Communication and Leadership Trustworthiness in Virtual Teams: An Empirical Comparison of the US and China

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Abstract
This paper examines the influence of culture, self-disclosure and communication media on perceptions of trustworthiness of the leadership of a virtual team using a massively multiplayer online game (MMOG). We obtained data from two main sources: a survey sent to the virtual team members in the US and China and archival data from the log-files of the MMOG. Based on a unique data set of 2245 participants from 319 virtual teams, this study shows that perceptions of leadership trustworthiness are affected by culture, high self-disclosure and intensive use of communication media. Furthermore, we posited and found that the relationship between two dimensions of self-disclosure and trustworthiness as well as the usage of synchronous or asynchronous communication media and trustworthiness is moderated by culture. Our study sheds light on the influence of computer-mediated communication on team leadership trustworthiness in virtual team environments and the moderating role of culture.

1. Introduction
Virtual teams in which members are geographically dispersed and coordinate their work predominantly with electronic information and communication technologies (ICT), have become an important work group structure in virtual and traditional organizations [24, 37]. Most organizations today employ virtual teams to some degree [21, 25, 29].

One key characteristic of virtual structures is the reliance on ICT, which also functions as a driver of the push toward dispersion of virtual structures. The very benefits of ICT -- enabling teams to be distributed in space and time, functionally and culturally diverse, more flexible and more autonomous -- result in greater challenges to coordination and cooperation within the team [48]. Especially, the team leadership must adapt to the new emerging work context [68].

The use and impact of ICT is strongly influenced by national culture [38]. Yet, there is a paucity of research in exploring these cultural differences in virtual teams. However, before examining global virtual teams, these differences should be comparatively explored on a national level. Therefore, this study focuses on two very distinct countries, the US and China, to investigate the influence of national culture on the relationship between the use of ICT and trust. More precisely we focus on the influence of self-disclosure in computer-mediated communication (i.e. the breadth and depth of the communication) and the communication medium (i.e. synchronous and asynchronous) on the perceptions of trustworthiness of the team leadership. By leadership we refer to either one leader or a group of leaders that build the leadership team.

2. Theoretical foundations

2.1. Trust in leadership
Scholars have emphasized the importance of trust in leadership for decades [1] and established its strong relationship to work attitudes, followed by most of the organizational citizenship behaviors, and finally job performance [19]. Moreover, some studies point out that employees' perceptions that leaders have attributes that promote trust may be important for leader effectiveness [e.g. 2]. As research indicates that effective team leadership is a main contributor to organizational team success [67] trust in the team leader is especially critical [16, 23, 31, 46]. Therefore, trust in leadership has been identified as one of the most important success factors for the initiative, development and continuation of virtual leadership [43, 44, 45]. Since in the virtual world trust is a way to “manage people whom you do not see” [23, p. 41] and interactions are generally more limited than in co-located groups, the extent to which ICT provide media
richness and synchronicity and, hence, opportunity to build social bonds, might enable trust.

McKnight et al. [43] argue that trust is an intention of willingness to depend on another party that is preceded by trustworthiness beliefs, i.e. the leader’s ability, integrity and benevolence, which help build the foundation for the development of trust [7, 40]. Scholars agree that trustworthiness is a multifaceted construct that captures both the character and the competence of the trustee [11, 34]. The ability dimension of trustworthiness identifies the competence, expertise, and capability, which enable the leader to fulfill certain tasks [39, 40]. The ability of a leader, however, does not say anything about his or her predictability in other aspects of his or her interactions with team members, such as their personal commitment to keeping promises or their benevolent intentions. Despite professional reliability and discretion, competent leaders may engage in unforeseeable acts, be dishonest, or disloyal. The integrity dimension of trustworthiness stems from perceptions that the leader or the leadership adheres to a set of principles that the team members find acceptable [40] and is seen as fair and consistent [11]. The benevolence dimension of trustworthiness refers to signals of cooperation, reciprocity, and loyalty [20, 39, 40]. Benevolence is also conveyed when the leader is able to correctly and fully anticipate the team members’ needs, and is willing to accommodate them [54].

In this study we focus on perceived leadership trustworthiness for the following reasons: First, a recent meta-analysis by Colquitt et al. [14] showed on the one hand that all three dimensions of trustworthiness have a unique, significant relationship with trust and on the other hand that ability, benevolence, integrity had significant, unique relationships with behavioral outcomes even when trust was considered simultaneously. Second, trust may be influenced by factors beyond the leader, as in models of institutional trust [51] whereas this study is focused on how interactions between team members and the team leadership affect perceptions of the leader. Third, Branzei et al. [7] argue that trustworthiness is especially suitable for capturing trust in emergent relationships, where initial trusting beliefs are important and immediate causes of early trusting intentions [42].

A significant and open question concerns the factors that contribute to perceptions and attributions of trustworthiness of leaders of virtual teams [12]. This study focuses on the trustworthiness of the virtual leadership as the foundation of trust, since despite the noted importance of trust in the leader there is a paucity of virtual team leadership research [68].

### 2.2. Culture and trust

National culture impacts the trust-building process because this process strongly depends upon the societal norms and values that guide people’s behavior and beliefs [20]. In this study the culture of the participants is defined by their nationality. Theories of why people from one country are more trusting than those from another country come from many sources across a wide range of academic disciplines. These studies present numerous explanations for differing levels of trust across countries, including type of culture or religion, ease of two-way communication within the country, presence of monitoring or sanctioning mechanisms and degree and type of associativeness [10]. Implications of these theories are far from conclusive because they provide multiple contradictory predictions regarding which country is the most trusting and trustworthy [9]. Considering the virtual context of this study there is also evidence that in mediated communication traditional theories might be shifted due to greater reliance on face-to-face communication of some countries compared to others [30, 58, 69]. In accordance with Buchan et al. [10] and due to the inconsistent theories of national differences in trust and the virtual context of our study, we hypothesize the following:

\[ H1: \text{Perceived trustworthiness of the leadership of virtual teams will vary across the two countries studied.} \]

### 2.3. Communication and trust

One important factor of influence on trust is communication. Frequent communication increases the amount of information that is available to estimate the other’s abilities, intentions, and behaviors within a relationship. It also gives people the opportunity to develop a shared vision and language and by this way to increase trust in the other’s competence. Existing research supports the link between communication frequency and trust [41, 3, 27, 30]. In addition to frequency of communication, open communication, in which managers exchange thoughts and ideas freely with employees in a two-way communication, is shown to enhance perceptions of trust toward the leader [62]. Hereby, the range of topics (breadth) and the revealing of personal information (depth), which are dimensions of self-disclosure, reduce uncertainty and are crucial to social bonding, which leads to trust [66]. According to interpersonal theories, self-disclosure is a type of communication through which individuals make themselves known to other people, break through the outgroup barrier and personalize
themselves [63]. Intimacy and relational development are fostered by reciprocately sharing information [56]. Therefore, self-disclosure and responding to self-disclosures lead to relationships and trust simultaneously [59]. So the more open the team communicates with its leadership and therefore establishes closer relationships, the more team members should trust in the team leadership. In computer-mediated communication self-disclosure is said to be even higher than in face-to-face encounters since little or no risk in revealing information is perceived due to a lack of physical presence [66]. Therefore, we hypothesize the following:

H2a: The range of topics (breadth) discussed with the leadership of virtual teams is positively related to the perceived trustworthiness of the leadership.

H2b: The amount of personal information (depth) revealed to the leadership of virtual teams is positively related to the perceived trustworthiness of the leadership.

Culture may indirectly encourage trusting behavior through the structuring of general patterns of communication [62]. Research has indicated that a greater depth of self-disclosure is associated with non-Western origins. In contrast, greater amounts of self-disclosure, breadth, are identified with Americans [61]. Accounting for national culture, we hypothesize:

H3a: Culture moderates the relationship between the range of topics (breadth) discussed and leadership trustworthiness such that Americans perceive the leadership as more trustworthy if discussing a wide range of topics with their leadership than Chinese.

H3b: Culture moderates the relationship between the amount of personal information (depth) revealed and leadership trustworthiness such that Chinese perceive the leadership as more trustworthy if revealing personal information to their leadership than Americans.

In addition to the effect of self-disclosure on trust, we investigated the effect of the communication media used. When it comes to the influence of the communication media there are various theories that are used to explain the effects of the different kind of media used. Theories like the reduces social cues approach [35], the theory of the social presence [55], the media-richness theory [15] or the media-synchronicity theory [18] refer to computer-mediated communication as inferior to face-to-face communication. These theories categorize media that offer multiple channels such as visual or vocal cues and high immediateness of feedback as richer than media that does not. The supposed relationship, richer, synchronous media promotes higher social presence and thus leads to more positive outcome than less rich media, has been shown various times [36, 32, 8, 6, 53]. Nevertheless, some studies found less rich media as more effective [52]. Even if empirical studies on the influence of communication media on trust, cooperation and performance are not consistent, there is an overall agreement that computer-mediated communication is superior to no communication situations. Distinguishing between synchronous and asynchronous communication media, we hypothesize the following:

H4a: Use of synchronous communication media for communicating with the leadership of virtual teams is positively related to the perceived trustworthiness of the leadership.

H4b: Use of asynchronous communication media for communicating with the leadership of virtual teams is positively related to the perceived trustworthiness of the leadership.

Culture is a boundary condition for all interpersonal communication [57]. It affects the way individuals communicate because individuals generally behave according to culturally incorporated norms, rules, and values. Chinese participants may prefer technologies that are richer and allow for more real-time interaction (i.e., synchronous technologies) since they rely more on face-to-face communication than American participants to accomplish team tasks [28, 38]. Conversely, Americans may be comfortable with the division of labor and the parallel conduct of work [38]. Therefore we hypothesize:

H5a: Culture moderates the relationship between the use of synchronous communication media and leadership trustworthiness such that Chinese perceive the leadership as more trustworthy if using richer and real-time communication media in communicating with their leadership than Americans.

H5b: Culture moderates the relationship between the use of asynchronous communication media and leadership trustworthiness such that Americans perceive the leadership as more trustworthy if using delayed communication media in communicating with their leadership than Chinese.

3. Method

3.1. The Online Game Context

The study of virtual teams poses significant challenges. On one hand, field studies of virtual teams are typically small in scale and often lack quantitative or objective data [e.g., 33]. On the other hand, laboratory studies, while allowing for large scale rigorous quantitative data collecting, involve relatively short-lived simulations in which the participants have
little psychological investment [e.g., 22]. In this study, an alternative setting of a Massively Multiplayer Online Game (MMOG) in which people interact in a realistic manner over an extended period of time in a virtual world is employed. Although laboratory simulations allow for similar sorts of data collection, this context has several advantages over such an approach. These games tend to be highly engaging and psychologically meaningful to participants [64, 65]. Often the relationship between players is compared to the relationship between co-workers in their real job [64]; the work that is being performed in video games is increasingly similar to the work performed in business corporations [65]. Recent studies indicate that MMOGs could function as leadership’s online labs providing a glimpse what team leadership might look like in the future [50]. Moreover, MMOGs allow researchers to create data sets with large sample sizes, multisource quantitative data, and good unobtrusive measurements.

In this study, we use a popular browser-based MMOG. The game itself is a real-time strategy game (RTS). Players start out as chieftains of their own villages and seek to gain natural resources, build armies and expand their realms. The game is timed to last approximately one year, at which one entity being deemed the winner based on the fastest completion of a certain building called “wonder of the world”. Playing with up to 20,000 users on one server with scarce resources and only one player or team being able to win, players soon find themselves in a social dilemma [17]. They have to cooperate with other players to protect their territory and resources and to successfully expand their reach. In the race to dominate, players form teams of up to 60 members under a leading chieftain or chieftains. However, teams are not randomly formed but mutually selected. Players can either found their own team, apply for a membership in an existing team or are recruited by an existing team, a process quite similar to the team selection processes within regular companies. Hereby, team leaders emerge either because they are the founders of the team or because the team members elect them. Recruiting, assessing, motivating, rewarding, retaining talented team members, and analyzing often incomplete data in order to make immediate decisions that have wide-ranging effects are only few of the tasks performed by the team leadership [50]. Teamwork, diplomacy and negotiation skills play a crucial role in this context leading to complex team structures and interactions between teams.

3.2. Sample and Procedure

The sample comprised 2245 participants in 319 teams. An approach was used that analyzes data obtained from two sources: archival data from the log files taken directly from the online game servers and a questionnaire administered to subscribed players in virtual teams.

Several sampling criteria were employed. First, this study focused on two game servers that were running for a sufficient amount of time, namely 279 days for the US server and 251 days for the Chinese server, allowing for teams to establish. Second, this study restricted the sample to players who were part of a team, rather than playing alone. Third, the focus was on players who were part of a team with at least 3 team members and a team leader because teams with less than three members were not viable, since the team leader does not play a prominent role in these teams. Fourth, we focused on team members without any leadership responsibilities within the team. Using these criteria, 397 teams with 6781 members were identified in the US and 318 teams with 7900 members were identified in China.

As noted earlier, this study believes that online gaming provides an excellent context in which to study virtual teams because research suggests [65] that individuals become highly engaged and psychologically invested in online games. To ensure that players were tapped who displayed a reasonable level of engagement in the task a link was posted to the survey on the log-in page of the game for a relatively brief period of time – three days in Mai 2008. In this way, casual players who do not log onto the game regularly were less likely to be part of the sample. 3761 players started the survey in the US and 2874 players in China. Therefore, the initial US response rate was 56% and the initial Chinese response rate was 34%. However, the response rate can be assumed to be higher since not all 14681 players logged in during the survey window. From this sample only the fully completed surveys from teams were kept where at least...
three team members had responded. This reduced the number of observations to 1347 participants allocated in 165 teams in the US and 898 participants allocated in 154 teams in China.

To verify that the sample contained the better performing and therefore more engaged players and teams, the non-responding 232 US teams as well as the non-responding 164 Chinese teams were compared to the sample of this study using performance data and team size data from the log-files. As anticipated, the teams in the sample were significantly better performing, \((m_{sample, US} = 66903, SD_{US} = 136946; m_{non-respondents, US} = 1980, SD_{US} = 2672; t_{US} = 6; m_{sample, CN} = 135142, SD_{CN} = 90535; m_{non-respondents, CN} = 39588, SD_{CN} = 45287; t_{CN} = 12)\) and larger \((m_{sample, US} = 30, SD_{US} = 14; m_{non-respondents, US} = 8, SD_{US} = 5; t_{US} = 19; m_{sample, CN} = 39, SD_{CN} = 14; m_{non-respondents, CN} = 12, SD_{CN} = 8; t_{CN} = 21)\) than the non-respondents. These findings suggest that the sample excluded the less engaged, causal players, who end up in smaller, poorer performing teams.

The average age of the players was 28 years, ranging from 12 years to 70 years in the US and 26 years, ranging from 11 years to 60 years in China; 26% of the sample was female in the US and 11% in China. The average team size was 30 players ranging from 6 to 60 players in the US and 39 players ranging from 6 to 60 players in China. The average number of respondents per team was 8, ranging from 3 to 23 in the US and 6, ranging from 3 to 13 in China.

**Equivalence.** In cross-national research, it is important to establish that the constructs, samples, and measures used are equivalent prior to testing comparative hypotheses [4]. We used the approach discussed by Bensaou et al. [5], to ensure all three types of equivalence: construct equivalence, sampling equivalence, and measure equivalence. All measures used were translated from English into Chinese and back-translated from Chinese into English by Chinese native speakers with strong English skills. A third Chinese native speaker compared both versions and made final adjustments.

### 3.3. Measures

**Dependent Variable.** Ratings of the three dimensions of leader trustworthiness, ability (six items), integrity (six items) and benevolence (five items) were obtained from team members. For the present study, the items were derived from Mayer and Davis [39] and altered slightly to reflect the virtual context. Each dimension had acceptable reliabilities with Cronbach’s \(\alpha = .95, .87, \text{ and } .89\) respectively.

**Independent Variables.** Data on culture, communication breadth and depth as well as the use of communication medium were obtained from the team members’ survey. **Culture** was measured by asking each team member which nationality he or she belongs to. Players had the possibility to choose either the US (US=1) or “other” in the US version and China (China=2) or “other” in the Chinese version. **Communication breadth and depth** was measured by using five items for depth and three items for breadth derived from Parks and Floyd [47] and adapted to the online game context. Both measures showed acceptable reliabilities with Cronbach’s \(\alpha = .68\) and .70. **Synchronous communication** was measured asking each member to what extent he or she is using the in-game chat program to communicate with the alliance leadership. **Asynchronous communication** was measured asking each member to what extent he or she is using email, the forum, and the in-game messaging program to communicate with the alliance leadership.

**Control Variables.** On a team level, this study controlled for **team size** (i.e., the number of players in the team), which was obtained directly from the game archives and **team performance**, which was measured by the in-game scoring system. On the individual level we controlled for age, gender, experience with the game, team members’ propensity to trust, and tenure in the team, which were all obtained from the team member survey. **Age** was measured in years and **Gender** was measured with two categories (male=1, female=2). **Experience** with the game and team member **tenure** were measured in months. **Propensity to trust** of the team members was measured in eight items [39]. Cronbach’s \(\alpha\) was .68.

### 3.4. Analyses

Because data were nested, i.e. team members interacted with the same leadership and therefore individuals were nested within teams, there was the potential for dependence in the data. The hypotheses involve predictors measured at two levels of analysis, the team (i.e., culture) and the individual level (i.e., team member’s communication content and medium). We ran a set of null models with no predictors for each dimension of trustworthiness. Resulting ICC(1) values reflecting the percentage of variance residing between groups indicated the multi-level nature of the data. Therefore, a hierarchical linear modelling (HLM) analysis was appropriate. Using a two-level approach, this statistical technique provides for an examination of relationships across multiple levels of analysis by taking this nonindependence inherent within nested data into account, incorporating simultaneously partitioning and modelling within-group and between-group variance [49]. All predictors were standardized prior to hypotheses testing [13].
Table 1. Means, standard deviations, and correlations for individual level variables

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<tr>
<th>Variable</th>
<th>Mean</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>1. Age</td>
<td>27.32</td>
<td>8.76</td>
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<tr>
<td>2. Gender</td>
<td>1.20</td>
<td>0.40</td>
<td>0.01</td>
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<tr>
<td>3. Experience</td>
<td>6.48</td>
<td>4.83</td>
<td>0.02</td>
<td>-0.13*</td>
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<td>4. PT</td>
<td>2.84</td>
<td>0.52</td>
<td>-0.06*</td>
<td>-0.15*</td>
<td>0.13*</td>
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<tr>
<td>5. Tenure</td>
<td>3.80</td>
<td>2.83</td>
<td>0.04</td>
<td>-0.17*</td>
<td>-0.63*</td>
<td>0.20*</td>
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<td>6. CB</td>
<td>4.13</td>
<td>1.14</td>
<td>-0.03*</td>
<td>0.02</td>
<td>0.05*</td>
<td>0.13*</td>
<td>0.09*</td>
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<td>7. CD</td>
<td>3.87</td>
<td>1.09</td>
<td>0.02</td>
<td>0.01</td>
<td>0.10*</td>
<td>0.31*</td>
<td>0.15*</td>
<td>0.53*</td>
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<td>8. SC</td>
<td>4.16</td>
<td>3.23</td>
<td>-0.07*</td>
<td>-0.10*</td>
<td>0.20*</td>
<td>0.32*</td>
<td>0.30*</td>
<td>0.30*</td>
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<td>9. AC</td>
<td>5.18</td>
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<td>-0.01</td>
<td>0.11*</td>
<td>0.11*</td>
<td>0.33*</td>
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<tr>
<td>10. Ability</td>
<td>3.75</td>
<td>0.82</td>
<td>0.00*</td>
<td>0.05*</td>
<td>0.10*</td>
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<td>11. Integrity</td>
<td>3.75</td>
<td>0.72</td>
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<td>0.09*</td>
<td>0.05*</td>
<td>0.02</td>
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<td>0.30*</td>
<td>0.36*</td>
<td>0.73*</td>
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<tr>
<td>12. Benevolence</td>
<td>3.53</td>
<td>0.75</td>
<td>0.03</td>
<td>0.09*</td>
<td>0.00</td>
<td>0.09*</td>
<td>0.00</td>
<td>0.41*</td>
<td>0.41*</td>
<td>0.17*</td>
<td>0.39*</td>
<td>0.65*</td>
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* p < 0.05

4. Results

Table 1 presents descriptive statistics and bivariate correlations for all individual level variables. Correlations at the individual level should be interpreted carefully because they do not take into account non-independence within the data.

Null models were run for the all three individual level dependent variables. Resulting ICC(1) values and associated chi-square tests revealed that 15 (ability; \( \chi^2 = 188, p < 0.001 \)), 12 (integrity; \( \chi^2 = 109, p < 0.001 \)), and 9 (benevolence; \( \chi^2 = 58, p < 0.001 \)) percent of the variance in perceived leadership trustworthiness resided between groups.

Table 2 shows the results of HLM analyses. Hypothesis 1 stated that trustworthiness of the leadership of virtual teams would vary across the two countries studied. This hypothesis was supported for all three dimensions of trustworthiness (ability: \( \gamma = 0.10, t = 3.81, p < 0.001 \)); integrity (\( \gamma = 0.11, t = 11.74, p < 0.001 \)); and benevolence (\( \gamma = 0.12, t = 7.26, p < 0.001 \)). Hypothesis 2a and 2b, regarding the relationship between communication breadth and perceptions of trustworthiness, was fully supported. Specifically, communication breadth was positively related to leader ability (\( \gamma = 0.13, t = 7.05, p < 0.001 \)), integrity (\( \gamma = 0.15, t = 9.54, p < 0.001 \)); and benevolence (\( \gamma = 0.13, t = 7.88, p < 0.001 \)). Communication depth was also positively related to leader ability (\( \gamma = 0.01, t = 3.79, p < 0.001 \)), integrity (\( \gamma = 0.15, t = 9.54, p < 0.001 \)) and benevolence (\( \gamma = 0.20, t = 11.79, p < 0.001 \)). Hypothesis 3a predicted that culture would moderate the relationship between communication breadth and perceptions of trustworthiness. As indicated in the columns marked Model 2, this hypothesis was supported for one of the three dimensions of trustworthiness, namely, ability (\( \gamma = -0.04, t = -2.26, p < 0.05 \)). Hypothesis 3b predicted culture would moderate the relationship between communication depth and perceptions of trustworthiness. This hypothesis was supported for all three dimensions of trustworthiness, that is, ability (\( \gamma = 0.06, t = 2.88, p < 0.001 \)), integrity (\( \gamma = 0.06, t = 3.29, p < 0.001 \)) and benevolence (\( \gamma = 0.07, t = 3.81, p < 0.001 \)). Hypothesis 4a and 4b stated that an increasing use of synchronous (SC) and asynchronous communication (AC) media has a positive effect on perceptions of leader trustworthiness. The results confirm hypothesis 4a only on the dimensions ability (\( \gamma = 0.05, t = 2.43, p < 0.01 \)) and benevolence (\( \gamma = 0.04, t = 2.18, p < 0.05 \)). Hypothesis 4b could be confirmed on all dimensions, to be precise, ability (\( \gamma = 0.12, t = 7.39, p < 0.001 \)), integrity (\( \gamma = 0.11, t = 7.32, p < 0.001 \)) and benevolence (\( \gamma = 0.12, t = 7.92, p < 0.001 \)). Hypothesis 5a predicted culture would moderate the relationship between synchronous communication and perceptions of trustworthiness. This hypothesis was supported for all of the dimensions of trustworthiness, namely, ability (\( \gamma = 0.12, t = 6.33, p < 0.001 \)), integrity (\( \gamma = 0.13, t = 7.82, p < 0.001 \)) and benevolence (\( \gamma = 0.10, t = 5.96, p < 0.001 \)). Hypothesis 5b predicted culture would moderate the relationship between asynchronous communication and perceptions of trustworthiness. This hypothesis was also supported for all three dimensions of trustworthiness, that is, ability (\( \gamma = -0.06, t = -3.33, p < 0.001 \)), integrity (\( \gamma = -0.09, t = 5.93, p < 0.001 \)) and benevolence (\( \gamma = -0.04, t = -2.76, p < 0.01 \)).
### Table 2. HLM results for dimensions of leader trustworthiness

<table>
<thead>
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<th></th>
<th>Ability</th>
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<th>Integrity</th>
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<th>Benevolence</th>
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<tbody>
<tr>
<td></td>
<td>Model 1</td>
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<td>Model 1</td>
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<td>L2 Team size</td>
<td>0.05</td>
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R²a

| Variance BG       | 0.02    | 0.02        | 0.01      | 0.01        | 0.01       | 0.01        |
|                  | 0.45    | 0.46        | 0.35      | 0.37        | 0.37       | 0.38        |

Note. Unstandardized parameter estimates are reported in the body of the table, with standard errors reported in parentheses. a. To provides an effect size comparable with moderator research [26], R²’s are estimated from ordinary least squares (OLS) regression that include a manager fixed effect.

* p < 0.05, ** p < 0.01, *** p < 0.001

5. Discussion

This study sheds light on the influence of computer-mediated communication on team leader trustworthiness in global team environments by exploring the influence of culture, self-disclosure as well as communication media on perceptions of trustworthiness of the leadership of a virtual team.

We found that culture had a significant influence on all three dimensions of trustworthiness. Players from the US had higher levels of trust toward their leader than players from China. Further, we found that both breadth and depth of the virtual communication had significant positive influence on all three dimensions of trustworthiness. This means the more team members feel able and free to discuss a wide range of topics (breadth) with their leadership and/or feel able to reveal personal information (depth), the more the trust toward the leadership increases as relationships develop. Our findings indicate that the relationship between breadth and perceptions of trustworthiness is moderated on one dimension (ability) by culture. On the other hand the relationship between the depth of communication and trust was moderated on all three dimensions by culture. These results show that for Americans a wider range of topics results in higher perceptions of trustworthiness on the dimension of ability than for Chinese. In accordance with that, findings indicate that for people from China the intimate and private content resulting from higher depth of communication played a significant higher role for all three dimensions of trustworthiness than for Americans. As predicted, this study shows that higher frequency of computer-mediated communication had a significant influence on perceptions of trustworthiness. While the use of synchronous media had a strong influence on perceptions of leader’s ability and benevolence, no effect on integrity could be shown. The use of asynchronous media had positive influence on all dimensions of trustworthiness. Our findings indicate that the relationships between synchronous media use and perceptions of trustworthiness as well as asynchronous media use and perceptions of trustworthiness are moderated on all dimensions by culture. These results show that for Chinese
participants the use of synchronous communication media leads to much higher levels of perceptions of trustworthiness than for American participants whereas the use of asynchronous media leads to much higher levels of perceptions of trustworthiness for American participants than for Chinese participants.

As we noted in the beginning of the paper, many organizations today utilize virtual teams that carry strategically important tasks. Therefore, managers and organizations need to recognize the strategic importance of managing trust toward the leader of such a virtual team that is technology-enabled. When dealing with global teams of mixed cultures, the leaders have to be aware of the differences of relationships between self-disclosure, communication media use and perceptions of trustworthiness. Regarding the establishment of trust in the leader of a virtual team, members from China rely more on intimate, private conversations and the use of synchronous media, while members from the US prefer a wider range of topics that is not as intimate and communicated rather via asynchronous media. In order to establish and maintain trust toward the leader or the leadership team, the individual culture should be accounted for and communication content and media should be selected to fit most needs.

Inevitably, this study has some limitations that have to be taken into account in order to adequately interpret the results and judge their generalizability. First, the study was conducted using self-allocated teams from a MMOG. Unlike many real virtual teams, participants in this study did not work for the same organization and the leader had no formal authority. However, recent developments show that in successful companies important decision making is distributed throughout the organization to enable people to respond rapidly to change. Hereby, teams are often partly composed of people from outside the institution [50]. Therefore, the findings may particularly be generalizable to these kinds of virtual teams that form, function, and disband fairly quickly and depend highly on coordinated action. Second, we employed self-reported measures for several key variables. In some cases (e.g. synchronous media usage), other sources of data were not available, but there was little reason to expect distortion in self-reporting. In some cases (e.g. dimensions of trustworthiness) the constructs are intrinsically subjective and perceptual; this condition necessitated the use of self-report [60]. Third, the choice of synchronous communication media in our study was limited to text chat. This was due to the fact that text chat was the only synchronous communication medium, which was already integrated in the game and therefore all participants had the opportunity to use it. All other media such as voice chat would have required participants to install additional software. Nevertheless offering richer media such as audio or video chat, which are closer to face-to-face communication, could mitigate the relatively lower levels of trust in China.

Future research may build upon the results of this study in a number of ways. Extending this study and also include mixed teams with members from different cultural backgrounds could further deepen the understanding of the antecedents of trustworthiness and the cultural influence. Moreover, the role of communication in building trustworthiness could be investigated to a larger extend if integrating richer media would be possible (audio or video chat). Additionally, MMOGs as a research platform should be explored further to strengthen the generalizability of the results. In conclusion, the results of this study provide answers to the questions about the perceptions of trustworthiness in virtual teams toward the leader.

On the whole, this study contributes to the knowledge on the dynamics of trust building in a cooperative, ICT enabled relationship.

6. References


[53] Sheffield, J., “The effect of bargaining orientation and communication medium on negotiations in the bilateral monopoly task: a comparison of decision room and computer conferencing communication media”, CHI’89 Proceedings, ACM.


