

THE ROLE OF CULTURE AND PERSONALITY IN THE LEADERSHIP PROCESS IN VIRTUAL TEAMS¹

Completed Research Paper

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Abstract

Leadership is a key challenge of virtual teams. A particular leadership style, namely inspirational leadership, which is a sub-category of transformational leadership, has been found to be especially suited for the study of highly diverse teams. Virtual team leaders increasingly have to manage global virtual teams that contain members from different cultural backgrounds and value orientations. This study answers a call of incorporating the role of individual-level attributes and dispositions as moderators of inspirational leadership effects, considering cultural and individual values of followers in a virtual setting. Results reveal the importance of inspirational leadership influencing attitudinal outcomes (trust in leadership and cohesion). Furthermore, the effect of leadership is shown to be dependent on cultural as well as personal values of followers indicating the need to consider individual factors in the process of managing virtual teams.

Keywords: Virtual Teams, Inspirational Leadership, Collectivism, Personality, Trust in Leadership, Cohesion, Team Performance

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Introduction

Leaders of globally dispersed teams face significant challenges (Bell and Kozlowski 2002), especially when the team members are culturally diverse. Leadership is a key challenge of virtual teams (Hertel et al. 2004; Kayworth and Leidner 2002) but highly important in virtual settings because of its correlation with performance (Bass et al. 2003; Hoyt and Blascovich 2003; Lisk et al. 2011). Therefore, this study focuses on the role of virtual team leaders who use a particular leadership style, namely inspirational leadership, which is effective in highly dispersed contexts (Joshi et al. 2009).

During the last two decades, the development of new communication technologies has enabled work dispersion and it has become common practice, worldwide, for organizations to implement virtual teams (Picot et al. 2008). The present study refers to virtual teams as “groups of geographically and/or organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task” (Townsend et al. 1998, p. 18). These virtual teams challenge the assumption, derived from face-to-face teams, that subordinates must be influenced by a leader in close and personal relationships. Leading a virtual teams doesn’t require the same techniques and leadership behaviors as in face-to-face teams (Balthazard et al. 2004; Hertel et al. 2005; Hoyt and Blascovich 2003; Lisk et al. 2011; Zigurs 2003).

Furthermore, virtual team leaders increasingly have to manage global virtual teams that contain members from different cultural backgrounds and value orientations. Evidence suggests that cultural diversity is a key feature of many virtual teams (Powell et al. 2004). Moreover, to successfully lead a culturally diverse team, leaders need to understand how individuals’ cultural values influence their reactions to leadership (Kirkman et al. 2009). Moreover, as leadership is a process of mutual influence between leader and follower, the influence of a follower’s values on the leadership process should be taken into account.

The present study offers the following contributions. First, we examine two attitudinal outcomes, namely trust in leadership and cohesion, of a particular leadership style, namely inspirational leadership, which is a sub-category of transformational leadership. It appears that Joshi et al. (2009) are one of the first to examine inspirational leadership in a virtual context. Moreover, the influence of inspirational leadership of trust in the leader and cohesion has not been studied yet. Therefore, the theoretical foundation is partly derived from prior research on transformational leadership in virtual settings. Second, we answer a call of incorporating the role of individual-level attributes and dispositions as moderators of inspirational leadership effects, considering cultural and individual values of followers (Joshi et al. 2009). So far very few scholars have attempted to theoretically specify and empirically assess followers’ roles in the leadership process (Howell and Shamir 2005).

The current study therefore aims to shed light on the following questions:

- How does inspirational leadership influence the building of attitudinal outcomes like trust in leadership and cohesion?
- Do cultural values and personal traits moderate the influence of inspirational leadership on trust in leader and cohesion?
- How do trust in leadership and cohesion in a virtual context influence team performance?

We investigate these questions in a unique context that offers a natural laboratory for the study of virtual teams (Bainbridge 2007; Bainbridge 2010), the context of online games. This context allows us to obtain objective team outputs as well as perceptual data in a setting wherein participants are highly engaged over an extended period of time. Team members in this setting were physically dispersed and interacted through the use of computer-mediated communication technologies.

The remainder of this paper is organized as follows. First, this study provides an overview of the relationships between the variables presented in the research model. Thereafter, the results of the correlation study follow. The study concludes with a discussion of the model, the results and its implications for practice, as well as future research opportunities, and the research limitations.

Theoretical Framework and Hypotheses

The Effects of Inspirational Leadership on Trust in Team Leaders

Trust in a team leader is a key component that determines the leader's effectiveness (Burke et al. 2007). Whereas trust in team members has been investigated in several studies, not many have focused on trust in virtual leaders. This is a major shortcoming, considering that trust in a leader seems to be essential in a virtual context (Avolio and Kahai 2003). Owing to virtual challenges, Shamir (1999) argues that "it is not clear, [...], whether it is possible to identify with a virtual leader, and what kind of trust can be developed in such a leader" (Shamir and Howell 1999, p. 55). However, researchers recently showed that it is possible to establish trust in leaders in a virtual context (Picot et al. 2009). In virtual team settings, so far the impact of inspirational leadership has only been studied on trust in team members (Joshi et al. 2009). We extend this logic to understanding the relationship of inspirational leadership and trust in virtual leaders.

Inspirational leaders are able to influence followers through a process of what Kelman (1958) mentioned as "internalization", which Wallis (1996, p. 70) interprets as "the amplification and clarification of values and beliefs that are shared by both leaders and followers". Bennis and Nanus (1985, p. 96) found inspirational leaders to be "rarely... the one who conceived the vision." The current study focuses on inspirational leadership. Therefore only one dimension of the multifactor leadership questionnaire (MLQ) (Avolio and Bass 1995), namely inspirational motivation (confidently communicating a compelling vision and goals) was considered. This is in line with previous research (Joshi et al. 2009) suggesting that inspirational leadership is especially useful to develop socialized relationships fostering team outcomes. Research in traditional settings suggests that the effectiveness of leaders in motivating followers is contingent upon employees' trust in leaders (Dirks and Ferrin 2002). Yet, there is a notable deficit of empirical work on the antecedents of trust in virtual leaders (Zhang and Fjermestad 2006). Team members seem to trust inspirational leaders because they provide the team with a vision and mission, and serve as the critical "missing link" needed to foster commitment and trust (Joshi et al. 2009). Inspirational leaders seem, while stressing the team's collective mission, to express confidence in the team's ability to accomplish the intended mission (Bass 1985). Enthusiasm and optimism and the ability to lead a team to accomplish a common goal are key characteristics of inspirational leadership (Bass 1985) and may therefore be able to foster trust in leaders in virtual team settings where team members often run the risk to experience a sense of isolation (Kirkman et al. 2002), and as a consequence, feel less trusting of teams' leadership caused by forms of dispersion. In summary, in a virtual context, inspirational leaders may play a key role in facilitating trust in the leader. Therefore, this study hypothesizes as follows:

H1: Inspirational leadership is positively related to trust in the virtual team's leader.

The Effects of Inspirational Leadership on Cohesion

Cohesion refers to the extent team members value their membership and are willing to remain part of the group which means that cohesive teams are groups that stick together and have the feeling of being an entity (Man and Lam 2003). Team cohesiveness strongly contributes to the successful performance of dispersed teams (Maznevski and Chudoba 2000). Yet, due to the spatial, temporal, organizational and cultural boundaries, virtual teams face unique difficulties in developing cohesion (Powell et al. 2004). These difficulties often result in task and interpersonal conflicts (Hinds and Mortensen 2005). Apart from that, a number of researchers mentioned the possibility of transformational leadership to enhance cohesiveness (Conger et al. 2000; Wendt et al. 2009). Thus, given that cohesion is essential for virtual team effectiveness but at the same time is difficult to build in a virtual context, it is quite important to investigate the facilitating role of inspirational leadership as to enhance cohesion in dispersed settings.

Inspirational leaders emphasize group values and a shared vision and mission. Consequently, subordinates identify more deeply with the team, which fosters a deeper sense of commitment (Bass et al. 2003; Sosik and Jung 2002). This is especially important in distributed teams because dispersion adds a considerable burden to the task of developing a shared vision and mission (Martins et al. 2004). Fortunately, team commitment can create "a network of psychological connections among distant team members that serves to overcome the physical distance that otherwise separates them" (Joshi et al. 2009, p. 243). The network of psychological connections, in turn, increases team cohesion (Dionne et al. 2004).

Moreover, by communicating a vision, inspirational leaders can strengthen the significance of the virtual teams' shared goals (Joshi et al. 2009). Setting shared goals was found to be positively related to cohesion in virtual teams (Martins et al. 2004). In summary, virtual team attributes, such as the lack of physical proximity and shared context increase inspirational leadership's relevance for facilitating team cohesion (Joshi et al. 2009; Purvanova and Bono 2009). This leads to the following hypothesis:

H2: Inspirational leadership is positively related to cohesion in a virtual team.

The Moderating Influence of Cultural Factors

Culture can be defined as "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations" (House et al. 2004, p. 15). Cultural value orientation of followers can play an important role in followers' reactions in leadership processes (Spreitzer et al. 2005; Walumbwa and Lawler 2003; Walumbwa et al. 2007). It can function as *facilitators* or *barriers* (cf. Keller 2006). There is a call for incorporating the role of individual-level attributes and dispositions as moderators of inspirational leadership effects in virtual settings, especially collectivistic orientation of followers (Joshi et al. 2009) et al. 2009). Therefore, this study investigates the moderating influence on the relationship of inspirational leadership and trust in leader, as well as relationship of inspirational leadership and cohesion.

Compared to other dimensions individualism has been more related to attitudes, values, norms, behaviors, team processes, and outcomes (Connaughton and Shuffler 2007; Kaushal and Kwantes 2006). Moreover, individualism has often been used as the operationalization of culture (e.g. Schwartz 1999; Stedham and Yamamura 2004). In individualistic cultures, the individual's needs, values, and goals take precedence over the group's needs, values, and goals. In collectivist cultures, the group's needs, values, and goals take precedence over those of the individual (Gudykunst 1997; Hofstede 1980). Collectivists are also sensitive to in-group/out-group boundaries (Triandis 1989). For example, research suggests that, compared to those from individualistic societies, persons from collectivistic societies tend to have greater in-group bias (Gómez et al. 2000). As the setting of this study makes it possible to compare several different countries, this study analyses the dimension of individualistic or collectivistic orientation at the country level using dimensions of the GLOBE study. Given that the GLOBE study is one of the most influential studies investigating cultural values and its relationship to perception of outstanding leaders GLOBE and allows to investigate cultural values on a country as well as an organizational level.

In the context of the trend towards team-based organizations and the increasing abandonment of hierarchical patterns of authority, the study of collectivistic values is especially important. Several arguments exist to explain the positive effect of followers' collectivistic orientation on the relationship between inspirational leadership and trust in leaders. First, Jung et al. (1995) argue in their theoretical study that people from collectivistic cultures are more prone to transformational leadership because they have a great level of respect for and obedience towards their leaders. They add that transformational leaders meet collectivistic needs by being group-oriented and caring. As a result, transformational leaders are highly respected and trusted by their collectivistic followers (Jung et al. 1995). Other researchers mentioned that transformational leaders' supportive behavior meets collectivistic team members' needs for affiliation and connection with the leader (Schaubroeck et al. 2007). Furthermore, Jung and Avolio (1999) state that there is high value congruence between transformational leaders and collectivistic followers (Jung and Avolio 1999). Moreover, some scholars have investigated the effect of followers' collectivistic orientation on the relationship between transformational leadership and cohesion. Walumbwa and Lawler (2003) state that collectivism positively moderates the relationship between leadership and outcomes such as cohesiveness in traditional settings. Therefore, this study hypothesizes the following:

H3: Culture moderates the relationship between inspirational leadership and trust in the leader of a virtual team in such a way that inspirational leadership's positive impact on trust in the leader is stronger in collectivistic cultures.

H4: Culture moderates the relationship between inspirational leadership and cohesion in a virtual team in such a way that inspirational leadership's positive impact on cohesion is stronger in collectivistic cultures.

The Moderating Influence of Personality Traits

Personality and personal values can be defined as “enduring dispositions that cause characteristic patterns of interaction with one’s environment” (Parks and Guay 2009, p. 675). There has been a call of incorporating the role of individual-level attributes and dispositions as moderators of inspirational leadership effects, considering individual values of followers in a virtual team setting (Joshi et al. 2009). In the last two decades a taxonomic structure, termed five-factor-model or alternatively the Big Five, has broadly gained acceptance (Judge and Bono 2000). McCrae and Costa (1997) noted that “many psychologists are now convinced that the best representation of trait structure is provided by the five-factor-model” {McCrae, 1997 #1382`, p. 509}. It consists of a robust set of five factors, namely extraversion, agreeableness, conscientiousness, neuroticism and openness to experience (Judge and Bono 2000). This study analyzes two of the five above-mentioned dimensions, namely extraversion and conscientiousness, as they are most suitable to the research context and extraversion is “the most appropriate initial factor to examine [...] in virtual teams” (Balthazard et al. 2004, p. 44). Individuals who score high on extraversion tend to be energetic, enthusiastic, outgoing, assertive, ambitious, active, and sociable. Conscientiousness represents the tendency to be organized, efficient, responsible, and careful (Judge and Bono 2000; Parks and Guay 2009; Roccas et al. 2002).

Four characteristics of extraverts, enthusiastic, outgoing, active, and sociable, are most likely to be relevant to the influence of inspirational leadership and trust in the leader. Due to higher enthusiastic levels, extraverts tend to have similar values to their leader, as enthusiasm is a key characteristic of inspirational leadership (Bass, 1985). Keller (1999) argued that similar leaders are preferred because mainly research on attraction and similarity proposes that individuals select partners that are similar to themselves (Keller 1999). Therefore extraverts may prefer inspirational leaders and may be more open to trust their leader. (Hypothesis 5). Referring to conscientiousness, however, due to the fact that very conscientious members are more carefully than extraverts, they may not be that open to inspirational leaders like extraverts and therefore less trusting their leaders (Hypothesis 6).

Regarding the influence of extraversion on the influence of inspirational leadership on cohesion, also similar values between leader and followers may support the influence. Consequently, extraverts may gain a deeper sense of commitment and identification with the team than individuals that are very conscientious. As mentioned, this is quite important for distributed teams, because developing a shared vision and mission is more difficult for virtual teams due to team member dispersion (Martins et al. 2004). However, commitment to the team can help to overcome these difficulties and can in turn enhance team cohesion (Dionne et al. 2004)(Hypothesis 7). Referring to conscientiousness, in turn, characteristics like organized, efficient, responsible, and careful seem to be more rational than characteristics of extraverts and therefore not that much related to inspirational attributes like enthusiasm, encouragement, inspiration and excitement. Positive inspirational leadership perceptions of individuals that are high in conscientiousness may be lower than for individuals that are low in conscientiousness. Thus the positive impact of inspirational leadership is expected to be higher for individuals that are not high in conscientiousness (Hypothesis 8).

Regarding the scarce research on followers' personality in the leadership process, this study hypothesizes the following:

H5: In virtual teams, individuals' extraversion moderates inspirational leadership's positive impact on trust in the leader in such a way that the trust in leadership will be stronger for highly extraverted individuals.

H6: In virtual teams, individuals' conscientiousness moderates inspirational leadership's positive impact on trust in the leader in such a way that the trust in leadership will be stronger for individuals that are low conscientiousness.

H7: In virtual teams, individuals' extraversion moderates inspirational leadership's positive impact on cohesion in such a way that the positive impact will be stronger for highly extraverted individuals.

H8: In virtual teams, individuals' conscientiousness moderates inspirational leadership's positive impact on cohesion in such a way that the positive impact will be stronger for individuals that are low conscientiousness.

The Influence of Trust and Cohesion on Team Performance

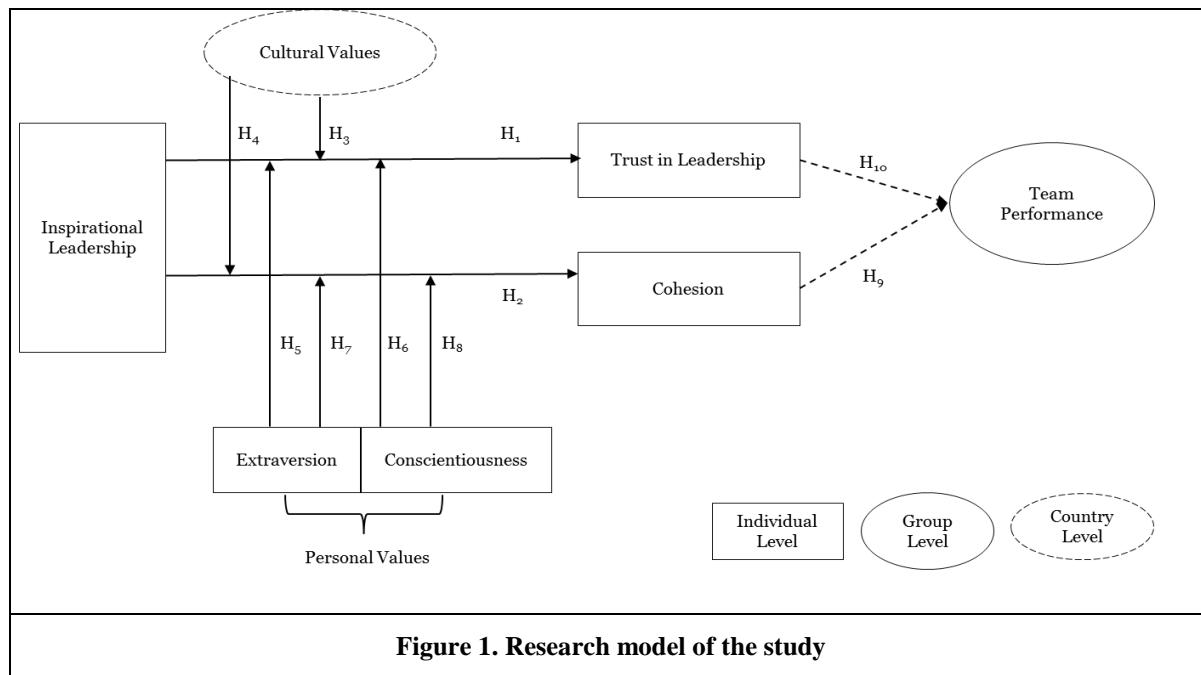
As already noted, empirical research on leadership trust in the virtual context is limited. Most studies on the relationship between leadership trust and team performance are conducted using face-to-face teams. These studies show that individuals that feel higher levels of trust in their leaders are motivated to perform beyond expectations, and more willingly perform tasks that require extraordinary effort (Burke et al. 2007; Podsakoff et al. 1990). Virtual teams can derive great benefit from inspirational leadership, because team members often have to accomplish complex tasks and additionally face the difficulties of interacting predominantly via technology (Martins et al. 2004). Furthermore, trust in leadership has been shown to expand communication and to improve information and knowledge sharing with the leader (Burke et al. 2007), which is essential for virtual team performance (Hertel et al. 2005). Finally, Dirks (2000) finds a strongly significant direct correlation between trust in leadership and team performance in a non-virtual setting (Dirks 2000), which supports the notion that trust in a leader enhances team performance. Dirks' results (2000) have recently been confirmed in a study of teams operating in a virtual setting (Picot et al. 2009). The present study investigates performance on a team level, as there is a call in the relevant field of inspirational leadership in virtual settings (Joshi et al. 2009). Thus, it is hypothesized that:

H9: Trust in leadership of a virtual team positively influences team performance.

There is evidence for the positive relationship between team cohesion and team performance in traditional settings. Several meta-analytical studies confirm that team cohesion positively influences group performance (Beal et al. 2003; Evans and Dion 1991; Mullen and Copper 1994). However, the direction of the cause-effect relationship is not always clear (Mullen and Copper 1994). Furthermore, very few empirical studies investigate the relationship between team cohesion and team performance in virtual settings. In a field study of three global virtual teams, Maznevski and Chudoba (2000) identify team cohesion as one of the most important performance dimensions (Maznevski and Chudoba 2000). Hoyt and Blascovich (2003) find that the relationship between cohesiveness and team performance does not differ for virtual teams and face-to-face teams (Hoyt and Blascovich 2003). In addition, Joshi et al.'s study (2009) supports the notion that team commitment, a parameter of team cohesion (Dionne et al. 2004), positively predicts geographically dispersed teams' performance (Joshi et al. 2009). It can be concluded that the results of traditional settings mentioned above are valid in a virtual context, too; therefore, this study hypothesizes that:

H10: Cohesion of a virtual team positively influences team performance.

Figure 1 shows the research model of the study.



Method

Research Setting

This study's context is a virtual world called *Travian*, and centers on a highly collaborative game play, known as raiding. In particular, the alliances' collaborative practices within the MMOG (massively multiplayer online game) world are studied, using data from log files and participant surveys. The virtual world offers a huge advantage of making available a vast amount of users' behavioral data, collected in an unobtrusive way. Furthermore, the context of an online game bears the advantage of being more engaging and psychologically meaningful to participants than laboratory simulations (Williams et al. 2006; Yee 2006). Online virtual worlds, such as an MMOG, provide a rich context in which to study collaboration (Bainbridge 2007; Steinkuehler 2008). These virtual worlds are hotbeds of collaborative activity, sharing many characteristics with real-world collaborative activities. For example, raiding involves interdisciplinary teams of players who learn to coordinate their specialized skills while taking advantage of the redundancy built into their specializations for backing each other up (Walter 2010). These characteristics are similar to those of real-world teams, such as work groups (Reeves et al. 2008; Reeves and Read 2009), surgical teams (Edmondson 2003), the military (Salas et al. 1995), control room teams (Patrick et al. 2006), sports teams (Eccles and Tenenbaum 2004), and musicians (Mertl et al. 2008). Moreover, the teams fulfill tasks that are highly complex, sometimes comparable to those fulfilled by real-world virtual teams and organizations (Kanawattanachai and Yoo 2007). Thus, online games are blurring the boundaries between work and play. The activities performed in such games are becoming increasingly similar to the work performed in business corporations (Yee 2006).

In terms of size, MMOG teams vary vastly, ranging from small, three player teams to highly structured organizations with hundreds of members. Therefore, studies can involve tasks that can be broken down into several subtasks, and manipulations can be introduced at the organizational level, rather than just at the team level or the individual level. Furthermore, MMOGs have the advantage of enabling the control of external effects, since these games are based on computer code that cannot be altered by the players. In addition, an objective performance measure is built into the game, substituting flawed perceptual performance measures and avoiding possible common method variance (Majchrzak et al. 2005). Another

major advantage of MMOGs is that they are played throughout the world, enabling researchers to conduct truly international and cross-cultural studies at very low costs.

Travian is free of charge, demanding no subscription fees or initial costs. As a result, the game is played by casual players as well as more dedicated gamers. Owing to it being browser-based, the game has a low entry barrier for new players, because no special client software needs to be installed on the computer. The game's orientation and processes mimic the competitive dynamics of industries that set out to conquer unexploited markets. The game's broad user base makes it particularly useful for research on organization and management. In the game, players start out as chieftains of their own villages and seek to gain natural resources, build armies, and expand their realms. The game lasts approximately one year, after which an entity is deemed the winner, based on the fastest completion of a certain building called "wonder of the world". Up to 25,000 users play the game on one server with events occurring in real time, using scarce resources. Only one team can win. Players therefore soon find themselves in a social dilemma (Dawes 1980) that is typical of any organization that coordinates labor parts. The players must cooperate with each other to protect their territory and resources, and successfully expand their realm. In the race to dominate, actors form teams of up to 60 members under a leading chieftain. Teamwork, diplomacy, and negotiation skills play a crucial role in this context, leading to complex team structures and interactions between and among teams. Therefore, the alliance's highly structured leadership teams are very important. Alliance members become colleagues, and losing a village or contingents of soldiers causes real emotions, suggesting psychological involvement. Owing to Travian's characteristics, teams can be regarded as virtual teams, as they fulfill the specifics of the definition.

Sample and Procedure

In the study's approach, data was taken directly from the computer servers (log files) and enhanced with the data collected from a survey, which was distributed to subscribed players in virtual teams. Several sampling criteria were employed. First, considering that the game runs for about a year, servers were used that had been running for 200 days, thereby ensuring that teams had been established and team membership was stable. Second, the sample was restricted to players who were part of a team, and excluded those who were playing alone, as well as those who were part of the leadership team. Third, the study focused on players who were 18 years and older. Using these criteria, 552 teams with 1593 members from 12 countries, namely, Australia, Germany, Iran, Finland, Israel, Hungary, Indonesia, Japan, Poland, Qatar, Russia, and Slovenia. To ensure that only highly engaged players were surveyed, a link to the survey was posted on the game's login page for a relatively brief period of time – three days in May 2010. Owing to professional players logging on several times a day, casual players who log on irregularly and are therefore less engaged were less likely to be part of the sample. The questionnaire was only available to players once. When they closed the questionnaire, they could not open it again, to ensure that players could not answer it twice.

A total of 203,646 players were on the servers, of which 145,814 players were alliance members (identified by the alliance identification numbers in the log files). These 145,814 players were grouped into 27,731 teams. Considering, that 51,242 players filled out the survey, this led to a response rate of 35%. As the study focused on alliance members only, leaders were disregarded. Of the 145,814 players, a total of 88,334 were followers in the alliances and had no part in the leadership. Of the alliance members, 12,209 answered the survey, resulting in a response rate of 14%. The average age of the surveyed players was 28, with ages ranging from 18 to 66 years, and 15% of the sample was female.

Measures

Players operate in teams. Thus, the players' perception may be affected by grouping effects, both at the team and the country level and therefore may not be independent of each other. The hypotheses involve predictors measured at two levels of analysis, the individual level (leadership, value differences, trust in the leader, and cohesion) and at the country level (culture). These nested data structures call for hierarchical linear models (HLM), rather than ordinary least square (OLS) analysis (Hox 1995; Raudenbush and Bryk 2002). All predictors were standardized prior to hypotheses testing (Hofmann and Gavin 1998). In order to show the nested data structure, intraclass correlation coefficients, namely ICC(1)

and ICC(2), were calculated. The values are given below. It has to be noted that due to the large sample size mean scores are generally more stable. It is therefore possible to have high ICC(2) values and low ICC(1) values (Castro 2002; James 1982).

Dependent Variable. The data on team performance were obtained directly from the log files of the game server (the in-game scoring system is acknowledged throughout the game). This offers the advantage of ranking and measuring each player's performance unobtrusively and objectively. Team performance was measured two weeks after the survey.

Independent Variables. The data on inspirational leadership were obtained from the members' survey. The six items for inspirational leadership were derived from Joshi et al.'s work (2009) and adjusted to the context. The items were rated on a five-point Likert-type scale with anchors of 1 for "strongly disagree" and 5 for "strongly agree". The measure showed a very good reliability, with Cronbach's $\alpha = .93$. The ICC values for inspirational leadership were ICC(1)=.10 and ICC(2)=.98. The data on trust in leadership were also obtained from the members' survey. The four items for trust in leadership were derived from Schoorman and Ballinger's work (2006), and were adjusted to the virtual context. The items were rated on a five-point Likert-type scale with anchors of 1 for "strongly disagree" and 5 for "strongly agree". A factor analysis showed that one item had to be excluded from the construct. The remaining three items showed an acceptable reliability with Cronbach's $\alpha = .65$. The ICC values for trust in leadership were ICC(1)=.02 and ICC(2)=.92. Moreover, the members' survey yielded the data on cohesion. The two items were derived from Seashore et al.'s work (1982), and were adjusted to the virtual context. The items were rated on a seven-point Likert-type scale, with anchors of 1 for "strongly disagree" and 7 for "strongly agree". The measure showed a very good reliability with Cronbach's $\alpha = .85$. The ICC values for cohesion were ICC(1)=.05 and ICC(2)=.97. For the data on culture, the GLOBE project's approach was adopted; therefore, culture was assessed at the societal level. Individualism-collectivism was assessed using the four-item collectivism scale developed in the GLOBE project (House et al. 2004). One item was excluded, due to its low correlation with the other items. All items were rated on a seven-point Likert-type scale, with anchors of "strongly disagree" and "strongly agree". The measure showed acceptable reliability with Cronbach's $\alpha = .70$. The ICC values for collectivism were ICC(1)=.10 and ICC(2)=.98. For measuring the individual personality values, the study adopted the Big Five approach, according to which personality is assessed using a ten-item scale (Benet-Martinez and John 1998). All items were rated on a five-point scale with anchors of "strongly disagree" and "strongly agree". The items didn't have to be adjusted to the virtual context. Five of the ten items measured the dimension of extraversion (e.g. "I see myself as someone who is outgoing, sociable") while the other five items were measured on the dimension of conscientiousness (e.g. "I see myself as someone who makes plans, follows through with them"). Both measures showed good reliability with Cronbach's $\alpha = .83$ for extraversion and Cronbach's $\alpha = .90$ for conscientiousness. The ICC values for extraversion were ICC(1)=.10 and ICC(2)=.98 and ICC(1)=.15 and ICC(2)=.98 for conscientiousness. In order to prove the validity of the scales, a confirmatory factor analysis (CFA) was conducted using AMOS 19. Results indicated that the four factor model of the independent variables provided a good fit to the data (e.g., goodness of fit index [GFI]=0.924, root mean square error of approximation [RMSEA]=0.078, comparative fit index [CFI]=0.939), Chi-square=991.6 with df=104.

Control Variables. Data on gender and age were obtained from the team member survey.

Results

Given the data's multi-level nature, hypotheses 1 to 8 were tested using hierarchical linear modeling (HLM). Hypotheses 9 and 10 concern the impact of aggregated trust in leadership, as well as aggregated team cohesion on team performance. These hypotheses were analyzed on the team level, using a separate HLM analysis. All predictors were standardized prior to hypotheses testing. Table 1 shows means, standard deviations, and correlations of study variables. Team performance had a mean of 1187 and a standard deviation of 1305.

Table 1. Means, standard deviations, and correlations of study variables								
Variable	N	Mean	SD	1	2	3	4	5
1 Age	1,539	27.50	7.80					
2 Inspirational Leadership	1,539	3.40	1.08	-.11 *				
3 Conscientiousness	1,539	3.89	.89	-.04	.35 *			
4 Extraversion	1,539	3.51	.91	-.07 *	.37 *	.62 *		
5 Trust in Leadership	1,539	2.73	.95	-.08 *	.33 *	.12 *	.14 *	
6 Cohesion	1,539	4.56	1.82	-.03	.64 *	.36 *	.39 *	.25 *

* p < .05

Table 2 and 3 show the results of the HLM analyses. Tests of the main effect hypotheses (hypotheses 1 and 2) are reported in the columns labeled Model 2; tests of the interaction hypotheses (hypotheses 3 to 8) are reported in the columns labeled Model 3. Note for all tables: Parameter estimates are reported in the body of the table, with standard errors reported in parentheses; * p < .10; ** p < .05; *** p < .01; **** p < .001; To provide an effect size comparable with moderator research (Hofmann et al. 2003), R²'s are estimated from ordinary least squares (OLS) regression that include a manager fixed effect.

Table 2. Results of HLM analysis on trust in leadership							
		Model 1		Model 2		Model 3	
Level 2 (Country)	Intercept	2.88	(.09) ****	2.92	(.09) ****	2.91	(.09) ****
	Culture Country			-0.02	(.07)	-.02	(.07)
Level 1 (Individual)	Age	-.08	(.02) ****	-0.06	(.02) **	-.05	(.02) **
	Gender	-.02	(.02)	-0.01	(.02)	-.01	(.02)
	Inspirational Leadership (IL)			0.31	(.02) ****	.30	(.03) ****
	Conscientiousness			0.01	(.03)	-.02	(.03)
	Extraversion			0.04	(.03)	.04	(.03)
	IL * Conscientiousness					-.10	(.03) ****
	IL * Extraversion					.07	(.03) **
	IL * Culture					-.02	(.03)
R ²		.01		.11		.13	
F-Value		5.62	***	33.98	****	24.73	****

N (Level 1) = 1,539; N (Level 2) = 12;

Table 3. Results of HLM analysis on cohesion

		Model 1	Model 2	Model 3
Level 2 (Country)	Intercept	4.33 (.19) ****	4.55 (.07) ****	4.56 (.06) ****
	Culture Country		-.05 (.06)	-.07 (.06)
Level 1 (Individual)	Age	-.04 (.05)	.04 (.04)	.04 (.04)
	Gender	-.04 (.05)	.02 (.03)	.02 (.03)
	Inspirational Leadership (IL)		1.02 (.04) ****	1.03 (.04) ****
	Conscientiousness		.17 (.04) ****	.18 (.05) ****
	Extraversion		.25 (.05) ****	.25 (.05) ****
	IL * Conscientiousness			.01 (.04)
	IL * Extraversion			.01 (.04)
	IL * Culture			-.07 (.04) *
R ²		.00	.43	.44
F-Value		1.28 ***	202.42 ****	135.91 ****

N (Level 1) = 1,539; N (Level 2) = 15;

Hypothesis 1 predicted that inspirational leadership in a virtual team is positively related to trust in the leader. As indicated in table 2, this hypothesis was supported ($\gamma = .31$, $t = 12.52$, $p < .001$). Hypothesis 2, regarding the positive impact of inspirational leadership on cohesion, could also be supported by the data ($\gamma = 1.02$, $t = 27.27$, $p < .001$). Hypotheses 3 and 4, regarding the moderating influence of culture on the relationship between inspirational leadership and trust in the leader (H3), as well as on the relationship between inspirational leadership and cohesion (H4), could however only be partially supported. Hypothesis 4 showed a moderation effect of culture on the relationship between inspirational leadership and cohesion ($\gamma = -.07$, $t = -1.93$, $p < .10$). Hypotheses 5 and 6 stated that the positive relationship between inspirational leadership and trust in the leader is moderated by extraversion and conscientiousness, and both could be supported (H5: $\gamma = .07$, $t = 2.41$, $p < .05$; H6: $\gamma = -.10$, $t = -3.39$, $p < .001$). Hypotheses 7 and 8 stated that the positive relationship between inspirational leadership and cohesion is moderated by extraversion and conscientiousness. The interaction testing was not significant. To interpret the significant moderation hypotheses' results, the simple slopes for the relationships were estimated 1 s.d. above and below the mean of the moderators. The slopes plotted in Figures 2, 3, and 4 illustrate the hypothesized relationship.

It is worth noting, that extraversion as well as conscientiousness had no significant direct effect on trust in the leader. However, they both had a significant positive direct effect on cohesion. This study didn't hypothesize any direct effect for the personality traits. Looking at research on extraversion and performance suggests that extraverts tend to be active in group interaction and often have high popularity (Balthazard et al. 2004) and may therefore impact cohesion. Research also found extraversion to be a key personal correlate with group performance (Barry and Stewart 1997). Conscientiousness did also positively influence cohesion. So far, conscientiousness has been linked to performance (Waung and Brice 1998). Maybe the result that linked conscientiousness to performance was due to the higher cohesion conscientiousness did provoke. Further studies should examine these relationships.

For testing the influence of trust in a leader as well as cohesion on team performance, all individual variables had to be aggregated to the group level for running a separate HLM analysis. Similar to Joshi et al.'s analysis (2009), this study excluded the moderators from the former HLM, but included the control variables. As can be seen in table 4, hypothesis 9, which predicted a positive relationship between trust in the leader and team performance, could not be supported by the data. Contrary, trust in the leader had a significant negative effect of team performance ($\gamma = -.180$, $t = -1.84$, $p < .10$). However, as stated in hypothesis 10, team cohesion positively influences team performance ($\gamma = .120$, $t = 2.36$, $p < .05$).

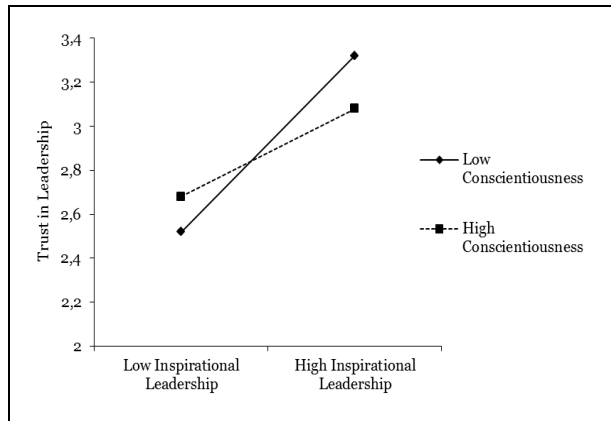


Figure 2. Simple slopes for the interaction between inspirational leadership and conscientiousness on trust in leadership

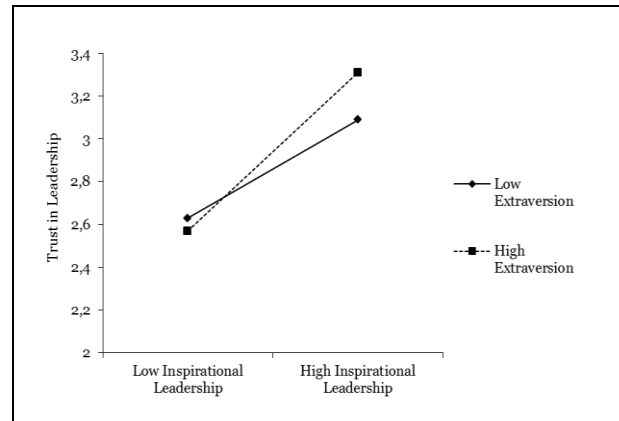


Figure 3. Simple slopes for the interaction between inspirational leadership and extraversion on trust in leadership

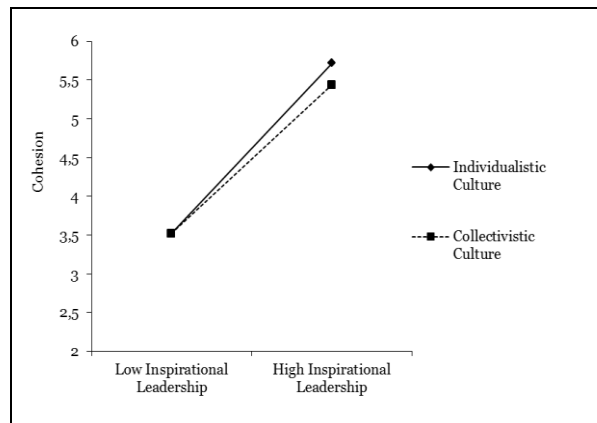


Figure 4. Simple slopes for the interaction between inspirational leadership and collectivism on cohesion

Table 4. Results of HLM analysis on team performance						
		Model 1			Model 2	
Level 2 (country)	Intercept	1165	(181)	****	1154	(363) ***
Level 1 (group)	Age	15	(92)		14	(92)
	Gender	193	(93)	**	187	(93) **
	Team Cohesion				120	(51) **
	Team Trust in Leadership				-180	(97) *
R ^{2a}		.04			.10	
F-Value		12.52	****		8.07	****

N (Level 1) = 552; N (Level 2) = 12;

Discussion of Results

Many researchers have concluded that leadership is a key challenge of virtual teams and is especially difficult to establish (Martins et al. 2004; Powell et al. 2004). Although, inspirational leadership has been identified as particularly suited for virtual teams to the best of our knowledge this leadership style has only been investigated in one study (Joshi et al. 2009). Therefore, the study's goal was to advance research on leadership by providing insight into the influence inspirational leaders have on emergent states such as trust in leadership and cohesion and, ultimately, on team performance, in a virtual context. Furthermore, the aim was to shed light on the role of culture, as well as followers' personality values in the inspirational leadership process. The data shows that inspirational leadership positively influences the emergent states and that the leadership influence is culture contingent. Referring to one of the research questions of this study, namely if inspirational leadership positively influences outcomes of team collaboration, the results show that an inspirational, motivational, and optimistic leadership style does have a positive influence in virtual teams. The question if this leadership style would positively fit in a virtual context can be supported. The result adds to the literature in two ways: First, it analyzes a sub form of transformational leadership thereby extending the research on new forms and dimensions of leadership and their influence on team outcomes. Second, the study transfers leadership research to the virtual context.

The second question of the study was how culture and personal values of the followers would influence the effect of inspirational leadership. Due to the expanding use of globally working teams consisting of different cultures this question is of high relevance for research and practice. The study's results however are somewhat surprising. The GLOBE measures of culture on the societal level only influenced the relationship between leadership and cohesion. Results show that this type of leadership does not necessarily influence cohesion equally in all cultures. Even if the effect is rather small, individualistic cultures benefit more from inspirational leaders regarding cohesion than collectivist cultures, possible because members of the latter are more prone to their group and people from the beginning. In individualistic cultures, individuals do not approach others easily; therefore, this culture benefits more from inspirational leadership highlighting the value of the collective. This shows that inspirational leaders can even motivate members of individualistic cultures, who are argued to be more self-centered. Furthermore, results suggest that inspirational leadership positively influences trust in leadership, regardless of the team members' cultural orientation. This result is somewhat surprising, and might possibly be explained by the global nature of the inspirational leadership style. It could be argued that an inspirational leader affects trust in the same way in any culture. Owing to its importance in the virtual context, inspirational leadership might be truly universal. Individualistic as well as collectivistic cultures both benefit from a leader's motivation and charisma in terms of stronger trust in their leader. This result again highlights the functioning and importance of a relevant leadership style in a virtual context.

Besides the culture of team members, personal values play an important role in human interaction since they significantly shape personalities. This study therefore also focused on if and how personality values influence the perceptions and reactions to inspirational leadership. Hence, the study examined personal traits' moderating influence on the relationships between leadership and trust in the leader as well as cohesion. The individual traits moderated inspirational leadership's impact on trust in the leader, but not on cohesion. The results highlighted the personality type that reacts more positively to inspirational leadership: People high in extraversion and low on conscientiousness, who can be described as open minded, outgoing, assertive, active, and sociable, instead of having the tendency to be organized, responsible, and careful, benefit much more from inspirational leadership in terms of building trust in the leader. Even if a virtual team does not consist only of people who display these more open minded personalities, it is however shown that they are more affected by leaders who share their values of motivation, ambition, and outgoingness. People low in extraversion and high in conscientiousness who rely more on norms and are generally more careful also benefit from inspirational leaders, but not as much as highly extraverted, less conscientious individuals. These insights are of great importance for organizations, management and groups working in a virtual context. However, the personal traits and values did not influence the relationship between inspirational leadership and cohesion. As mentioned above, this leadership style might be perceived similarly in many cultures and by personalities. It seems cohesion does not rely on personal values. This important result shows that an inspirational leadership style enhances group cohesion, regardless of the followers' personality traits. These results on the impact of personal values in the leadership process extend the literature by underpinning the importance of

followers' characteristics on the effectiveness of team management. So far, research has investigated the influence of personal values and culture on inspirational leadership in separate studies. Answering a call by Joshi et al. (2009) the study adds important insights into the leadership literature by offering a new context (virtual) where to study teams accounting for the culture.

Finally, the study was interested in how the attitudinal outcomes of inspirational leadership would affect the performance of a virtual team. The results are also surprising: Trust in the leader negatively influences team performance. In contrast, team cohesion positively influenced team performance. The negative impact of trust might be due to the study's measurement. Although the measure has been widely validated, the study showed a low Cronbach's α for trust in the leader (.65), even after deleting one item from the measure. This might have affected the influence of trust's impact on performance. However maybe even more interesting, Erdem and Ozem (2003), who examined the influence of trust on performance, state that the levels of trust can be too high. Unconditional and uncritical trust can affect effectiveness negatively. "The fact that team members trust each other too much in the name of solidarity may produce the risk of 'groupthink', and may have a negative influence on team performance" (Erdem and Ozen 2003, p. 134). However, Erdem and Ozem describe trust in the team, rather than trust in the leader. Langfred (2004) also suggests that too much trust can be harmful for performance. He argues that low levels of trust are generally accompanied by higher monitoring, while high levels of trust are accompanied by lower monitoring, which can negatively impact performance (Langfred 2004). "The findings are [...] particularly important to the trust literature, because negative effects of high trust on performance have not previously been empirically explored [...]" (Langfred 2004, p. 391). In accordance with this view, other researchers also suggest that there might be a downside to high levels of trust (Kramer 1999; McEvily et al. 2003). The study's provocative results call for further research on trust in the leader in virtual teams.

Inspirational leadership is effective in virtual teams, as demonstrated by cohesion positively influencing a virtual team's performance and, in turn, cohesion being positively enhanced by inspirational leadership, regardless of personality. Leadership can emerge in virtual teams and significantly impact team performance. The study's findings provide three main conclusions. First, at the start of the study, it was stated that it is difficult to act inspirationally in a dispersed setting, due to the lack of face-to-face contact. However, the analysis shows that the opposite is true. It is indeed possible to be inspirational in a virtual environment and have considerable influence on a team. Second, an insight into two variables that are important in the leadership process on performance was obtained. Inspirational leaders are able to create strong team cohesion, which is especially important in a virtual environment. They develop cohesion by emphasizing common goals and values, and by providing a collective vision of the future. High team cohesion results in better information sharing and cooperation, which is essential for excellent team performance. Furthermore, inspirational leaders are able to significantly enhance trust in the leader which in this study has a negative effect on team performance but which is usually associated with positive effects on outcomes such as satisfaction (Dirks and Ferrin 2002; Jarvenpaa et al. 2004). Third, the findings draw attention to the followers' role in the leadership process. Followers' personality and culture influence the relationship with the inspirational leader. Leaders of virtual teams who want to increase team performance through inspirational leadership need to understand and establish conditions that support this leadership style in a virtual environment. Leaders can use different scales and measures that are applied by researchers to obtain a specification of a follower's characteristics (Kirkman et al. 2009). Finally, it is of practical importance for organizations to understand followers' different perceptions of inspirational leaders, due to the assignments of ratings and evaluations of leaders, such as the 360 degree feedback. Followers' evaluations are often the basis of training and leaders' payment. Followers' personality and culture can distort an objective assessment. In order to minimize this problem and to enhance objectivity, organizations can train followers to make them conscious of the influence of their personality (Felfe and Schyns 2006; Felfe and Schyns 2010).

This study provides several implications for future research. First, trust in the leader and team cohesion were examined as factors that influence the relationship between inspirational leadership and team performance. There may be other variables that influence this relationship, such as team empowerment or trust in team members. Second, it would be useful to examine other dimensions of the GLOBE study. Power distance orientation and uncertainty avoidance might also be interesting in terms of inspirational leadership (Kirkman et al. 2009; Schaubroeck et al. 2007). Moreover, in order to clearly specify followers' reactions, it is essential to observe values that operate on other levels, such as the team level, or the

organizational level (Howell and Shamir 2005; Jung et al. 2009; Kirkman et al. 2009; Schaubroeck et al. 2007). It is also necessary to investigate the interaction of these different level values (Gelfand et al. 2007). Followers' Big Five and culture are not the only factors that influence the perception of inspirational leadership. Other variables include followers' gender (Zhang et al. 2005), followers' beliefs about themselves (Zhu et al. 2009) or followers' skills, which might also have an impact on the relationship to an inspirational leader. Furthermore, it is important to include contextual influences, such as task characteristics (Sosik et al. 1998), leaders' experience in the virtual environment or the profession they are operating in (Schyns and Sanders 2007; Zhang et al. 2005). Additionally, although virtual team leadership research has evolved recently, more research is needed with regard to specific leadership styles in virtual settings. Given the great potential of inspirational leadership in a virtual environment, it is highly recommended that this style be researched in more depth. Virtual teams are often self-managed. Future studies should investigate the reasons and conditions for the emergence of informal inspirational leaders in self-managed teams (Purvanova and Bono 2009; Yoo and Alavi 2004). Finally, many studies cited are based on short-term laboratory investigations and student samples. It is advised that future research concentrates more on longitudinal field studies in order to improve validity of results in real life settings.

Although the study's results are encouraging, there are also some limitations. First, cyclical causal feedback loops and interrelations were neglected in the proposed model. Inspirational leaders not only influence team performance; the perception of inspiration is also affected by team performance (Joshi et al. 2009; Pillai and Meindl 1998). Reciprocal relationships might emerge between the moderators and team performance (Burke et al. 2007; Mullen and Copper 1994). The model's explanatory power could therefore be further extended by including these interdependencies. Second, time, duration, and dynamics were not considered in the model; therefore, changes in the processes were not included. However, emergent states such as trust in the leader and team cohesion develop over time and therefore the impact on team performance changes too (Ilgen et al. 2005). Additionally, researchers argue that teams pass through different phases, during which different processes become more or less prominent (Pitariu and Ployhart 2010). That is why they state that framing propositions more dynamically enhances the precision and completeness of a model (Pitariu and Ployhart 2010). Therefore, more attention should be paid to dynamic mediated relationships in the future. Third, due to the lack of research, some transmissions from traditional to virtual settings were made in this study. Fourth, it has been neglected that it is, as proposed by some researchers, feasible to divide followers' relationship with the leader into personalized and socialized ones (Howell and Shamir 2005). It is possible that the consideration of the division enables an even more detailed insight into virtual leadership functioning. In addition, the research context poses the biggest limitation. Even if researchers believe that these online games are laboratories for research and represent the business work of tomorrow, the generalizability has to be questioned. For example the lower stakes of the actions in a game might reduce the generalizability. However, the new data collection serves as a context that offers new ways of research coming along with limitations of generalizability as do student samples or short time observations.

Virtual teams often do not reach their expected performance potential. Effective leadership can reduce this problem. If leaders recognize this fact, there are distinct opportunities for inspirational leadership to enhance virtual team cohesion, as well as performance. To answer the question in the title: no, leaders should not lead all people similarly. They have to account for the differences.

Appendix

Inspirational Leadership (Joshi et al., 2009)

(five-point Likert Scale; Chronbach's $\alpha=.93$)

1. The alliance leader/ leadership team makes everyone in the team enthusiastic about the team's assignments.
2. The alliance leader/ leadership team encourages me to express my ideas and opinions.
3. The alliance leader/ leadership team has a sense of mission that he/ she/ them transmits to me.
4. The alliance leader/ leadership team is an inspiration to me.
5. The alliance leader/ leadership team excites us with his/ her/ their visions of what may accomplish if we work together as a team.

6. The alliance leader/ leadership team makes us believe we can overcome anything if we work together as a team.

Trust in Leadership (Schoorman & Ballinger, 2006)

(five-point Likert Scale; Chronbach's $\alpha=.65$)

1. If I had my way, I wouldn't let the alliance leader/leadership team have any influence over issues that are important to me.
2. I would be willing to let the alliance leader/leadership team have complete control over my future in this company.
3. I really wish I had a good way to keep an eye on the alliance leader/leadership team.
4. I would be comfortable giving the alliance leader/leadership team a task or problem which was critical to me, even if I could not monitor their actions.

Cohesion (Seashore et al., 1982)

(seven-point Likert Scale; Chronbach's $\alpha=.85$)

1. I feel I am really part of my alliance.
2. I look forward to being with members of my alliance each day.

Country Collectivism (House et al., 2004)

(seven-point Likert Scale; Chronbach's $\alpha=.70$)

1. In this society, leaders encourage group loyalty even if individual goals suffer.
2. The economic system in this society is designed to maximize: 1=individual interests; 7=collective interests
3. In this society, being accepted by the other members of a group is very important.
4. In this society: 1=group cohesion is valued more than individualism; 4=group cohesion and individualism are equally valued ; 7=individualism is valued more than group cohesion

Big Five (Benet-Martinez & John, 1998)

(five-point Likert Scale; Chronbach's $\alpha=.83$ extraversion (items 1-5); Chronbach's $\alpha=.90$ conscienciousness (items 6-10))

I see myself as someone who...

1. Is outgoing, sociable
2. Is talkative
3. Has an assertive personality
4. Generates a lot of enthusiasm
5. Is full of energy
6. Does a thorough job
7. Does things efficiently
8. Makes plans, follows through with them
9. Is a reliable worker
10. Perseveres until the task is finished

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