

Unlocking the gender diversity–group performance link: the moderating role of relative cultural distance

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Abstract

Purpose – This study aims to shed light on the relationship between gender diversity and group performance by considering the moderating role of relative cultural distance. Drawing from the categorization–elaboration model (CEM), the authors hypothesize that gender-diverse collaborative learning groups perform better when a low level of relative cultural distance in country-level individualism–collectivism or power distance exists among group members.

Design/methodology/approach – To test this hypothesis, the authors conducted a study on 539 undergraduate students organized into 94 groups. The assessment of group performance was based on scores given by external raters.

Findings – The authors found that relative cultural distance significantly moderated the gender diversity–group performance relationship such that gender diversity was positively related to group performance when the collaborative learning group included members who similarly valued individualism–collectivism or power distance (i.e. relative cultural distance was low) and was negatively related to group performance when the collaborative learning group comprised members who differently valued individualism–collectivism or power distance (i.e. relative cultural distance was high).

Originality/value – This study contributes to understanding when gender diversity is positively associated with group performance by expanding the range of previously examined diversity dimensions to include relative cultural distance in country-level individualism–collectivism and power distance.

Keywords Gender diversity, Group performance, Cultural distance, Country-level individualism–collectivism, Country-level power distance

Paper type Research paper

Introduction

Most of a company's proprietary knowledge lives within employees' minds (Micklewait, 2022). Collaborative learning – the use of groups to support learning through working together – allows this knowledge to be fully expressed (Micklewait, 2022). In today's higher



educational settings, collaborative learning is the most common educational practice to help students develop teamwork skills (Curşeu *et al.*, 2018) and is increasingly used at work to capitalize on employees' wealth of knowledge (Micklewait, 2022). Gender is one of the most relevant demographic attributes of collaborative learning groups (Davies, 2009; Eurostat, 2019), and gender-related differences in interpersonal relations play a key role in shaping the performance of collaborative learning groups (Curşeu and Pluut, 2013). Indeed, when groups are gender diverse [1], they have access to a variety of perspectives, which has the potential to ultimately increase the complexity of the collective understanding of the task (Curşeu *et al.*, 2007), group creativity (Curşeu *et al.*, 2010) and performance (van Knippenberg and Mell, 2016). At the same time, however, gender diversity can hinder group effectiveness (van Knippenberg and Mell, 2016; Williams and Meân, 2004). Since collaborative learning groups enhance information sharing among members (Micklewait, 2022), it is critical to examine the conditions upon which gender-diverse collaborative learning groups can be beneficial, rather than harmful, for group performance (Kearney *et al.*, 2022).

Research has shown that the gender diversity–group performance link varies according to the *cultural* context (Schneid *et al.*, 2015) because culture represents an important source of social categorization and a significant reservoir of resources (Güver and Motschnig, 2017). This stream of studies has primarily focused on diversity in nationality (e.g. Maderer *et al.*, 2014) and individual cultural values (e.g. Kirkman and Shapiro, 2005) as important boundary conditions. However, the role of relative cultural distance – the extent to which each group member differs from the other group members on a given cultural dimension (Thomas, 1999) – has received much less attention. This limitation is critical because managing cultural differences is a central challenge for today's international business and learning environments (Hui *et al.*, 2023; Shin *et al.*, 2017).

The present study aims to examine *whether* and *how* relative cultural distance in country-level individualism–collectivism and power distance – based on the cultural framework of Hofstede (1984) – moderates the gender diversity–group performance link. These dimensions have been largely taken into account to explain the extent to which culture may “unlock” the benefits of gender diversity for group outcomes (Li *et al.*, 2022). Individualism–collectivism is relevant to group performance (Staples and Zhao, 2006) and is highly representative of respondents' national culture (e.g. Stedham and Yamamura, 2004). Indeed, recent studies have shown that this dimension is crucial to understanding the role of culture in group performance in the workplace (Baeza *et al.*, 2022; Staples and Zhao, 2006) because it influences members' appraisal of collective and personal benefits as well as their capacity to work interdependently on collaborative tasks. Along with individualism–collectivism, power distance is key to group performance, as it allows us to explain different group members' attitudes about gender roles and beliefs in power dynamics (Szymanowicz and Furnham, 2013), which may ultimately affect the effectiveness of collaborative learning groups (Cole *et al.*, 2013) [2]. As such, our study contributes to solving the puzzle of *when* gender diversity positively affects group performance, which is critical to finding ways in which mixed-gender groups can be more effective.

Our study contributes to the literature in two ways. First, by examining the moderating roles of individualism–collectivism and power distance cultural dimensions, we answer the calls for increased attention to the role of moderators that help explain the equivocal findings on the gender diversity–group performance relationship. In doing so, this paper draws on the categorization–elaboration model (CEM; Van Knippenberg *et al.*, 2004), which reconceptualized and integrated different theoretical perspectives for the first time. This model enables accounting for the beneficial and harmful effects of diversity simultaneously. Therefore, by integrating relative cultural distance in country-level individualism–collectivism and power distance within the CEM (Van Knippenberg *et al.*, 2004), we identify culture as a key contingency of the gender diversity–group performance relationship (Schneid

et al., 2015). Second, this study contributes to the small but growing body of research on surface- and deep-level diversity components (Harrison *et al.*, 1998, 2022). The adoption of this perspective is relevant to advancing the theory and practice of diversity management because employees often simultaneously bring multiple kinds of diversity to a workgroup. Thus, our research provides new theoretically and practically relevant knowledge on how to manage collaborative learning groups with different gender and cultural distance compositions.

State-of-the-art and hypothesis development

A CEM to gender diversity and group performance

Research has regarded gender diversity as a “double-edged sword” for group dynamics and effectiveness (e.g. Curşeu *et al.*, 2007; Moreland *et al.*, 1996). This perspective is in line with the CEM (Van Knippenberg *et al.*, 2004), which states that the effects of group diversity on workgroup performance should be understood in light of two processes that have independent and interactive effects: elaboration of task-relevant information (Mannix and Neale, 2005) and social categorization (Turner *et al.*, 1987). Diversity may facilitate performance by stimulating the exchange, elaboration and integration of task-relevant information. The processes enable collaborative learning groups’ capacity to bring together different perspectives and information and generate solutions superior to those produced by each member individually.

CEM suggests that diversity is more likely to benefit performance under certain conditions (i.e. moderator variables), such as when performance requires information processing and creative solutions. Simultaneously, diversity may exert a negative effect on performance when it leads to the emergence of “us-them” distinctions that evolve from social categorization. Indeed, individuals tend to classify themselves and others into social categories using highly salient and readily observable features, such as gender (Tajfel and Turner, 1986). Given the increase in social categorization, group members tend to develop intergroup biases (Tajfel and Turner, 1986) that lead them to stand for the positions of in-group members rather than those of out-group members. These intergroup biases may undermine group functioning if the value or distinctiveness of the identity inferred by the categorization is threatened. Indeed, to maintain a positive social identity, individuals strive to maximize their intergroup distinctiveness and consider out-group members less attractive (Tajfel and Turner, 1986). Drawing on the CEM, gender diversity may prompt either group information processing or social categorization processes, thus acting as a “double-edged sword” for group performance (Van Knippenberg and Schippers, 2007).

On one hand, gender diversity may exert a positive effect on group performance when it facilitates the elaboration of task-relevant information. This occurs when a collaborative learning group has access to a richer pool of resources from its members. Indeed, gender can be conceptualized in terms of variety because it captures qualitative dissimilarities in the kind of information brought by group members (Henttonen *et al.*, 2010). Given their qualitatively different life experiences, men and women can contribute to group cognitive complexity by introducing a variety of perspectives (Curşeu *et al.*, 2007; Curşeu and Pluut, 2013). Thus, diverse group composition increases information availability, which may help collaborative learning groups more accurately elaborate on task-relevant information. As a result, workgroups demonstrate a wider range of cognitive templates associated with gender diversity (Curşeu and Pluut, 2013; Østergaard *et al.*, 2011), which benefits their creativity and performance (Naqvi *et al.*, 2013).

Additionally, gender dissimilarities cover a broad variety of further factors that are highly relevant for group functioning, including the following aspects: communication styles (e.g. Carr *et al.*, 2004), cognitive styles (e.g. Rigolini *et al.*, 2021), leadership styles (e.g. Mandell and Pherwani, 2003), negotiation and conflict management styles (e.g. Barron, 2003;

Walters *et al.*, 1998), stress-related coping strategies (e.g. Matud, 2004), emotional experience, expression, awareness and regulation (e.g. Deng *et al.*, 2016). The combination of these gender-based attitudinal and behavioral differences during group interactions may help explain the beneficial effect of gender diversity on group processes and performance because greater gender diversity might help collaborative learning groups bring out the strengths of each gender (Curşeu *et al.*, 2018; Hirschfeld *et al.*, 2005; Opstrup and Villadsen, 2015). Correspondingly, studies have shown that members of gender-balanced collaborative learning groups, unlike those working in homogeneous collaborative learning groups, achieve higher performance (Zhan *et al.*, 2015), share a wide range of alternative ideas (Curşeu *et al.*, 2007) and enable high-quality group discussions (Curşeu *et al.*, 2018) and decision-making (Naqvi *et al.*, 2013).

On the other hand, since gender diversity represents an innate member feature that is immediately detectable, it provides a stronger basis for divisive social categorization within groups than less observable attributes (Van Knippenberg *et al.*, 2004). Indeed, during childhood, men and women are socialized within the traditional sex-role stereotypes framework that attributes different roles based on gender, thereby affecting their capacity to gain status in organizations (Bowles *et al.*, 2007; Curşeu and Sari, 2015). As a result, individuals automatically encode gender and make inductive inferences based on gender (Kinzler and Dautel, 2012). Gender diversity might hence increase the likelihood that these members perceive each other as dissimilar, thereby impairing group performance.

Moreover, gender stereotypes shape the task and role expectations of men and women in the workplace (Biernat and Sesko, 2013). Indeed, as a product of gender socialization, individuals are educated on how to socially behave in compliance with their assigned gender and internalize gender role expectations that lead to gender role-confirming behaviors (Wood and Eagly, 2012). In line with these stereotypes, women are considered less prepared than men to attain high-status positions; therefore, women are more likely to act compliantly in power-oriented social interactions (Curşeu and Sari, 2015; Watson and Hoffman, 1996). Conversely, men are typically associated with an “instrumental” gender role that has a higher social dominance orientation than women – who are associated with an “expressive” gender role that is “emotional” (Syed and Murray, 2008). This dissimilarity is basically invariant across cultural and situational contexts (Sidanius *et al.*, 2000) and might then contribute to the emergence of psychological divisions between men and women within gender-diverse collaborative learning groups. As a result, individuals of the same gender are likely to associate with each other and interact more often (Byrne, 1971), thus facilitating competitive intergroup behaviors. This may hamper the elaboration of task-relevant information and increase subgroup conflicts that ultimately undermine effective group functioning (Pelled *et al.*, 1999). Research supporting this line of reasoning has found that gender-heterogeneous workgroups tend to exhibit low group cohesion (Chatman and Flynn, 2001) and decreased group performance (Henttonen *et al.*, 2010).

One explanation for the mixed outcomes associated with gender diversity is the existence of moderating variables that mitigate or exacerbate potential beneficial and detrimental effects (Lawrence, 1988). Drawing on the CEM (Van Knippenberg *et al.*, 2004), three conditions may determine the salience of social categories and the development of subgroups within a workgroup (Turner *et al.*, 1987): 1) the degree to which a categorization (e.g. males vs. females) reflects existing dissimilarities between members; 2) the degree to which social categorization is subjectively meaningful to group members based on their cognitive frames of reference (Van Knippenberg *et al.*, 2004); and 3) how easily group members perceive the dissimilarities between each other and how quickly such differences are cognitively activated. Social categorization is more likely to emerge when these conditions are simultaneously present because the mere existence of gender divisions (i.e. the presence of men and women in the same group) is not sufficient to activate social comparison processes (Pearsall *et al.*, 2008;

Turner *et al.*, 1987). In this respect, the social categorization of a workgroup along gender lines meets the first two conditions because gender is a readily apparent feature that provides the strongest basis for social categorization in comparison with other characteristics. However, gender categorization also requires gender dissimilarities to be meaningful to group members in a context, which, as we discuss below, might be contingent on relative cultural distance.

The moderating role of relative cultural distance

According to the taxonomy of Güver and Motschnig (2017), moderators of the gender diversity–group performance can be categorized as time-, team-, task-, manager-, atmosphere- and context-related factors. Research has investigated the time- (e.g. tenure diversity, Kochan *et al.*, 2003), task- (e.g. type of task; Schneid *et al.*, 2015), team- (e.g. team size, Wegge *et al.*, 2008), manager- (e.g. supportive leader; Stewart and Johnson, 2009) and atmosphere-related characteristics (e.g. culture of inclusion, Shoreibah *et al.*, 2019) that might shape the effects of gender diversity on group performance. However, much less attention has been devoted to studying the cultural-contextual moderators of this relationship.

In this regard, one of the few studies focused on cultural-contextual moderators, one study examined diversity in nationality, reporting nonsignificant effects of this factor on the gender diversity–group performance relationship (Zhang and Hou, 2012). Moreover, a meta-analytic work by Schneid *et al.* (2015) divided previous studies including gender diversity and two performance outcome (i.e. contextual and task performance) measures into high/low country clusters on each GLOBE cultural dimension. The authors showed that collectivism had the strongest moderating effect on the gender diversity-task performance relationship.

Unlike Schneid *et al.* (2015), in this study, we adopted Hofstede's framework (2001). Hofstede (2001) defined culture as “the collective programming of the mind that distinguishes the members of one group or category of people from another” (p. 82). Following this conceptualization, culture can be regarded as a collective property with boundaries that generally coincide with national boundaries (Hofstede *et al.*, 2001). Thus, we focus on country-level differences in cultural dimensions because, consistent with Hofstede's research (Hofstede *et al.*, 2010), countries are meaningful units of cultural analysis, and within-country dissimilarities in values are lower than the corresponding intercountry differences (Schwartz, 2006; Loh *et al.*, 2010). As a result, countries are cultural “gravitational fields” that pull individuals into their orbits and, as such, shape their cultural values [3] (Akaliyski *et al.*, 2021; Minkov and Hofstede, 2014). National culture can then strongly affect expectations concerning group work and social behaviors within collaborative learning groups (Bachrach *et al.*, 2019; Hofstede, 1984).

More specifically, our study focused on country-level individualism–collectivism and power distance. Individualism–collectivism is considered a key dimension of culture (Hofstede, 1984; Sivadas *et al.*, 2008) because it guides people's overall behavior, such as the amount of emphasis they place on group membership (Hofstede, 1984). Power distance is instead closely related to attitudes about gender roles, which may affect power dynamics within collaborative learning groups (Lin and Lun, 2022; Szymanowicz and Furnham, 2013) and group effectiveness (Cole *et al.*, 2013).

Individualism–collectivism is viewed as a crucial cultural dimension in the context of teams (e.g. Sivadas *et al.*, 2008). Nevertheless, its impact on group performance is not straightforward. For example, some studies have found that, compared to individualistic [4] group members, collectivistic group members are more supportive (Gomez *et al.*, 2000), work harder (Wagner, 1995) and report higher identification with the group and stronger commitment to group goals (Chatman *et al.*, 2019). These positive group processes in turn improve collective performance (Jackson *et al.*, 2006; Marcus and Le, 2013). However, other

studies have shown that collectivistic group members are more likely to sacrifice group goal achievement and task performance and suppress minority opinions to preserve harmonious intragroup relationships (Kim *et al.*, 1994). Conversely, individualistic groups tend to encourage different problem-solving approaches and prevent groupthink by enabling dissenting opinions (Sosik and Jung, 2002; Hornsey *et al.*, 2006). As a result, they reach higher quality decisions (Ng and Van Dyne, 2001) and are more performant on creative tasks than collectivistic groups (Goncalo and Staw, 2006).

Considering the double-edge sword of individualism–collectivism for group functioning (Chatman *et al.*, 2019), the CEM perspective suggests that analyzing this cultural dimension as a moderator of the gender diversity–group performance relationship might not help shed light on how gender-diverse groups can bring out their potential. Indeed, on the one hand, collectivistic groups might lead members to prioritize collective goals despite gender-related differences (Hofstede *et al.*, 2010), thus preventing the emergence of corresponding social categorization processes that might impair group performance (Turner *et al.*, 1987). On the other hand, the maximization of the group's interests can suppress the unique knowledge from gender-diverse members, thus inhibiting the elaboration of the task-relevant information required for effective performance (Mannix and Neale, 2005). Accordingly, the equivocal effects of individualism–collectivism might be conciliated by considering group members cultural distance in individualism vs. collectivism – rather than the average of this cultural dimension at the group level.

Likewise, the literature has shown that it is the difference in power distance to cause the most severe problems to workgroup functioning (e.g. interpersonal conflict; Bouncken *et al.*, 2016). For instance, workgroups whose members were aligned on power-distance cultural values outperformed those that were misaligned on these values (Newman and Nollen, 1996). Additionally, the incongruence in leader-team power distance values was found to predict impaired group performance, above and beyond the main effects of leader and team values (Cole *et al.*, 2013). Accordingly, cultural distance in power distance is a critical contingency of the effects of gender diversity on group performance.

Even though a broader range of dimensions could be taken into account to assess culture, such as in the GLOBE study (House, 2004), we focused on individualism–collectivism and power distance (two of the four Hofstede's original cultural dimensions), as scholars in management have widely relied on these variables to calculate cultural distance between countries (Drogendijk and Slangen, 2006). Indeed, the “cultural distance” construct (i.e. the degree to which group members culturally differ from one another) is grounded in Hofstede's (1984) work, which used differences in country-level cultural value score indexes as an indicator of cultural distance (Kogut and Singh, 1988). This construct differs from the notion of “cultural diversity” (i.e. the amount of cultural heterogeneity represented in the workgroup) in its theoretical meaning and operationalization (Thomas, 1999). Precisely, while the underlying notion of cultural diversity is variety (i.e. the cultural heterogeneity in kind, source, or category of relevant knowledge or experience represented in the workgroup), separation (i.e. differences in viewpoints, mainly in terms of values, beliefs, or attitudes, noticeable as disagreements or opposition) and disparity (i.e. dissimilarities in portions of socially valued resources, apparent as inequalities or in relative concentrations) define the actual conceptualization of cultural distance (Bruyaka and Prange, 2020). More specifically, in line with Harrison and Klein (2007), while greater variety (i.e. cultural diversity) is related to higher levels of creativity, innovation, high-quality decisions and flexibility, higher levels of disparity and separation (i.e. cultural distance) increase the likelihood of conflict, distrust and disagreements. Thus, cultural distance represents one of the three main factors—together with cultural diversity and culturally based orientations of the group members toward the group function—related to the team's cultural composition that affects the group's functioning (Thomas, 1999).

Research on the moderating role of cultural distance in the gender diversity–group performance link is still limited. Addressing this gap is critical to advance the current understanding of the role of cultural distance in the performance of a gender-diverse group because the extent to which group members are culturally different from one another in country-level individualism–collectivism and power distance may explain when gender diversity can be a “friend” or “foe” of group performance.

Interaction effects of gender diversity and relative cultural distance in country-level individualism–collectivism on group performance.

Based on the CEM (Van Knippenberg *et al.*, 2004), we expect that when groups continue to interact over time, surface-level differences, such as gender, become less relevant, whereas deep-level characteristics, such as differences in underlying individualistic–collectivistic values, become more salient (Harrison *et al.*, 2002; Pelled *et al.*, 1999). Indeed, there is empirical evidence showing that long-lasting intrateam interactions allow team members to engage in meaningful exchanges and thus diminish the influence of sex differences while reinforcing the influence of attitudinal differences on team outcomes (Harrison *et al.*, 1998). Arguably, “as people interact to get to know each other, stereotypes are replaced by more accurate knowledge of each other as individuals” (Harrison *et al.*, 1998, p. 99). This interaction can allow team members to gain more information about each other’s performance (Lee and Farh, 2004). As a result, their perceptions of each other may rely less on stereotypes triggered by gender and more on observed behaviors, which are the manifestations of underlying cultural norms for group behaviors (Harrison *et al.*, 1998).

This process is particularly likely to occur when information about attitudinal dissimilarities becomes salient (Brown and Turner, 1981) and under conditions of equal status and cooperative contact (Ellison and Powers, 1994; Harrison *et al.*, 2002). For instance, Harrison *et al.*’s (2022) longitudinal study, which was conducted on business students engaged in team projects that lasted from 9 to 14 weeks during a semester, demonstrated that over time, interpersonal interactions enabled team members to gain deeper knowledge of their psychological similarity to their colleagues, although they—at the beginning of their assignments—used surface-level demographic data as information proxies about other group members. As a result, over time, as group members learned more about each other, deep-level diversity became more relevant in determining team outcomes (Harrison *et al.*, 2002).

Given their tendency to value cooperation and communal goals (Jost and Kay, 2005), women tend to place greater emphasis on sociability and interpersonal relations (Dabiriyani Tehrani and Yamini, 2022). Conversely, given their tendency to value personal success and status through competition, men tend to view themselves as more independent and autonomous (Dabiriyani Tehrani and Yamini, 2022). In gender-diverse groups, while agentic (e.g. achievement-oriented and competitive) men can promote the pursuit of learning outcomes by asking for task-related information, communal (e.g. nurturing and socially oriented) women can facilitate collaborative group processes by expressing agreement with team members and by emphasizing mutual support (Bachrach *et al.*, 2019; Eagly, 1987; Hayes and Flanner, 2000; Takeda and Homberg, 2014). Thus, a collaborative learning group can then make the most of mixed-gender interpersonal dynamics, resulting in better cooperation and group outcomes (Zhan *et al.*, 2015).

However, these effects might be contingent similarities in individualism–collectivism values among group members. Indeed, when members of collaborative learning groups are culturally similar to each other in individualism–collectivism values, the potential benefits of cross-gender behavioral complementarity may be enhanced. This is because group members share similar expectations and values for group behaviors as well as preconceived notions about how work groups should function (Thomas, 1999). The resulting higher perceived similarities among members are likely to attenuate the negative effects of social categorization processes, resulting in better group performance (van Knippenberg *et al.*, 2004). For instance,

when performing interdependent tasks (as is the case of collaborative learning tasks), group members who share low individualistic/high collectivistic values are likely to be willing to work as a team despite differences in gender because their main goal is to maximize the interest of the entire group (Schneid *et al.*, 2015). As a result, gender-diverse groups are more likely to integrate and capitalize on a wide range of task-relevant knowledge and skills, thus improving their performance in collaborative learning tasks (Schneid *et al.*, 2015; Staples and Zhao, 2006; van Knippenberg *et al.*, 2004). Alternatively, given their attention and motivated effort toward individualized tasks and related gains, group members who hold high individualistic/low collectivistic values prefer individualizing interdependent tasks by building buffers that enable them to decouple the activities and work as individuals. In doing so, they are likely to bring unique qualities and multiple viewpoints to problem-solving issues (Eisenhardt and Tabrizi, 1995) and, thereby, help the gender-diverse group achieve better performance (Sosik and Jung, 2002).

Conversely, when group members are culturally distant from each other in individualism–collectivism, they may not benefit from cross-gender behavioral complementarity because they are less able to overcome differences to successfully work together. Additionally, a greater cultural distance precipitates a comparison between with group norms and makes group members feel uncomfortable expressing their ideas, which poses a high risk for the erosion of group cohesion and functioning (Thomas, 1999). Indeed, research has suggested that cultural distance may result in striking contrasts in terms of decision-making, attribution, communication, negotiation, conflict management and leadership styles (e.g. Caputo *et al.*, 2018; Caputo *et al.*, 2019). For instance, individuals with high collectivistic values tend to prefer avoidance and problem-solving styles of conflict management and cooperative negotiation styles (Caputo *et al.*, 2019). Conversely, people with high individualistic values tend to prefer competitive negotiation styles (Caputo *et al.*, 2019). As a result, the greater the relative cultural distance among team members, the higher the likelihood that their attitudes toward the workgroup and their cultural norms for group behaviors will differ from each other (Köppel, 2008). This might increase the risk of misunderstanding and hamper the development of group cohesiveness (Köppel, 2008), thereby impairing group performance (Maderer *et al.*, 2014). Therefore, we develop the following hypothesis:

- H1. Relative cultural distance in country-level individualism–collectivism will moderate the gender diversity–group performance relationship: this relationship will be positive when relative cultural distance in country-level individualism–collectivism is low, but negative when relative cultural distance in country-level individualism–collectivism is high.

Interaction effects of gender diversity and relative cultural distance in country-level power distance on group performance.

Given their view of work-related conflict as destructive, women tend to conclude negotiation processes rapidly to prevent conflict escalation (Curşeu and Sari, 2015; Walters *et al.*, 1998). Conversely, given their view of conflict outcome as a determinant of their social status, men tend to compete in conflict situations to maximize their personal gains and consider working relationships in terms of dominance patterns (Barron, 2003; Walters *et al.*, 1998). In gender-diverse groups, while task-oriented men can help the group stay focused on the task, relationship-oriented women can maintain relational harmony and solve relationship conflicts by adopting a cooperative/accommodative style (Curşeu and Sari, 2015). This can increase the effectiveness of collaborative learning and the quality of interpersonal relations (Curşeu and Sari, 2015).

However, these effects might depend on the extent to which group members share similar power distance values. Indeed, when members of collaborative learning groups are culturally similar to each other in power distance values, the potential benefits of cross-gender

behavioral complementarity may be fostered because group members hold similar preferences for power and a common power-related interactional approach. This may reduce the detrimental effects of social categorization processes and facilitate positive interpersonal interactions, thereby enhancing group performance (Cole *et al.*, 2013). For instance, when performing masculine or gender-neutral tasks (as is the case of collaborative learning tasks), group members who share high power distance values are likely influenced by viewpoints proposed by men (i.e. members of traditionally high-power groups) and expect women (i.e. members of traditionally low-power groups) to behave in accordance with prescriptive gender role norms (Curşeu and Sari, 2015; Parboteeah *et al.*, 2008). Then, to be successful influencers, women must adapt their approach to group negotiation by conjugating competent behavior with kindness and by displaying other-directedness during group interactions (Curşeu and Sari, 2015; Carli, 2001). Alternatively, group members who share low power distance values might not expect women to strictly adhere to the social roles prescribed by traditional gender schemas (Carrasco *et al.*, 2015); they might rather share ideas and collaborate in decision-making activities (Javidan *et al.*, 2006). Both of these cases reflect an alignment of group members' power distance values, which facilitates group effectiveness (Cole *et al.*, 2013).

Conversely, when group members are culturally distant from each other in power distance, they disagree on the nature of their informal hierarchical interactions, and their preferences for power differentials are misaligned (Bouncken *et al.*, 2016; Cole *et al.*, 2013; Newman and Nollen, 1996). Accordingly, they perceive higher illegitimacy of intersubgroup (i.e. men vs. women) power differentials (Tajfel and Turner, 1986). The feelings of frustration resulting from this perceived unfair treatment (Grant *et al.*, 2011) would then hinder the quantity and quality of interpersonal interactions, leading to poorer performance (Sadler *et al.*, 2011). For instance, when women who are low in power distance are not asked by high-power distance colleagues to share their opinions before making important group decisions, they may feel frustrated, as their voices are not heard and they are treated unequally (Graham *et al.*, 2018; Shechtman and Horowitz, 2006). Supporting these arguments, research has shown that power distance incompatibility is associated with greater relationship conflict (Graham *et al.*, 2018), lower balance of team members' contributions and impaired teamwork quality and creativity (Bouncken *et al.*, 2016). Therefore, we develop the following hypotheses:

- H2.* Relative cultural distance in country-level power distance will moderate the gender diversity–group performance relationship: this relationship will be positive when relative cultural distance in country-level power distance is low, but negative when relative cultural distance in country-level power distance is high.

Materials and methods

Participants and procedure

The data used in this study were collected in 2019 from 539 undergraduate students organized into 94 teams. Students were distributed in four classes (i.e. UB1, UB2, UB3 and UB4) in the last year of the Bachelor of International Business Administration (BIBA) program at a top-ten-ranked French business school. Students spent three months working in teams on a group assignment, and the grade on this assignment was used in this research as an indicator of group performance. The assignment consisted of three interrelated activities: one in-class activity on income statements and balance sheets, one home activity of the same kind and one final report with an oral presentation of a business proposal for exporting a product. The in-class and home activities required students to work together to analyze and solve different case studies on income statements and balance sheets. Students were requested to work together on the in-class tasks for 1 h every week for 12 consecutive weeks

and on the home tasks outside the course at the end of every week during the same period. Each group was asked to present its solutions in front of the class at the end of the in-class weekly activity and at the beginning of the first available class following the home activity. Finally, the realization of the final report and the related oral presentation of the project on the business proposal for exporting a product required students to collaborate on the redaction of the report, the preparation of a PowerPoint presentation and the coordination of the group's oral speech. Criteria for the evaluation of the entire group assignment were the involvement level of the students, the quality of the ideas, the form of the final presentation and the credibility of the project.

The number of group members varied from three to six, with most collaborative learning groups including an average of five members. The average age of the respondents was 24 years, and 60% of students were female. In terms of nationality, most students were from France (39%), China (25.93%), Colombia (6.67%) and Mexico (5.56). Moreover, 43% of the groups were culturally homogeneous and contained only French students, whereas the portion of students' countries in culturally heterogeneous collaborative learning groups ranged from 14.30% to 85.70% of the group composition. The presence of both culturally homogeneous and culturally heterogeneous collaborative learning groups is the result of the fact that French students enrolled in the BIBA program had the opportunity to attend this program in either French (i.e. in a culturally homogeneous collaborative learning group with students of the same nationality) or English (i.e. in a culturally heterogeneous collaborative learning group with students of other nationalities). The French and English sections of each course were taught by the same professor. The study was conducted in agreement with the ethical norms established by the French National Center for Scientific Research, and all biographical information on students was retrieved from the business school's records.

Measures

Gender diversity. Following prior research on gender diversity (e.g. [Wegge et al., 2008](#)), gender diversity within groups was calculated using the heterogeneity index (HI) [[5](#)] ([Metzner, 2003](#)). The gender HI ranges from 0 to 0.5, where zero corresponds to a gender-homogeneous group and 0.5 to a gender-heterogeneous group. Smaller values indicate a more gender-homogeneous group, and larger values indicate a more gender-heterogeneous group regardless of group size and the majority gender within the team. Two other indexes that are commonly used to measure diversity—[Blau's \(1977\)](#) index and the [Gini \(1912\)](#) index—have not been chosen in this study for the following reasons. First, Blau's index does not retain interval properties and, accordingly, shows weaker effects as the distance from complete homogeneity increases ([Williams and Meân, 2004](#)). For this reason, proportional measures of gender diversity are more appropriate ([Williams and Meân, 2004](#)). In this respect, Gender HI is a nondirectional form of the proportion of group members in the minority recommended by [Williams and Meân \(2004\)](#) but preserves the property of interval measurement ([Dawson, 2012](#)). Second, the Gini index has been shown to be an appropriate measure of diversity only for variables that have ratio-level properties ([Harrison and Sin, 2006](#)), which is not the case for our study. Taken together, these considerations led us to retain Gender HI as a more suitable measure of gender diversity in this study than Blau's index and Gini index.

Relative cultural distance. To measure relative cultural distance, we first calculated a cultural distance index using the formula developed by [Kogut and Singh \(1988\)](#) [[6](#)] to determine the cultural distance between members of different societies based on the cultural dimensions in [Hofstede \(1984\)](#). In this study, this index was adapted [[7](#)] to calculate the cultural distance for collectivism-individualism and power distance to assess cultural distance regarding each specific cultural component separately. Next, to calculate the relative cultural distance, we used the formula in [Thomas \(1999\)](#) [[8](#)] that calculates the index for

relative cultural distance by averaging the cultural distance index between each member and the rest of his or her group colleagues.

Group performance. The performance of student groups was assessed using their grades given by their professor for the group assignment. The overall group assignment was worth 50% of the final grade and was thus graded on a scale ranging from 0 to 50.

Control variables. We controlled for *cultural diversity*, which was assessed using a dummy variable that distinguished culturally homogeneous versus heterogeneous groups. To this end, each element was categorized according to the class to which it belonged. Specifically, students from UB1 and UB2 were classified as homogeneous groups because these classes contained students from France. Students from UB3 and UB4 were classified as heterogeneous groups because these classes included all international visiting students who had the following nationalities: Argentina, Australia, Canada, Chile, China, Colombia, Dominican Republic, Germany, Italy, Mexico, Peru, Poland, United Kingdom and Vietnam. Moreover, we controlled for *individualism–collectivism*, *power distance*, *masculinity–femininity*, *uncertainty avoidance* and *long-term orientation* because these cultural dimensions have been shown to influence diversity effects and predict collective performance. Following Hofstede *et al.* (2010), for each group, we added the average score of each member for these cultural dimensions. These indexes ranged from 0 to 100, with scores closer to 100 referring to an individualist, high power distant, masculine, uncertainty avoidant and long-term-oriented culture and scores closer to zero referring to a collectivist, low power distant, feminine, uncertainty tolerant and short-term-oriented culture. Furthermore, we controlled for *aggregated individual ability* because this factor has been shown to be a key determinant of group performance on intellectual tasks—such as those completed by student groups in this study. Individual ability was measured using students' scores on the individual final exam. Finally, we implicitly controlled for students' previous work experience because the sample was uniform in terms of age ($M = 24$ years).

Results

Table 1 reports the descriptive statistics and correlations for the study variables.

Before testing the hypotheses, we conducted an independent sample *t*-test to determine whether there were significant differences in group performance between the culturally homogeneous and the culturally heterogeneous groups. The results revealed that the culturally homogeneous group ($M = 35.44$, $SD = 4.47$) did not significantly differ from the culturally heterogeneous group ($M = 35.74$, $SD = 4.97$) in the level of group performance ($T_{[92]} = -0.30$, *ns*).

Hypotheses 1 and 2 predicted that relative cultural distance in country-level individualism–collectivism and power distance moderate the gender diversity–group performance relationship. Following Aiken *et al.* (1991), we mean-centered the predictors before entering them into regression equations by subtracting the mean from the value of the original variable such that it had a mean of 0. Mean-centering continuous variables help prevent multicollinearity between the main effect and the interaction variables (Aiken *et al.*, 1991). Moreover, following the recommendations from Cohen and Cohen (1983), we entered control variables in Step 1, the independent and moderating variables in Step 2 and the interaction terms in Step 3. The procedure for entering the substantive study variables and the interaction term in a hierarchical manner is important to determining the increment in explained variance (R^2) that is the result of the interaction term alone (Cohen and Cohen, 1983). Each interaction effect was tested separately because of the renowned power problems and inflation of Type II error related to simultaneously testing multiple interactions in moderated multiple regressions (Spitzmüller and Stanton, 2006). As shown in Table 2 (Model 1), country-level individualism–collectivism ($\beta = 0.42$, $p < 0.05$) and power distance ($\beta = -0.30$, $p < 0.05$) were positively and

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Aggregated individual ability	33.46	7.59	–										
2. Cultural diversity	–	–	0.11	–									
3. Country-level individualism–collectivism	52.15	20.37	–0.07	0.53**	–								
4. Country-level power distance	68.73	7.53	–0.13	–0.02	0.47**	–							
5. Country-level masculinity–femininity	52.51	9.02	–0.11	0.41**	0.73**	0.27**	–						
6. Country-level uncertainty avoidance	68.34	18.08	0.19	–0.24*	–0.67**	–0.31**	–0.87**	–					
7. Country-level long vs. short term orientation	58.91	14.63	–0.17	–0.39**	0.03	0.52**	0.12	–0.36**	–				
8. Gender diversity	0.25	0.16	0.23*	0.09	–0.06	–0.06	–0.05	0.13	–0.15	–			
9. RCD in country-level individualism–collectivism	0.84	0.99	0.01	0.58**	0.18	–0.04	0.15	–0.11	–0.15	0.10	–		
10. RCD in country-level power distance	0.99	4.06	0.15	0.18	0.15	–0.00	0.25*	–0.11	0.04	0.15	0.06	–	
11. Group performance	35.61	4.74	0.42**	0.03	–0.01	–0.25*	–0.15	0.14	–0.23*	0.07	–0.07	–0.07	–

Note(s): *N* = 94 groups. For cultural diversity: 0 = *culturally homogeneous group*, 1 = *culturally heterogeneous group*. RCD = relative cultural distance

p* < 0.05; *p* < 0.01

Source(s): Authors own creation

Table 1.
Descriptive statistics
and correlations

Table 2.
Results of multiple
regression for group
performance

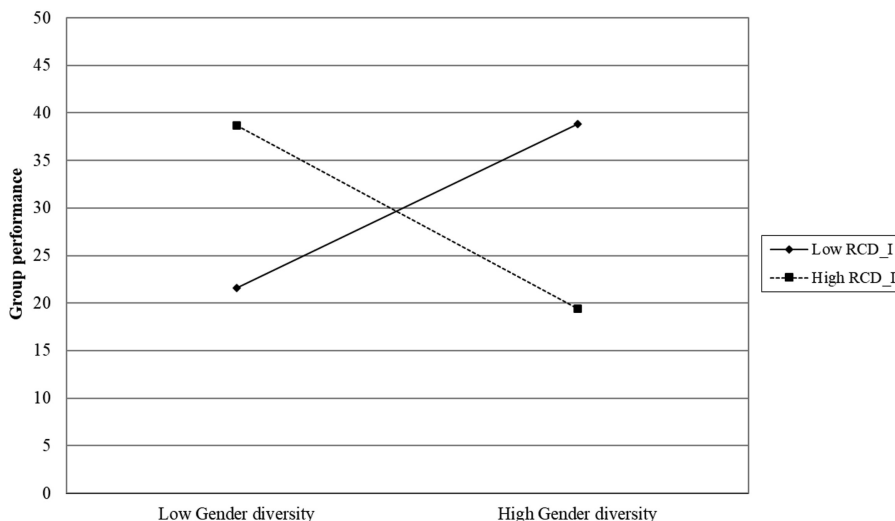
Variable/Model	Model 1		Model 2		Model 3		Model 4		Model 5	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Step 1										
Aggregated individual ability	0.39**	0.06	0.39**	0.06	0.32**	0.06	0.37**	0.06	0.36**	0.06
Cultural diversity	-0.14	1.19	-0.07	1.47	-0.10	1.40	-0.16	1.47	-0.22	1.16
Country-level individualism-collectivism	0.42*	0.04	0.40*	0.04	0.24	0.04	0.39*	0.04	0.43*	0.04
Country-level power distance	-0.30*	0.09	-0.30*	0.09	-0.29*	0.08	-0.25	0.09	-0.34*	0.09
Country-level masculinity-femininity	-0.36	0.11	-0.38	0.11	-0.31	0.11	-0.50*	0.12	-0.43	0.11
Country-level uncertainty avoidance	-0.12	0.06	-0.13	0.06	-0.28	0.06	-0.25	0.06	-0.12	0.06
Country-level long vs. short-term orientation	-0.07	0.05	-0.06	0.05	-0.17	0.05	-0.15	0.05	-0.03	0.05
Step 2										
Gender diversity			-0.01	2.80	-0.02	2.66	-0.03	2.76	-0.18	3.07
Relative cultural distance in country-level individualism-collectivism (RCD_I)			-0.08	0.56	-0.11	0.54				
Relative cultural distance in country-level power distance (RCD_PD)							0.19	0.12	1.20**	0.44
Step 3										
Gender diversity X RCD_I					-0.32**	2.86			-1.03*	2.64
Gender diversity X RCD_PD					0.37**				0.37**	
Total R ²	0.28**		0.29**		0.37**		0.31**		0.37**	
Δ R ²			0.01		0.08**		0.03		0.06**	
Note(s): N = 94 groups. Estimates are standardized regression coefficients. For cultural diversity: 0 = <i>culturally homogeneous group</i> , 1 = <i>culturally heterogeneous group</i> . Relative cultural distance refers to relative cultural distance in country-level individualism-collectivism. *p < 0.05; **p < 0.01										
Source(s): Authors own creation										

negatively associated with group performance, respectively. Conversely, country-level masculinity-femininity ($\beta = -0.36$, *ns*), uncertainty avoidance ($\beta = -0.12$, *ns*) and long-term orientation ($\beta = -0.07$, *ns*) were unrelated to group performance.

Moreover, gender diversity significantly interacted with relative cultural distance in country-level individualism–collectivism in predicting group performance ($\beta = -0.33$, $p < 0.01$, Model 3). To interpret the nature of this interaction (see Figure 1), we performed a simple slope test by following the procedure in Aiken *et al.* (1991). The results from this test showed that the gender diversity–group performance relationship was significantly negative when the relative cultural distance in country-level individualism–collectivism was high (i.e. plus 1 standard deviation from the mean; $B = -8.33$, $p < 0.05$) and significantly positive when the relative cultural distance in country-level individualism–collectivism was low (i.e. minus 1 standard deviation from the mean; $B = 8.84$, $p < 0.05$). Thus, these results supported Hypothesis 1 [9]. Moreover, results reported a significant interaction effect of gender diversity and relative cultural distance in country-level power distance on group performance ($\beta = -1.03$, $p < 0.05$, Model 5). As demonstrated in Figure 2, a simple slope test revealed that the gender diversity–group performance relationship was non-significant when the relative cultural distance in country-level power distance was low (i.e. 1 standard deviation above the mean; $B = 1.92$, *ns*) and significantly negative when the relative cultural distance in country-level power distance was high (i.e. 1 standard deviation below the mean; $B = -35.04$, $p < 0.01$). Hypothesis 2 was thus only partially supported.

Discussion

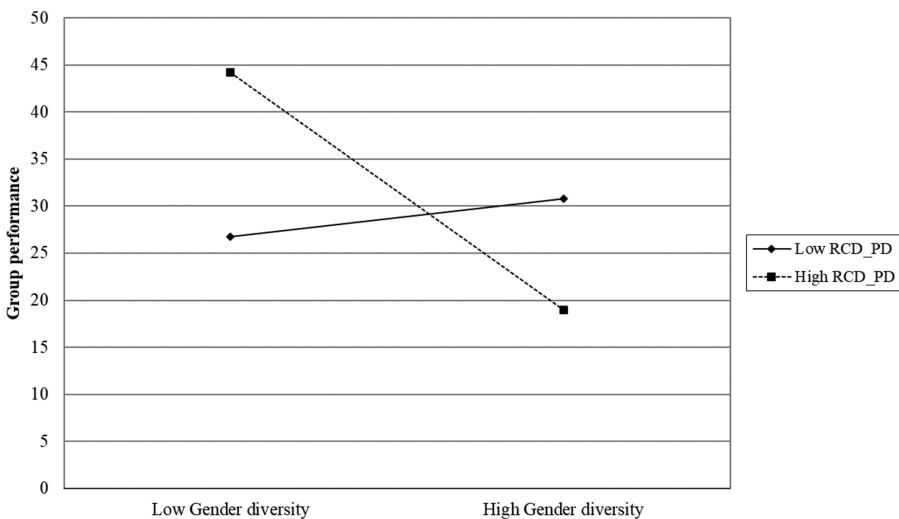
This study contributes to resolving the contrasting findings on the gender diversity–group performance relationship by shedding light on the conditions upon which gender diversity can be beneficial or detrimental to group performance. We found that gender diversity was positively associated with group performance when the relative cultural distance in individualism–collectivism was low and negatively related to group performance when the relative cultural distance in individualism–collectivism or power distance was high.



Source(s): Authors own creation

Figure 1.
Moderating effect of
relative cultural
distance in country-
level individualism-
collectivism (RCD_I)
on the relationship
between gender
diversity and group
performance

Figure 2.
Moderating effect of
relative cultural
distance in country-
level power distance
(RCD_PD) on the
relationship between
gender diversity and
group performance



Source(s): Authors own creation

Theoretical implications

This study contributes to the gender diversity literature by unraveling the benefits of gender-diverse collaborative learning groups for group performance. Specifically, our research broadens the range of diversity dimensions by integrating relative cultural distance in country-level individualism–collectivism and power distance within the CEM (Van Knippenberg *et al.*, 2004). In doing so, this study contributes to the limited research on the cultural-contextual moderators of gender diversity in collaborative learning environments by showing that when group members are culturally distant in terms of individualistic–collectivistic and power distance values, the performance of a gender-diverse collaborative group is threatened. In doing so, we answer calls for more research simultaneously investigating surface- and deep-level diversity components (Harrison *et al.*, 1998) and examining culture as a relevant component of normative fit in the context of gender diversity (Schneid *et al.*, 2015).

Furthermore, we answer calls for a collective rather than individualistic approach to the study of collaborative learning (Curşeu and Pluut, 2013; Curşeu and Sari, 2015), enriching the limited literature on the group-level benefits of collaborative learning. The results of this study suggest that in collaborative learning environments, when men and women interact under conditions of low relative cultural distance in country-level individualism–collectivism, they can produce new knowledge and insights that transcend the understanding of group members (Meslec and Curşeu, 2015). However, when group members are culturally distant from each other in individualism–collectivism, they cannot benefit from cross-gender behavioral complementarity because their different expectations and values regarding work group and interaction patterns can generate conflicts and lower cohesion, resulting in lower group performance (Staples and Zhao, 2006). This study then identifies relative cultural distance in individualism–collectivism as a cultural-contextual moderator that shapes the direction of the gender diversity–group performance relationship. In this regard, relative cultural distance in individualism–collectivism holds promise for unlocking the performance potential inherent in gender diverse groups, which signifies an important step for both theory and practice. Although Thomas (1999) had previously identified relative cultural distance in

individualism–collectivism as a factor influencing group effectiveness, this is the first study to identify cultural distance in this cultural dimension as a key contingency of the gender diversity–performance relationship.

Additionally, by unveiling the moderating role of cultural distance in country-level power distance, this study answers calls for more research on the interaction effects of gender diversity and power incongruity (Curşeu and Sari, 2015) and provides additional information on the conditions that can activate social categorization processes in mixed-gender collaborative learning groups. Although the benefits and detriments of power disparity within groups are well known (Tarakci *et al.*, 2016; Curşeu and Sari, 2015), this study moves a step forward in the cross-cultural management literature, as it is the first to identify relative cultural distance in country-level power distance as a relevant boundary condition for the gender diversity–group performance relationship. Our finding is consistent with prior studies showing that when group members disagree on the nature of their informal hierarchical interactions, group functioning may suffer (Bouncken *et al.*, 2016; Cole *et al.*, 2013; Newman and Nollen, 1996). However, our results do not support the claim that the relationship between gender diversity and group performance is positive when relative cultural distance in country-level power distance is low. A possible explanation might be that, despite being culturally similar, group members shared relatively high power distance values. This might have refrained women (i.e. members of traditionally low-power groups) from sharing their knowledge and viewpoints with men (i.e. members of high-power groups), thereby reducing the collective creation capacity needed for group performance (Akgün and Keskin, 2021; Lin and Lu, 2022).

Overall, this study suggests that, under favorable cultural conditions (i.e. low relative cultural distance in collectivism–individualism), gender diversity constitutes performance-enhancing variety. However, under unfavorable cultural conditions (i.e. high relative cultural distance in collectivism–individualism or power distance) gender diversity can be detrimental to group performance.

Limitations and directions for future research

The contributions of this research must be interpreted in light of its limitations. First, because of the time-lagged nature of our study, causal relationships cannot be inferred. Furthermore, we analyzed collaborative learning groups that had to interact for a relatively short period of time. Additionally, given that the same evaluator graded the group assignment of all groups, we cannot rule out that these evaluations might have been biased by same-rater personal bias, halo and pitchfork effects (i.e. early impressions of people being evaluated might influence subsequent ratings; Park *et al.*, 2015). Therefore, future longitudinal research is needed to investigate the dynamic relationships between gender diversity and group performance using multirater performance assessments. Second, our sample consisted of business students, which limits the generalizability of the results to the organizational context and does not allow us to rule out selection bias. Given that our sample was composed of young students who decided to attend international business management programs, our participants could have been particularly sensitive to and interested in cultural differences. As such, they might have been more willing and motivated to interact and collaborate with peers from other countries than students enrolled in other programs. This might have biased our results. Thus, the inclusion of international full-time workers and university students enrolled in different programs would increase the generalizability of our findings.

Additionally, data limitations impeded the inclusion of students' previous work experiences and qualitative aspects of such experiences (e.g. type of work experience and its relevance to the field), which might have affected teamwork abilities and individual contribution to group performance (Sharma *et al.*, 2021). There might have been variability

in this variable among students due to their nationality, as in some cultural settings, it is customary to begin working from a young (or even very young) age, while in others, it is common to wait until graduating from university (Passaretta and Triventi, 2015). Countries can also vary in their differentiation within the higher education system (e.g. more traditional higher educational systems provide mainly academically oriented education) and in the level of institutionalization of the linkage between higher education and the labor market. These differences impact students' opportunity to gain relevant work experience and build practical skills (Passaretta and Triventi, 2015). Hence, future research should try to replicate these findings while controlling for students' prior work experiences and other relevant individual-level (e.g. local language proficiency, motivation to pursue a high result) and group-level (e.g. degree of social loafing in a group) covariates.

Third, the mainstream international management research still includes the composite cultural distance index proposed by Kogut and Singh (1988) to synthetically evaluate cultural distance (e.g. Ding *et al.*, 2022; Lee *et al.*, 2021; Li *et al.*, 2021). Indeed, this index is one of the most popular measures based on Hofstede's country-level cultural dimension deviation (which is consistent with our choice of adopting Hofstede's theoretical framework). Nonetheless, this index has been criticized because it is based on the Euclidean mathematical calculation method and, as such, it carries all shortcomings attributed to dimensionalization (e.g. Ambos and Håkanson, 2014; Beugelsdijk *et al.*, 2018). These include symmetry (i.e. distance from country A to B is not necessarily identical to distance from country B to A), stability (i.e. culture is not static but changes slowly with time), linearity (i.e. the effect of cultural distance on collaborative learning may be nonlinear), causality (i.e. culture may not be the only determining factor of distance in terms of collaborative learning, but there may be additional factors, such as language differences; Shenkar, 2001) and lack of consideration of within-country level cultural distance. However, in this study, we partially overcome the shortcomings related to dimensions alignment (Yeganeh and May, 2011) and the country-level small variation due to the computation of an unweighted average of cultural dimensions (Ambos and Håkanson, 2014) by considering relative cultural distance in individual culture dimensions. This allowed us to conduct a more accurate test of the theoretical arguments involving specific cultural dimensions (Beugelsdijk *et al.*, 2018). Nevertheless, future studies should adopt more precise formulas to compute cultural distance.

Fourth, we used country-level indexes of cultural values that did not consider intracultural variations in these values and might reflect other national dissimilarities. This can be particularly important in countries with strong cultural/ethnic diversity, wherein migrants and their offspring may hold cultural heritage from their origin country and/or from their current host country. Thus, further research could measure individual-level cultural values using multidimensional questionnaires to rule out potential ecological fallacies and alternative explanations. Moreover, although we considered Hofstede's model (2001) to be the most appropriate framework for the purposes of the present study, we did not consider alternative cultural frameworks. Since accounting for all cultural and potential moderating factors is not feasible for the purpose of a single study, future investigations should replicate current results by adopting alternative cultural frameworks, such as Trompenaars' (1993) seven-dimension framework and the GLOBE nine-dimension framework (House, 2004). Fifth, we did not gather detailed information on participants' perceptions of either the interaction process or diversity. Hence, future studies should include these variables and other potential moderators (e.g. attitudes toward diversity; Traavik and Adavikolanu, 2016) to deepen the understanding of how and when gender diversity may affect group performance.

Fifth, the data for this study were collected in a pre-COVID-19 period. The forced transition to online learning during the pandemic, which moved collaborative learning groups to virtual settings and cut down important aspects of in-person communication (Järvelä and Rosé, 2020), complicated group members' collaborative learning experiences (Seymour-Walsh *et al.*, 2022). Due to the technological progress following the COVID-19

pandemic, universities and organizations have adopted more flexible modalities for training program delivery. Accordingly, additional research is needed to shed light on the cultural conditions upon which gender-diverse collaborative learning groups exhibit higher or lower performance within hybrid and/or remote learning settings.

Finally, this study focused on gender diversity based on the traditional woman/man dichotomy (i.e. physiological/bodily aspects related to biological sex) rather than on self-defined gender identities. This choice was motivated by the fact that the interpersonal attitudes and behaviors that are expected to explain the effects of diversity on group performance stem from the gender role expectations that people have internalized from their compliance with the assigned biological sex (Wood and Eagly, 2012), as well as from pre-existing biological differences between men and women (Stewart and McDermott, 2004). However, the traditional use of a binary gender measurement is unsuitable for many individuals whose identities lie within the intersections of these conventionally binary distinctions, such as transgenders (Bullough *et al.*, 2017; Kang and Bodenhausen, 2015). Since these people are unlikely to be categorized according to the traditional gender stereotypes (Gallagher and Bodenhausen, 2021), more research is needed to understand how gender diversity in terms of ambiguous or crossed-category membership (e.g. transgender or gender fluid identities) may interact with cultural differences to influence social categorization processes and group outcomes. Future studies should also investigate group outcomes resulting from the degree of alignment between team members' perceptions and others' perceptions of their own gender identity, such as in the case of gender ambiguity (i.e. ambiguously gendered bodies).

Conclusions and managerial implications

Overall, this study has practical implications for the management of group collaborative learning. To stimulate collective learning processes, educators should include gender composition and cultural distance in cultural dimensions as group design principles in collaborative learning environments. Attention should be devoted to the extent to which gender-diverse group members differ from one another in individualistic-collectivist and power distance values. Helpful tools to create a learning environment that facilitates positive group interactions include the implementation of group short-training programs to increase interpersonal awareness and social sensitivity and the adoption of group norms to affect the quality and nature of interpersonal relationships (Curşeu *et al.*, 2018; Meslec and Curşeu, 2015). Educators and corporate trainers could also provide their learners with diversity awareness activities that stimulate cognitive modifications. These interventions could focus on knowledge about gender-based behavioral differences to help group members see “people” instead of “categories” (Boroş and Petru, 2013). Helpful strategies to cultivate an inclusive diversity climate include stressing positive diversity attitudes as an important code of ethics and implementing recognition programs for people who behave accordingly. Alternatively, universities and organizations could consider arranging informal gatherings to help their members become acquainted with each other (Pettigrew, 1998). Educators could also publicly value the presence of diverse perspectives on problem-solving issues because research has revealed that if people see diversity as useful, they perceive it more positively (Lauring and Selmer, 2010).

In conclusion, this study helps disclose the boundary conditions associated with the effects of gender diversity on group performance. In line with the CEM, our findings indicate that by making gender-based categorizations less salient and enhancing value-based similarities among group members, a low level of cultural distance in country-level individualism–collectivism positively enables a positive gender diversity–group performance relationship. Conversely, gender diversity is negatively related to group performance when group members are culturally distant from one another in country-level individual collectivism and power distance values. Taken together, our findings clarify when gender diversity is beneficial (versus

harmful) for group performance, thereby improving current knowledge on the gender diversity-group functioning link. In doing so, these results can help universities and organizations effectively manage relative cultural distance in gender-diverse collaborative learning groups. We hope these findings will encourage future research to unravel how to maximize the benefits of gender diversity for group performance.

Notes

1. Note that this study focuses on diversity in groups characterized by biological differences between males and females rather than by socially constructed gender differences. This choice is motivated by the fact that the group differences in key interpersonal attitudes and behaviors that are expected to explain the effects of diversity on group performance arise precisely from the gender role expectations that individuals have internalized from their compliance with the assigned biological sex (Wood and Eagly, 2012) and from the preexisting differences between male and female human organisms (Stewart and McDermott, 2004). Accordingly, biological differences are expected to be more relevant than socially constructed differences to understand the conditions in which gender diversity is beneficial versus detrimental to group performance, which is what this study aims to shed light on.
2. We did not focus on uncertainty avoidance and masculinity-femininity dimensions because these two are still controversial in terms of content and their replicability in both Eastern and Western contexts (Bachrach *et al.*, 2019; Minkov, 2018; Minkov and Hofstede, 2014). Moreover, these dimensions do not seem to have explanatory power for knowledge-sharing processes (Akgün and Keskin, 2021), which, instead, are crucial to collaborative learning groups. Finally, the long- vs short-term orientation dimension is deeply related to Chinese Confucian values and national economic growth, which might be less reliable in predicting how individuals behave in collaborative learning groups within the French context (Bachrach *et al.*, 2019; Hofstede and Minkov, 2010).
3. However, given their regulatory power in exposing people to the same normative pressures of acculturation, countries are the most powerful grouping units (Akaliyski *et al.*, 2021). Indeed, nations are historically developed political units with a certain level of shared identity. Citizens are socialized through national media channels and the educational system to function efficiently within their national boundaries, which are generally characterized by a specific degree of economic development, social welfare and security (Akaliyski *et al.*, 2021). As a result, country-level culture can shape their members' cultural values (Akaliyski *et al.*, 2021; Minkov and Hofstede, 2014). This explains why within-country dissimilarities in values are lower than the corresponding intercountry differences (Hofstede, 2001; Hofstede *et al.*, 2010).
4. We refer to "individualistic" or "collectivistic" groups or group members based on their position within the individualism–collectivism continuum.
5. The heterogeneity index (HI) (Metzner, 2003) is calculated as follows:

$$\text{Gender heterogeneity index} = \frac{n(\text{of majority gender})}{n(\text{total})}$$

6. The original formula used by Kogut and Singh (1988) to calculate cultural distance is as follows:

$$CD_j = \sum_{i=1}^4 \{(I_{ij} - I_{iUS})^2 / V_i\} / 4$$

In this formula, CD_j is the cultural distance between country j and the United States (if the United States is the home country), I_{ij} is country j 's score on the i th cultural dimension, I_{iUS} is the score of the United States on that dimension, and V_i is the score variance of the dimension. In that case, cultural distance was calculated between the United States as the home country and other countries as host countries for a multinational enterprise.

7. The formula to calculate cultural distance for the country-level individualism–collectivism dimension is as follows:

$$CD_{jk} = \sum_{i=1}^1 \{(I_{ij} - I_{ik})^2 / V_i\} / 1$$

In this formula, CD_{jk} is the cultural distance between country j and country k , I_{ij} is country j 's score on the i th cultural dimension, I_{ik} is country k 's score on the i th cultural dimension, and V_i is the score variance of the dimension. Once all of the cultural distance indexes between each member of each group were calculated, the arithmetic average was calculated for all indexes to obtain the relative cultural distance as an average within the group.

8. The formula in Thomas (1999) to calculate the relative cultural distance is as follows:

$$\text{Relative Cultural Distance} = \sum_{i=1}^n CD_i / n$$

In this formula, CD_i is the cultural distance from the i th individual, and n is the number of measures within the group.

9. We conducted two supplementary analyses to determine whether 1) the standard deviation of country-level individualism–collectivism shapes the moderating impact of this cultural dimension on the gender diversity–group performance relationship, 2) the relative cultural distance on country-level masculinity–femininity would alternatively moderate the gender diversity–group performance relationship and 3) the relative cultural distance on country-level uncertainty avoidance would alternatively moderate the gender diversity–group performance relationship. The standard deviation of country-level individualism–collectivism did not significantly interact with individualism–collectivism and gender diversity to predict group performance ($B = -0.48, ns$). Likewise, neither the interaction term between gender diversity and relative cultural distance in country-level masculinity–femininity ($B = -1.79, ns, ns$) nor the interaction term between gender diversity and relative cultural distance in country-level uncertainty avoidance ($B = 1.30, ns$) were statistically significant. The results for these auxiliary analyses are available on request.

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