance for 21st century organizations. Thus, additional exploration of the mechanisms that drive effective communication, and subsequent team effectiveness, is needed. To this end, we argue that individual differences in team members' emotional intelligence may serve as one of these mechanisms that facilitates successful virtual team communication and effectiveness.

### **Emotional Intelligence**

Attention to the construct of emotional intelligence has burgeoned since the mid-1990s (i.e., Goleman, 1995; Graves, 1999; Jordan, Ashkanasy, Härtel, & Hooper, 2002; Mayer, Salovey, & Caruso, 2000). Since its inception, scholars have subscribed to differing conceptualizations of the emotional intelligence construct, although the majority of research supports the validity of integrative-models, in which emotional intelligence is regarded as an amalgam of several specific abilities (Mayer et al., 2008). The four-branch model of emotional intelligence (Salovey & Mayer, 1990; Mayer & Salovey, 1997) is arguably the most comprehensive and widely supported integrative model of emotional intelligence

(Mayer et al., 2008; Schutte, Malouff, Hall, Hagerly, Cooper, Golden, & Dornheim, 1998). According to this model, there are four main components of emotional intelligence, each of which reflects an aspect of one's ability to detect and manage emotions in self and others. The first component, perceiving and appraising emotions, refers to reflects one's ability to interpret the facial expressions and non-verbal cues that convey the emotional experiences of others (Mayer et al., 2000). The second branch of emotional intelligence, facilitation of emotions, refers to one's ability to utilize emotions to promote rational thinking (Mayer et al., 2000). For example, an individual who is high on emotion facilitation is able to use their emotions and/or the emotions of others to direct planning or problem-solving.

The third component of Mayer and Salovey's (1997) model of emotional intelligence, understanding emotions, reflects the ability of an individual to analyze emotions, and to understand the ramifications of changes in emotional states. The last branch, managing emotions, is characterized by the ability to monitor emotions in self and others, and to regulate these emotions in order to promote positive interpersonal relationships and personal goals. Thus, according to Salovey and Mayer (1990), emotion management reflects the ability to avoid negative feelings, in part through reappraising a situation to promote positive affective experiences. Importantly, this emotion management occurs both within the self, and also extends to others, such that individuals high on emotional intelligence are more adept at facilitating positive emotional experiences in others (see Askanasy, Zerbe, & Härtel 2005; Jordan et al., 2002; Lopes, Salovey, & Straus, 2003). For example, emotion management enables an individual to assist others in reappraising a negative situation to acknowledge positive outcomes of the circumstances.

In addition to being related to a variety of important interpersonal and life outcomes, including physical and psychological well-being (see Mayer et al., 2008), research has shown that emotional intelligence is positively related to effective team functioning in face-to-face teams. For example, emotional intelligence has been shown to facilitate team communication and cooperation in traditional teams (Jordan et al., 2002; Prati, Douglas, Ferris, Ammeter, & Buckley, 2003). Additionally, emotional intelligence is positively related to the quality and effectiveness of interpersonal interactions (Lopes et al., 2003; Schutte, Malouff, Bobik, Coston, Greeson, Jedelicka et al., 2001). Further, a meta-analysis conducted by Bell (2007) revealed that emotional intelligence in face-to-face teams has a positive relationship with team performance. Overall, this research demonstrates that emotional intelligence facilitates team effectiveness in traditional teams.

Given that emotional intelligence is related to team effectiveness in face-to-face teams, it is important to investigate whether the importance of emotional intelligence generalizes to virtual teams, one of the most common forms of workplace communication in the 21st century (Cascio, 2003). We argue that emotional intelligence is particularly important in virtual teams because members have fewer verbal and nonverbal cues with which to gather both task and social information. For example, individuals high on emotional intelligence are likely to be particularly effective at de-escalating conflict because they are able to perceive and manage the emotional experiences of self and others despite the reduced cues. Although research has demonstrated this relationship between emotional intelligence and effective communication in face-to-face teams (Jordan et al., 2002), to date no study has examined whether the role of emotional intelligence generalizes to virtual teams. Thus, we contribute to both research and practice on virtual teams by investigating emotional intelligence as a driver of team effectiveness.

### **Emotional Intelligence, Communication & Virtual Team Effectiveness**

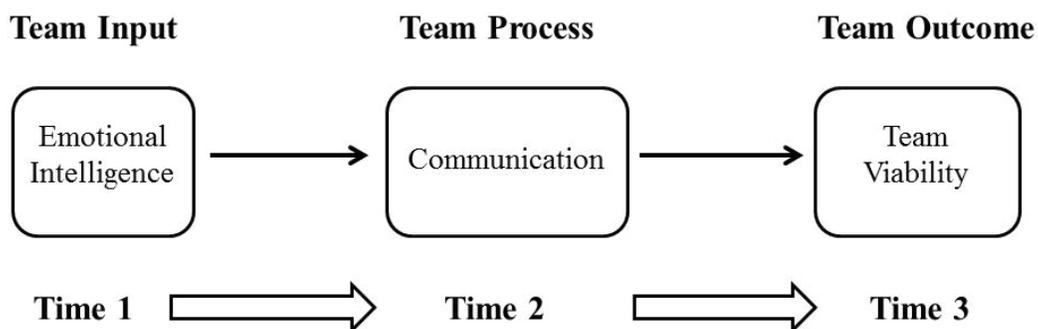
Models of team effectiveness generally adopt an input-process-output (IPO) framework (e.g., McGrath, 1991; Gladstein, 1984), in which inputs include individual team member attributes (e.g., expertise, demographics, personality), as well as aspects of the task itself (e.g., degree of interdependence required). Team inputs are proposed to be drivers of team processes, which reflect members' interactions directed towards goal accomplishment (Marks, Mathieu, & Zaccaro, 2001). Team processes, including open communication, coordination, and conflict management, all aspects of high quality communication, are proposed to drive team outputs, which include objective (e.g., profit; task-related performance) and subjective (e.g., collective efficacy, team viability) measures of team effectiveness outcomes (Gladstein, 1984; Hackman, 1987; Marks et al., 2001; Mathieu et al., 2008). In this way, team processes are

hypothesized to mediate the relationship between team inputs and team outputs. Extensive research on traditional face-to-face teams has substantiated IPO models of team effectiveness (i.e., Barrick et al., 1998; Fleming & Monda-Amaya, 2001; Foo, Sin, & Yiong, 2006). For example, Foo and colleagues demonstrated that open communication, a process variable reflecting team members' perceptions of equal opportunities to exchange information and the degree to which team members encourage and engage in genuine expression of their opinions, mediated the relationship between educational diversity, as an team member input variable, and team viability, an output variable defined as team members' assessments of their ability to work together as a unit in the future (Barrick et al., 1998).

Recent empirical evidence, although limited, suggests that the input-process-output (IPO) framework generalizes to virtual teams (Johnson et al., 2009; Martins et al., 2004). Consistent with research on traditional teams, the body of research on virtual teams suggests that effective communication, as a team process, is a key driver of both objective and subjective measures of virtual team effectiveness (Martins et al., 2004). In light of research highlighting the importance of communication in virtual team effectiveness, and given studies showing that virtual team members experience reduced communication compared to face-to-face teams, additional research on the mechanisms that generate effective communication in virtual teams is needed. We argue that emotional intelligence may serve as one of these mechanisms. Because individuals with high levels of emotional intelligence are likely attuned to the emotions of others, they are able to enhance the quality of communication among team members by picking up on nonverbal cues. For example, when nonverbal messages (i.e., e-mail) convey potential conflict, individuals high on emotional intelligence may be able to promote positive emotions within the workgroup, which promote effectiveness.

Consistent with the team literature, we invoke the IPO framework in the current study and conceptualize team members' emotional intelligence as a team input variable, and team viability, as an outcome variable. Team viability is a particularly important indicator of team effectiveness since team members' perceptions of their team's collective effectiveness have implications for their future performance within that group (Mathieu et al., 2008). Based on the IPO framework, we hypothesize that emotional intelligence will be a significant predictor of team viability, and that quality of communication, as a team process, will mediate the relationship between emotional intelligence and team viability (see Figure 1).

**FIGURE 1  
HYPOTHESIZED MODEL**



Notably, our study also addresses calls to consider the role of time in the study of teams. Specifically, scholars have argued that researchers should abandon cross-sectional research, particularly when testing mediational hypotheses (Mathieu et al., 2008). In order to more accurately model the temporal nature of teams, it is most appropriate to measure predictor, mediator, and outcome variables consistent with the hypothesized temporal sequence (Mathieu & Taylor, 2007). That is, mediational inferences are strengthened when predictor, mediator, and outcome variables are measured at different time points,

consistent with the researcher's proposed mediational sequence. Thus, we follow these recommendations by assessing each of our focal variables at different time points, consistent with our directional hypotheses (see Figure 1).

## **METHOD**

### **Participants**

Participants were 228 undergraduate students, who comprised 57 four-person virtual teams. Subjects were recruited from introductory psychology courses at a large Midwestern university, and received course credit for participating in the research project. Participants were 18 to 31 years old, with a mean age of 19. Sixty percent of the participants reported themselves as female (60%). Eighty-three percent of the participants reported themselves as Caucasian, 7% as Hispanic, 3% as African American, 3% as Asian/Pacific Islanders, and the remaining 4% reported their ethnicity as "Other".

### **Procedure**

Subjects, who received course credit for their participation in the research project, signed up to participate via a secured website that allowed them to read a description of the study and its requirements, which included: 1) an initial meeting with the researcher to provide informed consent; 2) attendance at three online team meetings, hereafter referred to as Task 1, Task 2, and Task 3 (see below for task descriptions); and 3) responding to three online surveys, hereafter labeled Time 1, Time 2, and Time 3 surveys. Participants were instructed to arrive at a designated location on the university's campus for the first day of their participation. At the initial meeting, which was conducted by undergraduate students trained by the first author, participants were told that they would serve as one member of a four-person team, and that henceforth they would only need Internet access to complete the study. Participants were then asked to provide a pen name (which they would use to log into the chat room and would provide at the beginning of each survey) and their e-mail address (so that instructions could be sent to them). Importantly, team members never interacted with one another face-to-face prior to working online together.

Following the initial meeting with the researcher, participants were e-mailed a link to the Time 1 survey, which included a measure of emotional intelligence and demographic items. Once completed, participants were e-mailed information regarding Task 1 with their fellow team members. At their assigned times, team members logged on to a secure website chat room, in which they communicated using instant messaging. Approximately two days after completion of Task 1, team members were sent information about completing Task 2. Immediately following their completion of Task 2, team members were e-mailed a link to the Time 2 survey, which included a measure of their perceptions of quality of communication. Approximately two days after completion of Task 2, team members were sent information about completing Task 3, their final task. Immediately following completion of Task 3, team members were e-mailed a link to the Time 3 survey, which included a measure of team viability.

**The Simulation.** The Tinsel Town Simulation, a top management team activity comprising three tasks (Devine, Habig, Martin, Bott, & Grayson, 2004), was used for Task 1, Task 2, and Task 3 for the current study. Simulation materials were adapted so that they could be e-mailed to participants. Each of the tasks required participants to act as a vice president of a fictional Hollywood movie studio. The four team members in each team were assigned to different vice president roles (i.e., Vice President of Marketing, Vice President of Talent Appraisal), and each received different information specific to their specialization. Thus, the simulation required that team members exchange information with one another using instant messaging in order to achieve a common goal, creating a high degree of interdependence. The goal of each task, which was to decide on which movies the fictional studio should produce the following year, was the same for each task (although different movie descriptions were used so that each task was unique).

## Measures

**Emotional Intelligence.** Emotional intelligence was measured at Time 1 (prior to Task 1) using 33 items by Schutte et al. (1998), which were developed based on Salovey and Mayer's (1990) conceptualization of emotional intelligence. Participants were asked to rate the extent they agreed with each statement using a five-point Likert scale. A sample item is: "I am aware of the non-verbal messages I send to others". In developing their measure, Schutte and colleagues maximized content validity by representing all four aspects of emotional intelligence proportionately in their item development.

**Quality of team communication.** Quality of team communication was measured at Time 2 (following Task 2) using eight items by Lester, Meglino, and Korsgaard (2002) to measure the quality of group communication and cooperation. We chose to measure this construct following Task 2 in order to allow teams enough time to establish a norm of virtual communication. Participants were asked to rate the extent that they agreed with each statement using a 5-point Likert scale. A sample item is: "We are very willing to share information with each other".

**Team viability.** Team viability was measured at Time 3 (following Task 3) using nine items from Barrick et al. (1998). Using a 5-point Likert scale, participants were asked to rate the extent that they agreed with statements regarding their team's ability to work together in the future. A sample item is: "This team accomplished what it set out to do".

## Data Analyses

Due to the nested nature of the data (individuals within teams), multilevel modeling was used to test our hypotheses. Multilevel modeling allows the researcher to simultaneously examine effects at multiple levels of analysis (e.g., individual and team levels) resulting in a more accurate model of the true multilevel phenomena (Krull & MacKinnon, 2001). To examine whether quality of team communication mediated the relationship between emotional intelligence and team viability, a multilevel mediation analysis was conducted. All variables included in our analyses were measured at the individual, rather than the team, level. As described by Kenny, Korchmaros, and Bolger (2003), the process of testing for lower-level mediation involves three steps: 1) demonstrating a significant relationship between the predictor and the criterion, 2) demonstrating a significant relationship between the predictor and the mediator, and 3) demonstrating a reduction in the relationship between the predictor and the criterion when the mediator is added to the model. Accordingly, we tested three models: emotional intelligence as a predictor of team viability, emotional intelligence as a predictor of quality of communication, and emotional intelligence and communication as predictors of team viability. Slopes in all models were constrained to be equal across teams because there was little between-team variance in team viability, indicating that there would be little information gained by allowing the slopes to be freely estimated between teams.

## RESULTS

Prior to conducting multilevel analyses, it is necessary to determine that there is sufficient variance in the criterion at all levels of analysis (Raudenbush & Byrk, 2002). Thus, a fully unconditional model was used to determine the proportion of variance in team viability that existed at Level 1 (within teams) and Level 2 (between teams). The intraclass correlation (ICC) was .08, indicating that 92% of the variability in team viability was within teams ( $\sigma^2 = 0.23$ ,  $z = 7.90$ ,  $p < .001$ ), and 8% of the variability in team viability was between teams ( $\tau_{00} = 0.02$ ,  $z = 1.02$ ,  $p = 0.15$ ). Although the amount of team-level variance in team viability was small, the existence of some variance at the team level was sufficient to justify multilevel analysis, since failing to account for this variance could potentially bias results (Roberts, 2007).

**TABLE 1**  
**DESCRIPTIVE STATISTICS, ALPHAS, AND ZERO ORDER CORRELATIONS FOR**  
**INDIVIDUAL LEVEL VARIABLES**

Variable	Mean	SD	1	2	3
1. Emotional intelligence	3.77	0.38	(.90)		
2. Team communication	4.01	0.51	.38*	(.91)	
3. Team viability	3.74	0.52	.21*	.69*	(.81)

Note. Listwise  $N = 163$ . \* $p < .01$ ; Alphas are listed along the diagonal

Means, standard deviations, alphas and zero-order correlations at the individual level of analysis for all variables are shown in Table 1. Note that the sample size for the correlations is 163 because this is the number of participants who completed all three surveys. However, because multilevel-modeling is robust with regards to missing data (Quene & Van den Berghe, 2004), we were able to include data from all 228 participants in testing our multi-level models. The first model investigated the relationship between emotional intelligence and team viability (see Table 2).

**TABLE 2**  
**RESULTS FOR GROUP COMMUNICATION AS MEDIATOR OF EMOTIONAL**  
**INTELLIGENCE TEAM VIABILITY RELATIONSHIP**

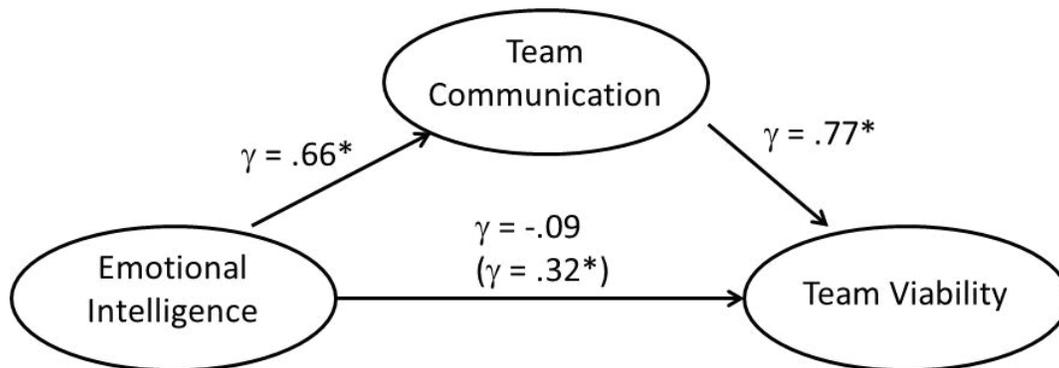
Variable	Coefficient	SE	t
<b>Model 1</b>			
Fixed effects			
Intercept ( $\gamma_{00}$ )	0.02	0.04	0.40
Emotional intelligence ( $\gamma_{01}$ )	0.32**	0.11	2.97
Random effects			
Level 1 variance ( $\sigma^2$ )	0.23**	0.03	
Level 2 variance ( $\tau_{00}$ )	0.02	0.02	
<b>Model 2</b>			
Fixed effects			
Intercept ( $\gamma_{00}$ )	0.03	0.04	0.72
Emotional intelligence ( $\gamma_{01}$ )	0.66**	0.08	7.68
Random effects			
Level 1 variance ( $\sigma^2$ )	0.18**	0.02	
Level 2 variance ( $\tau_{00}$ )	0.02	0.01	
<b>Model 3</b>			
Fixed effects			
Intercept ( $\gamma_{00}$ )	-0.01	0.03	-0.46
Emotional intelligence ( $\gamma_{01}$ )	-0.09	0.09	-0.98
Team communication ( $\gamma_{02}$ )	0.77**	0.07	11.53
Random effects			
Level 1 variance ( $\sigma^2$ )	0.14**	0.02	
Level 2 variance ( $\tau_{00}$ )	0	0	

Note. Model 1 = Emotional intelligence predicts team viability; Model 2 = Emotional intelligence predicts team communication; Model 3 = Team communication mediates emotional intelligence-team viability

There was a significant relationship between emotional intelligence and team viability ( $\gamma = 0.32, p < .01$ ), supporting our hypothesis that emotional intelligence would predict team viability, and justifying moving forward with testing our mediational hypothesis. The second model assessed the relationship between emotional intelligence and quality of team communication. There was a significant relationship between emotional intelligence and team communication ( $\gamma = 0.66, p < .001$ ), justifying the continuation of mediation analyses.

The third and final model included both emotional intelligence and quality of team communication as predictors of team viability. Quality of team communication was significantly related to team viability ( $\gamma = 0.77, p < .001$ ). However, with the addition of communication to the model, emotional intelligence ceased to be a significant predictor of team viability. The reduction of the emotional intelligence-team viability relationship to non-significance with the addition of team communication to the model provides evidence that communication functions as a mediator of the emotional intelligence-team viability relationship. Consistent with the recommendation of Sobel (1982), a Sobel test was used to determine whether the indirect effect of emotional intelligence on team viability via team communication was significantly different from zero. The Sobel test revealed a significant indirect effect of emotional intelligence on team viability via team communication ( $z = 6.39, p < .001$ ), indicating that quality of team communication fully mediated the relationship between emotional intelligence and team viability. The final model accounted for 42% of the within-team variance in team viability; however, the final model did not account for any additional between-team variance in team viability. Figure 2 provides our hypothesized model with parameter estimates.

**FIGURE 2**  
**HYPOTHESIZED MODEL WITH PARAMETER ESTIMATES**



## DISCUSSION

The purpose of our study was to examine the role of emotional intelligence in virtual teams. Specifically, we investigated the extent that emotional intelligence predicted team viability in virtual teams. Further, we examined quality of team communication as a mediator of the relationship between emotional intelligence and team viability. Our results support that emotional intelligence in virtual teams is a significant predictor of team viability, and that team communication serves as one mechanism through which emotional intelligence influences team viability in virtual teams. Consistent with research on emotional intelligence in face-to-face teams (Jordan et al., 2002), our findings suggest that emotional intelligence is a critical success factor for virtual team effectiveness because high levels of emotional intelligence facilitate effective communication among team members. Importantly, recent evidence suggests that emotional intelligence explains incremental variance beyond general mental ability in predicting job performance (Graves, 1999). Given organizations' increasing use of electronic communication, which has reduced verbal and nonverbal cues compared to face-to-face communication,

it is arguable that emotional intelligence reflects a critical element in predicting job performance in 21st century organizations.

The increasing use of virtual teams presents a unique challenge for managing human resources (Harvey, Novicevic, & Garrison, 2004). Thus, our findings have several practical implications for organizations as they revisit their human resource practices in light of the virtual nature of 21st century work. First, from a staffing perspective, organizations that rely on virtual teams should consider integrating emotional intelligence into their current selection system. Although emotional intelligence is frequently conceptualized as an innate ability, recent research suggests that emotional intelligence can be developed over time, meaning that it is trainable skill upon which organizations can capitalize (Ashkanasy et al., 2005). Thus, in addition to employee selection using emotional intelligence assessments, organizations should invest resources in emotional intelligence training for virtual team members to enhance their current workforce. Organizations that offer emotional intelligence training may be able to increase self-awareness, self-management, and social awareness among employees, and ultimately develop virtual team members who can more effectively handle the challenges created by the virtual environment.

### **Strengths & Limitations**

Our study has several notable strengths. First, following recommendations for reducing common method variance (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), we measured our focal constructs (emotional intelligence, quality of team communication, and team viability) at different time points consistent with our mediational hypotheses. Because cross-sectional data fail to adequately model the dynamic and changing nature of teams, studies that measure focal variables across the team's lifespan provide a richer understanding of the dynamics of team interaction (Kozlowski & Bell, 2003; Mathieu et al., 2008). A second strength of our study was our use of multilevel modeling to analyze our data. Although some researchers use methods of aggregation in team research, the nested nature of teams obviates the use of advanced statistics, which more accurately model team phenomena (Raudenbush & Byrk, 2002). Further, our use of multi-level modeling enabled us to account for missing data, which allowed us to include all participants in our analyses. A final strength of our study was the use of a real-world business simulation, which provides us more confidence that our results generalize to real-world virtual teams.

As with all research, our study has several limitations. First, the lifespan of teams in the current study was relatively short (less than 2 weeks). Thus, although the findings of the current study are generalizable to temporary virtual teams, the duration of the study limits the extent that the results generalize to long-term teams. A second limitation is that only one type of computer-mediated communication, synchronous communication (aka. instant messaging), in which participants communicated with one another in real time, was studied. Because multiple modalities of communication are available for virtual interaction (i.e., e-mail, videoconferencing), the findings of the current study are only generalizable to virtual teams who utilize synchronous communication. As well, the use of undergraduate students precludes generalization of our finding to the broader demographics that make up real-world virtual teams (i.e., age, comfortability with virtual communication). Additionally, the undergraduate students that comprised our sample were prominently Caucasian and were all from the same Midwestern university, which may limit the generalizability of our findings. Third, some may consider our treatment of emotional intelligence as a unidimensional construct to be problematic, given that since its publication, some researchers have found the Schutte et al. (1998) scale to be multidimensional (see Petrides & Furnham, 2000). However, because emotional intelligence has not been studied in the context of virtual teams, we were interested in whether overall emotional intelligence contributed to team communication, and subsequent team viability. Lastly, we did not utilize an objective measure of team effectiveness (e.g., performance), focusing only on team members' perceptions of effectiveness.

## Future Research

Much of the research on virtual team communication has focused on the negative effects that computer-mediated communication has on trust, and how to promote relationship development among team members as a means of facilitating team effectiveness (Jarvenpaa & Leidner, 1999; Martins et al., 2004). Our results suggest that emotional intelligence in virtual teams is another key driver of virtual team effectiveness. Additional research should consider the different factors of emotional intelligence, in order to assess the extent to which individual dimensions of emotional intelligence contribute to explaining effective communication in virtual teams. Further, we encourage scholars to examine the extent that emotional intelligence is related to emergent leadership in virtual teams, which has been shown to be a critical success factor toward team effectiveness in face-to-face teams (Pescosolido, 2005). Although emergent leaders are not formally appointed by organizations, and thus have no legitimate power, their informal authority over the team, which develops over time, means that they serve as role models in establishing normative behavior and emotions for the group (Dasborough, Ashkanasy, Tee, & Tse, 2009). Further, additional research investigating the role of emotional intelligence in virtual teams should be conducted on non-student samples to determine the generalizability of our findings.

## Conclusion

In conclusion, the purpose of our study was to investigate uncharted territory by exploring emotional intelligence in virtual teams. Although researchers have unequivocally demonstrated that emotional intelligence plays a unique role in driving various organizational outcomes, including effectiveness in face-to-face teams, scholars have to date neglected to investigate implications for emotional intelligence in virtual teams, despite their ever increasing use in 21<sup>st</sup> century organizations. As modern organizations harness technological advancements to enhance their bottom line, consideration must be given to the means through which individual differences interact with modern forms of human communication.

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