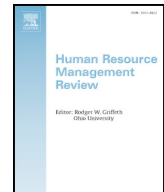




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The world is not flat: Examining the interactive multidimensionality of culture and virtuality in teams

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ABSTRACT

As organizations continue to spread their influence into foreign countries and take on increasingly complex tasks, the need for an accurate understanding as to how global, virtual teams function becomes more integral. At this time, although there are many organizations utilizing global, virtual teams, there is a dearth of literature that examines the impact of cultural differences within these teams. This paper aims to bridge this gap by offering an integrative interdisciplinary theoretical review, merging a lens of relevant cultural values, including Hofstede's five dimensions and extending to other conceptualizations such as the Triandis (1995) typology, with the Kirkman and Mathieu (2005) conceptualization of virtuality. Ultimately, theoretical propositions are provided for future examination of each cultural dimension. Finally, implications and future research are discussed in the hopes of providing invaluable insight as to the currently under-researched 'global' aspect of global, virtual teams.

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As tasks become increasingly complex and organizations spread their operations to a plethora of different countries, it is necessary for workers to find an effective method of coordinating and interacting across time and space with others from around their parent nation, or even the world (Taras, Kirkman, & Steel, 2010). Indeed, research has pointed to the fact that multicultural teams are becoming increasingly prevalent within organizations, thus emphasizing the importance of taking cultural issues such as differences in norms and traits into consideration when attempting to understand the modern workplace (Burke, Shuffler, Salas, & Gelfand, 2010).

Further, as research has progressed over time, we have developed an increasingly rich understanding regarding the advantages and challenges of virtual teams. For our purposes, virtual teams are conceptualized as interdependent groups which span physical and organizational boundaries and are dependent upon technology for communication and proper functioning (Hambley, O'Neill, & Kline, 2007). For instance, we know that utilizing electronic media can provide a team with increased flexibility and aid in the development of effective communication techniques (Sole & Edmondson, 2002). However, the lack of face-to-face communication can cause decreases in team cohesion, cooperation, and efficiency (Fjermestad, 2004; Hertel, Geister, & Konradt, 2005). Although we may have a relatively good perspective regarding the role of virtuality, when coupled with the fact that these virtual teams are also likely to be culturally diverse, our current understanding of virtuality in these types of teams may not be enough.

The aforementioned gap in the literature is exemplified in the dearth of articles examining both virtuality and culture. Indeed, a recent review by Gibson, Huang, Kirkman, and Shapiro (2014) found that, from the year 2000 to 2013, only eighteen articles empirically analyzed culture in virtual teams. Yet, a recent survey by SHRM showed that 49% of organizations employing virtual

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teams use them as a collaborative tool to bring together employees in different geographic locations (SHRM, 2012). Without taking cultural factors into consideration, a number of different problems can emerge such as increased conflict, lower levels of cohesion, decreases in trust, or the creation of demographic faultlines which, in turn, can affect team performance and effectiveness (Edwards & Sridhar, 2005; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Staples & Zhao, 2006). Furthermore, although there are numerous different conceptualizations of culture (e.g. Schwartz, 1994; Triandis, 1995; Trompenaars & Hampden-Turner, 1998), a majority of researchers focus on Hofstede's (1984) cultural dimensions and simply use country of origin as a proxy for the individual differences within a team (Gibson et al., 2014). This can serve to limit our understanding of culture's impact in virtual teams and fails to take into consideration such cultural differences as how individuals from different countries interpret contextual cues in their environment.

Therefore, the aim of the current paper is to bridge this gap between research and practice by offering an integrative, interdisciplinary theoretical review which maps relevant cultural values onto virtuality dimensions. Ultimately, this paper will disentangle our present knowledge surrounding global, virtual teams and provide propositions for future research. Furthermore, to answer the call of multiple researchers (Gibson et al., 2014; Leung, Bhagat, Buchan, Erez, & Gibson, 2011; Taras et al., 2010), while we will incorporate an examination of the traditional Hofstede (1984) dimensions of culture, we will move beyond these to examine other cultural dimensions that directly relate to how an individual reacts to his or her environment, such as high and low-context cultures and levels of tightness and looseness. Not only do cultural dimensions such as these have blatant implications for virtual teams, but their inclusion broadens our understanding of how culture and virtuality interacts in teams. In the sections that follow we first offer a detailed understanding as to the Kirkman and Mathieu (2005) three-dimensional conceptualization of virtuality. Utilizing this as a guiding framework, we examine how Hofstede's cultural dimensions, Triandis' cultural typology, Trompenaars' model of national cultural differences, high- and low-context cultures, and tight versus loose cultures can each result in different reactions to the role of virtuality in teams. Associated propositions regarding future areas for research exploration are presented with the discussion of each cultural value perspective. Finally, we conclude with suggestions regarding a future research agenda aimed at more broadly advancing our knowledge of global virtual teams, in order to better facilitate their practice in organizations around the world.

1. Defining virtuality in teams

Amid the increasing examination of virtual tool use in organizational, team settings, there have been a number of different conceptualizations of what is meant by 'virtuality.' Ranging from frequency of virtual interaction (e.g. Lu, Watson-Manheim, Chudoba, & Wynn, 2006) to how distributed the team actually is (e.g. Cohen & Gibson, 2003), researchers have adopted multiple, unique methods for examining this construct. Most of these frameworks are multidimensional and address physical and temporal dispersion to some degree (e.g. O'Leary & Cummings, 2007). Moreover, it is understood that distributed teams rely upon virtual tools, defined as the modes of communication used by teammates to interact virtually, to perform the functions essential to a standard team (Hertel, Konradt, & Orlikowski, 2004). The focus of the following review will examine how diverse cultural beliefs can lead to differential interactions with virtual tools across cultures. Therefore, similar to the aforementioned distribution framework, we conceptualize the measurement of virtuality is a multifaceted process requiring a focus on more than one dimension to fully understand how virtual a tool is (Martins, Gilson, & Maynard, 2004). For these reasons, we utilize the Kirkman and Mathieu (2005) framework throughout.

Kirkman and Mathieu (2005) delineated three dimensions that together comprise team virtuality: the extent of reliance on virtual tools, informational value, and synchronicity offered by such tools. The first dimension, extent of reliance on virtual tools, describes the proportion of team interaction that occurs via virtual means. On one end of this continuum, teams are completely face-to-face in terms of interacting and use no virtual tools whatsoever. On the other end are teams that interact solely through virtual means. Teams can fall anywhere along this continuum, for example, having a face-to-face kickoff meeting but interacting for a majority of the time using virtual tools such as teleconferencing and email, or vice versa. Informational value is the extent to which virtual tools transmit data that is valuable for team effectiveness. Kirkman and Mathieu (2005) argue that, when technologies convey rich, valuable information, exchanges are less virtual than those which provide less rich information. For example, videoconferencing serves to offer greater informational value than email, as such media provides not only dialogue but also the verbal and non-verbal social cues that may help to facilitate team interactions. Finally, synchronicity is the extent to which team interactions occur in real time or incur a time lag. For example, email is much more asynchronous than phone conversations or video conferences where team members can interact synchronously in real time. Ultimately, these three dimensions combine to determine a team's overall level of virtuality.

In this sense, a highly virtual tool can be thought of as one which has little informational value and low synchronicity. Indeed, common virtual tools that are considered to be highly virtual include email, message boards, and instant messaging (Kirkman, Cordero, Mathieu, Rosen, & Kukenberger, 2013). Conversely, tools that fall on the other end of these spectra include video-conferencing and tele-conferencing. This is due to the fact that, unlike their highly virtual counterparts, tools exhibiting low virtuality permit more detailed forms of communication such as the ability to non-verbally communicate. Specifically, tools that are low in virtuality are said to be richer media because they often include the social cues and real-time communication that one would experience in a face to face situation (Daft & Lengel, 1986). Although this explanation seems to leave out a discussion of reliance on the virtual tool, it is important to consider the fact that most virtual teams are hybrid, in that they may leverage a range of different media to some degree during their lifespan. The degree to which these meetings happen via richer media (i.e., face to face, videoconferencing) has been found to be important for such team processes as knowledge sharing

(Gajendran & Harrison, 2007). Therefore taken together, all three dimensions serve to determine the degree to which teams can be defined as virtual.

2. Conceptualizing culture

As teams become increasingly connected around the globe via virtual tools, culture inevitability becomes a key consideration. There are many different ways in which to define culture, and at multiple levels. Over the past five decades, our understanding of what is meant by 'culture' has shifted from a qualitative understanding of different value orientations held by those from different nations (e.g. Kluckhohn & Strodtbeck, 1961) to a complex network of dimensions that attempt to map out and quantify differences in values, norms, and beliefs across nations (e.g. Hofstede, 1984). Indeed, the interweaving of different values, beliefs, and norms has become an inarguably critical key to the definition of culture. Thus, for the purposes of the present paper we refer to culture as "shared motives, values, beliefs, identities and interpretations or meanings of significant events that result from common experiences of members of collectives" (House, Javidan, Hanges, & Dorfman, 2002, p. 15).

While the numerous perspectives and dimensions of culture can be important for understanding this "mosaic" approach to culture (Chao & Moon, 2005), such a large number of dimensions have been developed across disciplines and samples that it has led some researchers to describe the state of science as highly developed but incongruous (Maleki & de Jong, 2014). We aim to tease apart some of these inconsistencies by examining those cultural dimensions and frameworks that are best supported by empirical research in terms of having an impact on global, virtual teams. As such, it is not our intention to say that any one of the proposed dimensions or frameworks of culture is more important than another, or to say that they are completely unique from one another. Rather, we stress that when contemplating the interaction of culture and virtuality in teams, it is important to consider the impact of multiple dimensions because while there might be some theoretical overlap amongst them, each of the proposed dimensions can result in varying outcomes for global, virtual teams. Therefore, our review focuses upon not a single perspective of culture, but instead examines eleven unique cultural dimensions from three different frameworks in the extant literature on culture, as well as two novel dimensions that are not housed within traditional frameworks.

Our first set of studied dimensions is housed within the Hofstede (1984) cultural framework. Perhaps the best known of all frameworks of culture, this conceptualization emerged from a series of studies with IBM in the late 1960s through the early 1970s. Data collected from over 110,000 surveys of 88,000 IBM employees from 72 countries or regions resulted in the identification of four initial cultural dimensions: individualism–collectivism, power distance, masculinity–femininity, and uncertainty avoidance. Hofstede and Bond (1988) later added a fifth dimension of Confucian dynamism, or long versus short-term orientation. This cultural framework has resulted in a proliferation of research conducted since the initial studies to validate and assess each dimension, with thousands of empirical studies and several recent reviews (see Gelfand, Erez, & Aycan, 2007; Kirkman, Lowe, & Gibson, 2006; Taras et al., 2010 for more in-depth reviews).

Building upon this framework meant to tap into national culture, the Triandis (1995) typology was designed with an organizational lens towards understanding culture. By examining the interactions of individualism–collectivism and power distance, the Triandis framework suggests that the way information is shared and acquired within organizations differs based on the levels of each dimension (Bhagat, Kedia, Harveston, & Triandis, 2002). Although Hofstede's cultural values have been the most prominent in the study of virtual teams and culture, the Triandis approach can provide further insight when relating culture to virtuality in the workplace. Namely, instead of solely relying on the connection with group members versus being an autonomous individual, Triandis proposes the addition of horizontal and vertical to form a novel cultural framework of four cultural conceptualizations: horizontal individualism (HI), vertical individualism (VI), horizontal collectivism (HC), and vertical collectivism (VC). Due to its inherent multidimensionality, this framework can provide information above and beyond the consideration of individualism–collectivism and power distance separately.

In an attempt to further refine cultural dimensions such that they can be extrapolated to an organizational context (MacGregor, Hsieh, & Kruchten, 2005), Trompenaars and Hampden-Turner (1998) created a framework grounded in data obtained from over 15,000 managers across 28 different countries. Ultimately, five different bipolar dimensions of culture were suggested: universalism vs. particularism, individualism vs. communitarianism, affective vs. neutral, specific vs. diffuse and, achievement vs. ascription. Of these five dimensions, individualism vs. communitarianism and achievement vs. ascription are thought to correspond directly with Hofstede's individualism–collectivism and power distance respectively (Burgmann, Kitchen, & Williams, 2006). Additionally, universalism vs. particularism closely mirrors tight and loose cultures (which will be discussed later) in that it examines how individuals determine the importance of rules and relationships (Straub, Loch, Evaristo, Karahanna, & Strite, 2002). Therefore, for our purposes, our discussion will only include the affective vs. neutral and specific vs. diffuse dimensions from Trompenaars' model. Both of these dimensions offer a novel understanding of how global, virtual teams operate in that they tap into organizational outcomes such as emotional regulation and spillover.

Finally, our last two cultural dimensions of interest are unique in that they can be thought to have direct implications for virtual teams. The first, high- and low-context cultures, by examining the importance of contextual cues, permit a basic understanding as to how each individual would interact with not only the virtual tool being used, but also his or her team members. Thusly, it has recently has been heralded as having the potential to be useful for global, virtual teams (Gibson & Gibbs, 2006; Gibson et al., 2014). The second, tight vs. loose cultures delves into adherence to social norms and the consequences for not following them. More complex problems arise when individuals on teams have varying beliefs about the importance of these norms and, therefore, this dimension has been shown to have a direct impact on the performance of diverse teams.

3. Literature review approach

To best capture our current understanding as to how cultural differences interact with virtuality, we performed a systematic, interdisciplinary review of the literature to determine how different cultural dimensions can impact teams. To ensure the identification of meaningful articles, we searched a number of different databases including Business Source Complete, PsychINFO, and Google Scholar for empirical findings linking target cultural dimensions (e.g. power distance, high-context cultures, etc.) to team outcomes within the past fifteen years. This timespan was chosen to ensure a balance of research across all levels of virtuality seeing as videoconferencing wasn't seen as a useful, viable alternative to face to face meetings until the end of the 20th century (Lowden & Hostetter, 2012). Additionally, there is modern research which purports that cultural beliefs are being affected by globalization within different countries. For instance, since China has opened up their national market and adopted a more Westernized economic system there have been signs that younger workers, more adapted to the modern system, are more aggressive and willing to take risks than their older counterparts (Wei & Lau, 2012). This, in turn, has caused a general shift towards Chinese citizens exhibiting more individualistic traits (Decker, Calo, Yao, & Weer, 2015). Therefore, by incorporating only modern research, we will be gaining an understanding as to the status quo within different cultures.

The results of this search returned fifty empirical studies examining our cultural dimensions of interest. Each of the resulting articles was coded for the cultural dimension of interest, study design, how the dimension was measured, what team-level dependent variables it was related to, and an overview of the findings (full table of results is available upon request). After performing our literature search, we found that the majority of cultural dimensions included in empirical studies in psychology and management literatures either leverage the Hofstede (1984) or Triandis (1995) conceptualizations. On the other hand, the literature surrounding the less common cultural traits of high- and low-context cultures were pulled from a much more diverse pool of journals ranging from communication (e.g. Würtz, 2005) to electrical engineering (e.g. Damian & Zowghi, 2003). Finally, for the more obscure Trompenaars' model of national cultural differences, we found little to no empirical research done in any domain. Given these results, the following sections will provide a critical analysis as to how these empirical findings might interact with the aforementioned virtuality dimensions. However, it is important to note that for some of the dimensions of virtuality, there was not enough research to confidently provide propositions across all dimensions. For example, while there is discussion in literature about how Triandis' (1995) dimensions might affect reliance on a virtual tool, there is minimal discussion of the same dimension of virtuality across a majority of the Hofstede (1984) dimensions. Finally, throughout our discussion we will incorporate propositions to aid in guiding future research of global, virtual teams.

4. Hofstede's cultural dimensions

Hofstede (1980) defined culture as “the collective programming of the mind which distinguishes members of one human group from another” (p. 25). As previously discussed, his cultural values framework is perhaps best known of all of the frameworks of culture, and thus is an important first step in exploring the interactions of culture and virtuality in teams. The studies and theoretical advancements that we next describe are those that have provided a focus specifically upon the role of Hofstede's cultural values in virtual teams.

4.1. Individualism-collectivism

Of all the Hofstede dimensions, individualism-collectivism has been the most studied in relation to culture and virtual teams. Further, as will be discussed in more depth later, there have been several expansions and adaptations of this dimension by other researchers. Individualism-collectivism as conceptualized by Hofstede (1994) comprises a single continuum that examines “the degree to which people in a country prefer to act as individuals rather than members of groups” (p. 6). Individualism characterizes those cultures whereby the focus is upon the individual taking care of him or herself first and foremost, whereas collectivism focuses upon the value of a tight social framework where individuals work together to care for one another as a group. Given this focus on the group level, it is understandable that a significant amount of the global virtual teams' literature has focused upon investigating the role of individualism and collectivism in relation to team processes and performance.

In terms of general adoption and reliance on virtual tools, individualistic cultures are more likely to adopt new technologies, likely due to the idea that such technologies will benefit their own needs (Hofstede, 2001). Indeed, Hardin, Fuller, and Davison (2007) found that individualistic team members working in virtual teams tended to have greater computer and virtual team self-efficacy regarding their own and their teams' abilities to work in virtual environments than did collectivistic team members. However, this may also mean that individualistic team members may select tools for group work based on their own unique needs/preferences as opposed to considering the greater good of the team. From a collectivistic perspective, virtual tools such as videoconferencing that provide a chance for all members to connect may be preferred, given the desire to cooperate in one's group (Dekker, Rutte, & Van den Berg, 2008). Additionally, collectivistic values may encourage such team members to favor tools that allow for synchronicity, to feel more like one is part of the team even when utilizing less rich media (Staples & Zhao, 2006). Collectivistic cultures, such as China, focus on tone of voice, timing, and facial expressions as a means for extracting information during interactions with others, so any type of media that helps to facilitate this, such as those with greater synchronicity, will be preferred by these team members (Hofstede, 2001). Individualistic team members, on the other hand, may have less of a preference regarding synchronicity, as they convey meaning directly from words as opposed to social cues, and therefore may be more concerned about the tools that best facilitate their own needs such as instant messaging. However, collectivistic

team members may be more tolerable of virtual tools that do not exactly match their needs, if they feel such tools overall benefit the greater group (Decker et al., 2015). This may become an issue on diverse teams, whereby collectivistic members may provide less input into the selection of virtual tools for collaboration, leading individualistic members to select the virtual tools of the team that best benefit themselves, potentially to the detriment of the team.

Proposition 1. Teams characterized by individualism are more likely to rely on virtual tools, adopt tools that are high in task-related informational value, and are asynchronous, whereas teams characterized by collectivism are less likely to rely on virtual tools, are more likely to adopt tools that provide high relationship-related informational value and are synchronous in nature.

4.2. Power distance

Power distance is another commonly studied dimension, and captures perceptions of how power should be distributed, particularly in terms of the degree of inequality that exists among members (Hofstede, 1980). More specifically, low power distance cultures have low reliance upon hierarchical power structures, instead favoring equality among members, whereas high power distance cultures expect subordinates to suppress disagreement with superiors and favor hierarchies (Taras et al., 2010). Overall, this is one of the more consistent dimensions of Hofstede's original set of values, as very little variance exists in terms of how it has been defined and measured. There is also a fair amount of theory and research regarding how power distance may play out in virtual environments.

Power distance appears to be associated with preferences for virtual tool use in teams. Dekker et al. (2008) found in their field study of global virtual teams that in low power distance cultures, status differences are minimal and therefore the communication tool may be less important as long as all members have equal access to the same tools. However, in high power distance cultures, tools that allow for the inclusion of all team members (e.g., collaborative decision making platforms) may not be valued or necessary. Furthermore, it can be the case that in high power distance cultures, media that best mimic face-to-face interactions (e.g., videoconferencing) are preferred when interacting with superiors, in order to ensure the appropriate respect is conveyed from subordinates to superiors via social cues (Lee, 2002). Indeed, in his study of the acceptance of technology across cultures, Hofstede (2001) found that countries low in power distance, such as Austria or the UK, were more open to a range of new technologies than higher power distance cultures like Saudi Arabia or Mexico, quite possibly due to the fact that newer technologies have been designed for greater collaboration among individuals. This may mean that certain highly virtual tools which allow for widespread collaboration, such as email, may be deemed acceptable by low power distance team members but unacceptable by high power distance team members, potentially creating conflict regarding how to best communicate.

Accordingly, the importance of informational value in high power distance cultures may focus primarily upon this ability to show respect and reinforce hierarchy, whereas low power distance cultures are likely to be more concerned with leveraging tools that communicate information effectively to everyone on the team (Zhang, Lowry, Zhou, & Fu, 2007). Furthermore, in high power distance cultures, superiors may be the ones determining what virtual tools are to be utilized, thereby controlling the amount and types of information available to other team members and the overall dissemination process (Cho, 2014; Hill, Loch, Straub, & El-Sheshai, 1998). Finally, in terms of synchronicity, high power distance team members appear to favor synchronous communications as they can reinforce structure while also limiting who might be able to be involved in such communications (Lee, 2002). Thus, we offer the following proposition:

Proposition 2. Teams characterized by high power distance will prefer to leverage tools with high informational value and high synchronicity, whereas teams characterized by low power distance will prefer to leverage tools with high informational value and low synchronicity.

4.3. Masculinity-femininity

The dimension of masculinity-femininity places emphasis on distinguishing whether a culture values assertiveness, success, and competition, or quality of life, personal relationships, and care for others (Hofstede, 1980). Masculine cultures are those that are more assertive and competitive, whereas feminine are the opposite, preferring a friendlier and more cooperative environment. Hofstede, Vermunt, Smits, and Noorderhaven (1997) suggest that masculinity-femininity can predict how conflict will be managed, with more masculine cultures accepting open conflict whereas more feminist cultures being more meek and accommodating. Thus, for virtual teams, meetings may end up being a point in which conflict is either advanced or suppressed depending on the cultural composition of the team. Further, Dekker et al. (2008) suggest that the degree of masculinity is associated with greater focus on communicating information regarding the task, particularly in terms of task progress, whereas greater femininity is focused upon relationships, such as extra-role behaviors that support team members.

From the perspective of the dimensions of virtuality, this distinction of masculinity and femininity may affect the types of tools that are valued, particularly in terms of the informational value that they convey. Masculinity has been linked to a preference for one-way communication, likely due to the assertiveness and control that such communication offers (Hofstede, 2001). Thus, when operating in virtual teams, members higher in masculinity may want to utilize communication that is as one-directional (e.g. faxes or emails) and conveys primarily task oriented information (Dekker et al., 2008). Further, masculine cultures such as Japan favor media that is asynchronous, allowing for less input from others and more one-way interactions. On the other hand, team

members from feminine cultures such as Sweden should prefer more synchronous media that provides richer social information, as they appreciate the value of working with others and desire to have more personal interactions (Hofstede et al., 1997). Synchronous communication therefore affords more opportunities to connect and relate with other team members, which would be preferred in such feminine cultures. Drawing upon these preferences for media types based upon masculinity-femininity, we propose:

Proposition 3. Teams characterized by masculinity are more likely to rely on virtual tools, adopt tools that provide low relationship-related informational value, are high in task-related informational value, and are asynchronous, whereas teams characterized by femininity are more likely to rely less on virtual tools, adopt tools that provide high relationship-related informational value and are synchronous in nature.

4.4. Uncertainty avoidance

The original conceptualization put forward by Hofstede (1984) utilizes the dimension of uncertainty avoidance at a national level of analysis. Although there have been a number of researchers who have examined it at an individual level of analysis (e.g. Lim, Leung, Sia, & Lee, 2004; Mukherjee, Hanlon, Kedia, & Srivastava, 2012), it has also been referred to as tolerance for ambiguity when being examined at this level (Banks & Pelsmacker, 2014). Moreover, tolerance for ambiguity is commonly used as a cultural construct and is used as a composition variable within teams (DeRoma, Martin, & Kessler, 2003). Therefore, to better gauge the state of science regarding uncertainty avoidance, tolerance for ambiguity was included in our literature search. As a construct, tolerance for ambiguity typically measures the way an individual perceives and processes information about ambiguous or unfamiliar situations (Furnham & Ribchester, 1995).

In this sense, an individual who is high in tolerance for ambiguity is said to enjoy challenging situations and tasks, prefer novelty, and remain calm in unfamiliar situations (Owen & Sweeney, 2002). Conversely, an individual low in tolerance for ambiguity is more likely to succumb to pressure in challenging situations and desire finding the easiest solution (DeRoma et al., 2003). Similarly, research has found that individuals high on uncertainty avoidance are more likely to psychologically detach from his or her team or organization when placed in a situation where there are an absence of formal cues amongst team members (Ollo-Lopez, Bayo-Moriones, & Larazza-Kitana, 2010). This is likely due to the fact that countries exhibiting high levels of uncertainty avoidance typically rely on indirect communication processes to interact with team members, avoid conflict, and engage in face saving behaviors (Massey, Hung, Montoya-Weiss, & Ramesh, 2001). These findings are further supported by Matveev and Milter (2004) who explain that in Russia, a country with high uncertainty avoidance, a cooperative climate with effective, indirect communication is necessary for cooperation and cohesion within a team. Therefore, if the virtual tool being used is both asynchronous and has low informational value, individuals with high uncertainty avoidance would be extremely uncomfortable due to the ambiguity caused by the decrease in social presence. It is for these reasons that we propose the following:

Proposition 4. Teams characterized by high uncertainty avoidance will prefer utilizing a synchronous virtual tool with high informational value. However, teams characterized by low uncertainty avoidance will have little to no preference.

4.5. Long-term/short-term orientation

The final dimension of cultural values was added by Hofstede and Bond (1988) to capture the focus of individuals upon either the future or the “here and now” and its connection to the past. This dimension is referred to as either Confucian dynamism, in reference to the origination of the dimension from Confucian beliefs, or more commonly, short-term/long-term orientation. Cultures that have a long-term orientation are those where the primary focus is upon the future, characterized by a willingness to delay success or gratification for the purposes of future gain. Further, long-term orientation cultures value persistence, perseverance, and a focus on future orientated goals. Cultures with a short-term orientation are more focused on the short term, immediate needs of their teams, with less consideration of impact on the future.

This dimension is the least studied overall in comparison to other dimensions (Taras et al., 2010). However, there are some initial theoretical advancements and studies in specific regards to exploring the connection of this orientation with team virtuality. This is understandable, given that time and temporal dynamics are critical aspects of working in virtual environments. First, in relation to virtual tool selection and use, the temporal orientation of individuals may drive the degree to which they adopt particular tools, especially in terms of the degree to which they may support or violate traditional communication norms. For instance, Lee (2002) investigated role of cultural differences in email use, finding different patterns of use between Eastern (i.e., Korea, Japan) and Western (i.e., United States) individuals working on virtual teams. Furthermore, this case study found that Korean members with a stronger long-term orientation were more likely to hesitate in the use of email, particularly in communicating with superiors, as the informal nature of such communication could be viewed as a violation of respect for superiors. Short-term orientated individuals, such as those from the U.S., were more likely to leverage email as an appropriate form of communication given its value in quickly and easily providing needed information for achieving future goals. From the perspective of the informational value conveyed in virtual teams, this may also mean that long-term orientated cultures may value media that conveys greater informational value, such as the use of videoconferencing, as such media offers the additional presence of social cues

that enable the conveyance of respect and tradition more readily than less informationally rich media (i.e., email; Saunders, van Slyke, & Vogel, 2004).

Further, the perceived value of the tool as something that will offer information useful to the near term as compared to the long term may also be a consideration influenced by culture (Chau, 1996; Veiga, Floyd, & DeChant, 2001). Short-term orientated team members may be more apt to take on and leverage new tools that they perceive as providing a fast and ready solution for effective information sharing, whereas long-term orientated team members may require more contemplation before determining whether or not to accept a new technology, in order to determine its long term value (Hofstede et al., 1997). Indeed, MacGregor et al. (2005) argue that individuals with a short-term orientation are more likely to adopt new procedures and technology because they see the value of such tools as contributing to the overall success of the team in the near future, whereas long term oriented individuals are less likely to do so at a rapid pace. This in turn can create issues if teams are diverse in their orientations, particularly when not all team members are willing to adapt to new technologies (Saunders et al., 2004).

Similar issues may arise when considering synchronicity, as long-term orientated individuals may actually favor asynchronous communications as they allow for more time to consider information before formulating a response (Arman & Adair, 2012; MacGregor et al., 2005). However, short-term oriented team members may be more comfortable with fluidity in using whatever approach will lead to the fastest outcome. Saunders et al. (2004) note in their study of temporal orientation in virtual teams that short term orientation is typically associated with being more focused and not wasting time, which may mean readily adopting whatever media will accomplish tasks the fastest, whereas long-term orientated team members are more timeless, which may result in slower decisions regarding tool adoption. Alternatively, if utilizing asynchronous media, long-term orientated individuals may benefit from the incorporation of establishing process structures aimed at offering guidance to help teams manage their work, as such structures may replicate the more comfortable traditions of communicating in more synchronous environments (Massey et al., 2001). Overall, time orientation appears to be a critical factor for consideration in virtual teams, as short-term orientated cultures are more likely to be open to adopting and utilizing whatever technologies will help facilitate immediate goal attainment, whereas long-term orientated cultures may require additional time to process information and therefore may be both more likely to favor tools rich in informational value as well as generally be slower to adopt tools. Thus, we propose:

Proposition 5. Teams characterized by long-term orientation will favor asynchronous tools high in informational value and generally being slower to rely on virtual tools than teams characterized by short-term orientation which favor synchronous tools with low informational value.

5. Triandis' cultural typology

While Hofstede's framework of culture has served to provide much of the initial foundation for exploring culture and virtuality in teams, several researchers have aimed to move beyond Hofstede's initial conceptualizations of certain dimensions in an attempt to better understand their integrative effects. Specifically, while a great deal of research has been done to explore the influences of individualism and collectivism (e.g., Gelfand, Erez, & Aycan, 2007; Kirkman et al., 2006), Triandis (1995) suggested the reconceptualization of this cultural dimension. This reconceptualization spurred from the belief that individualism and collectivism are each internally polythetic constructs which differ on perception of equality. Specifically, individualism relies on an individual's view, whereas collectivism accepts definitions imposed by their ingroup (Triandis & Gelfand, 2012).

However, such views are not static above and beyond the contextual influences, making individualism and collectivism function differently depending on hierarchy and situational context (Triandis, 2004). Accordingly, the combination of values can greatly influence how individuals interact (Triandis & Singelis, 1998), especially when we consider their preferred virtuality means. Although Triandis' (1995) typology closely resembles individualism, collectivism and power distance, they are meant to signify an interaction between the different dimensions; therefore, it is possible for these dimensions to have different virtuality preferences than those found with the similar Hofstede (1984) dimensions. Consequently, the following section offers an integration of virtuality and the Triandis typology components, in order to highlight research findings as well as areas for proposed future exploration. Specifically, we highlight the four integrative orientations of Triandis' typology: vertical collectivism (VC), horizontal collectivism (HC), vertical individualism (VI), and horizontal individualism (HI).

5.1. Vertical collectivism

Individuals with the VC orientation favor in-group members and accept perceptions of inequality. In general, collectivistic individuals are likely to put their ingroup members' goals over their individual goals (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988), allowing them to adapt to the desired virtuality level that is chosen by the group. This is consistent with findings that collectivists will submit to current norms and sacrifice for their in-group members (Lu, Chang, & Yu, 2011). Even though these members feel strong ties with those in-group members, it is worth noting they do not see everyone as the same. Although they are concerned with their in-group and want to feel connected, they prefer to be different rather than solely relying on a feeling of oneness (Chen, Meindl, & Hunt, 1997).

Even though virtual tools can serve as means to connect individuals, they are still far from being equivalent to face-to-face conversation for many. Specifically, studies have found VC individuals to show a tendency to value more traditional methods and exhibit less reliance on technology, such as e-banking (Rugimbana, 2007). This reluctance to utilizing virtual tools can

yield differences in the degree to which VC individuals prefer relying on such tools. Moreover, those with a VC orientation will prefer meeting face-to-face occasionally due to the elicited social cues (e.g., Geber, 1995; Maznevski & Chudoba, 2000). Based on the differences in distribution of information across cultural dimensions, Bhagat et al. (2002) hint at the necessity for communication to be synchronous in VC cultures via the evenly distributed, horizontal flow of information. The vertical component of this dimension highlights the top-down information trend, which allows for superiors to dictate the communication times and means. Considering how collectivistic individuals are generally more susceptible to fall for social pressure than individualists (Hui & Triandis, 1986), VC members will likely endorse virtuality components that are aligned with the maintenance of in-group members and their superior's preferences. Taken these arguments together, we propose the following:

Proposition 6. Teams characterized by vertical collectivism will be more likely to limit reliance on virtual tools, accept varying forms of informational value, and comply with asynchronous methods when the in-group and superiors enforce such methods than teams characterized by horizontal collectivism or horizontal/vertical individualism.

5.2. Horizontal collectivism

HC individuals differ in that they accept and perceive equality amongst other employees regardless of role within the organization. Those classified as HC see the self as part of the collective and treat everyone within their team as equal (Triandis & Singelis, 1998). Therefore, there is a more communal nature inherent that allows individuals to question and voice concerns to superiors. Consequently, information is likely to be more widespread for those with this type of cultural orientation because there is a need to maintain connections with in-group members regardless of their status (Bhagat et al., 2002).

Due to its collectivistic component of sacrificing individual goals to benefit the group (Chen et al., 1997), HC individuals will target any communication means that is convenient for increasing their connectivity with in-group members. Accordingly, findings show that HC individuals are more likely to accept, reform, and acknowledge the information given to them by in-group members over out-group members (Chen et al., 1997). Therefore, higher levels of informational value allow for more fluid information and knowledge exchange to occur. In this sense, it is not surprising that HC individuals prefer knowledge to be implicit, systemic, and historically grounded (Bhagat et al., 2002) because of how it mimics traditional methods of interacting. However, different than the aforementioned VC preference for asynchronous method, HC individuals are willing to make an extra effort to comply with a more balanced form of communication. They will be more likely to adapt to others' needs and change their personal schedules to make meetings more synchronous. Ultimately, the coupling of the horizontal and collective components results in an emphasis on the need to practice equality (Neuliep, 2014). Taking these arguments together, we propose the following:

Proposition 7. Teams characterized by horizontal collectivism will be more likely to limit reliance on virtual tools, require higher informational value, and comply with synchronous methods when the in-group requires such methods than teams characterized by individual collectivism or horizontal/vertical individualism.

5.3. Vertical individualism

On the other hand, individuals with a VI orientation favor their own intrinsic and extrinsic goals while also putting weight on status differences. They have a desire to win and are more likely to see interactions as competitions (Lu et al., 2011; Oyserman, Coon, & Kimmelmeier, 2002). Within a team context, this means that it is important to emphasize the benefits of collaborating with others to accomplish shared goals instead of providing the motivation of self-enhancement seeing as status and competition are important to VI individuals. Additionally, they are not very emotionally connected to their groups despite belonging to more in-groups than collectivists (Neuliep, 2014). Essentially, they connect with others in the way that will provide them with the most advantages and social gain. Furthermore, these individuals are likely to be more independent and take risks without consulting their peers (Triandis & Singelis, 1998).

Due to the independent and autonomous characteristics of VI individuals, the strength of ties between individuals is diminished. Since they do not value relationships to the same extent as collectivists do, this will facilitate the reliance on virtual tools for the communication with any team member instead of the limited set of in-group members (Rugimbana, 2007). Accordingly, research shows that diminished physical contact does not have the same impact for VI individuals, and instead allows for the opportunity to network with more people. Furthermore, instead of having a preferred level of informational value, VI individuals will simply accept the decision of a superior (Bhagat et al., 2002). Moreover, when interaction is synchronous, there is little room for preparation and most of the responses have to be spontaneous and in real-time. Considering the importance of performing well (Chiou, 2001), VI individuals will prefer to thoughtfully draft a response, especially if this has any impact on future development. Although they can show flexibility in regards to different communication styles (Bhagat et al., 2002), they will usually prefer the method that provides the most self-enhancement. For the aforementioned reasons, we propose the following:

Proposition 8. Teams characterized by vertical individualism will be more likely to rely on virtual tools, accept varying forms of informational value, and comply with asynchronous methods when superiors enforce such methods than teams characterized by horizontal individualism or horizontal/vertical collectivism.

5.4. Horizontal individualism

Finally, individuals with a HI orientation highlight their own self-interest while, at the same time seeing everyone as equal. Different than VIs, HI individuals perceive the self as autonomous from others, yet equal (Triandis & Singelis, 1998). For this reason, studies often show that HI individuals have the most confidence in their skill levels (Lee & Choi, 2005). Therefore, the reliance on virtual tools is brought to the forefront when they are used as means to progress one's skills. Furthermore, increased informational value can be beneficial for those who do not rely on context to obtain information. For instance, HI individuals are more receptive and likely to transfer knowledge that is explicit, logical, and independent of context (Bhagat et al., 2002). One of the advantages of stripping any contextual influence is the omission of irrelevant cues (e.g., surface-level diversity; Garrison, Wakefield, Xu, & Kim, 2010), but HI individuals do not rely on such cues. This is shown in research via the finding that HI individuals consider web advertising as less informative and entertaining than any other cultural dimension (Lee & Choi, 2005). Finally, HI individuals will likely favor highly synchronous tools because they have more perceived equality in communication. In this sense, research has found that HIs have a more negative perception of information when it targets a mass audience and it does not appear to be personalized (Lee & Choi, 2005). Accordingly, a communication that fosters self-reliance is more characteristic of HI individuals. Therefore, we propose the following:

Proposition 9. Teams characterized by horizontal individualism will be more likely to rely on virtual tools, require higher informational value, and comply with synchronous methods than teams characterized by vertical individualism or horizontal/vertical collectivism.

6. Trompenaars' model of cultural differences

A third framework of culture that has been used to conceptualize and connect culture and virtuality is that of Trompenaars and Hampden-Turner (1998). As previously discussed, this framework offers five main dimensions, with three that largely overlap with other existing dimensions. Thus, we next offer a critical examination of the remaining two unique dimensions, that of affective vs. neutral and specific vs. diffuse dimensions, in terms of what they contribute to our understanding of the interplay between culture and virtuality. It is important to note that, while these dimensions can help us to better understand some of the potential effects of virtuality on global, virtual teams, Trompenaars' model is underused in both management and HR literatures; thus, very few articles were found in our review that empirically examine how these dimensions impact team outcomes. Therefore, this section will largely focus on theoretical papers or work found related to an individual level of analysis; however, the value added from these perspectives of culture should help spur future research to better understand their implications for global, virtual teams.

6.1. Affective vs. neutral

This cultural dimension is directly related to the amount of emotion individuals typically express during communication. For instance, in affective cultures (e.g. Italy) it is not only common but admired when an individual exhibits his or her emotions publicly. Moreover, individuals from an affective culture often feel that neutral cultures (e.g. Japan) are intentionally deceitful because they are more inclined to hold back their emotions (Straub et al., 2002). However, the main reason for holding back one's feelings in neutral cultures is to elicit the impression that one is in control of the situation and him or herself. Not only can this have implications for the workplace but it also can be seen in national differences in marketing such that more affective cultures will utilize strategies aimed at eliciting emotion whereas neutral cultures simply explain that the consumer will be getting the best deal on a specific item (Jun & Lee, 2007).

Following this pattern, there has been some theoretical research suggesting that individuals from more affective cultures will have a positive response to virtual mediums that either elicit emotions or allow them to exhibit emotion themselves (Kale, De, & Kreider, 2007). Therefore, whereas neutral cultures might be more comfortable hiding behind the seemingly emotionless display of virtual tools with less informational value, more affective cultures would find it very difficult to communicate effectively without using emotionally laden wording or emoticons. If coupled with high reliance on such a device, it could make matters worse because without the common display of emotion, those in affective cultures will feel that there is no personal link between oneself and his or her teammates. This, in turn, could breed distrust and force the formation of subgroups within the team (Sarker, Ahuja, Sarker, & Kirkeby, 2011). Therefore, we propose the following:

Proposition 10. Teams characterized by affectivity will prefer having low reliance on virtual tools and tools with high informational value. Teams characterized by neutrality, on the other hand, will prefer having high reliance on virtual tools and tools with low informational value.

6.2. Specific vs. diffuse

Arguably the most unique Trompenaars and Hampden-Turner (1998) dimension due to its extension outside of the workplace, this examines the degree to which employees 'take home' their on-the-job relationships. For instance, an individual in a specific

culture (e.g. United Kingdom) will view his or her co-workers as simply a person with whom they have a business relationship (Gilbert & Tsao, 2000). Conversely, diffuse cultures (e.g. China) are more apt to view their teammates as friends and willing to incorporate them into their social lives. This dimension, therefore, is a method for determining how much one integrates their private and public lives. The more diffuse the culture is, the more important it is for individuals on teams to build rapport and relationships with one another and be comfortable extending these friendships into one's private life (Cseh, 2003).

Although there has been no empirical work which specifically examines specific and diffuse cultures in a team setting, there are clear implications for global, virtual teams. Namely, if teammates rarely meet face to face and simply rely on virtual tools for communication, it is nearly impossible for integration across social domains. A field study performed by Gilbert and Tsao (2000) which examined interactions between managers and their subordinates also found that more specific cultures erred on the side of giving precise and pointed directions while avoiding pleasantries and conversation. Therefore, it is expected that more diffuse cultures will be less accepting of the extensive use of virtual tools due to the impossibility of building and maintaining relationships whereas specific cultures will thrive due to the decreased need for social interaction and focus on task interaction.

Proposition 11. Teams characterized by specificity will rely on virtual tools more, whereas diffuse teams will exhibit less reliance.

7. High- and low-context cultures

Moving beyond extant frameworks of culture, our final perspectives on culture and virtuality are cultural dimensions that do not necessarily fit within existing frameworks, yet still offer important contributions to understanding global, virtual teams. First, as is the case with most variables of interest to teams, research has shown that it is extremely difficult to consider their existence outside of the context they are nested within (Joshi & Roh, 2009). Originally proposed by Hall (1976), the cultural dimension of high and low context cultures exist on opposite sides of a continuum and represent how much contextualizing is performed by an individual during communication. For instance, a high-context culture, such as Japan relies upon the utilization of indirect communication via contextual cues like body language to relay information (Kittler, Rygl, & Mackinnon, 2011). In this sense, individuals from high-context cultures rely upon their environment for behavioral cues that inform them as to the best course of action in social situations, such as those that occur when working on a team (Kim, Pan, & Park, 1998). Alternatively, a low context culture, such as Germany, communicates directly through spoken word and there is little ambiguity in statements that are made, regardless of having a positive or negative connotation (Würtl, 2005). Although similar to Hofstede's (1984) individualism and collectivism in the sense that it directly ties to the need for saving face and maintaining trust and relationships, this dimension of culture moves beyond this to find details as to how one's environment causes changes in his or her actions (Korac-Kakabadse, Kouzmin, Korac-Kakabadse, & Savery, 2001).

Being so closely tied to communication style, it is understandable how variations in this cultural dimension could have major implications for global virtual teams. For instance, a study by Koeszegi, Vetschera, and Kersten (2004) examined how individuals from both high- and low-context cultures would react to a text-based, virtual tool utilized for the purposes of negotiation where messages would be received in real-time but there would be no visible social cues other than wording. Results showed that individuals from high-context cultures try to make up for the lack of social cues by sending significantly more messages to their partner in an effort to create a mutual social context. Not only did this take time away from performing the task at hand, but members of high-context cultures rated the virtual tool as significantly less useful than those of low-context cultures. This focus on relationship maintenance is a common theme in the examination of high-context cultures (e.g. Damian & Zowghi, 2003; Huang & Mujtaba, 2009). Therefore, in global virtual teams, whereas their low-context counterparts might have no problem adapting to virtual tools, individuals from high-context cultures will likely require a period of ingratiation where they develop a shared context with their team members. In this sense, although high reliance on virtual tools might initially be difficult for high-context culture teammates to get used to, over long periods of time they should be able to generate a social context. Not only does this raise implications for temporary, ad hoc teams, it also begs the question as to how high-context cultures might more easily adapt to particular virtual tools.

Although some research has shown that high-context cultures seek methods to generate context (e.g. emoticons) when utilizing virtual tools devoid of social cues (Kayan, Fussell, & Setlock, 2006), more often than not it is found that the less informational value a virtual tool has, the less it will be accepted by high-context cultures. For instance, email has been argued to be low in informational value, or the degree to which a tool offers meaningful and valuable information in relation to the task being performed (Daft & Lengel, 1986). From this perspective, when trying to communicate information, email has low informational value, as team members are lacking rich nonverbal and verbal social cues. These rich cues have been found as essential for individuals in high-context countries in both the workplace and in their general lives. In an examination of differences in website layouts across high- and low-context countries, Würtl (2005) explains that high-context cultures typically utilize images conveying body language such as bowing to relay information to consumers whereas low-context cultures utilize spoken and visual word. Seeing as these verbal, linguistic cues are necessary for low-context cultures to exhibit essential affective behaviors such as trust, without them, there tends to be increased conflict within teams (Damian & Zowghi, 2003). Indeed, it has been proposed that when multicultural teams experience interpersonal conflict, it might be better to simply communicate in visual or aesthetic outlets instead of verbally (Von Glinow, Shapiro, & Brett, 2004). Therefore, if the use of a virtual tool with low informational value is coupled with a high reliance, it could cause high-context individuals to not only be left out of conversations that they would otherwise be comfortable engaging in while collocated or utilizing a tool with high informational value but also increase negative affect within the team.

Proposition 12. Teams characterized by high-context will prefer low reliance on virtual tools and tools with high informational value. Low-context teams, on the other hand, will prefer high reliance on virtual tools and tools with low informational value.

7.1. Tight vs. loose cultures

Our final cultural dimension focuses upon one additional dimension not included in other frameworks previously reviewed, yet is one that offers a unique perspective for understanding global, virtual teams. Originally theorized almost fifty years ago, the idea of tight and loose cultures emerged from anthropological literature and described the degree to which a culture adhered to social norms (Pelto, 1968). In this sense, a tight culture (e.g. Japan) is said to have very strict social norms enforced through behavioral monitoring and sanctioning whereas a loose culture (e.g. Finland) is more flexible and has very few sanctioned norms, most enforcement at an interpersonal level (Boldt & Roberts, 1979). Largely thought to be driven by ecological factors such as whether or not a society consisted of farmers or hunters (Boldt, 1978), both the antecedents and outcomes of tight and loose cultures have been expounded in recent years. Indeed, a recent *Science* article by Gelfand et al. (2011) gathered data from nearly seven thousand respondents across 33 nations and determined that tightness and looseness is not only a viable cultural dimension but also has a number of proximal and distal factors that cross numerous levels of analysis. For our purposes, the most important proximal factor found by these authors is behavior in standard, everyday situations such as social interactions with others and in the workplace. Specifically, research has suggested that levels of tightness and looseness can have an impact on how individuals react to being part of a diverse team. In tight cultures, the dissimilarity between teammates has the ability to both negatively impact performance and increase rates of turnover (Gelfand, Nishii, & Raver, 2006) due to the decreased likelihood of accepting new sets of norms and behaviors (Chan, Gelfand, Triandis, & Tzeng, 1996).

Different cultural beliefs, in turn can affect how much autonomy is entrusted to teams. For instance, in tight cultures, there tends to be a preference for more centralized decision making structures within teams and organizations that better allow for close monitoring of performance (Takahashi et al., 2008). Interpersonal trust, in such cases, is largely taken out of the equation and is wholly replaced by trust in the institution (Liu et al., 2011), therefore tight cultures have been shown to operate best in very stable organizational and team environments (Sorensen, 2002). Although static environments might have negative implications for outcomes such as creativity by bounding a team to a specific set of rules (Erez & Nouri, 2010), it has also been shown to increase virtual team performance (Workman, 2005). This is thought to be result of the more centralized rule structure counteracting the inherent levels of ambiguity and instability that come with working on a global, virtual team (Shokef & Erez, 2006; Workman, Kahnweiler, & Bommer, 2003). Therefore, we propose that there will be a direct relationship between levels of tightness and looseness and informational value of the virtual tool being used.

Proposition 13. Teams characterized as loose will prefer using virtual tools with high informational value, whereas tight teams will prefer utilizing a tool with low informational value.

Table 1
Summary of proposed virtual tool preferences.

Cultural dimension	Reliance on virtual tools	Informational value	Synchronicity
Individualism	High	High task-related	Low
Collectivism	Low	High relationship-related	High
High power distance		High	High
Low power distance		High	Low
Masculinity	High	High task-related	Low
Femininity	Low	High relationship-related	High
High uncertainty avoidance		High	High
Long-term orientation		High	Low
Short-term orientation		Low	High
Vertical collectivism	Low	High	High
Horizontal collectivism	Low	High	High
Vertical individualism	High		Low
Horizontal individualism	High	High	High
Affectivity	Low	High	
Neutrality	High	Low	
Specificity	High		
Diffuse	Low		
High-context	Low	High	
Low-context	High	Low	
Tight		Low	
Loose		High	

8. Implications for future research in global virtual teams

Ultimately, each of the previously discussed perspectives of cultural values offer a unique set of implications and future research directions in their own specific domains, and are all very necessary to explore in order to advance our knowledge of global virtual teams. Given the fact that our review has provided a number of different directions in which cultural values can be examined in global virtual teams and how they might relate to team outcomes (See Table 1 for an overview of the propositions), we next turn towards integrating our findings based on current trends into a broader future research agenda. Specifically, we hope that while the previous propositions are considered as venues for research, researchers are encouraged to address the following overarching topics, regardless of which specific or combination of cultural value approaches is leveraged, in an effort to advance our understanding of global virtual teams. The following sections provide five different theoretical, practical, and methodological recommendations that future research should consider and expound upon.

8.1. Accurately utilize novel dimensions of culture

Albeit the case that this specific call has been made many times in the past (e.g. Leung et al., 2011; Taras et al., 2010), it is important to reiterate the move beyond Hofstede's (1984) cultural dimensions within the context of global, virtual teams. Our literature search has shown that, taken individually, each of the novel, cultural values examined has the potential to aid in the development of a more well-rounded understanding of why global, virtual teams carry out specific behaviors. Therefore, by limiting ourselves to only one cultural view, we are likely missing out on important factors that influence outcomes such as team performance. Although all of the cultural conceptualizations are not without their own criticism, it is imperative that research takes a multi-faceted approach in the future. Furthermore, although an argument can be made that the heavy overlap of cultural constructs deters from including multiple or novel dimensions, there are sources which have examined this issue and offered an integrated framework of the different cultural dimensions (e.g. Maleki & de Jong, 2014). Utilizing frameworks such as these, researchers can ensure that they are not measuring the same construct repeatedly and are capturing unique aspects of how culture interacts with their target virtual teams.

Moreover, this change should be coupled with more accurate measurements of each cultural dimension. The overwhelming majority of the studies found within the past fifteen years either use Hofstede's (1984) categorization of nations or country of residence as a proxy for actual, individual levels of measurement of the target traits (e.g. Cheng, Chua, Morris, & Lee, 2012; Diamant, Fussell, & Lo, 2009). While understandable if conducting a field or case study with limited access to demographic data, assuming an individual's cultural values are represented by those of the country they live in can be ill-informed. As previously explained, more recent findings show signs that some countries, such as China and the United States, are exhibiting shifts in traditional cultural tendencies (Decker et al., 2015). This dynamic nature of culture reflects the idea of individuals having a unique cultural mosaic whereby one can usurp or reject specific cultural values to best fit his or her needs (Chao & Moon, 2005). Therefore, there are obvious concerns as to whether or not we should assume an individual will have specific beliefs based solely on nationality (Lu et al., 2011).

8.2. Leverage the complexities of cultural differences

Although all of the aforementioned propositions examine each cultural dimension as distinct from one another in their relationship with virtuality, following from the previous recommendation, this is not always the case. In fact, most empirical research explains that global virtual teams would benefit from the creation of a shared culture that trumps national culture (Earley & Mosakowski, 2000; Zakaria, Amelinckx, & Wilemon, 2004). However, this might not always be possible with all teams. For instance, in our discussion of tightness and looseness, it is explained that individuals from tight cultures are more likely to self-select out of a team that does not share similar values. In this case, attempting to create a shared culture might be seen as an attack on their values and beliefs. Therefore, we suggest that alternative solutions are examined where an individual's culture, instead of being overwritten, is used to benefit the team by mapping their cultural strengths onto the task at hand.

Indeed, this idea has been suggested by Janssens and Brett (2006) who refer to it as the fusion model of collaboration. These authors explain that by embracing the cultural differences inherent within multicultural teams, an organization will not only preserve the differences that make each individual unique, but also create a more adaptable team that can leverage their differences to increase creativity and productivity. Acknowledging the fact that conflict is a realistic possibility within these situations, research suggests that formal interventions designed to encourage participation and generate transactive memory systems can attenuate its impact (Okhuysen & Eisenhardt, 2002). Furthermore, these authors acknowledge that most multicultural teams operate within a virtual context and make a specific call for examining how virtuality can impact the fusion model of collaboration.

8.3. Employ advances in methodological approaches

The study of global virtual teams is certainly a messy and challenging area, given the many dynamics that may contribute to or detract from their functioning, particularly via the interactions of virtuality and culture. In the present review, we have highlighted a range of different methodologies that have been leveraged to study global virtual teams, including both qualitative and quantitative techniques as well as field and lab study designs. However, we challenge future researchers to further expand upon these

methodologies and leverage advances that will better enable our understanding particularly of the patterns and dynamics that occur uniquely within culturally diverse and virtual environments.

For instance, social network analytic approaches may be particularly valuable for exploring global virtual team dynamics. The basic idea behind a social network is that it provides us with a visual representation of how entities, be it individuals within a team, organization, or some other network, interrelate with others. Analyses of these networks range from simple measures of centrality (i.e. determining how integral an entity is to a network) or density (i.e. the ratio of actual ties to possible ties in the network) to more advanced methods examining the change of networks over time (Carrington, Scott, & Wasserman, 2005). Such network approaches have begun to grow in prominence in terms of understanding the interplay of team dynamics more broadly, especially to discern the unique patterns that occur in teams as opposed to simply averaging variables to a team level. These analyses can be best described as capturing the more compilational nature of team processes and emergent states, whereby such higher level variables are not the same in their makeup as at lower levels (Klein & Kozlowski, 2000).

Social network analysis, therefore aids in understanding patterns that emerge at the group level, providing a clearer picture as to not just a summary of what might be occurring in a team, but a direct snapshot of the state of the team and its dyadic interactions at any given point in time. It is also possible to layer different networks of constructs and conduct analyses to determine how these networks may interact. This approach may be especially critical in global virtual teams, whereby networks can aid in identifying not just a general effect of diversity or similarity, but the specific instances where such cultural variabilities may have dynamic influences on team processes and outcomes. For instance, Sarker et al. (2011) was able to identify specific patterns of trust that impacted global virtual team outcomes. Such approaches may therefore be a critical next step in determining a more specific understanding of the interplay of culture and virtuality.

Another methodological consideration critical to studying global virtual teams is temporality, particularly in terms of leveraging more longitudinal approaches. Although some of the literature reviewed offered a perspective of how global virtual teams develop over time, the majority of work was cross-sectional or reflective of past experiences as opposed to offering research approaches that account for temporal dynamics. Many researchers have called for a better understanding of how both teams and MTSs change and develop as a function of time (Kozlowski & Klein, 2000; Uitdewilligen & Waller, 2012). From our current review, although there are several studies that do take a more longitudinal approach to examining global virtual teams, more work is needed. This is especially important for us to be able to more thoroughly understand how global virtual teams are formed, as well as how their subsequent development and adaptation processes (or lack thereof) can impact performance. Indeed, there may be unique factors to consider when examining newly formed global virtual teams as compared to well-established global virtual teams. Furthermore, cultures can change over time, as acknowledged earlier in our research agenda, and therefore providing a more temporally focused perspective to studying global virtual teams may help us better attend to such cultural changes and their implications for research and practice.

Finally, on related note, one way to better leverage longitudinal research on global virtual teams is to continue to advance both qualitative and quantitative approaches to understanding their dynamics. The complementarity of these two approaches can enable researchers to potentially identify through more grounded qualitative means the unique issues or challenges faced in different global virtual teams, such as how teams may develop their own ways to handle cultural diversity or challenges with virtual media (e.g., von Glinow et al., 2004). Such issues can then be further addressed in quantitative research to provide more control and rigor over how constructs are assessed and analyzed, a necessary factor for expanding our basic science as well as for developing valid practical interventions for improving global virtual teams in the workplace.

8.4. Engage in a more interdisciplinary perspective for research

Finally, it is important to recognize the value of leveraging multiple disciplinary perspectives when studying global virtual teams. Specifically, when considering several of the lesser known cultural dimensions, this review has illustrated that there are a large number of disciplines examining how culture impacts the way one interacts with the internet or a virtual tool. Although research in this realm is typically contained within the domains of psychology, management, and organizational behavior, it has the potential to greatly benefit from the inclusion of multiple, novel perspectives. Indeed, areas outside of traditional human resources and organizational psychology domains may be able to provide a richer depiction of the virtuality angle within global virtual teams. This is largely due to the fact that virtual tools are constantly changing and are now integral to our daily lives (Tannenbaum, Mathieu, Salas, & Cohen, 2012). Therefore, it is logical that our understanding as to how humans interact with these devices will also need to change in turn. For instance, by incorporating novel perspectives from human factors, computer science, or information systems researchers, we will have a more rich understanding as to how culture interacts with specific virtual tools. Then, leveraging this knowledge, we can better design experiments to fit our needs or provide practical tools that will be useful to organizations. Indeed, many of the studies included in the current review have come from domains of engineering and information systems. However, we wish to further press not only the need to explore global virtual teams using a variety of disciplines, but to truly become more interdisciplinary in our research. In many of the present studies incorporated in this review, the authors were solely from one discipline or another, with fewer studies truly combining interdisciplinary perspectives. Given the unique contributions and values from the different disciplines studying global virtual teams, we strongly encourage more cross-disciplinary work in this domain, such as the pairing of human resource management researchers who can leverage management theories of multicultural teamwork process and performance, with engineering researchers who understand the human-computer interaction issues that may challenge teams working in virtual environments. Such collaborations should be able to spur not only better research, but more practical results that can be implemented by organizations in the future.

8.5. Consider diversity of cultural values

Although our propositions examine how teams high or low on a single cultural dimension might be differentially affected by virtual mediums, it will rarely be the case that a global virtual team is composed entirely of individuals with shared values. Therefore, when selecting team members, it is not only important to consider the cultural mosaic of the team but also understanding that, because of these differences, the teams will react to virtual tools differently. Indeed, Staples and Zhao (2006) found that when culturally heterogeneous teams were diverse in terms of their individualism–collectivism, teams leveraging virtual tools to communicate (audio-conference, chat) outperformed face-to-face teams and experienced less conflict. In this case, this may be due to the fact that the informational value of the media conveyed more task focused information than the social cues which may have otherwise highlighted the cultural diversity of the teams. Similarly, if a team is composed of individuals who are diverse in power distance, there could be differential reactions to virtual tools. For instance, virtuality may be leveraged in high power distance cultures as a means of reinforcing hierarchies and controlling information flow among team members. Alternatively, for low power distance cultures, virtuality may be viewed as a method for encouraging interactions and information sharing across all team members. Ultimately, this disparity may in turn create conflict and confusion, as it can disrupt the understanding of who is in charge of leading the team and how information flow should be structured (Montoya-Weiss, Massey, & Song, 2001). In these situations, perhaps teams should work to develop appropriate norms and a shared, formalized power structure to minimize teamwork issues and promote team effectiveness.

Moreover, it is important to remember that one size does not fit all when it comes to choosing a virtual tool. Current research suggests that global virtual teams should be provided with an array of tools to choose from (Lacerenza, Zajac, Savage & Salas, 2015). However, if an organization is forced to utilize a specific platform for team collaboration (e.g. teleconferencing), it is best that they select individuals who will thrive in that level of virtuality. Simply appointing individuals to a virtual team without considering their operational context is ill-informed and could result in the loss of both time and money. However, in some cases, organizations might not have much flexibility in deciding who is on the team and what virtual tools they use. In these cases, although the current research would suggest building a shared culture, more research is necessary to tap into whether or not interventions could be provided that build cultural knowledge or intelligence. Further, by tapping into cultural intelligence as a criterion for selection in global virtual teams or even training intercultural sensemaking, perhaps organizations will be able to rise above the divide in literature regarding whether or not diversity is beneficial to teams in general.

9. Conclusion

Certainly, there has been much uncovered in the past few decades regarding global virtual teams. Ultimately, the present review has illustrated that there are a number of cultural dimensions that can be applied within the context of virtual teams. Although it does not seem that we are leveraging all of the different resources we have available, it is important that future research considers how culture and virtuality interact with one another while utilizing methods that are both theoretically and empirically sound. Therefore, it is our hope that this review serves to help answer the call for a better understanding as to how cultural differences can impact virtual teams and provides invaluable insight as to the currently under-researched 'global' aspect of global virtual teams.

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