



The influence of cultural intelligence and emotional intelligence on conflict occurrence and performance in global virtual teams

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ABSTRACT

The role of different types of intelligence in the occurrence of conflict in global virtual teams (GVTs) has largely been overlooked in the literature. As suggested by the theory of multiple intelligences, this study explores how cultural intelligence (CQ) and emotional intelligence (EQ) influence the occurrence of interpersonal, task and process conflicts in GVTs. Furthermore, by drawing on the contingency theory of task conflict and performance in groups and organisational teams, we examine the impact of these different types of conflict on the performance of GVTs. Utilising multilevel analysis, we tested the research model using a sample of 810 graduate and undergraduate business students from 38 different countries who worked in 232 GVTs. The results show that the CQ and EQ of the team members reduce the occurrence of the three different intragroup conflicts in GVTs. We also demonstrate that process conflict negatively affects GVT performance. We discuss the implications for research and practice.

1. Introduction

A 2018 survey showed that 89 % of white-collar employees worked at least occasionally in virtual teams, often with team members located in different countries (Culture Wizard, 2018). The COVID-19 pandemic has likely further increased that number as organisations were forced to shift to telework, and international travel was largely banned. Millions of people worldwide have been working in home offices due to widespread lockdowns and health concerns (Li et al., 2020), and the telework rates will likely remain higher than the pre-pandemic levels, even after the stay-at-home orders are lifted. Bartik et al. (2020) suggest that more than one-third of the firms that have switched to remote working believe that they will continue to work virtually even after the COVID-19 crisis. As organisations increasingly rely on global virtual teams (GVTs), understanding the dynamics and performance in this form of the organisational unit becomes more critical than ever.

Previous studies have examined the opportunities and challenges of GVTs (e.g., Eisenberg and Krishnan, 2018; Harvey et al., 2004; Jimenez et al., 2017; Kerber and Buono, 2004; Kirkman et al., 2002; Lilian, 2014). However, the role of conflict in such teams has been widely overlooked (Onkman et al., 2010). Conflicts may be related to the team's task, the process of work within the team or interpersonal relationships (Jehn and Mannix, 2001). Each of them can have enormous consequences for the team, affecting its performance (De Dreu and Van Vianen, 2001; De Dreu and Weingart, 2003a, 2003b). Much of the conflict in multicultural teams results from

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cultural differences between team members (Hibbert and Hibbert, 2017). Culture-sensitive handling of conflicts in organisations increases job satisfaction and improves work-related performance (Gunkel et al., 2016). Furthermore, studies show that conflicts are intertwined with emotions (Jehn, 1997). In multicultural settings, culture and emotion are both important factors for members with different cultural backgrounds to collaborate (Schellwies, 2015). Therefore, it can be claimed that there are many commonalities between successful teamwork in multicultural settings and various types of social intelligences (Luca and Tarricone, 2001).

Though the literature has acknowledged the role of various intelligences, such as cultural intelligence (CQ) and emotional intelligence (EQ), in the prevalence and resolution of conflict separately (e.g., Caputo et al., 2018; Goleman, 1998; Gonçalves et al., 2016; Gunkel et al., 2016; Jordan and Troth, 2004; Lenaghan et al., 2007), the role of multiple intelligences in the conflict occurrence in GVTs has, for the most part, remained unexplored. CQ refers to the ability of individuals to perform effectively in cross-cultural settings (Ang and Van Dyne, 2008), while EQ reflects 'the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions' (Salovey and Mayer, 1990: 189). Studying CQ and EQ together in the multicultural GVT context is important as they complement each other, resulting in the more effective functioning of cross-cultural interactions. Previous studies have mainly focused on CQ as it has been considered a key competence for GVT members (Dibble et al., 2019; Henderson et al., 2018; Koh et al., 2009; Presbitero, 2021). Presbitero (2016) and Presbitero and Toledano (2018) demonstrate that CQ positively influences task performance in virtual, cross-cultural interactions. Moreover, previous research shows that resolving and handling conflict is influenced by GVT members' CQ. That is, a higher CQ relates to higher effectiveness in conflict handling in GVTs (Presbitero, 2021). In particular, GVTs with a high average level of motivational CQ put in the extra effort to overcome perceived cultural differences, resulting in increased conflict management effectiveness (Magnusson et al., 2014). Nevertheless, conflicts are emotional experiences (Jehn, 1995, 1997). EQ helps avoid, recognise and resolve conflicts, as it has been shown to result in superior conflict resolution skills (Goleman, 1998; Jordan and Troth, 2004) and specific conflict resolution styles (Gunkel et al., 2016). EQ also plays a significant role in conflict resolution in a virtual team environment (Alfahid, 2018). EQ helps GVT members to cope with the challenges of multicultural virtual teamwork, including conflict management (Nauman et al., 2006). In addition, Gunkel et al. (2016) demonstrate that EQ influences the preferences for the conflict handling styles in GVTs. However, the role of EQ in the occurrence of conflict in multicultural teams has remained largely unexplored.

To fill this gap in the literature, according to the multiple intelligences theory (Gardner, 1983), this study investigates how CQ and EQ influence the occurrence of the three different types of conflict (interpersonal conflict, task conflict and process conflict) in GVTs. Furthermore, drawing on the contingency theory of task conflict and performance in groups and organisational teams (De Dreu and Weingart, 2003a), this study extends the GVT literature by examining the impact of these conflict types on performance in such teams. Previous research shows that conflicts in multicultural settings, compared to the culturally homogenous workgroups, suffer from higher complexity (e.g., Wall and Callister, 1995). Furthermore, barriers and biases because of cultural diversity increase the potential level of conflict in a multicultural setting (Triandis, 2000; Vodosek, 2007). This would even be more complicated when virtuality adds to multiculturalism. Communication difficulties (Liu et al., 2010), cultural tensions and misperceptions can exaggerate the intragroup conflicts (de Wit et al., 2012; Tenzer et al., 2014) in GVTs. Nevertheless, not all conflicts have adverse effects on a team's performance; some may even boost group performance. De Dreu and Weingart (2003a) suggest that task conflict and process conflict may have either a positive or negative influence on team performance, depending on task uncertainty and the conflict management approach. When it comes to interpersonal conflict, its effect on team performance is generally negative (Griffith et al., 2002).

In order to examine the role of multiple intelligences in the occurrence of conflict as well as the performance consequences of conflict in GVTs, we carry out an empirical study based on a sample of 810 graduate and undergraduate business students, forming 232 GVTs with members from 38 different countries. The results of our multilevel study contribute to the literature on international management and international human resources management, specifically with regard to GVTs, by exploring the role of multiple intelligences as a form of individual competence impacting group-level processes, namely, the different types of intragroup conflicts. Thus, our results contribute to the existing literature, which has so far mainly focused on conflict resolution, by first extending it to examine the occurrence of conflict in GVTs. Second, we examine the effects of the three different types of conflicts - interpersonal, task and process - on the GVT performance. We discuss the implications of our results for both research and practice.

2. Theoretical background

Information and communications technology is exponentially transforming to meet the needs of the changing business environment (Mangla, 2021). The increased use of digital communication technologies and their rapid development have significantly impacted the establishment of GVTs (Davidaviciene et al., 2020). Many companies are investing heavily in GVTs to enhance their performance and competitiveness (Ale Ebrahim et al., 2009). The reliance of organisations on GVTs continues to grow due to the need for innovative workgroups, increased globalisation and advances in information and communications technology (Adamovic, 2018).

GVTs can provide organisations with many benefits. They enable organisations to eliminate time and geographical location constraints (Lurey and Raisinghani, 2001), allowing them to access and combine the best expertise available for a particular job regardless of their location. As a result, the use of GVTs enables organisations to better pool the talents and expertise from around the globe (Boudreau et al., 1998; Cascio, 2000; Furst et al., 2004; Hunsaker and Hunsaker, 2008; Jimenez et al., 2017; Kirkman et al., 2002; Liao, 2017; Schmidtke and Cummings, 2017) while saving on travel and relocation costs (Boudreau et al., 1998; Cascio, 2000; Jimenez et al., 2017; Kankanhalli et al., 2006; McDonough et al., 2001; Rice et al., 2007), which, in turn, can produce better outcomes and generate the greatest competitive advantage from limited resources (Chen et al., 2008; Martins et al., 2004; Rice et al., 2007). Furthermore, GVTs provide organisations with flexibility and responsiveness (Hunsaker and Hunsaker, 2008; Piccoli et al., 2004; Pihkala et al., 1999; Powell et al., 2004). Responding quickly to changing business environments (Mulebeke and Zheng, 2006) enables organisations

to react more quickly to increased competition (Hunsaker and Hunsaker, 2008; Pauleen, 2003), leading to better outcomes (Gaudes et al., 2007; Piccoli et al., 2004) and higher effectiveness and efficiency (May and Carter, 2001). Moreover, due to the COVID-19 pandemic that has curtailed the physical mobility of people, especially at the global level, the importance and necessity of GVTs have increased (Batirlik et al., 2022). The organisations that were not prepared to work virtually became more aware of the necessity to be proactive and prepared for future emergencies (Mangla, 2021). Organisations that are able to operate virtually are more ready in times of severe disruption, such as the COVID-19 pandemic. More importantly, virtual collaborations contribute significantly towards greenhouse gas emissions. Compared with 2019, the CO₂ emissions in the first half of 2020 declined by 17 % due to the travel restrictions during the COVID-19 lockdown (Le Quéré et al., 2020).

However, working in GVTs may lead to challenges. One of the biggest challenges for teams in any environment is managing the conflict that arises from team members' tension caused by real or perceived differences (De Dreu and Weingart, 2003b). Intragroup conflicts inevitably occur due to the inherent interdependent nature of teamwork (De Dreu and Weingart, 2003a). The literature discusses three intragroup conflict types: interpersonal conflict, task conflict and process conflict (De Dreu and Weingart, 2003a; Jehn, 1997; Jehn and Mannix, 2001). Interpersonal conflict is usually the outcome of differences among team members in personal concerns, such as personality, feelings, preferences and values (De Dreu and Van Vianen, 2001; Jehn, 1995). In a GVT, disputes are inevitable and often based on fundamentally different needs, interests, perceptions or cultural norms (Levi, 2001). In contrast, task conflict is related to disagreements in viewpoints, opinions and ideas associated with the team task (Jehn and Chatman, 2000). Finally, process conflict is defined as an awareness of controversies about aspects of how task accomplishment will proceed (Jehn and Mannix, 2001) and relates to job assignments, responsibilities and resource delegation (Onkman et al., 2010). The three types of intragroup conflict (interpersonal, task and process conflicts) could also occur in a virtual team environment, and it has been suggested that they have a significant influence on virtual team performance (Hinds and Bailey, 2003). Past research indicated that virtual teams experience more task and interpersonal conflicts compared with collocated teams (Hinds and Mortensen, 2005). However, not every conflict is detrimental to team performance; some may even be constructive (De Dreu and Weingart, 2003a).

There has been a well-established but contradictory discussion regarding conflict and performance relationship in the literature (e.g., De Church and Marks, 2001; De Dreu and Van Vianen, 2001; De Dreu and Weingart, 2003b; Jehn et al., 1997; Jehn and Chatman, 2000; Van de Vilert and De Dreu, 1994). Over the years, distinct views have evolved about the conflict in organisations, and different schools of thought have evolved based on their view on conflict's effect on performance. For instance, the traditional view assumes that conflict is bad and always hurts organisational performance and must therefore always be avoided. In contrast, the interactionist view of conflict sees conflict as a positive situation and necessary to increase performance. It is believed that conflict is functional when it initiates the search for new and better ways of doing things and undermines complacency within an organisation (Robbins, 1987). The performance of GVTs, as a form of organisational unit, can be impacted either positively or negatively by intragroup conflicts.

GVTs are characterised as 'temporary, culturally diverse, geographically dispersed and electronically communicating workgroup [s]' (Jarvenpaa and Leidner, 1999: 792). While these characteristics offer a number of opportunities, such as flexibility with respect to geography and timing, they are most often paired up with unique challenges that may cause intragroup conflicts (Jimenez et al., 2017). First, cultural diversity is a double-edged sword, especially when examining its effect on intragroup conflicts and team performance in GVTs. Diversity increases minority viewpoints, leading to task conflict (Stahl and Maznevski, 2021), which in turn motivates the consideration of a larger number of alternatives and solutions (Williams and O'Reilly, 1998). Therefore, diversity can result in effective decision-making (Goleman et al., 2002), creativity and innovation (Jackson, 1992; Nemiro, 2002; Tschang, 2007; Watson et al., 1993). That is to say, compared with homogenous teams, GVT members are more likely to experience constructive conflict, like task conflict, which has been suggested to improve team performance (Kirchmeyer and Cohen, 1992). On the other hand, GVT members may suffer from interpersonal conflict (Daim et al., 2012), which is often caused by cultural diversity and can negatively influence team performance (Jehn, 1995).

Second, the impacts of geographical dispersion on intragroup conflicts can be viewed in terms of time-zone dispersion, language differences and virtual communication. Time-zone dispersion can slow down communication due to time differences in countries where GVT members are located. The technical delays in replying to messages may lead to intragroup conflicts in GVTs as they can be interpreted as a lack of participation or dedication (Kankanhalli et al., 2006; Montoya-Weiss et al., 2001). Furthermore, language differences often lead to social categorisation and biases, which may intensify intragroup conflicts (Barner-Rasmussen and Aarnio, 2011; Welch and Welch, 2008). However, the type of virtual communication tools used by the team, including non-verbal communication (e.g., email) and live communication (e.g., audio-video conferencing), may affect the problem of language differences (Jimenez et al., 2017). Non-verbal communication reduces the social categorisation and prejudice due to language proficiency differences (Klitmøller et al., 2015) and could alleviate this problem (Jimenez et al., 2017) and reduce interpersonal conflict (Kankanhalli et al., 2006). However, it increases the chances of misinterpretation (Desanctis and Monge, 1998) and subsequently induces task conflict (Kankanhalli et al., 2006).

Third, GVTs rely heavily on electronic-mediated communication technologies. Previous research suggests that electronic-mediated communication creates more conflicts in teams (Hollingshead, 2001; Jimenez et al., 2017; Kiesler and Cummings, 2002; Morley et al., 2015; Sensuse et al., 2021). However, over time, as the use of technology-mediated communication becomes natural in virtual teams and individuals gain experience and comfort with electronic communication technologies, they engage in more task, interpersonal and process knowledge exchange (Carlson and Zmud, 1999; Wakefield et al., 2008). Thus, as the use of electronic communication technologies increases among GVT members, they engage in more interactions that can reduce the likelihood of interpersonal, task (Hinds and Mortensen, 2005; Wakefield et al., 2008) and process conflicts (Wakefield et al., 2008). Interestingly, technology intervention impacts interpersonal conflict to a lesser degree compared with other conflict types, emphasising the fact that the interpersonal aspect is a more challenging issue in GVTs (Wakefield et al., 2008). Furthermore, using electronic communication technologies may

accompany various communication problems and failures, which may contribute to misunderstandings about the task in GVTs, leading to more task conflict (Kankanhalli et al., 2006).

Finally, the temporary nature of GVTs often results in less commitment to the organisation and trust-building among team members (Lindner and Wald, 2011), which can lead to more intragroup conflicts and, subsequently, negative impacts on team effectiveness (Taras et al., 2019). In this study, we assumed that the CQ and EQ of GVT members might have a significant role in the occurrence of conflict in GVTs. In the next section, the theoretical arguments supporting the hypotheses of this study are elaborated.

2.1. Intelligences and conflict

There are various theories of intelligence. The most prominent and conventional ones have been the psychometric theories, which view intelligence in terms of a 'map' of a person's mental functioning (Sternberg, 2012) and favour individuals who are strong in memory and analytical abilities (Sternberg, 2005). More recently, systems theories that try to characterise the structures and mechanisms of the mind that constitute intelligence have been introduced (Sternberg, 2012). These theories propose that intelligence goes beyond analytical intelligence (Gardner, 1983; Sternberg, 2012). Gardner's (1983) theory of multiple intelligences is one of the most well-known systems theories. According to Gardner's (1983) theory of multiple intelligences, intelligence is not a single thing. Instead, every human possesses different distinct intelligences, e.g., verbal-linguistic, logical-mathematical, visual-spatial, interpersonal and intrapersonal. Each type of intelligence is present to varying degrees in an individual, with some intelligences being better developed than others (Goodnough, 2001). Furthermore, different organisational contexts require individuals with different blends of intelligences.

In GVTs, in addition to CQ, there is an increasing interest in investigating the role of EQ in dealing with conflicts (Gunkel et al., 2016; Luca and Tarricone, 2001; Schellwies, 2015). Both CQ and EQ are situated in the theoretical framework of multiple intelligences and were derived from Gardner's (1983) interpersonal and intrapersonal intelligences and thus extend this theory (Ang and Van Dyne, 2008; Earley and Ang, 2003). Intrapersonal intelligence is the ability to process self-related concepts and sensations, have an effective working model of oneself, such as one's moods, desires, motivations and intentions, and use such information effectively in regulating one's own life. Interpersonal intelligence is the ability to process information related to other people and to understand their intentions, motivations, beliefs and desires and, consequently, work effectively with them (Gardner, 2006). The level of interpersonal abilities that individuals possess within a culture is independent of the level of interpersonal abilities that those individuals possess across cultures (Earley and Ang, 2003; Groves and Feyerherm, 2011), which means that an individual may be considered as emotionally intelligent in his/her own culture but not score high on EQ when interacting with individuals from other cultural backgrounds. Thus, EQ is said to be culture-bound (e.g., Ang and Van Dyne, 2008). However, it can be an essential element in the GVT context when complemented by CQ. In fact, CQ and EQ are distinct but, at the same time, interrelated constructs (Crowne, 2009, 2013; Moon, 2010; Schlaegel et al., 2021) and jointly explain individuals' attitudes and behaviours in a multicultural context.

Despite the considerable research interest in the role of EQ in intragroup conflicts (e.g., Ayoko et al., 2008; Lee and Wong, 2017; Paskewitz, 2021; Yang and Mossholder, 2004), relatively few studies have explored the impact of EQ on conflict occurrence in multicultural settings. Previous research shows that EQ is a predictor of individuals' work-related attitudes and behaviours (Jordan and Troth, 2002; Shih and Susanto, 2010; Wong and Law, 2002), and emotionally intelligent individuals tend to report less conflict at the workplace (Suliman and Al-Shaikh, 2007).

Interpersonal conflicts are interpersonal incompatibilities leading to the feeling of tension and friction (Hoegl et al., 2004). Therefore, interpersonal conflicts can be considered highly emotional experiences. While previous research reveals the positive effect of EQ on reducing the occurrence of interpersonal conflict among employees (e.g., Fitness and Curtis, 2005; Khajeh et al., 2013; Kisamore et al., 2010; Westerlaken et al., 2009), empirical research on the relationship between EQ and interpersonal conflict in the multicultural settings remains scarce. GVTs are more vulnerable to emotional effects due to the team's diversity, leading to different ways of displaying and interpreting emotion. Such differences may lead to tension and negative emotions among the team members (Schellwies, 2015). Employees with a higher EQ can perceive, manage and control emotions and therefore understand and avoid interpersonal conflict, which is rooted in the emotional aspects of interpersonal relationships (Jehn, 1997). Therefore, we hypothesize that:

Hypothesis 1a. EQ is negatively related to interpersonal conflict in GVTs.

Previous research shows that in the absence of EQ, process conflict is strongly related to negative emotions (Ullah, 2021). Disagreement regarding the distribution of roles and delegation of assignments creates negative emotions in employees (Kuriakose et al., 2019; Van den Berg et al., 2014). In fact, process conflict is linked to poor communication (Malik et al., 2021; Suifan et al., 2020) and coordination (Wakefield et al., 2008) between team members about how task assignments and responsibilities are approached by individuals. Emotionally intelligent people can better communicate with their team members during the process-related disagreements with the appropriate emotional tone, which prevents the invoking of negative emotions in others (Rezvani et al., 2019). Thus, EQ improves team coordination, absorbs different viewpoints, and minimizes the negative emotions that may lead to the process conflict. Therefore, we hypothesize:

Hypothesis 1b. EQ is negatively related to process conflict in GVTs.

Similarly, task conflict is also inherently emotional as it involves the perception of threats to individual or group goals (Jordan and Troth, 2002, 2004). Individuals with a high EQ can regulate and control their negative emotions; thus, they are able to manage conflict-related emotions more effectively and, as a result, avert task conflict (Law et al., 2004; Wong and Law, 2002; Yang and

Mossholder, 2004). Task conflict is likely to occur when team members disagree about the content and outcomes of the task to be performed (Jordan and Troth, 2002). Individuals with strong EQ are effective at understanding others' views, as well as at explaining their beliefs to others, even when they disagree with them (Zhang et al., 2015). Consequently, they will be able to deal with task-related tensions more efficiently. Therefore, we propose:

Hypothesis 1c. EQ is negatively related to task conflict in GVTs.

While a plethora of research studies have investigated the impact of EQ on intragroup conflicts (e.g., Ayoko et al., 2008; Khajeh et al., 2013; Kisamore et al., 2010; Lee and Wong, 2017; Paskewitz, 2021; Yang and Mossholder, 2004), a few studies have appeared in the literature examining the impact of CQ on conflict occurrence. In multicultural settings, EQ alone is not enough: CQ is also needed (Alon and Higgins, 2005). The cues to emotion and the ability to respond to the affective states of others may carry different interpretations in various cultures; thus, EQ may not transfer across borders (Earley and Ang, 2003) and the importance of CQ becomes inevitable.

Previous research suggests that CQ improves cross-cultural interactions (Adair et al., 2013) by facilitating understanding, interpretation, adaptation, communication and coordination (Johnson et al., 2006). CQ allows individuals to understand a cultural difference better, interpret unfamiliar and ambiguous gestures and adapt their behaviour to fit into the different cultures (Earley et al., 2006). Knowledge of other cultures, awareness of cultural differences and knowing how to adapt verbal and non-verbal behaviours in cross-cultural interactions facilitate understanding and enable effective communication (Silberstang and London, 2009). Hence, CQ improves dialogue and reduces interactional ambiguities and misunderstandings that would otherwise generate interpersonal conflicts (Ang and Inkpen, 2008). In addition, GVTs composed of culturally intelligent individuals experience greater cohesion than teams with lower-level CQ (Moynihan et al., 2006). Communication openness, feelings of connection (Hinds and Mortensen, 2005; Torpey, 2006) and team cohesion (Ensley et al., 2002) are important factors in preventing interpersonal conflicts. Therefore, we propose:

Hypothesis 2a. CQ is negatively related to interpersonal conflict in GVTs.

Prior research indicates that the more culturally diverse a team is, the more likely the team members to disagree over how to organize their workflow (Tröster et al., 2014; Vodosek, 2007). In other words, cultural diversity has been shown to contribute to increased process conflict (Jäger and Raich, 2011; Vodosek, 2005). Previous research suggests that CQ impacts the collaborative behaviour of individuals in GVTs (Li et al., 2017), thus, culturally intelligent individuals may cooperate better at work, leading to reduced process conflict. Thus, we hypothesize:

Hypothesis 2b. CQ is negatively related to process conflict in GVTs.

People from diverse backgrounds are different in their attitudes, beliefs, categorisations, self-definitions, norms, role definitions and values (Triandis, 1995). Therefore, culturally diverse groups experience more disagreements about their tasks; thus, task conflict is more likely to occur in such teams (Stahl et al., 2010; Vodosek, 2005). Knowledge about cultural differences and culturally sensitive behaviour improves the interactions of employees from different cultural backgrounds, and this further creates advantages when addressing task conflict (Pesch and Bouncken, 2018) in GVTs. Hence, we propose:

Hypothesis 2c. CQ is negatively related to task conflict in GVTs.

2.2. Intragroup conflicts and team performance

A large number of studies have examined the relationship between intragroup conflicts and performance, suggesting that conflicts have adverse effects on performance and reduce satisfaction by increasing tension and antagonism and distracting team members from the task (e.g., De Dreu and Van Vianen, 2001; De Dreu and Weingart, 2003b). However, the contingency theory of task conflict and performance in groups and organisational teams (De Dreu and Weingart, 2003a) suggests that the exact effect of task and process conflicts on team performance depends on the combination of task uncertainty (task routineness versus task complexity) and conflict management strategies (collaborating, contending and avoiding). For instance, task conflict may be beneficial to team performance when a group performs non-routine tasks in which standard solutions do not suffice (Amason, 1996; De Dreu, 1997; Jehn, 1994, 1995, 1997; Turner and Pratkanis, 1997), provided that team members collaborate and participate in the decision-making process (De Dreu and Weingart, 2003a). The basic premise is that teams that experience task conflict scrutinise task issues and engage in deep and deliberate processing of task-relevant information (De Dreu and West, 2001), thus achieving a better understanding of task issues (Simons and Peterson, 2000). This, in turn, fosters learning and the development of new creative insights, leading to the team becoming more effective and innovative (De Dreu and West, 2001) and thereby improving decision quality (Simons and Peterson, 2000). However, a meta-analysis by De Dreu and Weingart (2003b) shows a negative relationship between task conflict and performance. Additionally, Jehn (1995) notes that task conflict may be negatively related to team performance for routine tasks. These contradictory results indicate that in some specific situations or circumstances, the relationship between task conflict and team performance may also be positive (De Dreu and Weingart, 2003a). GVTs are temporary teams (Jarvenpaa and Leidner, 1999), which are formed to respond quickly to changing business environments (Mulebeke and Zheng, 2006), to enable organisations to respond faster to increased competition (Hunsaker and Hunsaker, 2008; Pauleen, 2003) and to make decisions more effectively and rapidly (Bal and Gundry, 1999; Paul et al., 2004). These characterisations imply that GVTs mostly perform uncertain tasks. Therefore, it can be claimed that task conflict is positively related to performance in GVTs.

Nevertheless, interpersonal conflict is universally seen as detrimental to team performance (Simons and Peterson, 2000). Conflicts

on personal issues, which are not task-related, or even personality differences and team members disliking one another, may distract team members from the task, leading to less cooperative and productive work (Griffith et al., 2002), and poor performance (Simons and Peterson, 2000). Similarly, process conflict may distract team members from task issues (Jehn, 1997) and decrease productive team outcomes because efforts are absorbed by disagreements about resources and responsibilities (Hinds and Bailey, 2003). Thus, process conflict may negatively affect team performance if team members spend excessive time arguing about who should do what in the team. (Jehn, 1997; Jehn and Mannix, 2001). Therefore, we propose:

Hypothesis 3. The performance of GVTs is negatively affected by (a) interpersonal conflict and (b) process conflict, whereas (c) task conflict has a positive effect on performance in GVTs.

Fig. 1 depicts the conceptual model of this study, which incorporates multiple intelligences (CQ and EQ), three intragroup conflict types (interpersonal conflict, task conflict and process conflict) and team performance.

3. Methodology

3.1. Sample and data collection

We utilised data based on a virtual international business consulting project. Over 5000 graduate and undergraduate business students from around 120 universities in 40 countries take part in the project every semester, working in GVTs of about four students in which each member typically has a different nationality. The participants collaborate with each other to develop solutions to a real-life business challenge presented by real-life companies during eight to nine weeks of teamwork. The challenges presented by the companies are unique; thus, the tasks performed by team members can be considered non-routine tasks. Like any other consulting project, the CEO and other senior managers are available to consult with the participants.

Individual and team performance is evaluated continuously based on weekly deliverables, progress reports and peer evaluations. The participants complete tasks weekly, evaluating various aspects of the teamwork (including the level of conflict, the performance of the team members, etc.) but also providing information about their personal characteristics (e.g., completing intelligence tests,

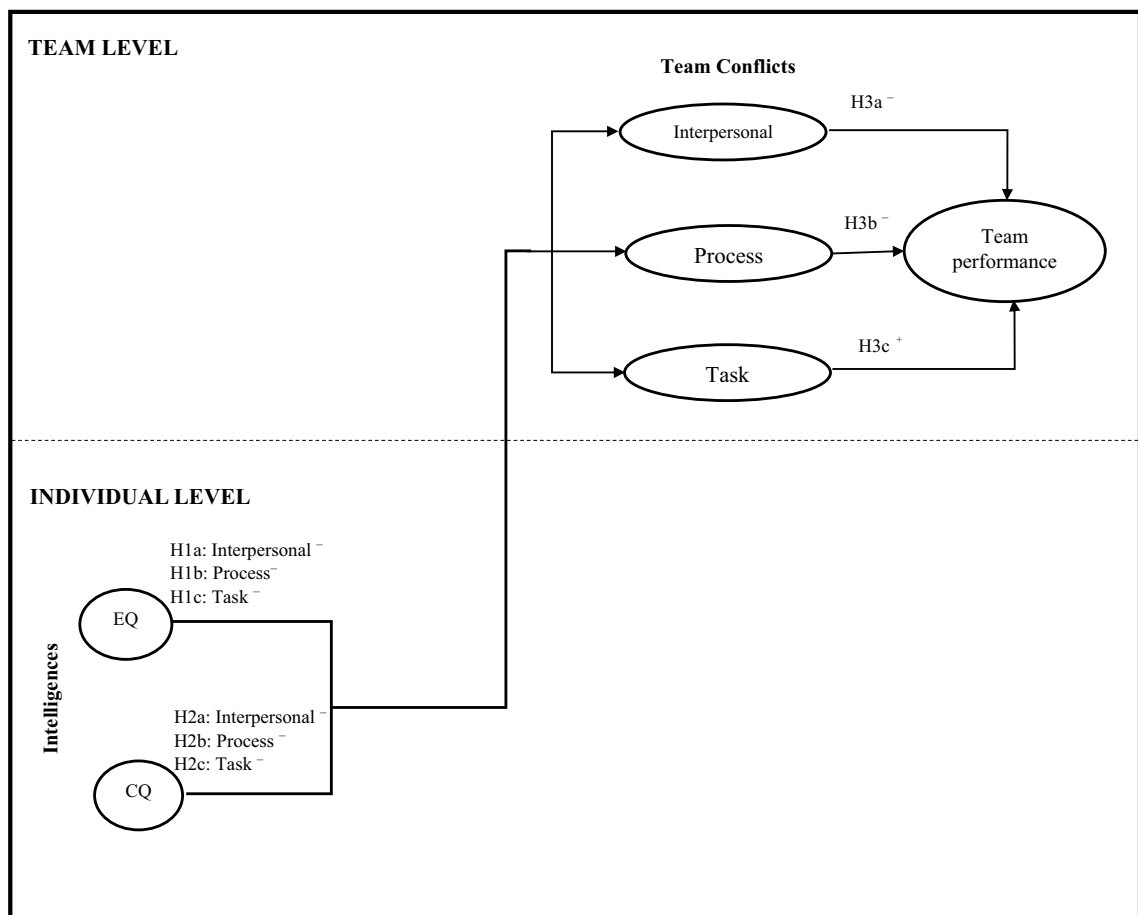


Fig. 1. Conceptual model.

assessing their level of motivation). In order to provide reliable estimates of team performance, at the end of the project, five to seven independent experts evaluate the solution to the business challenges presented by each team.

The nature of our student sample may be discussed as a shortcoming of this study as using a sample of students has been questioned in the literature (e.g., Balthazard et al., 2004; Bello et al., 2009; Furumo and Pearson, 2006). However, the incentive structure and work design of this project resemble a real consulting project with real compensation and career growth opportunities. The project accounts for 20–50 % of the course grade. To increase project engagement, a number of incentives have been promoted, such as after-market commission and travel stipends to the annual symposium organised for the best students, internships and job offers by the client organisations for the most successful teams. Most importantly, the international context is as real as it gets; the members of each team are of different nationalities and located in different countries and, thus, the teams deal with real cultural differences and possess different levels of proficiency in the working language (English), and deal with time zones and other challenges of global collaboration. A common concern with the use of students is their young age; however, this concern applies only if the focus of the study is on the values or attitudes that change as people mature. While most of our study participants were in their 20s, many were in their 30s, 40s or even 50s, with almost two-thirds having at least some work experience. There appears to be no difference in the challenges or experiences of teamwork reported by our younger project participants versus their older counterparts. All of them report the same difficulties, about the same level of satisfaction and number of conflicts in teams, and age does not seem to affect other indicators of team dynamics and performance. The vast majority of the students was close to graduation and will be joining the labour force within a year or two, and there is no reason to believe that their values or attitudes would drastically change in that time.

In addition to that, mixing undergraduate and graduate students in a study may be discussed as being lead to inconsistent results. However, the separation of students into ‘undergraduate’ vs. ‘graduate’ is not very meaningful in the international context. In the U.S./Canada, and some countries in the E.U., there is indeed a clear stratification of programs into ‘undergraduate’ vs. ‘graduate’. However, even in these countries, the differences between the demographics of Master's students in different programs are greater than between the traditional MBA vs. ‘undergraduate’. On the other hand, many countries do not have a clear separation into ‘undergraduate’ and ‘graduate’ programs, like is the case in the U.S. Often, the designation ‘Master's’ is given to programs that are very different from what is normally called ‘Master's’ in the U.S. In contrast, in some countries, ‘undergraduate’ programs are longer and start later, so their ‘undergraduate’ students tend to be older than MBA students in other countries.

Nonetheless, the ‘undergraduate’ and ‘Master's’ students are generally separated into ‘undergraduate’ and ‘graduate’ teams to avoid confusion and complaints from ‘graduate’ students that they must work with ‘kids’ and from undergraduate students that they must work with ‘bossy’ MBAs. However, when we compare the statistics for these two cohorts, there are no differences whatsoever on all dimensions. Students in both cohorts invest approximately the same amount of time in the project, report approximately the same set of challenges and concerns, report the same level of satisfaction, and even the quality of the reports is essentially indistinguishable based on the average ratings. Therefore, the very differentiation into ‘undergraduate’ and ‘graduate’ students in different countries is too inconsistent in different countries to be meaningful. Thus, the degree itself is not very informative.

The final dataset comprised 810 students belonging to 232 GVTs, composed of four to seven team members. 33.5 % of participants

Table 1
Individuals' demographic characteristics.

Demographic data	Frequencies (n = 810)	Percentage
<i>Gender</i>		
Female	438	54 %
Male	372	46 %
<i>Age</i>		
25 and less	643	79.4 %
26–30	96	11.8 %
31–35	39	4.8 %
36–40	20	2.5 %
41–55	12	1.5 %
<i>Education</i>		
Graduate	271	33.5 %
Undergraduate	509	62.8 %
Other	30	3.7 %
<i>Work experience</i>		
Never had a job	155	19.1 %
0–6 months	126	15.6 %
1 year	114	14.1 %
2–3 years	147	18.1 %
4–6 years	148	18.3 %
7–10 years	69	8.5 %
More than 10 years	51	6.3 %
<i>Managerial experience</i>		
Never worked as a supervisor	526	65 %
Supervised 1–2 people	153	18.9 %
Supervised 5–10 people	78	9.6 %
Supervised 10–20 people	43	5.3 %
Had their own business with more than five permanent employees on the payroll	10	1.2 %

were graduate students, 62.8 % were undergraduates, while the rest fell in the 'other' category (typically due to differences in education systems in some countries where university education levels do not neatly fit into undergraduate vs. master's categories). 65.3 % of participants have more than one year of work experience, and 35 % of them have at least some managerial experience. The participants came from 38 different countries. The average age of the participants was 23.5 and about half (54 %) were females. The detailed demographic characteristics of the sample are provided in Table 1.

3.2. Measures

According to the structure of the database, in this research, we studied two macro-categories, respectively, at both individual and team levels.

We measured the intelligences at the individual level as described below.

Cultural intelligence (CQ). We utilised a 20-item measure by Ang and Van Dyne (2008) to measure four dimensions of CQ: metacognitive CQ, cognitive CQ, motivational CQ and behavioural CQ. Metacognitive CQ refers to 'an individual's level of conscious cultural awareness during cross-cultural interactions' (Ang and Van Dyne, 2008: 5). While metacognitive CQ emphasises higher-order cognitive processes, cognitive CQ reflects the 'knowledge of norms, practices and conventions in different cultures that have been acquired from educational and personal experiences' (Ang and Van Dyne, 2008: 5). Motivational CQ reflects the 'capability to direct attention and energy towards learning about and functioning in situations characterised by cultural differences' (Ang and Van Dyne, 2008: 6). Finally, behavioural CQ refers to the 'capability to exhibit appropriate verbal and non-verbal actions when interacting with people from different cultures' (Ang and Van Dyne, 2008: 6). Presbitero (2016) demonstrates that this structure of CQ is also applicable in the virtual context.

We assessed metacognitive CQ using four items, cognitive CQ with six items, motivational CQ with five items and behavioural CQ with five items. The description of all CQ items is provided in Table 2a. We measured the items contributing to the CQ dimensions through a 7-point Likert scale (1 = 'strongly disagree' and 7 = 'strongly agree').

Emotional intelligence (EQ). We measured EQ using the Wong and Law (2002) emotional intelligence scale (the WLEIS) based on the Mayer and Salovey (1997) definition of EQ, which includes four dimensions (16 items): self-emotional appraisal (SEA), others' emotional appraisal (OEA), use of emotion (UOE) and regulation of emotion (ROE). This approach has shown satisfactory validity and reliability and has subsequently been validated in different countries (e.g., Fukuda et al., 2012; LaPalme et al., 2016; Li et al., 2012; Libbrecht et al., 2014). A self-emotional appraisal is the individuals' ability to understand their deep emotions and to express these emotions naturally. Others' emotional appraisal relates to individuals' ability to perceive and understand the emotions of people around them. Regulation of emotion refers to the ability of individuals to regulate their emotions, which will enable a more rapid recovery from psychological distress. Finally, the use of emotion reflects the ability of people to make use of their emotions by directing them towards constructive activities and personal performance (Mayer and Salovey, 1997; Salovey and Mayer, 1990). We measured each dimension using four items. The descriptions of all EQ items are listed in Table 2b. The participants answered each item on a 5-point Likert scale that ranges from 1 ('strongly disagree') to 5 ('strongly agree').

We measured the three types of conflict as well as the performance at the team level.

Intragroup conflicts. We used the nine-item measure developed by Jehn and Mannix (2001) to measure interpersonal, task and process conflicts. Each type of conflict was assessed using three items and through a 5-point Likert scale (1 = 'not at all' and 5 = 'a lot'). The descriptions of intragroup conflict items are presented in Table 3. The original data were collected based on individual reports. Namely, at the end of the project, the participants were asked to answer questions related to each type of conflict. The conflict assessment at the individual level was measured by taking the average of the items for each conflict type and for each team member. To

Table 3

Team-level constructs: Description of items, Cronbach's alpha, Wilks' lambda, variance, and inter-item correlations.

Item	α^a	Lambda	Variance	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Interpersonal Conflict</i>	0.81	0.25 ($p < .001$)	0.39									
(1) How much relationship tension is there in your workgroup?				1								
(2) How often do people get angry while working in your group?				0.58	1							
(3) How much emotional conflict is there in your workgroup?				0.55	0.70	1						
<i>Task Conflict</i>	0.87	0.43 ($p < .001$)	0.38									
(4) How much conflict of ideas is there in your workgroup?				0.53	0.51	0.48	1					
(5) How frequently do you have disagreements within your workgroup about the task of the project you are working on?				0.58	0.51	0.52	0.68	1				
(6) How often do people in your workgroup have conflicting opinions about the project you are working on?				0.53	0.49	0.44	0.69	0.73	1			
<i>Process Conflict</i>	0.85	0.67 ($p < .05$)	0.31									
(7) How often are there disagreements about who should do what in your workgroup?				0.49	0.45	0.45	0.47	0.59	0.53	1		
(8) How much conflict is there in your group about task responsibilities?				0.54	0.48	0.44	0.43	0.59	0.47	0.74	1	
(9) How often do you disagree about resource allocation in your workgroup?				0.56	0.46	0.47	0.53	0.55	0.55	0.62	0.62	1

$N = 810$.

^a Cronbach's alpha.

Table 2c
Individual-level constructs: Cronbach's alpha and inter-item correlations.

Item	α^a	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)			
<i>Cultural Intelligence</i>	0.93																																							
(1) CQ1		1																																						
(2) CQ2		0.59	1																																					
(3) CQ3		0.62	0.68	1																																				
(4) CQ4		0.54	0.62	0.67	1																																			
(5) CQ5		0.26	0.19	0.24	0.16	1																																		
(6) CQ6		0.30	0.28	0.33	0.26	0.58	1																																	
(7) CQ7		0.26	0.22	0.22	0.21	0.47	0.56	1																																
(8) CQ8		0.28	0.21	0.25	0.21	0.44	0.52	0.49	1																															
(9) CQ9		0.25	0.19	0.24	0.20	0.62	0.60	0.45	0.51	1																														
(10) CQ10		0.34	0.25	0.31	0.25	0.56	0.53	0.42	0.47	0.54	1																													
(11) CQ11		0.45	0.52	0.49	0.52	0.21	0.30	0.28	0.22	0.22	0.29	1																												
(12) CQ12		0.48	0.55	0.54	0.59	0.15	0.25	0.23	0.16	0.12	0.22	0.63	1																											
(13) CQ13		0.43	0.43	0.48	0.47	0.26	0.34	0.34	0.28	0.28	0.28	0.63	0.59	1																										
(14) CQ14		0.48	0.49	0.47	0.39	0.32	0.37	0.27	0.25	0.26	0.36	0.58	0.55	0.60	1																									
(15) CQ15		0.47	0.54	0.52	0.54	0.23	0.31	0.29	0.24	0.21	0.31	0.70	0.67	0.59	0.58	1																								
(16) CQ16		0.42	0.35	0.39	0.30	0.25	0.28	0.21	0.23	0.25	0.33	0.33	0.30	0.31	0.41	0.35	1																							
(17) CQ17		0.46	0.45	0.47	0.39	0.27	0.33	0.24	0.20	0.27	0.32	0.47	0.40	0.38	0.49	0.42	0.65	1																						
(18) CQ18		0.39	0.42	0.43	0.34	0.29	0.32	0.27	0.24	0.24	0.30	0.40	0.38	0.39	0.47	0.38	0.54	0.55	1																					
(19) CQ19		0.44	0.42	0.44	0.37	0.32	0.34	0.29	0.27	0.29	0.38	0.42	0.35	0.40	0.49	0.41	0.50	0.55	0.59	1																				
(20) CQ20		0.44	0.47	0.44	0.38	0.25	0.32	0.23	0.22	0.22	0.34	0.48	0.40	0.39	0.47	0.43	0.52	0.66	0.56	0.61	1																			
<i>Emotional Intelligence</i>	0.90																																							
(21) EQ1		0.02	0.06	0.05	0.02	0.04	0.05	0.00	0.07	0.06	0.07	0.08	0.02	0.02	0.06	0.05	0.03	0.01	0.04	0.06	0.02	1																		
(22) EQ2		0.11	0.07	0.06	0.08	0.10	0.07	0.04	0.05	0.04	0.11	0.06	0.05	0.07	0.08	0.02	0.04	0.08	0.06	0.03	0.05	0.34	1																	
(23) EQ3		0.01	-0.04	0.01	0.01	0.05	0.03	0.00	0.01	0.00	0.04	0.05	0.02	0.01	0.04	0.01	0.03	0.01	0.02	0.06	0.00	0.44	0.43	1																
(24) EQ4		0.03	0.03	0.06	0.05	0.01	-0.01	-0.03	0.00	-0.01	0.07	0.05	0.02	0.03	0.06	0.01	0.05	0.03	0.00	0.04	0.03	0.41	0.48	0.58	1															
(25) EQ5		0.05	0.01	0.02	-0.01	0.05	0.01	0.02	0.05	0.00	0.07	0.04	0.00	0.00	0.06	0.00	0.04	-0.01	0.05	0.03	0.01	0.39	0.27	0.36	0.31	1														
(26) EQ6		0.01	0.01	0.06	0.02	0.05	0.06	-0.01	0.02	-0.03	0.09	0.03	0.02	0.00	0.05	0.03	0.05	0.07	0.08	0.07	0.09	0.32	0.28	0.44	0.32	0.51	1													
(27) EQ7		0.00	0.03	0.03	-0.02	0.04	0.02	-0.04	0.03	0.00	0.08	-0.02	0.01	0.01	0.07	0.03	0.05	0.00	0.04	0.00	0.04	0.24	0.27	0.25	0.28	0.33	0.37	1												
(28) EQ8		0.01	0.00	0.06	0.04	0.07	0.04	0.00	0.05	0.03	0.09	0.06	0.03	0.05	0.05	0.05	0.05	0.03	0.10	0.06	0.05	0.34	0.42	0.41	0.42	0.53	0.61	0.46	1											
(29) EQ9		0.04	0.02	0.05	0.03	0.03	0.02	0.00	0.05	-0.02	0.02	0.10	0.05	0.03	0.05	0.05	0.03	0.06	0.03	0.05	0.05	0.33	0.34	0.39	0.35	0.26	0.27	0.13	0.29	1										
(30) EQ10		0.03	-0.01	0.00	0.02	-0.01	-0.01	-0.03	0.03	-0.01	0.05	0.08	0.04	0.04	0.02	0.03	0.06	0.02	0.01	0.04	0.04	0.37	0.42	0.34	0.34	0.33	0.32	0.29	0.40	0.43	1									
(31) EQ11		0.10	0.07	0.09	0.08	0.11	0.08	0.03	0.09	0.06	0.11	0.10	0.09	0.08	0.16	0.10	0.10	0.10	0.07	0.11	0.07	0.34	0.36	0.36	0.36	0.29	0.30	0.25	0.34	0.43	0.56	1								
(32) EQ12		0.09	0.03	0.06	0.07	0.06	0.07	0.10	0.15	0.07	0.11	0.09	0.06	0.06	0.10	0.06	0.10	0.08	0.06	0.12	0.05	0.35	0.36	0.37	0.32	0.34	0.34	0.25	0.35	0.36	0.54	0.56	1							
(33) EQ13		0.07	0.01	0.05	0.05	0.06	0.06	0.03	0.08	0.07	0.08	0.04	0.05	0.10	0.03	0.04	0.06	0.01	0.03	0.01	0.02	0.24	0.37	0.39	0.39	0.21	0.27	0.22	0.35	0.27	0.26	0.31	0.21	1						
(34) EQ14		0.03	0.01	0.02	0.02	0.06	0.07	0.04	0.10	0.09	0.08	0.04	0.03	0.06	0.06	0.04	0.02	0.02	0.01	0.01	0.03	0.39	0.38	0.51	0.43	0.26	0.29	0.20	0.35	0.40	0.30	0.34	0.28	0.50	1					
(35) EQ15		0.07	0.03	0.05	0.06	0.06	0.08	0.02	0.10	0.06	0.09	0.06	0.05	0.05	0.01	0.01	0.03	0.05	0.02	0.06	0.04	0.35	0.38	0.54	0.51	0.30	0.31	0.21	0.42	0.35	0.37	0.35	0.29	0.55	0.65	1				
(36) EQ16		0.07	0.03	0.05	0.06	0.07	0.10	0.06	0.08	0.05	0.06	0.12	0.07	0.10	0.11	0.09	0.06	0.09	0.07	0.08	0.05	0.35	0.32	0.55	0.34	0.21	0.32	0.18	0.32	0.38	0.32	0.30	0.32	0.47	0.62	0.52	1			

N = 810.

^a Cronbach's alpha.

group the conflicts' assessment into the team level, for each type of conflict, the conflict assessments at the individual level were averaged within the teams to create a group-level assessment of each type of conflict occurrence.

Team performance. We measured the level of performance through the evaluations of the final consulting report by five to seven experts. The experts evaluated the report using a 7-point Likert scale from 1 ('poor') to 7 ('excellent') separately and examined various aspects, including: the economic viability of the proposal, the creativity and novelty of the proposed solution, the quality of the supporting arguments and explanations, the readability and formatting quality of the report, the quality of the report's executive summary and the quality of each report section. To achieve the final score, the ratings were averaged across the dimensions and then across the evaluators' assessments. To assess the appropriateness of aggregating expert evaluations, we used the inter-rater standard deviation based on the average range and standard deviation of rater scores for each report, averaged across the entire cohort. The average range of rater evaluations for a given report was 1.95, and the average standard deviation was 0.81. In other words, in most cases, on a 7-point scale, the expert evaluations for the same report varied within plus or minus one point from the average rating. A relatively narrow range and standard deviations of the ratings, coupled with the large number of experts who evaluated each report, allow us to claim that the overall average evaluations are reasonably reliable and valid proxies for the report quality.

Controls. We controlled for age, gender, educational level, English proficiency, cultural diversity and cognitive ability. Age was self-reported in years. Gender is a dichotomous variable, based on self-reported gender (1 for female, 2 for male). Educational level was coded as 2 for 'undergraduate' students in BA/BS or equivalent programmes, 3 for 'graduate' students in MS/MA/MBA or similar programmes, and 1 for 'other' students who did not fit neatly into either of the two categories: typically, continued education or non-degree executive education courses. English proficiency of students belonging to the teams was self-assessed and evaluated on a scale ranging from 1 ('poor') to 5 ('excellent'). Cultural diversity demonstrates the teams' level of diversity in terms of team members' cultural background and was measured by dividing the number of different nationalities within a team by the team size, with results ranging from 0.4 to 1. It was coded as 1 if everyone in the team was from a different country, while 0 denotes that all team members were from the same country, and values in-between represent other cultural diversity combinations.

Finally, we controlled for cognitive ability, too, as prior research shows that cognitive ability is related to EQ (e.g., [Cotruş et al., 2012](#); [Furnham and Grover, 2020](#); [Rockstuhl et al., 2011](#)), CQ (e.g., [Ang et al., 2007](#)) and performance (e.g., [Furnham, 2008](#); [Schmidt and Hunter, 1998](#); [Salgado and Anderson, 2003](#)). We measured cognitive ability using a 20-item multiple-choice IQ test, developed for the purpose of this project. All available IQ tests are commercial instruments and require that the test be taken at the test provider's platform, which does not fit the data collection logistics of a research project that uses its own data collection tools and surveys. In addition to that, the biases of IQ tests arising from cultural background differences and language proficiency are widely known (e.g., [Kim and Zabelina, 2015](#); [te Nijenhuis et al., 2016](#)). To eliminate the logistics challenges and the possible effects of language proficiency and cultural backgrounds, we designed our own IQ test containing as little text as possible and focusing primarily on logic and reasoning. This IQ test includes ten verbal logical reasoning questions (the concepts and problems are expressed in words) and ten non-verbal logical reasoning questions (the concepts and problems are expressed in the form of figures, images or diagrams). Based on our

Table 2a
Cultural intelligence items.

Cultural intelligence items	Description
<i>Metacognitive CQ</i>	
CQ1	I check the accuracy of my cultural knowledge as I interact with people from different cultures.
CQ2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
CQ3	I am conscious of the cultural knowledge I apply to cross-cultural interactions.
CQ4	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
<i>Cognitive CQ</i>	
CQ5	I know the arts and crafts of other cultures.
CQ6	I know the cultural values and religious beliefs of other cultures.
CQ7	I know the rules (e.g., vocabulary, grammar) of other languages.
CQ8	I know the legal and economic systems of other cultures.
CQ9	I know the marriage systems of other cultures.
CQ10	I know the rules for expressing non-verbal behaviours in other cultures.
<i>Motivational CQ</i>	
CQ11	I am sure I can deal with the stresses of adjusting to a culture that is new to me.
CQ12	I enjoy interacting with people from different cultures.
CQ13	I enjoy living in cultures that are unfamiliar to me.
CQ14	I am confident that I can get accustomed (get used) to the shopping conditions in a different culture.
CQ15	I am confident that I can socialise with locals in a culture that is unfamiliar to me.
<i>Behavioural CQ</i>	
CQ16	I alter my facial expressions when a cross-cultural interaction requires it.
CQ17	I change my non-verbal behaviour when a cross-cultural situation requires it.
CQ18	I change my verbal behaviour when a cross-cultural situation requires it.
CQ19	I use pauses and silence differently to suit different cross-cultural situations.
CQ20	I vary the rate (speed) of my speaking when a cross-cultural situation requires it.

Table 2b
Emotional intelligence items.

Emotional intelligence items	Description
<i>Self-emotional appraisal</i>	
EQ1	I have a good sense of why I have certain feelings most of the time.
EQ2	I always know whether or not I am happy.
EQ3	I have a good understanding of my own emotions.
EQ4	I really understand what I feel.
<i>Others' emotional appraisal</i>	
EQ5	I always know my friends' emotions from their behaviour.
EQ6	I am a good observer of others' emotions.
EQ7	I am sensitive to the feelings and emotions of others.
EQ8	I have a good understanding of the emotions of the people around me.
<i>Use of emotion</i>	
EQ9	I always tell myself I am a competent person.
EQ10	I would always encourage myself to try my best.
EQ11	I am a self-motivated person.
EQ12	I always set goals for myself and then try my best to achieve them.
<i>Regulation of emotion</i>	
EQ13	I can always calm down quickly when I am very angry.
EQ14	I am quite capable of controlling my emotions.
EQ15	I have good control over my own emotions.
EQ16	I am able to control my temper and handle difficulties rationally.

assessment of the distributions across the multiple-choice answer options, items for difficulty and discrimination, and point-biserial correlations among the items, the test is of good quality.

Participants were required to read and understand the given question and accordingly choose the right answer from the given options. Each correct answer was worth one point, with no penalty for incorrect answers; thus, the maximum IQ score was 20. The final score is divided by the cohort average and multiplied by 100 to scale it to the commonly-used mean of 100 and standard deviation of about 17, which is common for IQ tests. However, for the purpose of our test, we continued to use the raw 20-point scale. The test shows good psychometric properties. On average, the respondents correctly answered 13 out of 20 questions, with a correct answer rate for each item of around 70 %. It also shows no systemic result variations across nationalities, and the results do not correlate significantly with age or gender, indicating a reasonable level of difficulty and a minimal threat of bias. The test has been distributed to over 30,000 people, providing a solid cohort average. As our IQ measure is a proprietary instrument, and more importantly, to maintain the integrity of the test since it may be used again in the following studies of this project, we only include some samples of the IQ items in [Appendix A](#).

3.3. Methods

In order to test the research hypotheses, we developed a multilevel structural equation modeling (MSEM). This method is recommended and useful in the case of nested data and latent variables at both levels (Klein and Kozlowski, 2000; MacKinnon, 2008; Mathieu and Taylor, 2007; Mathieu et al., 2008; Sophia et al., 2007). We executed the data analysis using R (Version 4.0.2) and used the 'Lavaan package'. The package provides a collection of tools that can be used to explore, estimate and understand a wide family of latent variable models, including factor analysis, structural equation, multilevel and latent class (Lee, 2007; Muthén, 2002; Skrondal and Rabe-Hesketh, 2004). We developed a 2-level MSEM, allowing the study of a complex relationship among latent variables on different levels (individual and team levels) as well as across different levels (Hox et al., 2010; Muthén, 1994; Raudenbush and Bryk, 2002; Snijders and Bosker, 2011).

Despite the moderate correlations among interpersonal conflict, task conflict and process conflict, the items of each construct can be considered good measures due to the high convergent validity demonstrated by Cronbach's alpha indexes that are greater than 0.70. Furthermore, the Variance Inflation Index (VIF) is less than 2.4, indicating no multicollinearity issues among interpersonal conflict, task conflict and process conflict (Allison, 1999). The Wilks' lambda test is also statistically significant ($p < .001$) and different from one, showing the discriminant power of interpersonal, task and process conflicts. Moreover, Harman's one-factor test confirms the validity of our measures as the first factor explains 18.11 % of the total variance (Podsakoff and Organ, 1986). In addition to the above quantitative tests, in order to avoid common method bias, we collected data from different sources, such as self-report surveys, expert evaluations and peer evaluations, and we also guaranteed the anonymity of the respondents (Podsakoff et al., 2012). Furthermore, the measures were typically taken at different times (Dasi et al., 2017; Siemsen et al., 2010), and the hypotheses are formulated with a focus on comparing the perceptual values of the participants. Finally, the results are based on comparative values and complex estimations that involve multiple independent variables (Siemsen et al., 2010).

Table 2c illustrates Cronbach's alpha and inter-item correlations at the individual level, while Table 3 shows the Cronbach's alpha,

Table 4
Means, standard deviations and Pearson correlation.

Variable	Mean	SD ^a	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Cultural Intelligence (CQ)	5.30	0.96	1											
(2) Emotional Intelligence (EQ)	4.07	0.51	0.11**	1										
(3) Interpersonal Conflict	1.27	0.33	0.00	-0.07	1									
(4) Task Conflict	1.45	0.41	0.02	-0.07*	0.70**	1								
(5) Process Conflict	1.39	0.39	-0.01	-0.10**	0.70**	0.67**	1							
(6) Team Performance	5.12	0.97	-0.01	0.08*	-0.02	0.02	-0.12**	1						
(7) Age	23.55	4.94	0.06	0.10**	0.00	0.10**	0.00	0.17**	1					
(8) Gender	1.46	0.50	-0.05	-0.05	-0.01	0.02	0.00	0.04	0.13**	1				
(9) Educational level	2.30	0.53	0.01	0.05	0.07*	0.14**	0.09*	0.09*	0.44**	-0.02	1			
(10) English Proficiency	4.50	0.70	0.03	0.06	0.00	-0.02	0.00	0.03	-0.08*	0.09*	-0.02	1		
(11) Cultural Diversity	0.83	0.13	0.03	0.08*	0.00	0.09**	0.05	0.09*	0.55**	0.07	0.29**	-0.07	1	
(12) Cognitive Ability (IQ)	12.31	3.71	0.06	0.02	-0.02	-0.01	-0.03	0.05	0.05	0.17**	0.03	0.40**	0.03	1

N = 810.

^a SD = standard deviation.

* Correlation is significant at the 0.05 level (two-tailed test).

** Correlation is significant at the 0.01 level (two-tailed test).

Table 5
Multilevel structural equation modeling.

Relationship	Estimate	S.E.	Z-value	p-Value
Emotional Intelligence (EQ) → Interpersonal Conflict	-1.80	0.36	-4.99	.000
Emotional Intelligence (EQ) → Process Conflict	-1.97	0.35	-5.70	.000
Emotional Intelligence (EQ) → Task Conflict	-1.85	0.37	-5.08	.000
Cultural Intelligence (CQ) → Interpersonal Conflict	-0.62	0.22	-2.82	.005
Cultural Intelligence (CQ) → Process Conflict	-0.68	0.26	-2.63	.009
Cultural Intelligence (CQ) → Task Conflict	-0.70	0.26	-2.74	.006
Interpersonal Conflict → Team Performance	0.20	0.28	0.72	.472
Task Conflict → Team Performance	0.39	0.22	1.78	.075
Process Conflict → Team Performance	-0.72	0.23	-3.18	.001

CFI = 0.61, TLI = 0.51, RMSEA = 0.099.

N = 810.

the Wilks' lambda tests, the variance and the inter-item correlations at the team level. We tested the overall goodness of fit of the model through the comparative fit index (CFI), the Tucker-Lewis index (TLI) and the root mean square error of approximation (RMSEA) (Asparouhov and Muthén, 2018).

4. Findings

Table 4 presents the descriptive statistics and Pearson correlations. CQ is statistically and positively correlated with EQ ($p < .01$), meaning the higher the level of CQ within the team, the higher the overall EQ of the team members. EQ is statistically and negatively correlated with both task conflict ($p < .05$) and process conflict ($p < .01$) and statistically and positively correlated with team performance ($p < .05$). This implies that as the level of EQ decreases within the team, the risk of process and task conflict within the team increases. Moreover, a higher EQ level within the team improves the team's performance. Finally, process conflict is statistically and negatively related to team performance ($p < .01$), suggesting that as the level of process conflict decreases, it raises the level of performance within the team.

In order to make our results comparable across studies, we measured standardised coefficients, which is recommended in the literature (e.g., Ferron et al., 2008; Lorah, 2018; Snijders and Bosker, 2012) as a method to measure the effect size in multi-level models. The standardised coefficients or effect sizes in multi-level models can be obtained by standardising (i.e., $M = 0$; $SD = 1$) each variable before analysis (Ferron et al., 2008). Table 5 presents the results of the MSEM. The findings are aligned with the inputs highlighted through the correlations matrix. EQ is negatively and significantly related to interpersonal conflict (-1.80 ; $p < .001$), process conflict (-1.97 ; $p < .001$) and task conflict (-1.85 ; $p < .001$). CQ is also negatively and significantly related to interpersonal conflict (-0.62 ; $p = .005$), process conflict (-0.68 ; $p = .009$) and task conflict (-0.70 ; $p = .006$). This means that the lower the level of EQ and CQ of each team member, the higher the level of team interpersonal, process and task conflicts. Thus, hypotheses 1a, 1b, 1c, 2a, 2b and 2c are supported. However, the occurrence of interpersonal conflict, as well as the occurrence of task conflict, do not affect the performance of the team. Thus, hypotheses 3a and 3c are not supported. Instead, hypothesis 3b is supported, implying that the lower the process conflict, the better the team performance (-0.72 ; $p = .001$). Interestingly, cognitive ability is negatively and significantly related to interpersonal conflict (-1.08 ; $p < .001$), task conflict (-1.27 ; $p < .001$) and process conflict (-1.32 ; $p < .001$). This means that the lower the IQ of the team members, the higher the level of interpersonal, task and process conflicts within the team. Furthermore, educational level is positively and significantly related to task conflict (0.93 ; $p = .012$) and process conflict (0.75 , $p = .036$), meaning that the higher the educational level, the higher the occurrence of task and process conflicts. The MSEM fit indices, such as CFI = (0.61), TLI = (0.51) and RMSEA = (0.099), indicate a satisfactory agreement of the model with the data.

5. Discussion

The ever-growing globalisation and the flexibility to deal with an unexpected crisis, such as the COVID-19 pandemic, make remote work a reality for many organisations. Therefore, working from home is likely to persist even after the end of the pandemic (Bartik et al., 2020), at least for jobs that do not require a constant on-site/in-office presence. As a result, the popularity of GVTs will grow rapidly. Despite the numerous benefits that GVTs provide for organisations, there are some challenges, such as conflicts, associated with GVTs hindering the collaboration and productivity of the team members (Ale Ebrahim et al., 2009).

According to the theory of multiple intelligences (Gardner, 1983) and the contingency theory of task conflict and performance in groups and organisational teams (De Dreu and Weingart, 2003a), and based on a sample of 810 graduate and undergraduate business students, forming 232 GVTs, we examined the role of CQ and EQ in the occurrence of three different types of intragroup conflict in GVTs as well as the effect of these conflict types on the performance of such teams. The results of our study demonstrate that the CQ and EQ of team members enhance their ability to avoid interpersonal, task and process conflicts in GVTs. The results show that EQ has a stronger negative correlation with intragroup conflict in GVTs than CQ. This result highlights the importance of EQ even over CQ in GVTs when it comes to averting conflict. Moreover, the result of correlation analysis demonstrates that in GVTs, CQ and EQ are interrelated constructs. This emphasises the importance of studying CQ and EQ together in multicultural environments. In addition, this study advances our knowledge on the widely neglected discussion on the influence of cognitive ability (IQ) on conflict occurrence

in multicultural settings as the results show that team members' IQ has a statistically negative effect on interpersonal, task and process conflicts in GVTs.

Furthermore, the findings suggest that in a GVT environment, process conflict negatively affects team performance. This result is in line with previous research, suggesting that process conflict reduces productive team outcomes and performance (Hinds and Bailey, 2003; Jehn, 1997; Jehn and Mannix, 2001). Thus, avoiding process conflict seems to have positive consequences for team performance. We did not find any statistically significant relationship between interpersonal conflict and team performance or between task conflict and team performance in GVTs.

This study contributes to the literature in several ways. First, past research has mainly focused on the impacts of CQ (e.g., Caputo et al., 2018; Gonçalves et al., 2016) and EQ (e.g., Gunkel et al., 2016; Jordan and Troth, 2004; Lenaghan et al., 2007) on conflict management (the limitation, mitigation and containment of conflict (Tanner, 2000)), and conflict resolution (resolving the underlying incompatibilities which have caused the conflict (Siniver, 2016)). Whereas the present study contributes to the literature by investigating the role of CQ and EQ in preventing conflicts from occurring. Conflict prevention can be considered as a more practical strategy than conflict resolution (Newey, 1992) and conflict management. It is more effective to manage or contain disputes before they convert to conflict, as conflict may spoil the ambience and spread negativity. Conflict occurrence might disrupt interpersonal harmony between individuals, thus avoiding conflict is important where interpersonal relationships are highly valued (Zhang et al., 2011), like in a team context.

Second, existing research on the role of intelligences in any working environment, including GVTs, has typically explored the effect of only one type of intelligence at a time. Specifically, when it comes to the role of intelligences in a multicultural context, prior research has mainly focused on the cultural differences within teams, and much attention has been placed on the importance of CQ (e.g., Chen and Lin, 2013; Moon, 2013; Presbitero, 2020; Presbitero, 2021; Richter et al., 2021), leaving other intelligences like EQ aside. Whereas, when it comes to the impacts of intelligences on intragroup conflicts in any type of team, previous studies have mainly focused on EQ (e.g., Ayoko et al., 2008; Lee and Wong, 2017; Paskewitz, 2021; Yang and Mossholder, 2004). The present study contributes to the literature, first by investigating the role of EQ in multicultural settings. Second, it examines the impact of CQ on conflict occurrence. More importantly, this study underscores the importance of studying CQ and EQ together in the GVT context. According to the theory of multiple intelligences (Gardner, 1983), intelligences are not necessarily single acts; instead, they are interactive and work together in a variety of ways (Martin, 2001). Hence, more than one intelligence can be employed in a given situation (Armstrong, 1994; Martin, 2001). GVTs are complex working environments; however, various intelligences that team members bring to the team, like CQ and EQ, lessen the challenges of working in the virtual multicultural environment of GVTs. According to Thomas (2006), CQ shares some attributes with EQ. Peterson (2004) has likewise proposed that EQ is an essential facet of CQ, denoting that, to be culturally intelligent, one needs to be also emotionally intelligent. Thus, CQ and EQ are related constructs and support the development of each other in a mutually reinforcing manner. This may also explain the inter-correlation of CQ and EQ. This mutually-beneficial relationship implies that they are also interrelated in their association with a specific outcome. Therefore, what could be considered as the unique effect of CQ on conflict avoidance in GVTs, is, in fact, at least partially the joint effect of CQ and EQ on avoiding conflict. Thus, if we had only analysed CQ without assessing EQ, we may have obtained misleading results. The reason is that it could be incorrectly concluded that all of the explained variance in conflict occurrence is attributed to CQ when at least part of this variance results from a joint effect with EQ. Therefore, studying CQ and EQ together in a GVT context would lead to more accurate results.

5.1. Managerial relevance

The results of our study are of interest to human resource managers of international organisations dealing with global virtual work. As previous studies have demonstrated, CQ (e.g., Azevedo and Shane, 2019; Erez et al., 2013; Presbitero and Toledano, 2018; Rehg et al., 2012; Taras et al., 2013) and EQ (e.g., Clarke, 2010; Coleman and Argue, 2015; Slaski and Cartwright, 2003; Turner and Lloyd-Walker, 2008) can be learned, and training programmes can result in significant increases in the CQ and EQ of individuals. Investing in training related to these intelligences may result in less process conflict and better performance in GVTs. However, as training programmes may be costly and relatively slow in creating results (Cadman and Brewer, 2001), selecting the right candidates for the right jobs at the stage of recruitment can provide significant improvements in productivity in GVTs and minimise the direct costs of training and replacements due to unwanted staff turnover (Robertson et al., 2002). Using CQ and EQ assessment tools can help recruiters make better hiring decisions (Wasylyshyn, 2010).

Furthermore, the results of our study emphasise the importance of EQ even over CQ in GVTs, and draw the attention of human resource managers of multinational firms to the important role of EQ in preventing intragroup conflicts in GVTs. Moreover, our findings suggest paying special attention to the process conflict in GVTs as our results highlight the positive impact that averting process conflict has on GVTs' outcomes.

5.2. Limitations and future research

Our study is subject to various limitations. The first limitation is related to the generalisability of findings due to the nature of the study sample. The use of a student sample poses a threat to the generalisability of the findings to the workplace/employee context, particularly due to the presumably lower stakes and motivation (only part of a course grade) for students to perform compared with their corporate counterparts who are motivated by their salaries and the threat of job losses in the event of poor performance (Balthazard et al., 2004; Furumo and Pearson, 2006). However, the GVTs of our study cannot be considered artificial groups created for

the purpose of an experiment; they are real project teams working on a consulting project for a real-life company with compensation and career growth opportunities. The types of teams presented in our study do, in fact, resemble many temporary, project-oriented groups in organisations (Cohen and Bailey, 1997). Thus, the results of this study can be related to project groups in organisations. Furthermore, in a business setting, performance evaluations are often carried out on an annual basis, while student projects are substantially shorter and may not have the time to develop organisational structures beyond the artificial settings given to them. Thus, we encourage future research to extend the research to GVTs in organisations. Second, even though the data used for our study were collected during multiple time points and consisted of self-evaluations, peer-evaluations and expert assessments during various time points, our study is cross-sectional in its nature. Longitudinal studies may allow changes to be observed within the teams and their performance. Therefore, future studies may want to examine the GVTs in a longitudinal study. Third, a further limitation of our study is related to the combination of cultures in a team. The cultural similarity may result in lower levels of conflict in GVTs. Thus, the results might be different with different cultural distances among the team members. Future studies may consider the cultural distances in their research. Fourth, our study focused on the direct effects of intelligences on conflict as well as conflicts on team performance. Future studies may also examine the indirect effects of intelligences on team performance by examining the mediating role of the different types of conflict between the intelligences and team performance. Fifth, interpersonal, task and process conflicts are highly correlated in our study. However, we performed discriminant validity and multicollinearity analyses, and no multicollinearity issues exist among these different conflict constructs. The results show a discriminating predictive power of the three types of conflict, meaning that interpersonal, task and process conflicts are independent constructs. However, understanding whether one type of conflict would lead to another could be an interesting issue for future research. Finally, the results reveal significant statistical relationship between IQ and intragroup conflicts. Future studies may further theoretically and empirically examine this relationship.

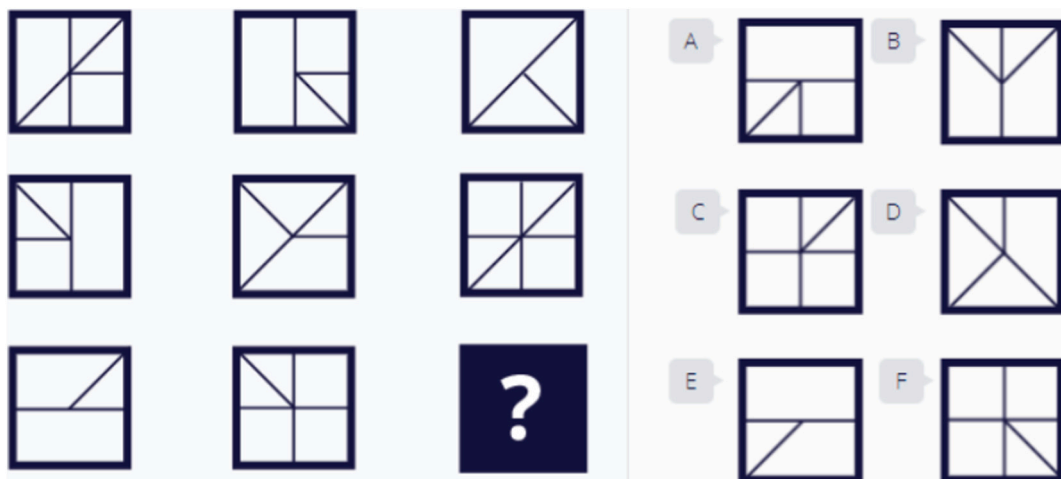
Declaration of competing interest

None.

Acknowledgements

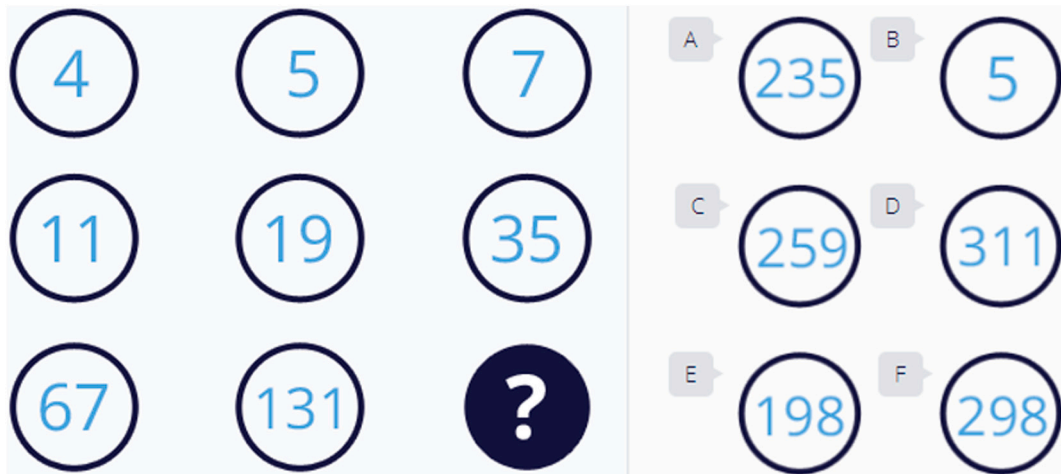
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Appendix A. Examples of IQ items



- Choose one of the variants on the right to replace the missing shape.

- A
- B
- C
- D
- E
- F



- Choose one of the variants on the right to replace the missing shape.

- A
- B
- C
- D
- E
- F

- Mary, who is sixteen years old, is four times as old as her brother. How old will Mary be when she is twice as old as her brother?

- A. 20
- B. 24
- C. 25
- D. 26
- E. 28

- Which one of the numbers does not belong in the following series?

2 - 3 - 6 - 7 - 8 - 14 - 15 - 30

- A. 3
- B. 7
- C. 8
- D. 15
- E. 30

- Ralph likes 25 but not 24; he likes 400 but not 300; he likes 144 but not 145. Which does he like:

- A. 10
- B. 50
- C. 124
- D. 200
- E. 1600

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