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## **A Process-Based Explanation of the Psychic Distance Paradox: Evidence from Global Virtual Teams**

By: Peter Magnusson, Anja Schuster, [Vas Taras](#)

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### **Abstract:**

Previous research has found evidence of a counter-intuitive positive relationship between psychic distance and performance, which has been labeled the “psychic distance paradox”. However, there is a dearth of literature explaining the causal mechanisms that elucidates such a positive relationship. Studying the effect of team-level psychic distance on the performance of global virtual teams, we build on the input-process-outcome framework of team research, which allows the integration of process variables to provide new insights into the underlying coherences of the psychic distance paradox. These variables include the team members’ expectation of challenges as well as the level of team effort toward the task. The team members’ motivational cultural intelligence is introduced to the model as a moderating factor. The data support the hypothesized causal path. The findings start unveiling the psychic distance paradox through the integration of the literatures on psychic distance and global virtual teams.

**Keywords:** Psychic distance | Psychic distance paradox | Global virtual teams | Team performance

### **Article:**

#### **1 Introduction**

Psychic distance represents one of the central, yet highly controversial, concepts in international business research (Blomkvist and Drogendijk 2013). Originally employed to explain international trade preferences beyond the influence of geographic distance, it represented the perceptual evaluation of whether a country feels “nearer” than others (Beckerman 1956). Later, Uppsala scholars adopted psychic distance as one of the focal elements in their internationalization model of the firm and defined it as the “factors preventing or disturbing the flow of information between firm and market” (Johanson and Wiedersheim-Paul 1975, p. 308). In their view, psychically close countries are expected to be similar so that few national differences and low uncertainty in regard to the foreign market promote successful internationalization.

Following this perspective, psychic distance has predominantly been viewed as having a “negative” impact on international business activity. For example, firms are less likely to enter

markets that are psychically distant (e.g., Blomkvist and Drogendijk 2013; Johanson and Vahlne 1977) and high psychic distance leads managers to adopt low cost/low control entry modes (Hennart and Larimo 1998). Further, psychic distance has a negative effect on trust and satisfaction in international channels of distribution (Obadia 2013).

Håkanson and Ambos summarize this research by stating that “the general assumption in most of these studies is that the more different a foreign environment is as compared to that of a firm’s (or an individual’s) country of origin, the more difficult it will be to collect, analyze and correctly interpret information about it, and the higher are therefore the uncertainties and difficulties—both expected and actual—of doing business there” (2010, p. 195).

However, a contrary perspective has also emerged in the literature. Studies have shown that psychic distance may, at least sometimes, be positively related to performance. For example, O’Grady and Lane (1996) found that Canadian retailers perceived the US market to be psychically very similar, yet their failure rates turned out astoundingly high. This finding led the authors to coin the term ‘psychic distance paradox’. Larger-scale empirical findings supporting a positive relationship between psychic distance and performance have emerged in studies by Evans and Mavondo (2002) and Evans et al. (2008) examining Australian retailers, as well as by Sousa et al. (2010) in their study of Spanish manufacturers.

Hence, it appears that the effect of psychic distance may not always be negative. To explain the positive relationship between psychic distance and performance, Evans and Mavondo (2002) suggest that when psychic distance is large, firms will perceive greater uncertainty and “as a means of reducing this uncertainty, firms will undertake more extensive research and planning” (2002, p. 518). In contrast, psychically close markets can lead to an overestimation of similarities (O’Grady and Lane 1996; Pedersen and Petersen 2004). In effect, the argument is that firms will ‘try harder’ in psychically distant markets whereas psychic closeness breeds complacency.

This logical chain sounds like a reasonable explanation of the mechanism that underlies the psychic distance paradox. However, as best as we know, empirical evidence to substantiate such an explanation is non-existent. Zaheer et al. (2012) reach a similar conclusion and call for more fine-grained distance research that includes the examination of the underlying processes linking distance with performance. Answering their call, we take a fresh look at the relationship between psychic distance and performance by studying global virtual teams and introducing potential process variables that might affect the relationship.

Focusing on teams allows us to build on the input-process-outcomes (IPO) framework of team performance (Hackman and Morris 1975), which facilitates the inclusion of moderating and mediating process factors. It has been argued that an understanding of team performance as a teamwork process allows the exploration of theoretical linkages on an interpersonal level (Dionne et al. 2004). Therefore, it appears valuable to study the relationship between psychic distance and performance in the context of project-based global virtual teams (GVTs), which permits longitudinal tracking and the consideration of potential process factors.

Research to date on global team effectiveness has explored team diversity and its effect on performance extensively (see meta-analysis by Stahl et al. 2010), yet it has largely focused on objective diversity attributes, such as country affiliation and demographic characteristics. We suggest expanding the GVT literature by introducing a subjective diversity measure that is borrowed from the distance literature of international business research. By introducing a perceptual measure of diversity, we hope to gain a valid predictor for interpersonal processes impacting team performance.

Integrating the psychic distance literature with the literature on team diversity and performance, we seek to contribute to both fields. We develop a model based on the IPO framework, which is the dominant conceptual approach to the study of group performance (Hackman and Morris 1975). Specifically, we develop a causal path model in which we introduce the expected level of challenges and the level of effort as mediators to the relationship between team-level psychic distance and team performance. We also consider the moderating effect of the team members' motivational cultural intelligence (CQ) and thus advance the literature on global teams by shifting the focus from objective diversity measures to a team-level measure of perceived diversity. Our contribution to the distance literature is a first attempt at explaining the psychic distance paradox and one of the first ventures to study psychic distance at the team level. The findings have significant implications on our understanding of psychic distance and its consequences as well as for managers in the management of global teams and other related international business activities.

We proceed by providing a brief background on psychic distance, diversity in teams, as well as global team research. We then develop our mediated process framework and explain our hypotheses. The empirical context is a large sample of global teams in a higher education setting. This has two advantages. First, it allows for a longitudinal examination of psychic distance effects and second, it provides a homogeneous context to examine team performance, processes, and behaviors driving team performance, often a challenge in prior global team research. We conclude by discussing the implications of our research, note some limitations, and provide suggestions for future research.

## **2 Literature Review**

### **2.1 Defining Psychic Distance**

The first reference to psychic distance is often attributed to Beckerman's (1956) classic article examining intra-European trade. Beckerman (1956) concluded that in addition to geographic distance, psychic distance is also expected to affect trade flows. He suggests that trade will be more common with partners that have been personally contacted and cultivated and such personal relationships are easier to develop with partners that are psychically closer.

Following the introduction by Beckerman (1956), the concept appears to have been largely dormant until reintroduced by the Uppsala School in its internationalization research. Vahlne and Wiedersheim-Paul (1973) define psychic distance in terms of factors that prevent or disturb the flow of information between suppliers and buyers. This suggests an individual and perceptual component to psychic distance. However, the Uppsala internationalization studies relied on longitudinal examinations of internationalization processes, sometimes spanning more than 100 years (e.g., Johanson and Wiedersheim-Paul 1975). This forced the creation of objective psychic distance measurements that did not incorporate individual perceptions and differences based on context and time. Subsequently, measurements of psychic distance based on country-level indicators of cultural values or institutional ratings became commonplace (e.g., Eriksson et al. 2000; Blomkvist and Drogendijk 2013; Sheriff et al. 2010), often using Kogut and Singh's (1988) formula to transfer Hofstede's (1980) cultural value scores into a cultural distance index.

Evans and Mavondo (2002) reasserted psychic distance's roots as a construct that captures managers' perception of differences. They argue that psychic distance is not the simple

presence of external environmental factors, but rather “it is the mind’s processing, in terms of perception, of cultural and business differences that forms the basis of psychic distance” (Evans and Mavondo 2002, p. 516). Sousa and Bradley (2006, p. 51) follow this perspective and define psychic distance as the “individual’s perception of the differences between the home country and the foreign country,” and we also adopt this perspective.

This view places the focus on the decision-maker rather than the overall firm as the reference point (Sousa and Bradley 2006). This is consistent with Vahlne and Wiedersheim-Paul (1973) whose definition of psychic distance focused on the information flow between multiple parties. As managerial decision-making often occurs at the team-level, our extension is a logical next step. We view team-level psychic distance as the aggregate of the subjective distances between countries as perceived by the members of the team. In line with previous work, we expect ‘distances’ between the home and foreign country to result from the perceptions of national differences in various aspects such as business practices or the cultural, political, geographic, and/or economic environments (Child et al. 2009; Ghemawat 2001; Håkanson and Ambos 2010).

## 2.2 Performance Effects of Psychic Distance

Over the years, empirical findings on internationalization decisions have been relatively consistent indicating that firms are more likely to enter and compete in psychically similar markets (e.g., Blomkvist and Drogendijk 2013; Dow 2000). Recently, Håkanson and Dow (2012) examined almost 50 years (1962–2008) of international trade history and found that although the effect of psychic distance has slowly been decreasing, there is still a significant negative relationship between psychic distance and international trade.

The effect of psychic distance on performance has also been examined extensively, but evidence has been much more inconsistent and conflicting. Initial theoretical arguments tended to favor a negative relationship. Following the Uppsala tradition, psychic distance is considered to constitute a cost to international business as it hinders effective information transfer across national boundaries and increases uncertainty (Johanson and Vahlne 1977; Johanson and Wiedersheim-Paul 1975). In psychically close countries, on the contrary, markets can be expected to function in a similar way as the home market, reducing costs for the foreign company as it is able to leverage home country competencies more easily (Gomes and Ramaswamy 1999).

There are empirical findings supporting such arguments. Negative effects of perceived differences were found in regard to knowledge transfer performance within multinational companies (Pedersen et al. 2003), the development of trust and performance in international exchange relationships (Katsikeas et al. 2009), and an increased uncertainty related to subsidiary performance judgments by headquarters (Grewal et al. 2008). Significant negative effects of psychic distance on firm performance were also supported in a meta-analysis by Magnusson et al. (2008), but the authors argue that such findings are often subject to a methodological caveat. Most studies examining psychic distance and firm performance gather data retrospectively, so that the causality can be challenged. Thus, one must ask whether psychic distance leads to poor performance or poor performance leads to greater psychic distance perceptions.

In contrast, an emerging number of studies support a positive effect of psychic distance on performance outcomes. O’Grady and Lane’s (1996) study of Canadian retailers found a surprising lack of success in the US market, a phenomenon O’Grady and Lane dubbed the

‘psychic distance paradox’. Subsequently, several larger empirical studies have found evidence that firms may obtain better performance in distant markets (e.g., Evans and Mavondo 2002; Evans et al. 2008; Hang and Godley 2009; Morosini et al. 1998; Sousa et al. 2010).

Explanations for these seemingly counter-intuitive findings are speculative. O’Grady and Lane (1996) suggest that psychic closeness leads to complacency. In countries perceived as similar, managers may become careless and underestimate slight, but important, differences between the markets. In contrast, if markets are perceived as very different, managers will also perceive a high degree of uncertainty. To reduce this uncertainty, managers are expected to conduct more extensive market research, be very careful, plan obsessively, and take multiple measures to ensure success (Evans and Mavondo 2002; Evans et al. 2008). Morosini et al. (1998) found that international acquisitions in distant markets outperform acquisitions in similar markets. They explain this finding by suggesting that acquisitions in distant markets may provide access to resources and processes that create new complementary synergies, rather than, perhaps, less useful overlapping resources provided by a psychically similar partner. Thus, a growing body of literature has emerged suggesting that, at least sometimes, greater psychic distance may constitute an advantage.

### 2.3 Diversity in Global Virtual Teams

Modern organizations have become dependent on teams that are geographically distributed and asynchronous (Maynard et al. 2012). GVTs can be defined as “a group of people who work interdependently with a shared purpose across space, time and organization boundaries using technology” (Lipnack and Stamps 2000, p. 18). They are characterized by their members’ distribution across geographic distances, time zones, as well as institutions. GVTs provide several advantages to the organization, such as the availability of the most skilled individuals regardless of location and the possibility of a 24-hour work day, through a global relay by passing tasks from one time zone to the next.

However, due to their specific nature, GVTs face additional challenges. One source of difficulty is the dispersion of team members. Non-collocated teams need to pool resources virtually to ensure successful collaboration, using technology rather than face-to-face communication. The reduction of communication to the virtual level is limiting in several ways, including delayed feedback, reduced conflict identification, and misunderstandings due to disrupted communication patterns (Hinds and Mortensen 2005; Maznevski et al. 2006). Additional challenges may result from the increased diversity of linguistic, cultural, and national backgrounds of the GVT members (Maznevski and Chudoba 2000; Montoya-Weiss et al. 2001).

One aspect of team diversity which has received abundant attention in the literature is the effect of cultural diversity on team processes and performance. Stahl et al.’s (2010) meta-analysis identified 102 studies that have examined the effects of cultural diversity on team processes or outcomes. Their findings suggest that cultural diversity can entail costs in the form of increased conflict and reduced social integration, but also benefits, such as higher team-member satisfaction and greater creativity.

Cultural diversity has normally been operationalized using variety or diversity indices by counting the number of nationalities represented on a team or dispersion of cultural values of the team members (e.g., Dahlin et al. 2005). This approach, however, does not account for the perceptions of the team members about their cultural differences. The few studies that have

incorporated perceptions of differences have focused on constructs such as personal values, personalities, and commitment to the project (e.g., Harrison et al. 2002).

Wilson et al. (2012) pointed out the limitations of the preoccupation with objective measures of diversity in GVT performance research and called for the incorporation of perceptual measures to better capture the perceived differences between team members and the resulting reactions, behaviors, and team outcomes. Such perceptions might not necessarily be aligned with objective differences but can be more suitable to capture team- and individual-level processes that result from those perceptions (Edwards and Wilson 2004).

### **3 Conceptual Development**

Our literature review reveals the need for a better understanding of the psychic distance paradox as well as for the effect of perceived differences on team performance. We draw on the IPO framework by Hackman and Morris (1975) to integrate both aspects into our model. The framework provides a basic structure for the research on team performance, postulating a causal chain of team inputs, processes and outcomes. Input factors commonly studied encompass the team starting conditions, which include team size, task type, technology used, and the team's level of knowledge, skills, and abilities. Team processes are concerned with how teams achieve their goals and refer to the interaction among group members (Devine 2002). Jackson et al. (2003) further tease apart the process variables into (1) affective reactions by the team members, which capture the teams' emotional response to diversity and (2) team behaviors, which capture the teams' behavioral response. Team outcomes commonly encompass specific performance indicators such as decision quality, speed of decisions, and team effectiveness (Jarvenpaa et al. 1988).

Our model focuses on the diversity of the team, measured as the perception of psychic distance among team members. Consistent with Jackson et al.'s (2003) causal model, we incorporate the team's expectation of challenges as an affective reaction and the displayed effort level as the team's behavioral response. Figure 1 illustrates our conceptual framework. We expect psychic distance to lead to an increase of expected challenges. In response, the teams that expect a high degree of challenges will respond with an increased effort, which in turn will enhance team performance. The impact of 'expected challenges' on 'team-level effort' is moderated by the team's motivational CQ.

#### **3.1 Psychic Distance and Expectations of Challenges**

Trying to enhance our understanding of team-level processes, we propose a clear distinction between psychic distance as the team members' perception of differences between the participating countries and the team members' expectations of challenges in working together.

The attraction-similarity paradigm postulates that interpersonal liking and attraction are facilitated between individuals featuring similar attributes (Byrne 1971). More homogeneous groups should, therefore, benefit from the promotive conditions of their team. Diverse teams lack this advantage, however, and face greater challenges. Findings by Triandis (1960) indicate that members of culturally dissimilar groups face greater challenges than members of culturally homogeneous groups. Likewise, racially heterogeneous groups show a higher level of process-related problems in their collaboration (Hoffman and Maier 1961). Research further shows that people who are similar on certain sociodemographic dimensions expect to share knowledge as

well as cultural tastes, which in turn facilitates communication and improves coordination efforts (Mark 1998).

A similar conclusion emerges from the literatures on social identity and social categorization. Social identity theory suggests that individuals feel a need to evaluate themselves against others in order to establish a personal identity and build up self-esteem (Tajfel and Turner 1986). Individuals also define themselves as member of various social groups which they use as comparison basis. Such social groups are based on shared characteristics such as gender, nationality or occupation (Turner 1985) and can be divided in a person's in- and out-groups depending on his or her membership status. This social categorization process promotes stereotyping as it leads to an increased perception of homogeneity of out-groups (Mackie and Smith 1998). The expectations approach to diversity suggests that stereotypes lead to inferences regarding underlying attributes of out-group members such as values and beliefs and consecutively bias behavior (McGrath et al. 1995). Both arguments describe cognitive processes that strongly support a positive relationship between psychic distance and the team members' expectations of challenges in working together.

*Hypothesis 1: In GVTs, team-level psychic distance is positively related to expectations of challenges.*

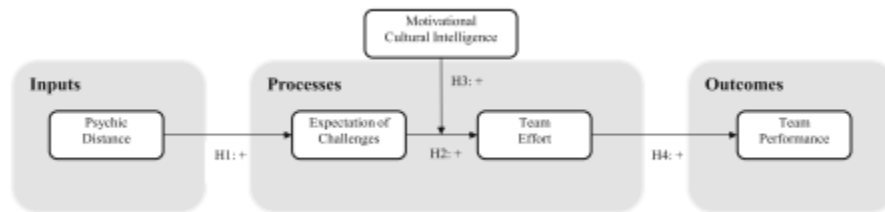


Fig. 1 Conceptual framework

### 3.2 Expectations of Challenges and Level of Effort

If psychic distance prompts people to expect substantial collaboration challenges, the question arises as to how people respond to these challenges. We posit that teams will respond to a perception of greater challenges with an added effort. Evans and Mavondo (2002) suggest that, at the firm level, managers perceive psychically distant markets as very challenging. Trying to ensure success, firms devote more time to research and planning. Similarly, Pedersen and Petersen (2004) conclude that managers spend more time anticipating challenges in psychically distant markets and they find that in markets perceived as similar, managers often experience a shock effect due to unanticipated differences.

Child et al.'s (2009) findings also support this argument. They discover that the majority of UK firms attempt to cope with high psychic distance to the Brazilian market through 'bridging' mechanisms. These bridging mechanisms include the investment of time, resources, and effort to develop solutions that minimize the negative effects of uncertainty. This includes developing trust-based relationships with local counterparts (Child et al. 2009).

In response to greater expectation of challenges, we also expect GVTs to respond with greater effort, research, and planning. This argument rests on the assumption that the team has a desire to do well. Managers of firms entering foreign markets have a desire to do well based on job security, promotion opportunities, and other rewards. Members of GVTs are under similar



pressures to accomplish the organizations' objectives. Research has shown that motivation reflects an intention to act. However, it does not influence outcomes directly but its impact is mediated by the level of effort that is extended toward the task (Meyer et al. 2004). Work in GVTs is usually done in a professional or academic setting over a certain amount of time with high task interdependency and often with cross-functional team members. We expect those external factors to motivate team members to invest the required effort in order to achieve the common goal. As a consequence, we propose that members of a GVT that expect to meet a higher level of challenges in their prospective team work, increase their invested effort so as to ensure successful achievement.

*Hypothesis 2: In GVTs, expectations of challenges are positively related to team-level effort*

### 3.3 The Moderating Effect of Motivational Cultural Intelligence

Motivation in GVTs is likely affected by the characteristics of the team, task, and other external factors. Nevertheless, expectation of challenges may also affect motivation and, consequently, effort (Gruenfeld et al. 1996). We suggest that in the context of national diversity or perceived psychic distance, the team's motivational CQ might moderate the impact of expected challenges on team effort. CQ has been defined as an "individual's capability to function and manage effectively in culturally diverse settings" (Ang et al. 2007, p. 336). It has been conceptualized and empirically validated as a four-dimensional construct consisting of 1) motivational, 2) behavioral, 3) cognitive, and 4) meta-cognitive dimensions (Ang et al. 2007; Earley and Ang 2003). Motivational CQ is particularly relevant in the context of motivation in GVTs as it represents a dynamic motivational construct that influences group processes and outcomes and can be defined as "the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences" (Ang et al. 2007, p. 338). In effect, high motivational CQ captures the team members' intrinsic motivation and self-efficacy in dealing with different cultures. Further, teams with high motivational CQ genuinely enjoy interacting with people from different cultures, which suggests a greater interest and commitment toward understanding the other team members, their perspectives, and their needs. Unlike the contextual factors that favor the translation from expected challenges to increased commitment such as team type or task type, motivational CQ represents an internal team factor positively moderating the relationship.

Teams high on motivational CQ are expected to be more open and display a tendency to persist (Earley and Ang 2003), suggesting that they will better adapt to the inherent challenges of a GVT. The novel cultural experience is expected to motivate teams, enable them to use their cultural knowledge and strategies, and trigger attention and effort (Templer et al. 2006).

Accordingly, teams with a high degree of motivational CQ should have a particular interest in dealing with challenges related to cultural differences. Thus, we expect that teams high on motivational CQ will respond to greater challenges by an even stronger commitment and effort to overcome these challenges, which leads us to the following prediction.

*Hypothesis 3: In GVTs, the relationship between expectations of challenges and team-level effort is positively moderated by motivational cultural intelligence.*

### 3.4 Team Effort and Team Performance

Whereas there may be a difference between working hard and working smart (Blau 1993), and it might be possible that one team member decides to complete the whole task and do so in an outstanding fashion with very limited involvement of all other team members, intuition presents a strong argument for a positive relationship between team effort and team performance (DeShon et al. 2004). Anyone who has ever engaged in a team sport can also probably attest that trying hard often compensates for inferior talent.

Related research supports such a contention. In the team environment, Hinds and Mortensen (2005) found that virtual teams had significantly reduced task and interpersonal conflict with a high spontaneous communication effort. Ocker and Fjermestad (2000) showed that high performing virtual teams significantly communicated much more frequently (i.e., greater effort) than low performers. Moreover, effort was found to be positively related with task performance in opensource software communities (Ke and Zhang 2009). Beyond the team environment, the relationship between effort and performance has also received considerable attention in the sales literature. Effort, defined as the number of calls and contacts with clients, has often been found to be positively related to sales performance (Brown and Peterson 1994).

Hackman and Wageman (2005) list three processes they consider relevant for team performance, namely (1) the level of effort expended toward the task, (2) the appropriateness of task strategies and (3) relevant skills and knowledge of the team members. As we specifically model the effects of psychic distance on the level of expected challenges which we expect to increase the level of effort, we focus on the first process only. Accordingly, we suggest that GVTs which put in a higher effort will be rewarded with better performance.

*Hypothesis 4: In GVTs, team-level effort is positively related to team performance.*

## 4 Method

### 4.1 Sample

Past research on psychic distance has encountered some difficult challenges. First, even if the firm is the unit of analysis, it is arguably the board or top management team that makes the decisions related to internationalization. Second, to avoid hindsight sensemaking by managerial decision-makers, a valid study design requires the collection of ex-ante psychic distance and ex-post performance data. This is very difficult to achieve in an organizational setting as data collection might take several years. A longitudinal study of GVTs may help overcome some of these inherent challenges. However, research on GVTs faces its own challenges due to the difficulties in gathering valid and reliable data from a significant number of teams.

The research context for the present study is a large multi-country global collaboration project. A total of 1,006 graduate and undergraduate students studying in 20 different countries participated in the project in 2011. In most cases, the project was a required part of an International Business course (the project typically accounted for about 20–30 % of the students' grade), but some variation among participating universities existed. Each participant was randomly assigned to one of 145 teams, with an average of 6.9 students per team (maximum of 8). Typically, each team member was from a different university to create truly global teams. Many participating students, naturally, were foreign exchange students. Thus, a team could

potentially include a participant from a Swiss university and a US university, yet both of these participants might be foreign exchange students from Sweden. As shown in Table 1, 67 different nationalities participated in the project. The average age was 23.73 (SD = 6.24) and 51 % were males.

The project task and environment were designed to resemble the corporate world as closely as possible. Over an eight-week period, each team was assigned to develop a plan for a new international market entry for a multinational corporation. The students were randomly assigned to teams, just like corporate employees generally have no choice as to whom they work with. The teams were given significant autonomy in terms of extent and type of communication methods, but all teams were introduced to and encouraged to use free collaboration tools, such as email, voice and video conferencing tools (e.g., Skype), document and collaboration platforms (e.g., Google Docs and Dropbox), and social media (e.g., Facebook and Google ?), similar to what is commonly used in a corporate environment.

Furthermore, although there was a relatively high level of standardization of project expectations for all participants, some natural variation also occurred. Some professors (managers) emphasized different parts and others required additional components (e.g., journal or oral presentation). This resembles a corporate environment in that GVT participants often have somewhat competing objectives/ pressures from different superiors. In sum, the challenges the students experienced due to different levels of language skills, geographic and time zone differences, cultural differences, and varying levels of technical skills were similar to those typically encountered in a corporate GVT environment.

Table 1 Sample characteristics: number of students per country

Albania	1	Hungary	2	Russia	5
Algeria	2	Iceland	1	Saudi Arabia	1
Australia	1	India*	23	Serbia	1
Austria*	7	Indonesia*	129	Singapore	5
Bangladesh	5	Iran	3	Slovakia*	12
Belarus	1	Italy	6	Spain*	19
Brazil	6	Japan*	8	Sri Lanka	1
Cambodia	1	Korea (South)*	32	Sweden	4
Canada	1	Kosovo*	11	Taiwan	2
Colombia*	44	Kyrgyzstan	1	Tanzania	1
Costa Rica	1	Latvia	1	Thailand	1
Denmark	1	Lebanon	1	Tonga Islands	1
DR Congo	1	Lithuania*	55	Turkey	3
Ecuador*	46	Mexico*	4	Turkmenistan	1
Egypt	2	Moldova	6	UAE*	17
El Salvador	1	Montenegro	1	UK	2
Finland	4	Nepal	1	Ukraine	2
France*	20	New Zealand*	26	USA*	223
Georgia	2	Nigeria	3	Uzbekistan	1
Germany*	15	Philippines	1	Venezuela	1
Ghana*	64	Poland*	30	Vietnam	1
Greece	1	Portugal	3		
Hong Kong	1	Romania*	126		

\*Participating University

## 4.2 Variables

Team progress was measured continuously and data were gathered from the participants at multiple times throughout the project. Once each participant had been assigned to a team, all participants completed a pre-project survey in which psychic distance perceptions were sampled. Some psychic distance researchers have advocated for the use of multi-item and multi-dimension scales of psychic distance to capture many potential facets. For example, Evans et al. (2008) rely on 52 items to capture 10 different psychic distance dimensions. While potentially valuable, such an approach would be impractical in a team context. Hence, we adapt methods by researchers who have adopted a more holistic approach to psychic distance measurement. Dow (2000) and Hakanson and Ambos (2010) measure psychic distance based on a single-item perceived distance. Following this more holistic approach, we measure psychic distance with two items. On a five-point scale, ranging from very similar (1) to very different (5), participants were asked to rate the 1) degree of perceived differences and 2) degree of perceived difficulty of working together among the national cultures represented on the team. An averaged team-level psychic distance for each indicator was created by combining the scores of all team members.

*Expectations of challenges* were also drawn from the pre-project survey and consisted of three items. Leaning on the definition of GVTs and their key defining elements of diversity in culture and geography, the use of non-rich communication modes and a temporary type of group (Kristof et al. 1995), on a five-point scale, ranging from no problem (1) to big problem (5), each participant was asked to rate the expected challenge based on 1) differences in languages, 2) differences in skills with online communication tools, and 3) differences in opinions and ability to reach a consensus. We created a team-level expectation of challenges scales by combining the scores of all team members.

*Motivational cultural intelligence (CQ)* was measured in a pre-project survey with a five-item scale adapted from Ang et al. (2007). The scale includes items like, 'I enjoy working with people from cultures that are unfamiliar to me' and is measured on a five-point scale, ranging from definitely no (1) to definitely yes (5). An averaged team-level motivational CQ score was created by combining the scores of all team members.

At the conclusion of the project, all participants completed a post-project survey. As a proxy for each team's effort, we measured the frequency and intensity of team communications. Although many teams used a variety of communication tools, email usage was, by far, the most commonly used tool and thus provided the most consistent measurement. We asked four items to capture this construct. Two items asked Likertstyle questions in regards to the use of emails and email attachments anchored by never (1), only a few times during the project (2), weekly (3), several times per week (4) and every day (5). Two other items asked the participants to quantify how many emails each student sent and received during the course of the project.

Finally, *team performance* was operationalized based on the quality of the team report as evaluated by at least four independent experts (business professors). The experts evaluated each report on a five-point scale ranging from poor (1) to excellent (5) in terms of clarity of presentation, attention to detail, formatting quality, and grammar and writing style. Scores from each faculty grading the reports were averaged for each dimension. The inter-rater reliability ranged from 0.71 to 0.82 depending on the evaluation dimension.

Additionally, we include four control variables that capture more objective forms of team diversity. First, we include a measure of *country diversity*, based on the diversity index offered by Van Der Zee et al. (2004). It takes into account not only the number of countries represented

on the team, but also how it relates to the team size and how evenly the team members are distributed among the countries. Second, we control for *geographic diversity* by measuring the average distance in kilometers separating each team member. *Age diversity* was measured based on the standard deviation of each team members' age and *gender diversity* is based on the standard deviation of the participant's gender. A team of four men and four women would have maximum diversity (0.5) and a team of only females (males) would have zero gender diversity (Harrison and Klein 2007). By incorporating multiple objective diversity measures, we measure the effects of the teams' *perceived* differences beyond any objective diversity.

### 4.3 Common Methods Bias

The measurement scales for this research are drawn from four separate sources. Psychic distance perceptions, expectations of challenges, and motivational CQ are drawn from the pre-project survey. Team effort is drawn from the post-project survey. Team performance is evaluated separately by independent instructors rating each team's report quality. Finally, the objective diversity control measures are created as indices based on the objective (e.g., country citizenship, demographics) diversity of the team members. The use of different sources to measure predictor, mediator, and criterion variables suggest that this research study is not subject to common methods bias.

### 4.4 Validity and Reliability

We rely on SmartPLS (Ringle et al. 2005) to analyze the data. The use of partial least squares (PLS) is primarily guided by PLS's ability to evaluate latent constructs for relatively small samples (145 teams) and its efficiency in handling interaction effects of latent constructs. PLS calculates the interaction variables by creating all possible products from the two sets of indicators. These product indicators are used to reflect the latent interaction variables (Chin et al. 2003). PLS models are analyzed and interpreted in two stages (Barclay et al. 1995), which is consistent with the recommendation in the literature for analyzing structural equations: first evaluate the measurement model, and then evaluate the structural model.

To evaluate the validity and reliability of each construct, we examine the factor loadings, composite reliability, and average variance extracted (AVE), which are presented in Table 2 with all measurement items. Factor loadings exceeding 0.70 indicate that the variance between the construct and its indicators is greater than the error (Fornell and Larcker 1981). The factor loadings for all items, except one of the *expectations* items (0.66) exceed this threshold.

Reliable constructs are expected to have a composite reliability that exceeds 0.70 (Anderson and Gerbing 1988). All constructs in this study exceed this threshold. Convergent validity is assessed by examining the AVE. This measures the proportion of variance that is explained by the indicators compared to the proportion due to measurement errors. Fornell and Larcker (1981) recommend that AVE should exceed 0.50 and all constructs in this study exceed this threshold. Finally, discriminant validity was evident in that no confidence interval for the phi correlations between pairs of variables contained 1.0 (e.g., Anderson and Gerbing 1988), and all squared phi correlations were less than the respective variance extracted estimates for all pairs of constructs (e.g., Fornell and Larcker 1981).

To add further confidence that all constructs are discriminant, we also subjected the data to an exploratory factor analysis in SPSS. Using Eigenvalues ( $\geq 1$ ) as the cutoff, the factor

analysis divided the data into the five expected constructs and with a total explained variance of 69 %. In contrast, a forced one-factor solution explained only 22 % of variance. In sum, the analysis of the measurement model satisfies common validity and reliability criteria, and we conclude the data is appropriate for further structural analysis. Construct correlations are presented in Table 3.

Table 2 Measurement scales with item loadings, CR, and AVE

	Loadings
<i>Psychic distance (pre-project survey; CR = 0.84, AVE = 0.73)</i>	
1. Based on your knowledge about cultures and values around the world, please rate the degree of difference among the national cultures of the following countries. (1 = very similar; 5 = very different)	0.88
2. Based on your knowledge of the working styles, cultural, linguistic, economic and political differences, rate the expected degree of ease/difficulty of people from the following countries would experience when working together. (1 = very similar; 5 = very different)	0.83
<i>Expectations of challenges (pre-project survey; CR = 0.77, AVE = 0.53)</i>	
1. Please rate how much you expect <i>differences in opinions and an inability to reach consensus</i> to be a barrier to effective collaboration on your team. (1 = no problem; 5 = big problem)	0.66
2. Please rate how you expect <i>differences in skills with online communication tools</i> to be a barrier to effective collaboration on your team. (1 = no problem; 5 = big problem)	0.75
3. Please rate how much you expect <i>different languages</i> to be a barrier to effective collaboration on your team. (1 = no problem; 5 = big problem)	0.77
<i>Motivational cultural intelligence (pre-project survey; CR = 0.82, AVE = 0.54; 1 = definitely no; 5 = definitely yes)</i>	
1. I enjoy interacting with people from different cultures	0.83
2. I am confident that I can socialize with locals in a culture that is unfamiliar to me	0.70
3. I enjoy working with people from cultures that are unfamiliar to me	0.84
4. I am confident that I can get accustomed to the working conditions in a different culture	0.53
5. I am sure I can deal with the stresses of working with people from other cultures. (omitted)	
<i>Team-level effort (post-project survey; CR = 0.95, AVE = 0.82)</i>	
1. How many emails did you send to your teammates? (0–100)	0.89
2. How many emails did you receive from your teammates? (0–100)	0.90
3. How frequently did you use email as a communication tool? (1 = never; 5 = frequently)	0.95
4. How frequently did you use email attachments as a communication tool? (1 = never; 5 = frequently)	0.87
<i>Team performance (independently evaluated by at least 4 professors; CR = 0.93, AVE = 0.77)</i>	
1. Clarity of presentation (1 = poor; 5 = excellent)	0.89
2. Attention to detail (1 = poor; 5 = excellent)	0.85
3. Formatting quality, readability, visual appeal (1 = poor; 5 = excellent)	0.90
4. Grammar and writing style (1 = poor; 5 = excellent)	0.86

Table 3. Construct correlations, AVE on diagonal

	1	2	3	4	5	6	7	8	9
1. Performance	0.93								
2. Psychic distance	0.17*	0.73							
3. Team-level effort	0.19*	0.11	0.82						
4. Expectation of challenges	0.04	0.31*	0.20*	0.53					
5. Motivational CQ	0.10	0.19*	0.15*	0.30*	0.54				
6. Age diversity	0.10	0.07	0.29*	0.17*	0.10	-			
7. Country diversity	-0.17*	-0.03	-0.23*	0.00	-0.12	-0.14	-		
8. Gender diversity	0.12	0.12	0.08	0.13	0.13	0.02	0.07	-	
9. Geographic diversity	0.13	0.15*	0.17*	-0.06	0.04	0.20*	-0.35*	-0.04	-

\*  $p < 0.05$

## 5 Results

To test the hypothesized mediated model, we run the structural model in three steps and the results are presented in Table 4. To assess the significance level of the path coefficients, we use the bootstrapping procedure with 500 bootstrap samples and 145 cases. Initially, we examine the effects of the four control variables on team performance (Model 1). Country diversity has a negative effect ( $b = -0.15$ ,  $p < 0.05$ ) and gender diversity has a positive effect ( $b = 0.13$ ,  $p < 0.10$ ).

Age diversity and geographic diversity are not significantly related with team performance. In Model 2, we add psychic distance to the model. Consistent with the psychic distance paradox, there is a positive relationship between psychic distance and team performance ( $b = 0.20$ ,  $p < 0.01$ ). Given the significant positive relationship between psychic distance and performance, we can proceed to examine whether the mediating process variables help us explain this finding.

In Model 3, we examine the mediated path model. In support of Hypothesis 1, psychic distance is positively related to expectations of challenges ( $b = 0.31$ ,  $p < 0.01$ ). Expectations of challenges is positively related to team-level effort ( $b = 0.15$ ,  $p < 0.05$ ), as predicted by Hypothesis 2, and team level effort is positively related to team performance ( $b = 0.15$ ,  $p < 0.05$ ), in support of Hypothesis 4. Further, the direct effect of psychic distance on team performance has decreased and is now only marginally significant ( $b = 0.13$ ,  $p < 0.10$ ). An examination of the total effect (direct effect + mediated effect) finds a significant total effect of psychic distance on team performance ( $b = 0.16$ ,  $p < 0.05$ ). When the process variables are added to the model, the effect of the control variable objective country diversity index only has a marginally significant effect on performance ( $b = -0.13$ ,  $p < 0.10$ ). Further, age diversity has a significant positive relationship with expectation of challenges ( $b = 0.19$ ,  $p < 0.05$ ) and positively related to effort ( $b = 0.22$ ,  $p < 0.01$ ). Gender diversity is not related to any of the endogenous variables and geographic diversity is negatively related to expectation of challenges ( $b = -0.15$ ,  $p < 0.05$ ).

Finally, in Model 4, we examine the moderating effect of motivational CQ. Consistent with our prediction in H3, motivational CQ positively moderates the relationship between expectations of challenges and effort ( $b = 0.30$ ,  $p < 0.01$ ). In sum, the mediated process model proposed in this study is supported and helps explain the positive relationship between psychic distance and performance.

Table 4 PLS results: explicating the causal chain between psychic distance and team performance

	Model 1		Model 2		Model 3		Model 4	
	$\beta$	t value	$\beta$	t value	$\beta$	t value	$\beta$	t value
Control links								
Age diversity → expectation of challenges					0.19	2.36*	0.18	2.46*
Age diversity → effort					0.22	3.63**	0.19	3.21
Age diversity → team performance	0.06	0.86	0.05	0.75	0.06	0.51	0.06	0.52
Country diversity → expectation of challenges					-0.07	0.61	-0.06	0.63
Country diversity → effort					-0.16	2.53**	0.17	2.64**
Country diversity → team performance	-0.15	2.13*	-0.16	2.04*	-0.13	1.61 <sup>†</sup>	-0.14	1.71 <sup>†</sup>
Gender diversity → expectation of challenges					0.09	1.37	0.09	1.45
Gender diversity → effort					0.09	1.03	0.06	0.73
Gender diversity → team performance	0.13	1.68 <sup>†</sup>	0.11	1.13	0.11	1.36	0.11	1.35
Geographic diversity → expectation of challenges					-0.15	2.26*	-0.15	2.12
Geographic diversity → effort					0.09	1.19	0.08	1.21
Geographic diversity → team performance	0.07	0.92	0.04	0.55	0.07	0.85	0.06	0.89
Cultural intelligence (CQ) → effort							0.13	1.30
<i>Hypothesized effects</i>								
Psychic distance → team performance			0.20	3.44***	0.13	1.87 <sup>†</sup>	0.13	1.91 <sup>†</sup>
Psychic distance → expectation of challenges					0.31	4.29**	0.31	4.46**
Expectation of challenges → effort					0.15	2.11*	0.11	1.65 <sup>†</sup>
Effort → team performance					0.15	2.26*	0.14	2.28*
<i>Interaction effects</i>								
CQ*Expectations of challenges → effort							0.30	5.91**

<sup>†</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 6 Discussion

Contrary to the dominant view of psychic distance as a barrier to collaboration across borders (e.g., Johanson and Vahlne 1977; Obadia 2013), some previous studies have found empirical evidence for a positive link between perceived psychic distance and performance (e.g., Evans and Mavondo 2002; O'Grady and Lane 1996). To understand these seemingly paradoxical findings and in response to calls for a more fine-grained analysis of the underlying processes involved in distance effects (Zaheer et al. 2012), we transfer the issue to the team level, which enables us to introduce process factors such as motivational CQ and effort level.

The data support our model linking team-level psychic distance to the challenges expected by team members in regard to the upcoming task, the level of effort that they display toward the assignment, and how well they perform as a team. The relationship between expected



challenges and the level of effort is positively moderated by the motivational CQ of the team members. In other words, the present study tests the effects of psychic distance at the team level and finds that (1) consistent with the psychic distance paradox, psychic distance indeed has a positive effect on performance; (2) the effect of psychic distance on performance is mediated by effort so that an increase in psychic distance increases effort which in turn improves performance; and (3) motivational CQ moderates the relationship so that the effect of psychic distance on performance is stronger under the high CQ condition.

The present study is the first known study to offer and test a theoretical model explaining the positive link between psychic distance and performance by incorporating process factors. Prior research (e.g., Evans and Mavondo 2002; O'Grady and Lane 1996; Pedersen and Petersen 2004) had speculated that psychic distance may prompt firms to do more research, use more caution, and plan more, i.e., try harder, but empirical evidence substantiating such arguments has been missing. We show that perceived differences among team members can have a positive effect on performance when it leads to greater effort.

Our process-based approach contributes to unveiling the psychic distance paradox. It appears that the conventional consideration of psychic distance as a barrier to cross-national cooperation and impairment to international performance might be insufficient to explain performance effects. The study findings show that psychic distance triggers behavioral responses such as an increase of effort that can offset the difficulties in cooperation otherwise expected. With this, our results substantiate earlier speculations regarding the roots of the psychic distance paradox. Internationalization research might benefit from the inclusion of such processes factors as we can expect similar processes to occur in top management teams responsible for the internationalization process of a company. Despite the difference that top managers react according to their perception of distance toward a foreign environment (rather than within the team) their psychic distance should increase their expectations of challenges and increase the level of effort they invest into the firm internationalization.

Previous research on the psychic distance-performance relationship might have studied the phenomenon too superficially, looking at the general relationship and neglecting process factors and potential mediators and moderators. The present study attempted to look deeper and explore the mediating effect of effort and the moderating effect of CQ in the relationship between psychic distance and performance. While we cannot claim that effort and CQ are the only mediators and moderators at play, our findings are the first steps toward understanding of the internal mechanism of the psychic distance paradox.

Beyond an improved theoretical understanding of the processes underlying the psychic distance paradox, this study also represents one of the first attempts to incorporate psychic distance into the GVT literature. Considerable research has examined antecedents to GVT success. Team diversity, often in the form of country affiliation, demographic characteristics, or personality differences, have been examined extensively and generated significant insights into how team diversity affects team performance (e.g., meta-analysis by Stahl et al. 2010). However, examination of team members' perception of differences has been surprisingly absent from the literature. Thus, the findings of this study also provide insights for managers of global teams.

## 6.1 Managerial Implications

Handling team diversity represents a major managerial challenge in today's working environment. An increasing amount of work is accomplished in teams, comprising team

members with different national and cultural backgrounds, and often across various geographic locations. Whereas diversity can be a powerful source of innovation as diverse backgrounds representing different knowledge sources minimize groupthink, diversity also involves divergent tendencies that can impede team work. Our findings have significant implications for managers responsible for selecting, training, and overseeing global teams.

First, we must acknowledge that national diversity has a moderate negative effect on performance of GVTs. This serves as a reminder that collaborating effectively across cultures is challenging and fraught with obstacles. However, the findings in regards to psychic distance encourage the use of internationally diverse teams and identify parameters that enable members of such teams to achieve superior performance.

Second, it is helpful to understand that the perception of cross-national differences among team members and the resulting increase of expected challenges is not a negative thing per se. Psychic distance might help avoid unexpected negative surprises in the process and keep up motivation and effort level. As the data support a positive impact of psychic distance on performance, we can infer that team members who perceive a low level of distance run the risk of underestimating the difficulties of working in that cross-national team. This can prove especially relevant if two nations are perceived as similar as the false sense of similarity may reduce alertness to pitfalls of cross-cultural collaboration ultimately hurting performance.

The findings also reveal the positive moderating effect of motivational CQ. Although CQ is a relatively recent development (Earley and Ang 2003), it has quickly garnered significant interest in the expatriate management literature. Our findings suggest that it may also be a valuable and important metric for selection of participants on global teams. Although, to some extent, motivational CQ may be an innate trait, positive exposure to different cultures through, for example, travels and culinary experiences may foster a greater appetite for increased global interaction. Earley and Mosakowski (2004) provide a multi-step framework for enhancing your CQ. It begins with a rigorous assessment of the individual's strengths and weaknesses in terms of CQ and then provides a variety of suggestions for how to improve your CQ.

These findings are particularly important in the context of cross-cultural training. In cases when based on external attributes (e.g., similar language, religion, and economic ideology), cultures appear similar, attention should be devoted to informing the trainees of cultural differences that may not be readily apparent, particularly those at the levels of values and beliefs. However, it is also important to communicate that differences and challenges are not impregnable as team motivation needs to be ensured. Exercises and activities that contrast the cultures and point out where the differences may lie would be particularly beneficial, especially if coupled with prompts to put in more effort in preparing for and managing cross-cultural interactions. Likewise, training programs designed to improve CQ in general, and motivational CQ in particular, would further contribute to improving performance in cross-cultural contexts.

## 6.2 Limitations and Future Research

Like most research, the present study is not without limitations. However, many of these limitations also present opportunities for future research. First, the present study devoted considerable effort to designing a task and team environment resembling a corporate environment to obtain findings that are valid and generalizable beyond the academic settings. Business school students are also the managerial decision-makers of tomorrow and gaining access to a sufficiently large sample of corporate teams is very challenging. Nonetheless, the

study participants worked for course credit and a replication of the findings in a corporate environment would certainly be valuable to confirm the generalizability of the findings presented here to the business workplace settings.

The findings from this study may also be confined to the specific task and temporal context. The team assignment required a fair degree of creativity, demanded a high level of coordination, and interdependent task execution. Routine tasks might not have the same motivational effect on the team members and thus not increase the effort level and subsequent performance as much as the task in this study. Thus, future research may examine the proposed psychic distance paradox framework in varying task environments.

Furthermore, the team interaction phase in the present study lasted about 8 weeks. While this is a considerable length of time, in an organizational setting this would arguably represent a rather short-term assignment. Future research would be well served to examine psychic distance effects on team performance for teams working on longer (and shorter) projects.

Consistent with many previous psychic distance researchers (e.g., Ha°kanson and Ambos 2010), we adopted a holistic summary perspective to measure psychic distance. However, other researchers (e.g., Child et al. 2009; Dow and Karunaratna 2006) have examined multiple dimensions of psychic distance and found differential effects on performance. Hence, future research may want to extend this study by examining whether different psychic distance dimensions have differential effects on the process variables included in this study.

As noted earlier, the psychic distance paradox process as laid out in this paper rests on the assumption that teams are motivated to do well. External pressures (need to do well to pass the class) make such an assumption reasonable. One could, however, imagine that teams with limited motivation (internal or external) may respond by withdrawing from the task. Therefore, future research could potentially gain further insights by varying extrinsic motivation (in different natural settings or experimentally) or by measuring the teams intrinsic motivation to do well to examine how different levels of motivation affect the process framework in this study.

Finally, another area of psychic distance research that may require additional attention is the fit between managers' perceived differences and actual differences between markets or teams. The psychic distance paradox rests on the assumption that managers often underestimate differences (e.g., O'Grady and Lane 1996; Pedersen and Petersen 2004). Underestimating differences leads to complacency, which causes failure. However, it would presumably also be possible for managers to overestimate differences, which may lead to discounted performance. As argued by Evans and Mavondo (2002), both under- and overestimation of differences lead to suboptimal performance. Either too little effort has been put into the market entry or too many resources have been wasted. The findings of this study suggest that a greater perception of differences leads to greater effort and performance, but future research may also want to explore the upper boundaries of this relationship. In effect, at what point does increased effort have diminishing or even negative returns?

## **7 Conclusion**

We believe that the phenomenon of psychic distance is ripe with future research opportunities. Initial empirical evidence indicates that it plays an important role in dynamics and performance of GVTs. Our study starts unveiling the underlying mechanism of the psychic distance paradox and shows the mediating effect of expected challenges and effort and the moderating effect of CQ on the psychic distance—performance relationship. The empirical evidence suggests that

psychic distance can be positively related to performance when it leads to great expectations of challenges, which in turn leads to greater effort. Further, the introduction of psychic distance as a subjective measure helps to understand interpersonal processes within a team and thus extends the literature on psychic distance as well as on diversity in GVTs. A better understanding of the underlying mechanisms have important implications for psychic distance theory and direct application in the selection of participants, team composition, cross-cultural training, and the management of global teams.

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