Cross-Cultural Competencies and Diversity in International Teams: A Comprehensive Exploration

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UiA University of Agder

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Cross-Cultural Competencies and Diversity in International Teams: A Comprehensive Exploration

To my father, mother & sisters

Nooria Yari

Cross-Cultural Competencies and Diversity in International Teams: A Comprehensive Exploration

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Summary

This thesis comprises three essays that investigate cross-cultural competencies in a diverse international team context. The first essay conducts a systematic review of 158 seminal CQ, GM, and CC publications. Utilising advanced bibliometric methodologies, key journals, influential publications, and ground-breaking researchers in this domain are identified. Further co-citations are examined through factor and cluster analyses, deciphering the complex knowledge structure in this research spectrum. Five predominant research streams emerge, bridging the overlap between CQ, GM, and CC constructs. Burst analyses further spotlight the prevailing trends and rapidly growing research avenues, laying a foundation for impending scholarly endeavours.

The second essay addresses the multifaceted nature of 'diversity' - a term that remains largely enigmatic despite its widespread use in International Business literature. The context in this paper is on Global Virtual Teams (GVTs), which are inherently infused with diversity. This paper presents the conceptual framework of *personal diversity*, which clarifies three salient diversity types - the variety of demographic attributes, disparity in functional attributes, and separation along covert attributes. Using a sample of 345 GVTs, the implications of these diversity types on intermediary team processes, barriers to collaboration, and psychological and task outcomes are empirically tested employing PLS-SEM modelling. Key findings reveal that demographic variety augments collaboration and enhances psychological outcome. Additionally, disparity, especially concerning English

proficiency and technical skills, can increase barriers to collaboration and adversely impact psychological outcome.

The third essay pioneers a nuanced conceptual framework tailored to assess the configurations of team cultural intelligence. The framework originates from the multiple intelligence theory and is enhanced by foundational theories specific to each CQ dimension. Simultaneously, it integrates three diversity theories: information processing, (in)justice perspective, and categorisation paradigms. The delineation elucidates how diverse CQ configurations, characterised by CQ ranges, dimension disparities, and separations, associate with different team outcomes. An illustrative example of global virtual teams tests the theoretical framework empirically to present further theoretical and practical implications.

Summery Dansk

Denne afhandling består af tre essays, der undersøger tværkulturelle kompetencer i en mangfoldig international teamkontekst. Det første essay foretager en systematisk gennemgang af 158 banebrydende CQ, GM og CC-publikationer. Ved at anvende avancerede bibliometriske metoder identificeres nøgletidsskrifter, indflydelsesrige publikationer og banebrydende forskere inden for dette område. Yderligere undersøges medciteringer (co-citations) gennem faktor- og klynganalyser, og derved kortlægger det komplekse vidensstruktur i dette forskningsspektrum. Fem dominerende forskningsstrømme dukker op, som bygger bro over overlapningerne imellem CQ, GM og CC-konstruktioner. Burst-analyser fremhæver yderligere de herskende tendenser og hurtigvoksende forskningsveje og lægger grundlaget for fremtidig studier .

Det andet essay behandler den mangefacetterede natur af 'diversitet' - et udtryk, der forbliver stort set gådefuldt på trods af dets udbredte brug i International Business litteratur. Konteksten i denne artikel er på globale virtuelle teams (GVT'er), som i sagens natur er fyldt med mangfoldighed. Dette essay præsenterer de konceptuelle arbejdsrammer for "*personal diversity*", en model der præciserer tre fremtrædende diversitetstyper - variationen af demografiske egenskaber, ulighed (disparity) i funktionelle egenskaber og adskillelse langs skjulte egenskaber. Ved at bruge en stikprøve på 345 GVT'er bliver implikationerne af disse diversitetstyper på mellemliggende teamprocesser, barrierer for samarbejde, og psykologiske resultater samt opgave testet empirisk ved brug af PLS-SEM-

modellering. Nøgleresultater afslører, at demografisk variation forstærker samarbejde og forbedrer det psykologiske resultat. Desuden kan ulighed, især med hensyn til engelske og tekniske færdigheder, øge barriererne for samarbejde og påvirke det psykologiske resultat negativt.

Det tredje essay introducerer en nuanceret konceptuel ramme, som er skræddersyet til at vurdere konfigurationerne af teamkulturel intelligens. Den konceptuelle ramme stammer fra "den multiple intelligens teori" og forstærkes af grundlæggende og specifikke teorier for hver CQ-dimension. Samtidig integrerer de tre diversitetsteorier: informationsbehandling, (u)retfærdighedsperspektiv og kategoriseringsparadigmer. Afgrænsningen belyser, hvordan forskellige CQ-konfigurationer, karakteriseret ved CQ-rækker, dimensionsforskelle og adskillelser, forbindes med forskellige teamresultater. Et illustrativt eksempel på globale virtuelle teams tester den teoretiske ramme empirisk for at præsentere yder

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CHAPTER 1: General introduction of the thesis

1.1. Relevance and importance of the topic

Organisational behaviour and cross-cultural collaboration have assumed unprecedented significance in today's interconnected and diverse world. As globalisation accelerates, organisations increasingly operate internationally to stay competitive and harness the benefits of a diverse workforce with different cultural backgrounds. In Western Europe and the U.S., foreign-born workers constitute 24% and 17% of the workforce, respectively (Alexandra, 2023; Bls, 2019; Ilo, 2015). Globally, over 80,000 multinational firms contribute to 23% of total employment, with 60% of managers in OECD countries working in international virtual teams (De Backer & Miroudot, 2018; Taras, 2020).

However, working across cultures is inherently challenging (Earley & Ang, 2003; Leung et al., 2014). Effective collaboration across borders requires a profound understanding of cultural differences and the ability to leverage these differences for innovative problem-solving and strategic decision-making (Livermore et al., 2022). Research suggests that diverse teams have the potential to outperform homogeneous teams, but only when they harness cultural differences effectively (Earley & Mosakowski, 2000; Lisak et al., 2016; Rosenauer et al., 2016). To illuminate the components of effective intercultural engagement, both scholars and practitioners have contributed a myriad of competence models, such as cultural intelligence (CQ), global mindset (GM) and cross-cultural competencies (CC), from diverse research domains and fields (Andresen & Bergdolt, 2017; Bücker et

al., 2014; Earley & Ang, 2003; Earley & Mosakowski, 2004; Elo et al., 2015; Leung et al., 2014).

Cultural intelligence comprises several dimensions, including cognitive, metacognitive, motivational and behavioural CQ (Ang & Van Dyne, 2008). It refers to effectively adapting to cross-cultural environments (Ang et al., 2003). The knowledge of CQ has therefore become increasingly valuable, especially in digital settings (Rüth & Netzer, 2020). *Global mindset* is the capacity to function effectively within environments characterised by high cultural and business complexity (Andresen & Bergdolt, 2017). To function effectively in cross-cultural environments, individuals need to have personal attributes of openness and cosmopolitanism (in addition to cognitive and motivational facets). Cross-cultural competence (CC) is an individual's effectiveness in drawing upon knowledge, skills and personal attributes to work successfully with people from different national and cultural backgrounds (Johnson et al., 2006). Intercultural competencies have been researched in diverse disciplinary fields such as global leadership (Alon & Higgins, 2005; Caligiuri & Tarique, 2012; Lane & Maznevski, 2019; Le et al., 2021; Lisak & Erez, 2015; Maldonado & Vera, 2014; Ramsey et al., 2017), international business (IB) (Chen et al., 2009; Felicio et al., 2016; Felicio et al., 2016; Liou et al., 2021; Lorenz et al., 2018; Lu et al., 2014; Malhotra et al., 2013; Mangla, 2021), international management (Ng et al., 2009; Ott & Michailova, 2017; Raman et al., 2013; Ramsey et al., 2011; Ramsey & Lorenz, 2016; Richter et al., 2016), intercultural communication (Diao & Park, 2012; Froese et al., 2016; Leung et al., 2014; Zakaria, 2017), international education

(Camargo et al., 2020; Cray et al., 2018; Curran et al., 2021; Eisenberg et al., 2013; Holtbrügge & Engelhard, 2016; Iskhakova & Ott, 2020; Mynott, 2018; Ng et al., 2009), cross-cultural psychology (Adair et al., 2013; Gelfand et al., 2008; Kanfer, 1990; Leung et al., 2014; Matsumoto & Hwang, 2013; Volpone et al., 2018) and personality management (Bandura et al., 1987; Deci & Ryan, 1985; Harvey et al., 2005; Jiang et al., 2018; Leung et al., 2007; Rüth & Netzer, 2020; Shu et al., 2017; Van Dyne et al., 2012). This disciplinary diversity reflects the importance and relevance of intercultural competence across various contexts.

Specifically, cultural intelligence encompasses comprehending, appreciating and effectively engaging with individuals from diverse cultural backgrounds (Ang et al., 2003). Acknowledging and understanding cultural differences is pivotal to developing a high level of CQ. An individual's or team's capacity to adapt to and leverage these differences can determine the success of cross-cultural interactions. Cultural intelligence is not merely about recognising cultural nuances; it is also about harnessing cultural diversity to enhance collaboration and achieve shared goals. CQ has thus emerged as a critical factor in effectively navigating the challenges caused by cultural differences and a potential facilitator in mitigating the adverse effects of diversity (Ang & Van Dyne, 2015; Ang et al., 2007). Team diversity is a valuable source of knowledge and insights for developing cultural intelligence, essential for effective communication, collaboration and problem-solving in today's globalised world (Mangla, 2021). While perceived cultural dissimilarity among team members in global virtual teams can negatively impact task performance, cultural intelligence helps mitigate this effect (Presbitero, 2020).

Furthermore, cultural intelligence positively influences various aspects of team dynamics in diverse teams, such as cross-cultural effectiveness (Li et al., 2013), individual-level task performance of team members (Presbitero & Toledano, 2018), social integration (Richter et al., 2021), team integrative behaviour (Moynihan et al., 2006), creativity (Janssens & Brett, 2006), role conflict and overload (Kubicek et al., 2019) as well as team performance (Groves & Feyerherm, 2011; Mor et al., 2013). It strengthens the relationship between the leader's cultural intelligence and ethical behaviour among team members, enhances task performance (Presbitero & Teng-Calleja, 2019), promotes speaking-up behaviour (Ng et al., 2019) and fosters higher levels of psychological safety within the team (Dibble et al., 2019; Ng et al., 2019; Presbitero, 2020; Presbitero & Teng-Calleja, 2019; Presbitero & Toledano, 2018).

1.2. Problem statement

As mentioned, cultural intelligence is not only about recognising cultural nuances; it is also about harnessing cultural diversity and navigating cultural differences in an intercultural environment. Despite its importance and the growing research on intercultural competencies, specifically CQ, over the past two decades, the research on team-level CQ still needs to be explored. *Team dynamics* are the backdrop against which cultural intelligence operates within a team, encompassing the behavioural patterns, interactions and relationships among team members. These dynamics set the stage for how cultural differences manifest and influence team outcomes. Moreover, only some issues in a team arise from cultural differences. Some conflicts or synergies may be due to differences in personalities,

professional backgrounds or personal histories. Understanding these dynamics therefore ensures that team-level CQ can be effectively recognised, developed and utilised. Current literature frequently emphasises cultural intelligence as a significant factor in moderating or mediating the adverse effects of diversity in multicultural teams. However, it is equally important to explore the complexities of diversity itself before attributing CQ's significance (Adair et al., 2013). Given this, the two main factors of team dynamics chosen for this thesis include: team diversity and team-level CQ configurations. Cultural diversity is a defining characteristic of our interconnected societies, with cultural differences forming a foundational element of diversity dynamics; it holds a central place in the CQ literature. In teams where members come from diverse cultural backgrounds (Groves & Feyerherm, 2011), CQ plays a critical role in influencing team processes and outcomes (Schlaegel et al., 2021), and is a potential facilitator of diversity dynamics (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Williams & O'reilly Iii, 1998). As defined in the literature, team diversity encompasses differences in any attribute that may lead to the perception of dissimilarity between individuals (Harrison & Klein, 2007; Williams & O'reilly Iii, 1998). While studies have attempted to explore the consequences of team diversity, the results still need to be conclusive. Cultural diversity mainly presents a complex picture with positive and negative outcomes, creating a longstanding debate (Minbaeva et al., 2021), as much of the literature has relied on the 'double-edged sword' metaphor to explain cultural diversity's positive and negative impacts on teams (Stahl et al., 2010). Moreover, Minbaeva et al. (2021) outlined that most

recently published papers draw on the conceptual distinction between surface vs. deep-level diversity, which can unintentionally dismiss meaningful differences between people related to categories. They urge researchers to synthesise different approaches to examine team cultural diversity (Minbaeva et al., 2021).

One approach to address these discrepancies involves associating different processes with specific types or dimensions of diversity (Meyer, 2017). Nonetheless, it has been challenging to understand and synthesise the effects of diversity within international business literature. As Harrison and Klein (2007) noted, cumulative findings on the consequences of within-unit differences could be more robust or consistent or both. Most researchers need to be more precise while using the definition of diversity when the definitions do not pinpoint and substantiate the nature of differences within units, nor do they specify the collective distribution or the compositional pattern of differences within a unit (Harrison & Klein, 2007). Researchers have established that diversity affects different outcomes in various ways, but they have yet to investigate the exact mechanisms and reasons why diversity yields positive effects on some outcomes and negative on others (Caputo et al., 2018; Charoensukmongkol & Pandey, 2020; Dolce & Ghislieri, 2022; Gabel-Shemueli et al., 2019; Murphy et al., 2019; Zhou & Charoensukmongkol, 2022), both in team levels (Bogilovic et al., 2017; Chua & Ng, 2017; Groves & Feyerherm, 2011; Li et al., 2013; Livermore et al., 2022; Pidduck et al., 2022; Presbitero, 2021; Presbitero & Toledano, 2018) and in organisational levels (Elenkov & Manev, 2009; Magnusson et al., 2013; Moon, 2010).

When considering team-level CQ, only a few studies have elevated their analysis beyond individual-level CQ (Fang et al., 2018; Ott & Michailova, 2018; Yari et al., 2020). However, limited studies have reached a consensus on how to measure and define team-level CQ. Most research has either targeted overall CQ or its dimensions, which restricts exploring their combined effects on specific work outcomes (Schlaegel et al., 2021). Additionally, most team CQ studies have primarily used average aggregation techniques to evaluate individual CQ (Adair et al., 2013; Dibble et al., 2019; Gregory et al., 2009; Hu et al., 2019; Iskhakova & Ott, 2020; Mangla, 2021; Ng et al., 2019; Richter et al., 2021) or the overall team CQ (Li et al., 2013; Livermore et al., 2022; Pidduck et al., 2022; Presbitero, 2021; Presbitero & Toledano, 2018).

Therefore, there needs to be more agreement in the literature on measuring best and conceptualising these higher levels of CQ. Aggregating the higher-level CQ by averaging team or organisation members' CQ scores may mask the interactions among team members. It thus may not reflect the nature of CQ as a collective product. The appropriate way of aggregation depends on conceptualising the construct at both levels and emergent processes from lower to higher levels (Kozlowski & Klein, 2000). This gap leads to the much-needed exploration and examination of team CQ configurations.

1.3. Research context

Based on the given relevance and importance and the problem statement outlined above, this thesis aims to contribute to the ongoing discussions within cultural intelligence literature and team diversity dynamic literature; for these, three papers

have been developed. Chapter 2, a systematic review, underscores the importance of cultural intelligence (CQ) and includes concepts that are strongly related to CQ, namely global mindset (GM) and cross-cultural competencies (CC). By applying bibliometric methods, the paper offers an objective and reproducible approach to assess the current state of the literature. Bibliometric methods can reduce subjectivity since their indicators can be calculated for an entire publication set (both from internal and external references) and represent a collective judgment of a broader segment of literature (Belter, 2015). This chapter seeks to contribute to a better understanding of the intellectual structure of research on the three constructs and their effects on different outcomes, the diffusion of the different concepts throughout the research literature and the structure of the scientific community.

One of the exciting findings from this chapter is the emerging research stream that delves into CQ, related team processes and group-level outcomes. The chapter encourages researchers to integrate their work on group-level CQ, examining team processes and outcomes within the field of IB. This field heavily relies on analysing the impacts of cultural diversity on various team outcomes, including creativity, communication effectiveness and social integration. Previous studies have revealed how cultural diversity affects some of these outcomes, such as its association with heightened creativity, increased conflicts and reduced social integration (Stahl et al., 2010). This chapter thus urges researchers to explore the interplay between CQ, cultural diversity and team-level results. Given this, the field of IB and management gains significantly from integrating these two domains

in team-related research, a direction taken in Chapter 3 and Chapter 4. The remaining empirical chapter of this thesis therefore focuses on team dynamics and the roles of diversity (Chapter 3) and team CQ configurations (Chapter 4) on different outcomes.

Notably, Chapter 3 of the thesis explores the role of diversity in team dynamics and presents the nuanced model of personal diversity. The premise of personal diversity is based on diverse aspects of team members' attributes, classified into three distinct levels. This assumption further elaborates that each of the differences in these attributes has a different effect on team processes and outcomes. The article in this chapter, " Unpacking diversity in teams: How are variety, disparity and separation associated with collaboration barriers and team outcomes?" marks a shift in focus, transitioning from cultural intelligence to the complex nuances of diversity dynamics within teams.

Lastly, acknowledging that cultural intelligence is the newest cross-cultural competency measure, is a necessary precondition to acquiring GM, and is shown to play a vital role in CC development (Johnson et al., 2006). I choose to focus on the concept of CQ solely for the empirical parts of this thesis, specifically in Chapter 4. Cultural intelligence encompasses comprehending, appreciating and effectively engaging with individuals from diverse cultural backgrounds (Ang et al., 2003). Moreover, acknowledging and understanding cultural differences is pivotal to developing a high level of CQ. An individual' or team's capacity to adapt to and leverage these differences can determine the success of cross-cultural interactions. Cultural intelligence is rooted in an individual's ability to adapt and

thrive in culturally diverse environments through acquiring cultural knowledge, mindfulness, and behavioural skills (Earley & Ang, 2003). As Gardner (1993) emphasised, intelligence is not a singular, general ability but a collection of distinct abilities utilised in different contexts (Earley & Ang, 2003; Kelley & Michela, 1980). CQ incorporates two key aspects: the mental (metacognitive and cognitive CQ) and action-focused (motivational and behavioural CQ) (Bücker et al., 2016). Each dimension of cultural intelligence facilitates intercultural effectiveness in significantly different and meaningful ways (Rockstuhl & Van Dyne, 2018). Therefore, thoroughly examining the diverse facets of various CQ dimensions is of utmost significance.

Chapter 4, "Unveiling the significance of CQ diversity", therefore builds upon the insights provided by the preceding papers, introducing a nuanced approach to quantifying team-level cultural intelligence. Even though each of the chapters is an independent study, they attempt to reveal the importance of intercultural team environment, intercultural competencies, and how to best navigate today's globalised and interconnected world.

As outlined in the preceding and current sections, this thesis aims to contribute to the ongoing discussions within the fields of cultural intelligence literature and team diversity dynamics. The research context has underscored the pivotal role of team dynamics in shaping the outcomes of intercultural collaboration. Within this context, in next section I briefly list the theories that underpin a solid foundation for the chapters 3 and 4. These theories offer a robust theoretical framework for comprehending and analysing the complex dynamics of cultural intelligence, team

diversity, and their influence on team outcomes. They are firmly established and firmly rooted in prior research, thereby contextualizing the studies in this thesis. These theories possess the capacity to predict and explain diverse facets of team behaviour. Furthermore, employing these theoretical frameworks aids in the identification of practical implications and recommendations for organisations and practitioners.

1.3.1. Information processing theory:

This theory postulates that the larger the pool of information and the greater the variety of available perspectives (Simon, 1978), the more diverse team members can tap into more diverse sources of knowledge and information (Mayo et al., 2017), resulting in enhanced group problem-solving, creativity, innovation (Qi et al., 2022) and adaptability. Information processing theories posit that teams with complex problems require a large pool of cognitive resources to process information effectively and improve performance (Galbraith, 1973; Tushman & Nadler, 1978). The idea is that heterogeneity in organisations can lead to improved group outcomes, such as enhanced interaction openness and shared understanding, improving the flow of information (Marschan-Piekkari et al., 1999; Welch et al., 2001).

1.3.2. The (In)justice theory:

The (in)justice or inequality theory states that when an individual perceives an outcome to be unfair, they are likely to experience an emotional impact, such as anger or guilt (Greenberg, 1987), which can be seen as a stress-inducing factor that triggers feelings of strain or frustration, ultimately leading to the development of

counterproductive work behaviour (Flaherty & Moss, 2007). These theories imply that inequality may cultivate a sense of dissonance, which may lead individuals to adapt their behaviour by withdrawing their contributions, which can further distract members from essential tasks and impair team cohesion and performance (Greenberg, 1987). In teams, there is a variation in the distribution of functional attributes among team members. Pelled (1996) argues that these variations in functional, educational or industry background capture experiences and perspectives relevant to the task performance of most work groups. This type of diversity substantially impacts the task-relevant group process and performance (Milliken & Martins, 1996; Sessa & Jackson, 1995).

1.3.3. The similarity attraction & social categorization theories

When viewed as separation, diversity often takes cues from the similarity attraction theory (Byrne, 1971) and social identity theory (Tajfel & Turner, 1986). This perspective involves mentally associating oneself with others of similar backgrounds, designating them as the "ingroup" and others as the "outgroup." Such categorization can lead to biases between groups, impacting teamwork and the exchange of information. A higher separation does not mean that anyone has diversity, but that the difference interval among the members is more widely spread. Unlike variety, disparity and separation are believed to have detrimental effects on organisational effectiveness and are described as more "ugly than beautiful" (Harrison & Klein, 2007). The separation of differences in hidden attributes influences inferences regarding the similarity of other group members in terms of underlying values and beliefs as well as the behaviour towards these other

members. In teams, this is hypothesised by looking at the cultural distance among the group members, which focuses on difficulties, costs and risks (see (Shenkar et al., 2008; Ward & Ward, 2003), associated with cross-cultural dissimilarities between individuals, groups or organisations (Adler et al., 2008; Klitmøller & Lauring, 2013; Shenkar, 2001).

1.3.4. Underlying theories of CQ & dimensions

The concept of cultural intelligence stems from Sternberg's (1986) framework of multiple loci of intelligence, which distinguishes between cognitive, motivational and behavioural intelligence. It further builds upon Gardner's (1993) theory of multiple intelligences, emphasising that intelligence encompasses distinct abilities utilised in various contexts. As a result, cultural intelligence (CQ) is firmly grounded in these foundational theories and sheds light on individuals' ability to adapt and flourish in culturally diverse environments. It also enhances their effectiveness in multicultural settings by acquiring cultural knowledge, practising mindfulness and developing behavioural skills (Earley & Ang, 2003; Thomas et al., 2008; Van Dyne et al., 2009).

Each dimension of CQ builds upon different underlying theories. For example, Flavell (1979) proposes a foundational theory of metacognition: understanding and awareness of one's cognitive processes. Flavell's theory contributes significantly to the development of the field of metacognition and has been influential in educational psychology and cognitive science. This theory distinguishes between metacognitive knowledge and metacognitive control, highlighting individuals' cognitive processes to monitor, regulate and enhance their learning and thinking

(Ang et al., 2007; Flavell, 1979). The two main components of metacognitive CQ are metacognitive knowledge and metacognitive control, which refer to an individual's awareness and understanding of their cognitive processes and the regulation and management of cognitive processes during learning and problem-solving. It encompasses monitoring one's comprehension, memory and problem-solving efficacy. It further includes strategies such as planning, monitoring, evaluating and adjusting cognitive activities based on ongoing feedback. Individuals with high metacognitive CQ actively monitor their cognitive processes during cross-cultural encounters. They actively reflect on their thoughts, evaluate their understanding of cultural cues and adjust their cognitive strategies based on the evolving cultural context.

Similarly, individuals with metacognitive CQ self-regulate their cognitive biases, control emotional reactions and ensure that their cognitive responses align with the goals of effective intercultural communication. The cognitive CQ dimension builds upon Ackerman (1996) who challenges the traditional view of intelligence as a general cognitive ability or a set of domain-specific skills. Instead, he argues that intelligence intertwines with knowledge acquisition and organisation across various domains. The theory proposes that individuals' intellectual development is influenced by the accumulation of knowledge, the processes through which knowledge is acquired and the interaction between cognitive processes and personality traits. Critical components of this theory include knowledge acquisition, cognitive process, personality traits and domain-specific expertise. Cognitive CQ encompasses cognitive skills such as perspective-taking, empathy,

cultural awareness as well as the ability to analyse and interpret cultural information. Motivational CQ builds upon self-efficacy theory (Bandura, 1986; Bandura et al., 1987), a fundamental concept in psychology that focuses on individuals' beliefs in their capabilities to achieve specific goals, tasks or outcomes. According to this theory, individuals with high self-efficacy are more likely to set goals related to cultural adaptation and engagement. They are motivated to learn about different cultures, improve their intercultural communication skills and actively seek opportunities for cross-cultural interactions. The behavioural CQ dimension builds upon ideas presented by Hall (1959) who underscores the significance of context and communication style in intercultural interactions, and Gudykunst (1998) who highlights the importance of uncertainty reduction strategies and interpersonal relationships in intercultural interactions, respectively. According to these ideas, individuals with high behavioural CQ understand the importance of nonverbal cues, gestures, and cultural norms to reduce misunderstandings. They actively seek information, observe behaviour and adapt communication patterns to minimise uncertainty and anxiety in cross-cultural encounters.

Based on the theory of multiple intelligences, everyone possesses various capacities, including inherent and stable abilities and achievements that may vary depending on the situation. Some people may be more adept at utilising these different types of intelligence than others. As Gardner (1993) proposes, a person's learning preferences are closely tied to their potential. Additionally, Gardner and Moran (2006) emphasise the importance of having individuals skilled in different

areas, as well-balanced organisations and teams benefit from diverse skills and intelligence. This diversity grants the group a more vital and varied collective capacity than individuals with similar traits. Sternberg (1984) and Gardner (1983) agree that individuals possess various abilities and diverse mental skills. In essence, people differ from one another in their capacity to understand complex ideas, adapt to their environment effectively, learn from experiences, engage in reasoning and overcome challenges through thoughtful consideration (Neisser et al., 1996). Viewing CQ as a functional attribute therefore embraces the understanding that individuals from different cultural backgrounds bring unique skills and perspectives to the group and that these variations can act as a diversity measure. In Chapter 4, the conceptual framework is built upon cultural intelligence theories incorporated with diversity theories, namely, information processing, the (in)justice view and categorisation theories.

1.4. Structure of the thesis & foundations

As stated, the thesis presents three studies that describe the importance of intercultural competencies and team dynamics. Starting with systematic literature on intercultural competencies, namely CQ, GM and CC, using bibliometric methods Chapter 2 lays the foundation of the thesis. Based on the findings from this chapter, Chapter 3 examines the role of different types of diversity measures on team processes and outcomes, Chapter 4 Part 1 proposes a conceptual framework for team CQ configurations, and Chapter 4 Part 2 examines the team CQ configurations empirically.

Chapter 2, "Cultural intelligence, global mindset and cross-cultural competencies: a systematic review using bibliometrics", explores the concept of CQ and other interrelated concepts such as global mindset and cross-cultural competencies in international business and management literature. The study highlights several objective findings; among others, it finds that despite their separate origins (CQ, GM and CC), common foundational elements have led to the development of similar research themes and interconnected bodies of literature. However, these studies often remain confined within their respective constructs (Lee & Sukoco, 2010; Shaffer et al., 2006). The study also reveals a distinct pattern in the distribution of research focus within the domains of CQ and GM. CQ studies predominantly examine individual and group-level outcomes, while GM research delves into organisational-level outcomes. Despite CQ's overall prominence, GM takes precedence in organisational-level investigations. However, uncertainties persist regarding the specific components of organisational GM and organisational CQ, primarily due to limited research efforts, as highlighted by various scholars (Andresen & Bergdolt, 2017; Elenkov & Manev, 2009; Felicio et al., 2015; Lahiri et al., 2008; Magnusson et al., 2013; Moon, 2010; Raman et al., 2013).

Another interesting finding of this chapter, resulting from burst analysis, shows that between 2009 and 2014, there was a significant emphasis on learning, training, and the development of CQ, GM and CC. Specifically, at the group level, a burst of interest in group collaboration occurred during 2012-2013. Notably, the keywords "creativity" and "knowledge" demonstrate ongoing bursts from 2017 and 2016, respectively, particularly concerning group-level outcomes (Bogilovic

et al., 2017). These trends reflected the importance of effectively organising and designing multicultural teams to address cultural challenges, as evidenced by studies exploring CQ's impact on team creativity and the role of metacognition in enhancing cultural knowledge and team creativity (Chua & Ng, 2017). Further, this chapter identifies a research stream focused on group-level cultural intelligence, related team processes, and outcomes. This stream of publications delves into various aspects of knowledge, including knowledge-sharing within collaborations, knowledge-generation within groups and creativity (Bogilovic et al., 2017; Chen & Lin, 2013; Chua & Ng, 2017; Dollwet & Reichard, 2014; Eisenberg & Mattarelli, 2017; Li et al., 2013; Thomas, 2006). Given these findings, the chapter advocates for integrating research on group-level CQ and the broader team processes and outcomes in the IB and management fields. Drawing from the perspective of international business, which heavily examines the impacts of cultural diversity on team outcomes like creativity, conflicts, communication effectiveness and social integration, the chapter proposes investigating the direct influence of CQ on these group-level outcomes. Additionally, the chapter encourages researchers to explore how CQ might moderate the associations between cultural diversity and group-level outcomes.

This chapter contributes to the existing literature through a systematic and comprehensive review of three interrelated yet distinct constructs utilising bibliometric methods. Employing this methodology provides an unbiased and replicable means of evaluating the literature's course. Its methodological advancement, including factor and cluster analysis to outline intellectual research

streams and burst analysis to pinpoint emerging research domains, sets this chapter apart. By synthesising the outcomes of these methodologies, this chapter focuses on pivotal research areas, intersections, and gaps within the literature. As a result, it enhances the scholarly discourse. It offers valuable insights for future research directions to advance the fields of cultural intelligence, global mindset and cultural competence within international business and management.

Based on the findings of Chapter 2, Chapter 3 (Unpacking diversity in teams: How are variety, disparity and separation associated with collaboration barriers and team outcomes?) unpacks the term diversity by first presenting a fine-grained and nuanced model of three diversity types and their underlying dimensions "diversity in personal attributes" in a global virtual teams (GVT) setting. The study empirically investigates the within-unit and between-unit diversity defined by Harrison and Klein (2007). It assesses the impact of variety, disparity and separation on various team outcomes. The study differentiates between three types of diversity attributes possessed by team members. These are demographic attributes, such as age and gender, which are not related to the task; functional attributes, such as skill sets, precisely English language skills, technical skills and cultural intelligence skills, which team members acquire through experience; and hidden attributes, such as values (based on Hofstede's cultural dimensions) which are relevant to the task and brought to the team by each member.

Additionally, Chapter 3 tests the diversity types against assumptions derived from three theories, as proposed by Harrison and Klein (2007), using appropriate measurements. The finding of this chapter indicates that variety in demographics

act differently on different outcomes. For instance, age and nationality both positively affect psychological and task outcomes. Specifically, variety in age showed a positive relationship with psychological outcome, while variety in nationality positively impacted task outcome.

Further, the findings show that diversity in the form of disparities in functional attributes mainly negatively affects barriers to collaboration and psychological outcomes. Disparity can make it difficult for members to relate to one another or agree on common goals and methods, giving rise to disagreements and internal competition. Bertrand and Lumineau (2016) state that internal competition and tensions often arise when members strive for superiority, which increases the likelihood of conflict (Pelled, 1996). This negatively impacts decision-making and group outcomes such as member satisfaction and cohesion (Jehn et al., 1999). Specifically, English skills and technical skills disparity strongly affects barriers to collaboration and psychological outcomes. However, the study also finds that the disparity in specific skill sets, such as technical and cultural intelligence skills, has a positive relationship with the barriers to collaboration, meaning it decreases the barriers experienced in teams. The disparity in CQ skills mainly shows a positive association with psychological and task outcomes.

The findings regarding the impact of separation along hidden attributes, namely cultural value, are not uniform. Previously, research demonstrated the negative impact of cultural value separation on the survival of inter-organisational relationships (Barkema & Vermeulen, 1997; Hennart & Zeng, 2002) and that the differences in cultural values can obstruct communication and increase

coordination difficulties (Gibson & Gibbs, 2006; Klitmøller & Lauring, 2013; Stahl et al., 2010). However, the results from Chapter 3 show that each dimension has its own characteristics, and separation along them has a different effect on different outcomes. For instance, separation along power distance decreases task outcome, separation along long-term orientation increases barriers to collaboration and separation along masculinity has a negative association with psychological outcome, supporting the previous arguments. In contrast, separation along uncertainty avoidance positively influence both psychological and task outcomes, and separation along collectivism decreases barriers to collaboration and significantly increases psychological outcome. Given these, Chapter 4 contributes to the literature by providing valuable evidence that sheds light on the diverse personal differences inherent within teams. It offers a comprehensive perspective by showcasing the multifaceted ways these differences collectively and independently impact team processes and outcomes.

Chapter 3 provides the foundation of interest in looking into CQ configurations and how the differences in CQ are associated with different team outcomes. Chapter 4, "Unveiling the significance of CQ configurations; a conceptual framework and illustrative example", therefore begins by building a conceptual foundation based on CQ and diversity theories in part 1 and continues by testing the model in GVT settings in part 2. The study begins with a review of the current literature on team CQ and team CQ configurations, highlighting its importance and the gap in the literature. CQ is essential in teams where members come from different cultural backgrounds (Groves & Feyerherm, 2011), as it impacts both

team processes and outcomes (Schlaegel et al., 2021). While there is consensus that cultural intelligence exists at individual and team levels (Groves & Feyerherm, 2011), there is less agreement on measuring and conceptualising these higher levels of cultural intelligence (CQ). The paper identifies two main challenges: (A) the aggregation of CQ dimensions into one overall score, or looking only at one dimension of CQ individually, and (B) the aggregation or handling of team-level CQ as averages (i.e. the different levels of CQ that exist between team members). Part 1 of this chapter thus delves into the theoretical background of CQ and the different dimensions of CQ. Further, the study focuses on the individual attributes of CQ dimensions to emphasise that intelligence is not a singular, general ability but rather a collection of distinct abilities utilised in different contexts (Earley & Ang, 2003); Gardner (1993); (Kelley & Michela, 1980). CQ construct incorporates two key aspects (Bücker et al., 2016). The mental aspects (metacognitive and cognitive CQ) contain the understanding and comprehension of knowledge (Ang et al., 2007; Flavell, 1979), and the concept of intelligence-as-knowledge (Ackerman, 1996). The action-focused aspects (motivational and behavioural CQ) involve applying knowledge through self-efficacy, motivations and verbal-nonverbal behaviours (Bandura et al., 1987; Bandura & Walters, 1977; Bücker et al., 2016; Deci et al., 1985; Kanfer, 1990). Each aspect of CQ is crucial for a particular outcome, and differences in these CQ dimensions may impact team outcomes differently. Chapter 4 therefore contributes to the literature by providing a framework that helps researchers to move beyond the aggregation methods used, which hinders our understanding of the complex nature of team-level CQ (Barrick et al., 1998; Kozlowski & Klein,

2000; Ng & Van Dyne, 2005; Schlaegel et al., 2021). Further by incorporating multiple diversity theories, such as information processing theory (Simon, 1978), (in)justice theory (Greenberg, 1987; Harrison & Klein, 2007, p. 1201) and social categorisation theory (Tajfel & Turner, 1986), this chapter aims to provide a more comprehensive view of CQ diversity implications on team dynamics and performance. The framework in this chapter introduces the concepts of variety, disparity, and separation (Harrison & Klein, 2007, p. 1201) in team members' CQ dimensions (functional attributes). It explains how CQ influences each stage of information processing positively and acknowledges the potential adverse effects of disparities and team separation in CQ dimensions and the role of (in)justice view and social categorisation in shaping team outcomes (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Mayo et al., 2017; Williams & O'reilly Iii, 1998).

Part 2 of Chapter 4 tests an illustrative example empirically to show how different configurations influence team outcomes. The results indicate that the metacognitive, cognitive, motivational and behavioural CQ variety positively impacts subjective outcomes. However, regarding objective outcomes, the variety of these CQ dimensions did not yield statistically significant results. Cognitive CQ disparity showed positive and statistically significant relationships with subjective and objective outcomes. In contrast, motivational CQ disparity displayed a strong negative association with subjective outcomes but lacked statistical significance for objective outcomes. On the other hand, behavioural CQ disparity showed negative and significant associations with both subjective and objective outcomes, with a stronger negative relationship observed for the

objective outcome. Overall, Chapter 4 contributes to team-level CQ and team diversity literature by demonstrating the significance of considering CQ configurations within teams. This chapter ends with presenting theoretical and practical implications and acknowledging the study's limitations by providing future research agendas.

The overall thesis employs a range of research methods across its three chapters, offering a well-rounded and rigorous approach to addressing its research questions. These different methods serve distinct purposes and contribute unique strengths to the thesis.

In the Chapter 2 a bibliometric review is conducted using the Web of Science database, supported by software tools like HistCite, R-package Bibliometrix, and Sci2. This comprehensive review synthesizes existing literature and provides a robust theoretical foundation for the entire thesis.

The Chapter 3 focuses on empirical research and utilises data from the X-Culture project. Various statistical tools, including IBM SPSS, and PLS-SEM 3 are employed to analyze and interpret the data.

Chapter 4 adopts a hybrid approach, starting with the development of a conceptual framework based on established theories, such as multiple intelligence theory and information processing theory. Subsequently, partial least squares structural equation modelling (PLS-SEM) is used for empirical testing. The specialised software, PLS-SEM 4, assists in constructing path models with latent variables. This combination of theory and empirical testing strengthens the thesis's theoretical and practical

contributions. Table 1. 1 shows the summary of the structure, method and findings of the three papers.

Table 1. 1 Overview of thesis projects

Research objectives	*Focus*	*Methodology*	*Theories*	*Sample*	*Main findings*
Chapter 2 Cultural intelligence, global mindset & cross-cultural competencies; A systematic review using bibliometrics					
Most influential literature in CQ, CC, GM; Intellectual structure of streams of research; the emerging streams of literature; the promising routs for future research	Intercultural Competencies within IB	Hybrid; Bibliometrics LitRev (Citation & Co-situation Analysis Factor & cluster analysis) + Burst	–	WoS 158 publications	CQ examine individual & group-level outcomes; GM research Org-level; limited research on Org- & Team CQ; emphasis on learning, training, & development of CQ, GM & CC; keywords creativity & knowledge burst
Chapter 3: Unpacking diversity in teams: How are variety, disparity and separation associated with collaboration barriers and team outcomes					
How do the various diversity measures such as variety of demographic attributes *(age, gender, nationality),* disparity of functional attribute *(English, Technical, CQ skills),* & separation along hidden attributes *(values based on cultural dimensions)* collectively & independently interplay with *barriers to collaborate*, & *psychological & task*?	Team Dynamics: Input-process-output	Empirical (PLS-SEM) Multivariate analysis	Information Processing; (In)Justice; Social Categorization,	Virtual Collaboration project 1170 individuals in 345 teams.	Age V boosts psychological outcomes, nationality V enhances task outcomes; English & technical skill D elevate collaboration barriers; English skill D reduces psychological outcome, while technical skill D decreases task outcome; CQ D reduces collaboration barriers; positively affecting psychological & task outcomes.
Chapter 4: Unveiling the Significance of CQ Configurations; A Conceptual Framework & Illustrative Example					
Part 1: How can we move beyond treating CQ as a uniform concept & acknowledge the variation in CQ among team members? *Part 2*: What role does the diversity of CQ dimensions (metacognitive, cognitive, motivational, & behavioural CQ) play in enhancing or reducing team outcomes?	Team dynamics: Configuration of team-level CQ	Hybrid; Conceptual framework with illustrative example (empirical)	Multiple Loci of Intelligence, Self-efficacy; Knowledge as Intelligence + IPT, SCT, IJT	Virtual Collaboration project 1170 individuals in 345 teams.	Conceptual framework that moves beyond traditional aggregation methods for team-level (CQ); A comprehensive view of CQ diversity's influences on team dynamics & performance; V in dimensions of CQ are + related to team effectiveness; Ability D among team members can harm team performance; Cog Disparity enhance both outcomes; Mot S has + impact & Cog S has – impact on objective outcome

= (In)Justice Theory, SCT=Social Categorization Theory, V= Variety, D= Disparity, S= Separation, Cog= Cognitive, Mot=Motivation :

Chapter 2 is published and can be cited as follows: Yari, N., Lankut, E., Alon, I., & Richter, N. F. 2020. Cultural intelligence, global mindset, & cross-cultural competencies: a systematic review using bibliometric methods. European Journal of International Management, 14(2): 210-50.

CHAPTER 2: Cultural intelligence, global mindset, cross-cultural competencies; A systematic review using bibliometrics

This chapter is published and can be cited as follows: Yari, N., Lankut, E., Alon, I., & Richter, N. F. 2020. Cultural intelligence, global mindset, & cross-cultural competencies: a systematic review using bibliometric methods. *European Journal of International Management*, 14(2): 210-50.

2.1. Introduction

Cultural intelligence (CQ) is the ability to succeed in a cross-cultural environment and comprises several dimensions, including cognitive, metacognitive, motivational, and behavioral CQ (Ang & Van Dyne, 2008). It stems from cross-cultural psychology yet has attracted strong interest in the field of international business and management e.g., (Johnson et al., 2006). Empirical research shows that it reliably predicts outcomes such as global leadership e.g., (Sutton et al., 2013), negotiation performance e.g., (Imai & Gelfand, 2010), expatriation intention e.g., (Richter et al., 2019 (forthcoming)), and job performance e.g., (Ang et al., 2007). Furthermore, a number of journals have published special issues on CQ e.g., (Chiu et al., 2013), and there are already several review articles on the concept (e.g., (Fang et al., 2018; Ott & Michailova, 2018).

Review studies address the definition of CQ in contrast to the more traditional international business terminology e.g., (Andresen & Bergdolt, 2017; Johnson et al., 2006; Levy et al., 2007). Moreover, the authors have reviewed the literature with a focus on structuring (empirical) studies based on CQ (Fang et al., 2018; Ott & Michailova, 2018). Ott and Michailova (2018) present an overview of studies that refer to the concept as an antecedent, moderator, or mediator in relation to different outcomes, such as leadership, performance, and effectiveness. They also present an overview of antecedents to CQ, such as cultural exposure and cross-cultural training. Their review

refers to 73 conceptual and empirical publications published from 2002 to 2015 in management, international business, education, and psychology journals that fulfill certain rankings (appearance on the ABS list, rank C or above in the ABDC ranking) (Ott & Michailova, 2018). Fang et al. (2018) review empirical research (142 publications) on CQ, building on a keyword search in the Web of Science (WoS) database (keyword: CQ in the topic or title, excluding, among others, articles in anthropology, biology, and medicine). Fang et al. (2018) also discuss different measurement scales and offer an overview of antecedents, including articles that focus on means to develop CQ, direct and indirect effects of CQ on various outcomes in quantitative studies, and qualitative research into CQ. Finally, they discuss studies that look at CQ at an aggregate level (Fang et al., 2018). Moreover, there are the first meta-analyses done on the different work-related outcomes of CQ (Rockstuhl & Van Dyne, 2018; Schlaegel et al., 2017). These reviews draw an excellent picture of the research completed and indicate that the topic of CQ in international business and management is no longer in a nascent phase, but in a growth phase, with an evolving scientific community (see (Von Krogh et al., 2012)).

In addition to CQ, there are two concepts with a longer research history in international business and management: cross-cultural competencies (CC) and global mindset (GM) e.g., (Andresen & Bergdolt, 2017; Elo et al., 2015); (Bücker & Poutsma, 2010; Leung et al., 2014). While these concepts are not identical to CQ, they are valuable when looking at the CQ research domain for two reasons: first, they have relevant overlap with the concept of CQ (see Appendix 1 for a brief overview of selected measurement approaches). Second, they are used for the same purpose in international business and

management, namely, to understand and explain diverse outcome variables such as those mentioned above. However, reviews of empirical research only concentrate on one of the concepts – the above on CQ (and others on GM and CC, see (Javidan & Bowen, 2013; Levy et al., 2007). This may be cumbersome due to the overlap involved and we see potential in gaining further insight through combining the existing knowledge on shared and distinct facets of each construct. The early research goes in this direction, such as the recent study by Andresen and Bergdolt (2019) empirically combining CQ with GM, and Johnson et al. (2006) who suggest that CQ plays an important role in the development of CC.

In this vein, we complement past reviews and broaden the focus: we systematically review the literature using bibliometric methods and include concepts that are strongly related to CQ, namely GM and CC. Relying on bibliometric methods, we offer an objective and reproducible approach to assessing the current state of the literature (see (Belter, 2015)). We seek to contribute to a better understanding of the intellectual structure of research on the three constructs and their effects on different outcomes. Since each concept is ultimately used to explain different outcomes in international business (at the individual, group or team, and organizational levels), there is a value in understanding: a) the intellectual structure of the literature around CQ, CC, and GM; b) the diffusion of the different concepts throughout the research literature, and; c) the structure of the scientific community. We believe that there is value in further integrating research into the three concepts as each can be informed by the other, and knowledge spillovers in research may help to further resolve the existing conflicts in explaining the performance outcomes of international business and management

phenomena. This should help in developing a potential joint future research agenda to advance theorizing in international business and management.

Ultimately, this will answer the following questions: (1) Which journals, publications, and specific researchers are the most influential in CQ, GM, and CC research? (2) What is the intellectual structure of the CQ, GM, and CC literatures, including key research streams and potentially bridging researchers in the field? (3) What is the temporal evolution of research streams in CQ, GM, and CC research and what are the emerging topics? (4) What are the promising routes for future research?

2.2. Concepts, data, and methods

2.2.1. Concepts studied: CQ, GM, and CC

There is a lack of consensus on the terms, similarities, distinct features, and associations of CQ, GM, and CC. We demonstrate this below with reference to conceptual papers that seek accepted definitions: Andresen and Bergdolt (2017) present a systematic review of the definitions of CQ and GM (that also incorporates studies in a similar vein, such as (Levy et al., 2007), who define GM on individual, group, and organizational levels). Johnson et al. (2006), Spitzberg and Chagnon (2009), as well as Leung et al. (2014) all propose definitions and models of CC.

We define CQ as the ability to succeed in complex cross-cultural environments through knowledge or cognition, motivation, and behaviors. This definition is based on the review by Andresen and Bergdolt (2017), who compare seven definitions and conceptualizations of CQ. All the publications they reviewed identify a cognitive dimension, with six out of seven suggesting that resources to adapt behavior are an integral part of CQ, and four out of seven refer to the motivational component

(Andresen & Bergdolt, 2017). We next refer to Ang and Van Dyne (2008) and Earley and Ang (2003) and summarize as follows: Cognitive CQ represents the general knowledge and knowledge structures about culture. Metacognitive CQ reflects the mental capability of individuals to acquire and understand cultural knowledge. Motivational CQ is an individual's capability to direct energy towards learning about and functioning in different intercultural situations. Finally, behavioral CQ describes an individual's capability to exhibit appropriate actions in culturally diverse encounters (Ang & Van Dyne, 2008; Earley & Ang, 2003). Andresen and Bergdolt (2017) find that a certain degree of CQ is a necessary precondition for acquiring a GM that enables successful international business relationships. Johnson et al. (2006) state that CQ has a key role in the development of CC, and that CQ relates to CC, which in turn relates to failure or success in international business.

We define GM "as the capacity to function effectively within environments characterized by high cultural and business complexity" ((Andresen & Bergdolt, 2017), p. 183). To function effectively in these environments, individuals need to have personal attributes of openness and cosmopolitanism (in addition to cognitive and motivational facets). Andresen and Bergdolt (2017) conclude that GM goes beyond CQ since it allows managers or employees to identify successful strategic actions needed in a global context. Similarly, Javidan et al. (2016) define GM as a set of individual self-efficacies that affect a global leader's ability to influence others in a complex, interdependent, ambiguous, and constantly changing global world. While both GM and CQ resemble each other, a GM more specifically addresses successfully coping with global

management and leadership challenges in addition to *just* being culturally intelligent, at least when following what Andresen and Bergdolt (2017) summarize in their review.

Following the review of CC definitions in international business by Johnson et al. (2006), we define CC as "an individual's effectiveness in drawing upon a set of knowledge, skills, and personal attributes in order to work successfully with people from different national cultural backgrounds." ((Johnson et al., 2006), p. 530). Most authors define CC as similar to CQ: the ability to effectively function in diverse cultural settings. Gertsen (1990) discusses three interdependent dimensions that make up CC: an affective dimension (personality traits and attitudes), a cognitive dimension (how individuals acquire and categorize cultural knowledge), and a communicative dimension (being an effective communicator). In contrast to CQ, CC involves personality traits and a focus on communication (although there is some overlap with the behavioral CQ dimension). Leung et al. (2014) present a general framework of CC that views GM and CQ as forms of CC, using CC as an umbrella term for the other two. In their model, capabilities related to CQ are determined by traits and attitudes. Traits and attitudes are part of GM that additionally comprises capabilities (see also Appendix 1 for an overview of content domains of selected measurement instruments, adapted from (Leung et al., 2014)).

Pinpointing the distinct features of each concept and the potential associations between them is ambiguous. Although broadly accepted terminologies are desirable, including recognizing distinct and overlapping characteristics as well as the causal ordering of concepts (e.g., (Levy et al., 2007; Spitzberg & Chagnon, 2009)), we note that recent

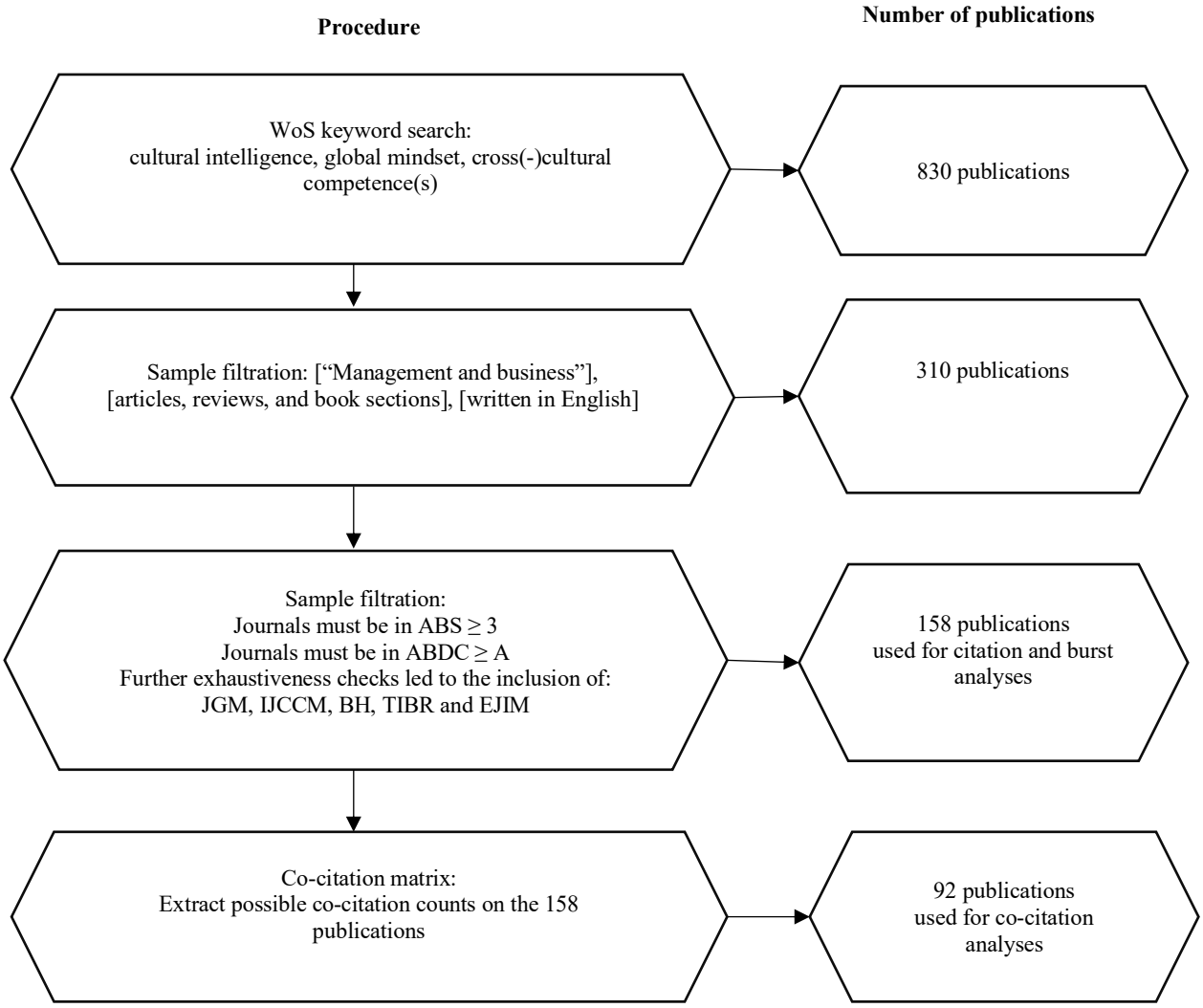
attempts to do so have not fully accomplished this goal. Still, we believe that the above overviews provide a good first indication.

2.2.2. The database and collection of publications

To perform our analyses, we first selected the appropriate publications using the WoS database by Clarivate Analytics, for three reasons: first, it is well recognized and most authors performing bibliometric analyses use it e.g., (Collinson & Rugman, 2010; Fetscherin & Heinrich, 2015). Second, recent reviews comparing different databases demonstrate that it has good coverage of publications, comparable to Scopus – another popular database used for bibliometric purposes e.g., (Harzing & Alakangas, 2016). Third, it was designed to satisfy the users of citation analysis and is therefore compatible with most tools for citation analyses e.g., (Harzing & Alakangas, 2016).

In the second step (see Figure 1), we chose keywords: CQ, GM, and CC. This search also refers to different abbreviations of these terms, their plurals, and different ways of spelling, resulting in 830 publications. We filtered this collection for English publications in management and business. We also filtered for research published in journals that meet certain minimum rankings (for a similar procedure, see (García-Lillo et al., 2017)) which is advantageous with regards to ensuring a sufficient number of co-citations for the later analyses.

Figure 2. 1 Procedure and results of sample extraction



JGM = *Journal of Global Mobility,* IJCCM = *International Journal of Cross-Cultural Management,* BH = *Business Horizons,* and TIBR = *Thunderbird International Review,* EJIM = *European Journal of International Management*

Further checks of the resulting journal list showed that this list was not sufficiently exhaustive to permit a comprehensive review. Evaluating further outlets with the help of three experts in the field of CQ and along the number of articles published, we added more journals to the list (see Figure 1). This process was designed to achieve a

collection of publications with the potential to make strong research contributions and generate citations, which is our primary unit of analysis. Publications that generated few or no citations are problematic in bibliometric analyses since they inflate the collection of publications retrieved without contributing to the analyses. For instance, they may bias the intended clustering of publications or may result in many small clusters of research with few publications or even only one. We also included two seminal books on CQ ((Earley & Ang, 2003) and (Ang & Van Dyne, 2008)) as external references to our sample (see (Boyack & Klavans, 2010)) due to a high number of co-citations identified for the two sources. The filtering process led to the final retrieved collection of 158 publications.

For a final correction of the extracted citation data (e.g., checking for duplicates, spelling of author names), we used several software packages that prepared the collection for the different purposes: citation analysis, co-citation analysis, and burst analysis. For the citation and burst analyses, we used HistCite, the R-package Bibliometrix (Aria & Cuccurullo, 2017) with the default script included in the package, and Sci2 (science of science). For the co-citation analysis, we used Bibexcel (Persson et al., 2009) to check for spelling errors, incorrect author names, and duplicates (Cobo et al., 2011) and used the default functions provided. Finally, we manually checked the files to ensure there were no duplicates in the analyses.

2.2.3. Bibliometric citation analysis

We performed a bibliometric citation analysis using HistCite on our retrieved collection of 158 publications and their number of citations. Bibliometric citation analysis has become popular in many fields in the past few years (e.g., (Apriliyanti & Alon, 2017;

Chatterjee & Sahasranamam, 2018; Collinson & Rugman, 2010; Fetscherin & Heinrich, 2015; White et al., 2016)) as it estimates the influence of publications (or documents), authors, and journals via citation rates. In this context, citations are viewed as a measure of influence or impact. If a publication or an author is heavily cited, it or they will be considered important or popular (e.g., (Kim & Mcmillan, 2008; Zupic & Cater, 2015)).

We obtained bibliometric citation data in the forms of local citations (LCS) and global citations (GCS). LCS is the number of times a publication is cited by others in our collection of 158 publications. GCS is the number of times a publication is cited in WoS databases and within the retrieved collection (Apriliyanti & Alon, 2017). We also used HistCite to compute LCS and GCS for the two external seminal books. Using these scores, we identify the most influential publications, the most prolific authors, and the most influential journals.

2.2.4. Bibliometric co-citation analysis

We performed a co-citation analysis on publications to understand the intellectual structure of the research into CQ, GM, and CC (see (Zupic & Cater, 2015)). The analysis uses co-citation counts, i.e., the number of times two publications are cited together by others. This is regarded as a measure of similarity based on the assumption that the more often two publications are cited together, the more likely their content is related (Small, 1973). Thus, co-citation analysis is a useful tool to identify streams of thought or shared research interests (Pasadeos et al., 1998; Zupic & Cater, 2015). We used Bibexcel to extract the number of co-citations for the publications in our retrieved collection. Of the 158 publications, 92 showed co-citations and were extracted in the form of a co-citation square matrix (an overview of detailed steps when using Bibexcel is provided from the

corresponding author upon request). The co-citation square matrix produced in Bibexcel includes the raw counts of co-citations and was loaded into SPSS. We transformed this matrix into a correlation matrix using Pearson's r, as this is an advantageous normalization for the upcoming cluster and factor analyses (see (Di Stefano et al., 2012; Reader & Watkins, 2006)).

To find intellectual streams, we performed exploratory factor and cluster analyses, which allow for a comparison and reliability check of results (see (Samiee & Chabowski, 2012)). We first applied an exploratory factor analysis using principal component analyses (most common in bibliometric analyses, see (Zupic & Cater, 2015)). We referred to the eigenvalues and the scree plot for determining the number of factors. We used varimax rotation to ease the interpretation of results (e.g., (Di Stefano et al., 2012; Reader & Watkins, 2006)) which produced results similar to an oblimin rotation in our case (as preferred by (Samiee & Chabowski, 2012)). To interpret the assignment of publications to factors or intellectual streams, we used a threshold for factor loadings at ±0.50 (as did (Reader & Watkins, 2006; Samiee & Chabowski, 2012)). While the factor analysis led to nine factors (with a total explained variance of 94.80%), the analysis of loadings shows that no publication specifically loaded on factor 9, providing us with eight factors to be analyzed further. Second, we used cluster analyses on the correlation matrix of co-citations. We employed the most common protocol of first applying a hierarchical, connectivity-based clustering method, Ward, followed by a centroid-based cluster procedure, k-means (Mooi & Sarstedt, 2011). Ward's method helped us determine the appropriate number of clusters and the related agglomeration schedule (based on squared Euclidean distances) pointed to eight or nine

clusters. In combination with the factor analysis results, we decided on an eight-cluster solution. In the next step, we applied the k-means cluster procedure to specify the best assignment of publications to the eight clusters (see (Mooi & Sarstedt, 2011)). Table 2.1 gives an overview of the assignment of publications to clusters from both the factor and cluster analyses. The eight factors are numbered from 1 to 8 and the clusters are labelled from A to H to avoid confusion. We note that two publications were not loaded under a factor due to their factor loadings, but are clustered under F and H. The total number of publications assigned was 92.

	Cluster								*Total*
Factor	A	B	C	D	E	F	G	H	
1	**40**	**10**	**7**	2					*59*
2				**9**					*9*
3					**11**	1			*12*
4						2			*2*
5							3		*3*
6								1	*1*
7					2				*2*
8						2			*2*
-						1		1	*2*
Total	*40*	*10*	*7*	*11*	*13*	*6*	*3*	*2*	***92***

Table 2.1 Overview of assignment to clusters from factor and cluster analysis

As Table 1 demonstrates, both analyses are strongly in line and confirm a basic structure of research clusters. For interpretative purposes, we concentrated on the clusters confirmed by both procedures that showed a meaningful size (10% of publications in a cluster). We decided to include cluster C, which has seven publications, due to its very clear assignment to one group in the cluster analysis. Thus, we concentrated on: 1A with 40 publications, 1B with 10 publications, 1C with seven publications, 2D with nine publications, and 3E with 11 publications. We are confident that these 77 (of the 92)

publications provide a good overview of the research streams. For the 15 publications not unambiguously grouped into a coherent group, we pursued the following strategy: If they were neither among the top-cited publications nor received more than 20 co-citations, we excluded them from further analysis.

2.2.5. Code frame development and manual coding based on computer-aided text analysis

To understand the meaning of the intellectual streams emerging from the multivariate analyses, we transferred all publications along with their cluster assignment to NVivo (e.g., (Bazeley, 2002; Leech & Onwuegbuzie, 2011)). In NVivo, we performed an automatic count of keywords and used the word-tree function on the full publications (as a tool of computer-aided text analysis / CATA, see (Gaur & Kumar, 2018)). In combination with previous literature reviews (e.g., (Andresen & Bergdolt, 2017; Fang et al., 2018; Ott & Michailova, 2018)) and a careful reading of the publications, we developed a code frame for manual coding. Hence, we combined automated procedures with manual coding to achieve the highest level of objectivity while being able to structure content into meaningful categories.

We coded all publications along their core research areas into seven broad themes: (1) *Concept, stages, measurement* was assigned to all publications that either introduce one of the concepts of CQ, GM, or CC, or conceptually discuss or empirically validate the concepts and their measurements. (2) *Antecedents* was assigned to all publications that look at the antecedents of CQ, GM, or CC either empirically or conceptually; these antecedents comprise, for instance, personality, international exposure, language abilities. One antecedent received a separate code, namely learning. Publications that

look into how training can influence CQ, GM, and CC and at the forms of training or learning and learning contexts received the code (3) *Learning* (see likewise, (Fang et al., 2018)). We coded *outcomes* into three levels: the first was (4) *Individual-level outcomes*, which was assigned to all publications on outcomes at the individual level of analysis. Subthemes center around different performance types (job, task, leadership, and expatriation) and also discuss expatriation intention, adjustment, and job satisfaction. The second code was (5) *Group-level outcomes*, as knowledge sharing in teams, team performance, collaboration, trust, acceptance in groups, and negotiations. The third code was (6) *Organizational-level outcomes*, for all publications that examine organizational outcomes from internationalization processes, firm performance effects, and outcomes at the level of business functions such as marketing (innovation, marketing mix adaptation), and human resources (organizational turnover, employee commitment, human resource success). Some of these HR outcomes show an overlap between the organizational and individual level, hence we implemented a double coding under two categories yet proposed a lead or primary category. If a publication analyzes both antecedents and outcomes, we coded it primarily along the outcomes it looks at. Review studies (i.e., publications with the primary objective of conducting a structured or unstructured review of the literature and field) are not further coded along themes but receive the code (7) *Review*.

For the coding, we followed standard procedures in the field (e.g., (Richter et al., 2016)), such as testing the code frame on a sub-collection of publications and engaging in open coding to enrich the code frame when necessary. Coding was done by two of the authors independently from each other. Thus, coding was done by coders with in-depth

knowledge of the field. Conflicts were discussed and addressed (Leech & Onwuegbuzie, 2011). Intercoder reliability was calculated using Cohen's kappa (Cohen, 1960). The overall intercoder reliability between the two coders is 0.813, which is within the upper level of "perfect agreement" (Mchugh, 2012).

2.2.6. Burst analysis

Across a period of years, research topics may weave in and out of popularity. One technique for measuring the appeal of a topic in research literature over time is Kleinberg's (2003) burst detection algorithm, which is well recognized on different fields using bibliometric methods (e.g., (Chen et al., 2018; Guo et al., 2011; Song et al., 2016; Zhu et al., 2019)). We applied this algorithm to identify emerging topics and radical changes or sharp increases in interest in a specific topic – called the burst – over time (e.g., (Zhu et al., 2019)). Researchers may look at different kinds of time-stamped text to run the algorithm, including titles, abstracts, and keywords published with the manuscript in a certain year. Running the algorithm for a certain time period, researchers can identify words in titles, abstracts, and keywords that reflect sudden usage increases. The algorithm then outputs a list of these words together with the beginning and end of the burst, as well as the burst strength (also called weight), to indicate the change in usage frequency (e.g., (Guo et al., 2011; Kleinberg, 2003)).

Two authors reviewed these lists and selected words relevant to our study, resulting in 38 keywords. We compared the words from the algorithm with the keywords by means of the CATA performed for the co-citation clusters and our code frame. As a result, we identified a list of terms which we structured along our code frame to facilitate readability. For some of the keywords, coding them into different categories would have

been possible. For instance, a burst for the word *performance* in 2013 is twice related to organizations yet related one time to expatriates in organizations (see Table 2.6). In this and other cases, we structured it along the dominant context, here the organizational one. To make this transparent, we integrated an overview of the context in which the respective keyword was used in the manuscript.

2.3. The most influential publications, authors, and Journals

2.3.1. The most influential publications

Table 2.2 shows the most cited publications based on the number of local citations, the LCS. It demonstrates a strong focus on CQ with 11 out of 14 publications focusing on CQ. Conceptualizations were found in particular: for instance, the most cited publication is the handbook by Earley and Ang (2003) (LCS: 84; GCS: 801). It is one of the earliest publications that focused on the development of the concept along with theoretical reviews and a discussion of measurements. The publication by Ang et al. (2007) (LCS: 74; GCS: 487) ranks second and focuses on the validation of the then newly developed cultural intelligence scale (CQS). Similarly, the study by Ang et al. (2006) (LCS: 37; GCS: 229 and rank 5) discussed the discriminant validity of the four-factor model of CQ and laid the groundwork for all authors aiming to empirically use the CQ model. Earley and Peterson (2004) are third most cited (LCS: 44; GCS: 224) and focused on CQ and its implications on training and global work assignments. Likewise, Ng et al. (2009) (LCS: 40; GCS: 179 and rank 4) present CQ as a moderator in the relationship between experiential learning and global leadership self-efficacy. GM and CC come into the ranking in the form of review articles, i.e., the review by

Johnson et al. (2006) on CC (LCS: 31; GCS: 261) and the review by Levy et al. (2007) on GM (LCS: 25; GCS: 268).

Table 2.2 Ranking of publications along LCS (and GCS

LCS Rank	*GCS Rank*	*Publication*	*Title*	*Source*	*LCS*	*GCS*
1	1	(Earley & Ang, 2003)	Cultural intelligence: individual interactions across cultures	*Stanford University Press*	84	801
2	3	(Ang et al., 2007)	Cultural intelligence: Its measurement and effects on cultural judgement and decision-making, cultural adaptation and task performance	*Management and Organization Review*	74	487
3	8	(Earley & Peterson, 2004)	The elusive cultural chameleon: cultural intelligence as a new approach to intercultural training for the global manager	*Academy of Management Learning & Education*	44	224
4	10	(Ng et al., 2009)	From experience to experiential learning: cultural intelligence as a learning capability for global leader development	*Academy of Management Learning & Education*	40	179
5	7	(Ang et al., 2006)	Personality correlates of the four-factor model of cultural intelligence	*Group & Organization Management*	37	229
6	12	(Templer et al., 2006)	Motivational cultural intelligence, realistic job preview, realistic living conditions preview, and cross-cultural adjustment	*Group & Organization Management*	32	158
7	5	(Johnson et al., 2006)	Cross-cultural competence in international business: towards a definition and a model	*Journal of International Business Studies*	31	261
8	4	(Levy et al., 2007)	What we talk about when we talk about 'global mindset': Managerial cognition in multinational corporations	*Journal of International Business Studies*	25	268
8	11	(Earley & Mosakowski, 2004)	Cultural intelligence	*Harvard Business Review*	25	178
9	13	(Thomas, 2006)	Domain and development of cultural intelligence – the importance of mindfulness	*Group & Organization Management*	24	155
9	14	(Imai & Gelfand, 2010)	The culturally intelligent negotiator: The impact of cultural intelligence (CQ) on negotiation sequences and outcomes	*Organizational Behavior and Human Decision Processes*	24	119
10	9	(Gupta & Govindarajan, 2002)	Cultivating a global mindset	*Academy of Management Executive*	22	219
11	2	(Ang & Van Dyne, 2008)	Handbook of Cultural Intelligence: Theory, Measurement, and Applications	*ME Sharpe*	21	609
12	6	(Shaffer et al., 2006)	You can take it with you: Individual differences and expatriate effectiveness	*Journal of Applied Psychology*	17	244

Table 2.2 also shows an overview of the top 14 most cited publications, based on the number of global citations, the GCS. The publications in the two lists are identical, however the ranking changes when looking at the GCS. The most obvious difference is

the one found for the publication by Ang and Van Dyne (2008), which is the second most globally cited publication (though ranked eleventh along the LCS). The two review publications by Levy et al. (2007) and Johnson et al. (2006) are also higher ranked along the GCS.

2.3.2. The most prolific authors

There was a total of 375 authors with articles in the 158 publications: 19 publications have a single author, and 362 authors belong to one or more co-authored publications. Table 2.3 presents the most prolific authors in CQ, GM, and CC research from 1999 to 2018. We present all authors with their affiliation, country, number of publications, and a weighted score for their co-authorships. Country of origin was measured along the corresponding authors of each publication (which is one way to measure country of origin). As per White et al. (2016), we calculated a weighted score based on the authorship for the total number of publications: single authors receive a score of 1, authors with only one co-author receive 1/2, authors with two co-authors receive a score of 1/3, etc. We present the top 15 authors in terms of the weighted score in Table 2.3.

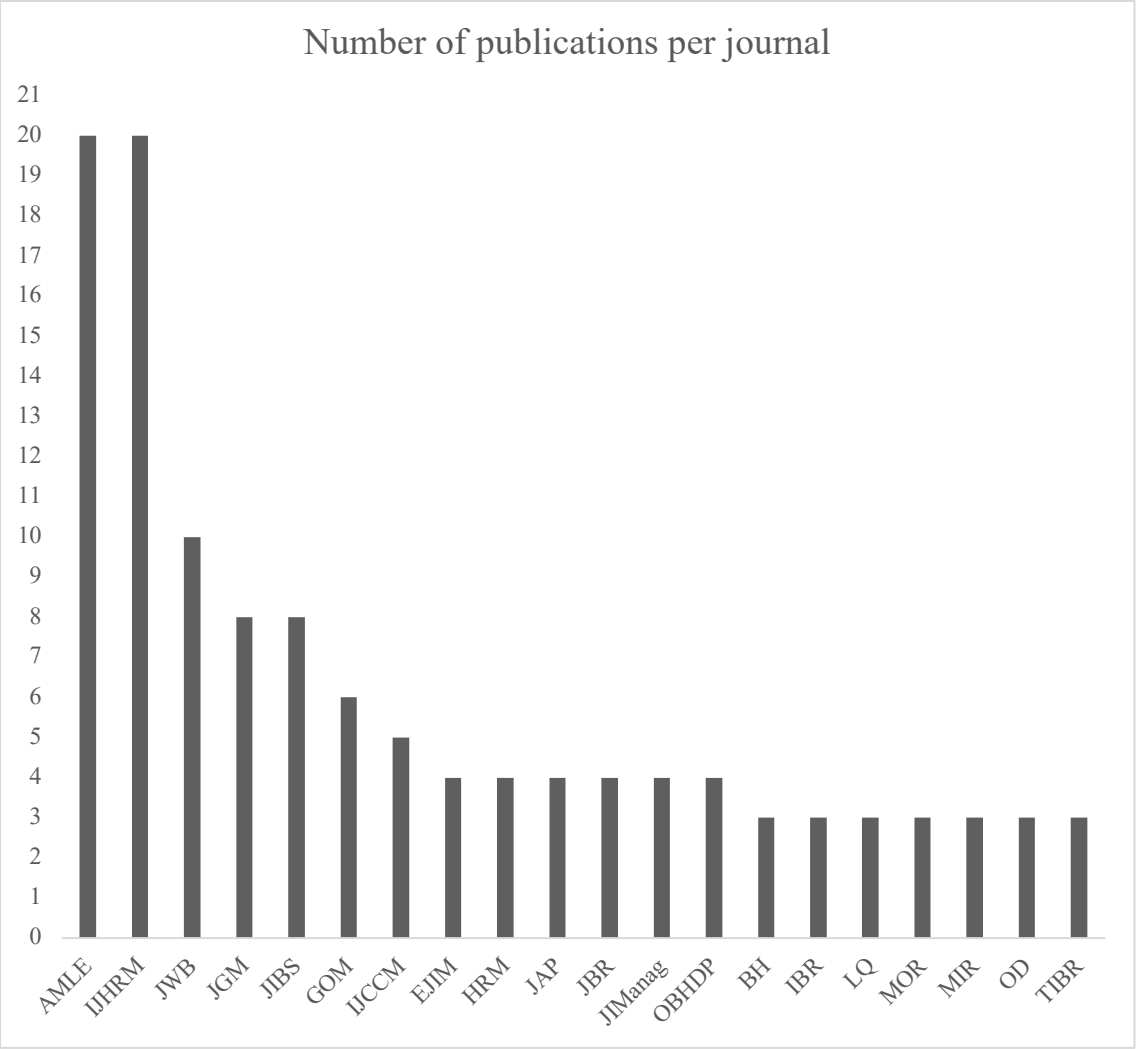
Table 2.3 The most prolific authors between 1999 and 2018

Author Name	*Author affiliation*	*Country*	*No. of publications*	*Weighted Score*
Soon Ang	Nanyang Technological University	Singapore	8	2.84
Christopher P. Earley	University of Technology Sydney	Australia	5	2.83
Alfred Presbitero	Deakin University	Australia	3	2.50
Joost J.L.E. Bücker	Radboud University	Netherlands	6	2.42
Linn Van Dyne	Michigan State University	USA	4	2.01
Snejina Michailova	University of Auckland	New Zealand	4	1.75
Dana L. Ott	University of Otago	New Zealand	3	1.50
Kok Yee Ng	Nanyang Technological University	Singapore	4	1.18
Tomasz Lenartowicz	Florida Atlantic University	USA	3	1.17
Susan Freemann	University of South Australia	Australia	3	1.03
Melanie P. Lorenz	Florida Atlantic University	USA	3	1.03
Jase R. Ramsey	Saint Louis University	USA	3	1.03
Jose Augusto Felicio	Technical University of Lisbon	Portugal	3	1.00
Olivier Furrer	University of Fribourg	Switzerland	3	0.92
Günter K. Stahl	Vienna University	Austria	3	0.91

2.3.3. The most influential journals

The publications come from 47 different sources, published between 1999 and 2018, with a strong uptick of publications in recent years (especially from 2013). **Error! Reference source not found.** depicts the distribution of publications across journals, and **Error! Reference source not found.** depicts the development of publications over time. Table 2.4 gives an overview of the number of publications per journal, the LCS, and the GCS, as well as the LCS and GCS per year.

Figure 2. 2 Number of publications per Journal Number of publications per Journal



AMLE = *Academy of Management Learning & Education*; IJHRM = *International Journal of Human Resource Management;* JWB = *Journal of World Business*; JGM = *Journal of Global Mobility;* JIBS = *Journal of International Business*; GOM = *Group & Organization Management*; IJCCM = *International Journal of Cross Cultural Management*; EJIM = *European Journal of International Management*; HRM = *Human Resource Management*; JAP = *Journal of Applied Psychology*; JBR = *Journal of Business Research;* JIManag = *Journal of International Management;* OBHDP = *Organizational Behavior and Human Decision Processes*; BH = *Business Horizons*; IBR = *International Business Review*; LQ = *Leadership Quarterly*; MOR = *Management & Organization Review;* MIR = *Management International Review*; OD = *Organizational Dynamics*; TIBR = *Thunderbird International Review*

Figure 2. 3 Development of publications over time

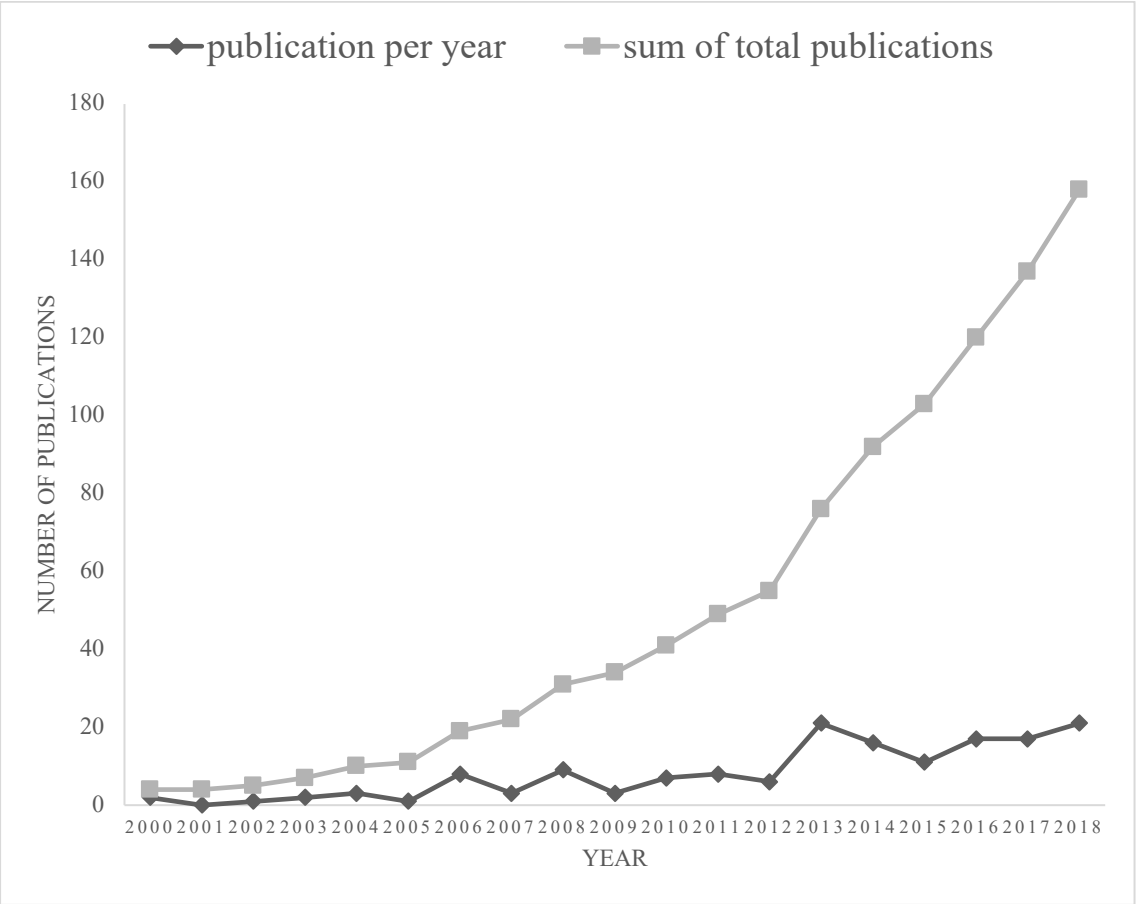


Table 2.4 The number of publications per Journal between 1999 and 2018

Journal	*Subject*[*]	*No. of publications*	*LCS*	*Rank*[†]	*LCS yearly*	*Rank*[†]	*GCS*	*Rank*[†]	*GCS yearly*	*Rank*[†]
Academy of Management Learning & Education	General & Strategy	20	163	*1*	21.60	*1*	972	*1*	131.35	*1*
International Journal of Human Resource Management	HRM / IB	20	45	*7*	7.62	*4*	446	*8*	79.34	*2*
Journal of World Business	IB	10	49	*6*	5.89	*6*	472	*7*	63.31	*4*
Journal of Global Mobility-The Home of Expatriate Management Research	HRM	8	3	*19*	1.17	*19*	19	*29*	8.33	*23*
Journal of International Business Studies	IB	8	75	*5*	8.24	*3*	806	*2*	75.88	*3*
Group & Organization Management	Organization / HRM	6	130	*2*	11.22	*2*	720	*4*	59.90	*6*
International Journal of Cross-Cultural Management	Organization / HRM	5	5	*18*	1.25	*18*	17	*31*	5.33	*28*
European Journal of International Management	IB	4	0	*22*	0.00	*27*	10	*35*	1.75	*40*
Human Resource Management	Organization / HRM	4	13	*14*	1.91	*11*	139	*13*	17.97	*11*
Journal of Applied Psychology	Psychology	4	35	*9*	4.31	*9*	371	*9*	40.18	*8*
Journal of Business Research	Marketing	4	2	*20*	0.50	*22*	28	*26*	10.42	*20*
Journal of International Management	IB	4	2	*20*	0.33	*25*	54	*19*	9.25	*22*
Organizational Behavior and Human Decision Processes	Organization / HRM	4	40	*8*	4.95	*8*	203	*11*	26.20	*10*
Averages (total database)		**3.16**	**17.5**		**2.01**		**151.26**		**17.25**	

[*]According to Anne-Wil Harzing's journal quality list (www.harzing.com); [†]relative rank among each of the 47 journals in the sample.

We refer to the number of publications as a proxy of the output by each journal on CQ, GM, and CC. The three highest-output journals are: *Academy of Management Learning & Education* (N = 20), *International Journal of Human Resource Management* (N = 20), and *Journal of World Business* (N = 10). We concentrate on the GCS per year to determine whether the high-output journals are also influential in the field. In terms of GCS per year, the ranking differs slightly: *Academy of Management Learning & Education* (GCS yearly: 131.35) and *International Journal of Human Resource Management* (GCS yearly: 79.34) remained at the top of the list. Third highest along the GCS per year is *Journal of International Business Studies* (GCS yearly: 75.88 GCS), though slightly before *Journal of World Business*.

2.4. Current and emerging intellectual streams

2.4.1. Co-citation clusters and their main research themes

Table 2.5 gives an overview of the factors and clusters derived from the co-citation analysis and lists their publications and core research themes. These factors or sub-clusters form intellectual streams that we labelled as follows: *1A) 'The CQ construct and its implementation into the literature' (with 40 publications), 1B) 'Knowledge management cross-cited over constructs' (with 10 publications), 1C) 'CQ, leadership and social interaction' (with 7 publications), 2D) 'CQ and international exposure' (with 9 publications), and 3E) 'Research involving the GM construct' (with 11 publications).).*

Table 2.5 Overview of Clusters

Clusters	Core research area (primary codes)	Core concept	Theme (author) Sequencing from older to newer
The CQ construct and its implementation into the literature (1A: 40)	Concept, stages, measurement (13)	CQ (12) CC (1)	A handbook of CQ introducing its definition, conceptualizations, dimensions, measurements, training as well as demonstrating the usage of the construct to understand intercultural encounters in organizations (Earley & Ang, 2003) see org-level outcome and learning) * The CQ concept, its measurement, profiling and training options in a manuscript targeted towards business people and managers (Earley & Mosakowski, 2004) A commentary outlining CQ as an alternative concept for future cross-cultural research (Earley, 2006) Conceptualizing on a culturally intelligent model of team collaboration intended to enhance creative and realistic decision-making ((Janssens & Brett, 2006); see group-level outcome) * A definition of CQ that explicitly introduces mindfulness as a key component (Thomas, 2006) In a vein to enhance the theoretical precision of the CQ concept, the authors cross-validate the CQ scale and introduce a model that links CQ to intercultural effectiveness outcomes ((Ang et al., 2007); see individual-level outcome) * A framework of firm-level intercultural capability (CQ) in the context of offshore outsourcing ((Ang & Inkpen, 2008); see org-level outcomes)* Conceptualization of CQ (Ang & Van Dyne, 2008) Conceptualization on a process model that delineates CQ as a moderator when it comes to translating work experiences to leadership learning outcomes ((Ng et al., 2009); see learning) * Conceptual foundations of CQ at the organizational level, building on dynamic capabilities (Moon, 2010) Quantitative test of the operationalization and conceptualization of the CQ scale (Bücker et al., 2015) Introduction of the CQ short-form measure (Thomas et al., 2015) Conceptual paper on the extension of situational judgement tests from an intercultural competence perspective (Rockstuhl et al., 2015) *See also: (Ang et al., 2006; Earley & Peterson, 2004; Magnusson et al., 2013; Moon, 2010)*
	Antecedent (5)	CQ (5)	Examine the relationship between personality and CQ ((Ang et al., 2006); see conceptualization) * Examine the relationship between cultural exposure and individual CQ (Crowne, 2008) Examine the relationship between EQ and CQ ((Moon, 2010); see conceptualization) * Examine factors and processes that contribute to CQ development in the context of experiential CQ education ((Rosenblatt et al., 2013); see learning) * Examine the relationship between short-term cross-cultural study tours and CQ (Wood & St Peters, 2014)

	Learning (7)	CQ (5) CQ, GM (2)	The CQ concept and its implications for training global managers for global work assignments ((Earley & Peterson, 2004); see conceptualization) * Experiential learning (in developing countries) and CQ/GM (Pless et al., 2011) Experiential learning approach to train CQ ((Macnab et al., 2012); see individual-level outcome) * Experiential learning in global virtual teams (GVT) and CQ (Erez et al., 2013) Cross-cultural management courses and CQ (Eisenberg et al., 2013). Experiential learning (style) and CQ (Li et al., 2013) Cultural learning in different cultural contexts with a focus on GM and CQ ((Mosakowski et al., 2013)) *See also: (Earley & Ang, 2003; Mor et al., 2013; Ng et al., 2009; Rosenblatt et al., 2013)*
	Individual- level outcome (7)	CQ (6) CC (1)	Examine the relationship between motivational CQ and cultural adjustment (Templer et al., 2006) Examine the relationship between personality and competencies (such as cultural flexibility, ethnocentrism) on expatriate effectiveness (Shaffer et al., 2006) Examine the relationship between CQ (and expatriate experiences) and cultural adjustment, effectiveness and performance (Lee & Sukoco, 2010) Examine the moderating role of CQ in the relationship between expatriate supporting practices, cultural adjustment and performance (Wu & Ang, 2011) Examine the relationship between motivational CQ and interactions (cultural sales) between people of different origins ((Chen et al., 2012); see org-level outcomes) * Examine the relationship between CQ and expatriate adjustment (Malek & Budhwar, 2013) Examine the relationship between CQ and communication effectiveness and job satisfaction (Bücker et al., 2014) *See also: (Ang et al., 2007; Macnab et al., 2012)*
	Group-level Outcome (4)	CQ (4)	Examine the relationship between CQ and negotiation sequences and outcomes (Imai & Gelfand, 2010) Examine the relationship between leader CQ and team performance outcomes (Groves & Feyerherm, 2011) Examine the relationship between cultural metacognition, trust and creative collaboration (Chua et al., 2012) Examine the relationship between metacognitive CQ, cultural perspective taking and intercultural collaboration, with a focus on deriving recommendations for training ((Mor et al., 2013); see learning) * *See also: (Janssens & Brett, 2006)*
	Org-level outcome (2)	CQ (2)	Examine the moderating role of CQ in the relationship between leadership and innovation in organizations / units (Elenkov & Manev, 2009) Examine the moderating role of export manager's CQ in the relationship between marketing mix adaptation and export performance ((Magnusson et al., 2013); see conceptualization) * ***See also:** *(Ang & Inkpen, 2008; Chen et al., 2012; Earley & Ang, 2003)*
	Review (2)	CC (1) CQ, GM (1)	A definition and model of CC in IB (that is linked to CQ) ((Johnson et al., 2006)) A review of theoretical and empirical developments in the inter-cultural competence literature (comprising CC, CQ and GM) (Leung et al., 2014)

Knowledge management cross-cited over constructs (1B: 10)	Concept, stages, measurement (3)	CQ (1) CC, GM (1) CC (1)	A conceptual framework to distinguish between stable and dynamic CC (Leiba-O'sullivan, 1999) Conceptualization on the stages of cultural adaptation (Sanchez et al., 2000) An examination of a four-stage model of developing cultural sensitivity or CQ (Shapiro et al., 2008) *See also: (Begley & Boyd, 2003; Bücker & Poutsma, 2010; Lenartowicz et al., 2014)*
	Learning (2)	CQ, CC (1) CQ (1)	A conceptual learning framework for cross-cultural training programs in MNCs (with a focus on cultural knowledge transfer) ((Lenartowicz et al., 2014); see conceptualization) * Cross-cultural management education and CQ (and student satisfaction and commitment) ((Ramsey & Lorenz, 2016); see individual-level outcome) *
	Individual-level Outcome		*See also: (Ramsey & Lorenz, 2016; Taylor et al., 2008)*
	Group-level Outcome (1)	CQ (1)	Examine the relationship between CQ and team knowledge sharing (Chen & Lin, 2013) *See also: (Zander et al., 2012)*
	Org-level outcome (2)	GM (2)	Elaborate on the need to embed a corporate GM in company-wide policies ((Begley & Boyd, 2003); see conceptualization) * Examine the relationship between top management orientations and employee commitment in MNC ((Taylor et al., 2008); see individual-level outcome) *
	Review (2)	CQ (1) CQ, CC, GM (1)	A review of measurement instruments of global management competencies (CC, GM and CQ) ((Bücker & Poutsma, 2010); see conceptualization) * A review of the leadership literature of global teams (involving GM and CQ of leaders) ((Zander et al., 2012); see group-level outcome) *
CQ, leadership and social interaction (1C: 7)	Antecedents (1)	CQ (1)	Relationship between international exposure, languages, orientations, sex, age, and education with BCIQ (Alon et al., 2018)
	Learning (1)	CQ (1)	Experiential cross-cultural training and CQ (Alexandra, 2018) *See also: (Xu & Chen, 2017)*
	Individual- level outcome (3)	CQ (2) CC (1)	Examine the mediating role of CC in the relationship between personality and cultural adjustment (Wu & Bodigerel-Koehler, 2013) Examine the relationship between CQ and transformational leadership (Ramsey et al., 2017) Examine the relationship between metacognitive and motivational CQ with cultural learning and job creativity of expatriates ((Xu & Chen, 2017); see learning) *
	Group-level Outcome (2)	CQ (2)	Examine the moderating role of motivational CQ in the relationship between psychic distance and team performance (Magnusson et al., 2014) Examine the interaction effect between cognitive and metacognitive CQ on an individual's creativity in multicultural teams (Chua & Ng, 2017)

CQ and international exposure (2D: 9)	Concept, stages, measurement (1)	CQ (1)	Assessment of the cross-cultural equivalence of the four-dimensional 20-item CQ scale and the two-dimensional 12-item CQ short scale (Bücker et al., 2016) *See also: (Schreuders-Van Den Bergh & Du Plessis, 2016; Varela & Gatlin-Watts, 2014)*
	Antecedents (4)	CQ (4)	Examine the relationship between cultural beliefs and CQ in international sojourns (Chao et al., 2017) Examine the relationship between international sojourns and CQ ((Varela & Gatlin-Watts, 2014); see conceptualization) * Examine the relationship between cross-cultural trigger events and CQ with a discussion of the implications for training ((Reichard et al., 2015); see learning) * Examine the relationship between individual motives and CQ in study abroad programs and the mediating role of cultural boundary spanning (Holtbrügge & Engelhard, 2016) *See also: (Remhof et al., 2013)*
	Learning		*See also: (Reichard et al., 2015; Schreuders-Van Den Bergh & Du Plessis, 2016)*
	Individual- level outcome (3)	CQ (3)	Examine the relationship between international exposure and CQ, as well as between CQ and the intention to work abroad ((Remhof et al., 2013); see antecedents) * Examine the role of motivational CQ in experiential learning and cultural adjustment of expatriates ((Schreuders-Van Den Bergh & Du Plessis, 2016); see learning) * Examine the relationship of CQ and adaptation of expatriates (Presbitero, 2017)
	Review (1)	CQ (1)	A review of the research on antecedents, outcomes and moderators of CQ (Ott & Michailova, 2018)
Research involving the GM construct (3E: 11)	Concept, stages, measurement (3)	CQ, CC, GM (1) GM (2)	A framework for and systematic assessment of measurement instruments of global management competencies (CC, GM and CQ) (Bücker & Poutsma, 2010) Examine the relationship between individual and corporate GM and internationalization ((Felicio et al., 2016); see org-level outcome) * Conceptual paper on the need of a manager's GM to integrate global forces and a global network (Kedia & Mukherji, 1999; see org-level outcome) * *See also: (Gupta & Govindarajan, 2002; Lahiri et al., 2008)*
	Antecedents (1)	GM (1)	Examine antecedents of GM (among them education, languages, international experiences) (Story et al., 2014)
	Learning (2)	GM (1) CQ (1)	A framework to reduce the stigmatization and stereotyping of inpatriates in the home country organizations with a focus on GM (Harvey et al., 2005) Examine the relationship between experiential learning in GVT and different performance outcomes (Taras et al., 2013)
	Org-level outcome (3)	GM (3)	Conceptual framework on GM and its development in a firm context ((Gupta & Govindarajan, 2002); see conceptualization) * Conceptualize on the moderating role of GM in the globalization and organizational development relationship ((Lahiri et al., 2008); see conceptualization) * Examine the relationship between GM and the performance of offshore service providers (Raman et al., 2013)

			See also: (Felicio et al., 2016; Kedia & Mukherji, 1999)
	Review (2)	GM (2)	A review of the literature on GM (Levy et al., 2007) A review of the literature on GM with a focus on its identification and development (Javidan & Bowen, 2013)

Note: We have double-coded publications that equally fit under two or more codes. We added the details of these publications under the primary code that we assigned and marked them with a "*" to indicate that they received a secondary coding which is then listed under "see also". The publications have only been counted once under their primary code.

The overwhelming majority of publications that form intellectual stream 1A relate to CQ as the core concept and there are 13 out of the 40 publications in this stream that relate to the concept itself, stage models, or measurement aspects of CQ. These publications are at the heart of the CQ conceptualization and its implementation into the literature or field. It was less obvious to label the intellectual streams 1B and 1C. Therefore, we made use of word trees and word frequency counts using NVivo for these groups of publications which provided a focus on 'leadership' and 'social groups /relationships /experiences /interactions /dominance' for intellectual stream 1C. The intellectual stream 1B showed a focus on knowledge management (i.e., knowledge creation and knowledge transfer). This latter stream is also interesting, as it demonstrates a mixture of concepts involved: there seems to be a knowledge transfer or at least cross-consideration visible in the co-citations in the sense that studies often include more than one concept (cf. (Ramsey & Lorenz, 2016)). Stream 2D again focuses on CQ as the core concept and concentrates on examining its associations with international exposure. The 11 publications in stream 3E differentiate from the others by almost fully focusing on GM.

Analyzing the common and distinct research areas in the different streams using our coding scheme and the more quantitative analyses, we outlined the following observations. First, there is an overlap of research areas. Even if the constructs have emerged separately, their underlying similarities have spawned a surge of similar research themes, which in turn has led to the emergence of closely-related literature. However, this literature often remains separated along the constructs. For instance,

studies on individual-level outcomes examine the effects of CQ (Lee & Sukoco, 2010) and CC (Shaffer et al., 2006) on expatriate effectiveness separately. However, there is no study that has compared the effects of the two constructs on expatriate effectiveness.

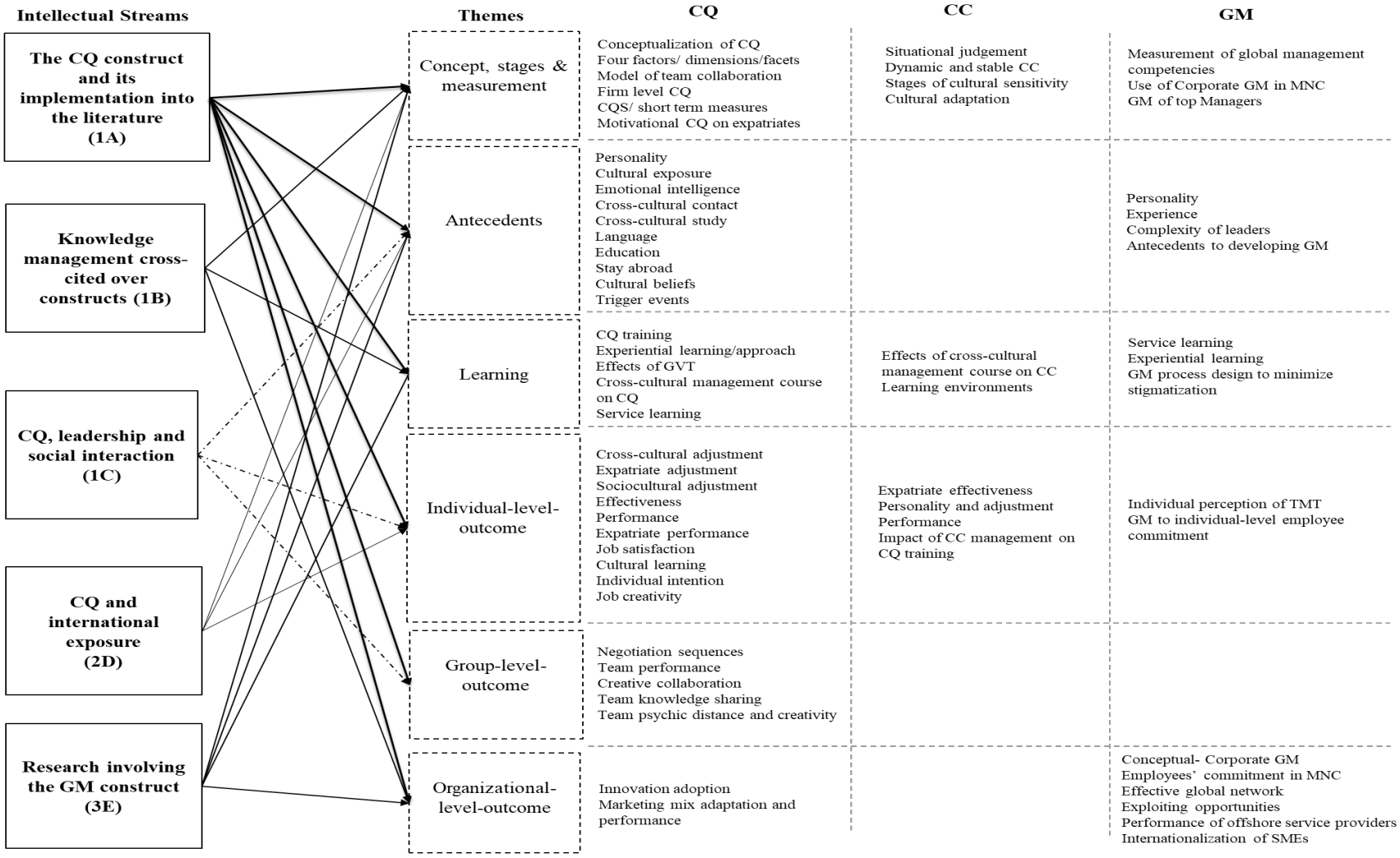
Second, the CQ literature has more research on individual-level and group-level outcomes, while the GM literature has more research on organizational-level outcomes. Even if CQ is the dominant construct overall, GM is the preferred construct for organizational-level research. As Andresen and Bergdolt (2017) conclude, there is still uncertainty over the constituents of organizational GM (c.f. (Felicio et al., 2015; Lahiri et al., 2008; Raman et al., 2013)) and organizational CQ (c.f. (Elenkov & Manev, 2009; Magnusson et al., 2013; Moon, 2010)) due to limited research. There is a substantial need for more research on organizational-level CQ and its association with individual-level CQ in the organization. In this context, GM has consistently been related to managerial cognition (Levy et al., 2007), CQ with individuals, such as employees, expats or managers (c.f. (Bücker et al., 2014)), and CC has been tested in both the management literature (e.g., (Leiba-O'sullivan, 1999)) and international business literature (e.g., (Johnson et al., 2006)). However, the majority of CQ publications in the sample are published in management journals, while the publications on GM and CC are more often published in both management- and international business-focused journals.

Third, there are sometimes similar publications (from similar teams of co-authors) that loaded under different factors and in different streams (e.g., (Bücker & Poutsma, 2010), (Bücker et al., 2015), and (Bücker et al., 2016) loaded under factors 1A, 2D, and 3E). These publications loaded under different factors because they were not co-cited with

related publications. Hence, researchers were not aware of their interrelatedness (maybe also triggered by former co-cites remaining in the same stream). As Samiee and Chabowski (2012) note, this could lead to research streams that remain aware of only a few publications within a certain subfield. Alternatively, some publications showed elevated loadings with several factors, yet remained in the factor with the highest loading (e.g., (Taylor et al., 2008) showed a loading with Factor 1 of 0.669, and of 0.571 with Factor 3; full factor loadings are available upon request from the authors). These publications could point to relevant cross-co-cites, as the publications are recognized both in the CQ and GM literature.

We believe that researchers can benefit from the knowledge along the different constructs and from a combination of this knowledge. **Error! Reference source not found.**, therefore, sheds light on this existing knowledge and potential areas for knowledge creation across the three concepts. As Shafique (2013) states, science can progress due to the dynamics of convergence among knowledge domains, which results from the fusion and recombination of related knowledge across the boundaries of different knowledge domains. These knowledge spillovers, and the fusion of research streams, may be a dynamic process that continuously feeds the growth of the field.

Figure 2. 4 Visual representation of intellectual stream



2.4.2. Emerging intellectual streams resulting from burst analysis

Table 2.6 gives an overview of keywords (we took the freedom to complete word stems to full keywords) that emerged from the burst analysis sorted along our coding categories. The weights represent the relevance of a keyword (or burst term) over its active period. Thus, a higher weight may result from a long active period of a keyword, its higher frequency, or both. For instance, the word stem for *language* had the highest weight (3.06), appearing frequently in the titles and original keywords of the publications analyzed (from 2015 onwards).

Table 2.6 Overview of Keyword Streams from Burst analysis

	Weight	Length	Start	End	Context to the keyword
Concept and measurement					
global mindset	1.57	4	1999	2002	developing a mindset for global competitiveness; cultivating a GM
global mindset	2.01	4	2005	2008	leading cultural research in the future - paradigms and tastes; what we talk about when we talk about GM; GM and high-performance work practices
global mindset	1.76	2	2015	2016	individual and corporate GM in internationalization (2x); effect of GM in client-vendor relationship quality; nurturing GM and leadership
corporate global mindset	1.58	1	2016	2016	GM, cultural context, and the internationalization of SMEs (2x)
competence	2.48	2	2012	2013	cross-cultural competencies; can business schools make students culturally competent; developing cross-cultural competencies; intercultural competence; an exploratory study of competences required to create customer experience; dynamic cross-cultural competencies (2x); cross-cultural competence of expatriate managers
CQS	1.35	2	2015	2016	measuring CQ; robustness and measurement equivalence of CQS
quotient	1.52	1	2018		business cultural intelligence quotient (BCIQ) (2x)
cultural intelligence	1.91	3	2016		CQ in study abroad programs; impact of cross-cultural management education on CQ; effect of leader CQ on managing national diversity; measuring organizational CQ; CQ and export performance; CQ and trust building among expatriates; CQS; role of CQ in expatriation; role of CQ in turnover intentions; effect of host country language exposure on the development of CQ; CQ and individual and team creativity; CQ and job performance; CQ and leadership; systematic literature review on GM and CQ; CQ and virtual teamwork; CQ and task performance; CQ and consumer ethics; CQ and expatriate adaptation; CQ and transformational leadership; CQ and job creativity; CQ and creativity in teams; enhancing CQ; CQ and benefits from diversity in international alliances; BCIQ (2x); CQ and voice behavior among migrant workers; global team performance and CQ; a review on CQ; CQ in global project teams; CQ and maladaptation; CQ and conflict management; international experience and CQ development; CQ's role in expatriates' opportunity recognition and innovativeness; CQ meta-analysis; CQ and job satisfaction; CQ and cross-cultural event volunteering

Antecedents and correlates					
personality	1.59	1	2006	2006	consumer ethnocentrism and personality traits; Big 5 and expatriate effectiveness
capability	2.19	3	2008	2010	intercultural capability, learning capability, dynamic capability
skill	2.11	1	2014	2014	skill cross-cultural competence mechanisms; assessing cross-cultural skills; leadership skills
emotion(al)	1.50	2	2010	2011	emotional intelligence as correlate to the four-factor model of CQ; empathic emotion and leadership performance
psychological capital	1.60	1	2014	2014	psychological capital in international HRM (antecedents of GM); a measure of cross-cultural psychological capital
language	3.06	4	2015		language-based diversity and faultiness in organizations; leading across language barriers; contributing to public goods in native and foreign language settings; language, CQ and turnover intentions; impact of host country language exposure on CQ; language proficiency, adaptability and job performance; it is not all about language ability (CQ's role for task performance)
Learning and training					
develop	1.28	6	1999	2004	developing a mindset for global competitiveness; a developmental expatriate model; expatriate development; development of political skill and capital
learn	1.44	3	2009	2011	from experience to experiential learning in global leader development; cultural learning processes in MNCs; developing global leaders through international service-learning programs
experiential	1.58	2	2012	2013	experiential CQ development; experiential CQ education; develop CQ - moderating role of experiential learning style
student	1.31	1	2013	2013	can business schools make students culturally competent; developing management students' CQ
education	2.10	1	2013	2013	developing cross-cultural competencies in management education; experiential CQ education; effectiveness of Global Virtual Collaboration as a Teaching Tool in Management Education
cross-cultural training	1.27	1	2014	2014	application of learning theories to improve cross-cultural training programs in MNCs; short-term cross-cultural study tours
Individual- and group-level outcomes					
expatriate	2.60	2	1999	2000	a developmental expatriate model; expatriate training and development
expatriate	1.41	3	2006	2008	CQ in IB, a definition and model related to expatriates; management of New Zealand expatriates in China
expatriate	1.38	3	2008	2010	expatriation (what leads to CQ); expatriate stories about cross-cultural encounters
performance	1.65	2	2010	2011	effects of CQ on expat performance; leader CQ; testing moderating effects of CQ on team performance; expatriate performance; leadership performance
leader	1.30	1	2011	2011	leadership performance; developing responsible global leaders; leader CQ and leader and team performance
collaboration	1.39	2	2012	2013	collaborating across cultures (CQ and trust in creative collaboration); global virtual collaboration
work	1.77	2	2013	2014	CQ and intention to work abroad (2x); CQ among host country managers working for foreign multinationals
communication effectiveness	1.37	2	2014	2015	impact of CQ on communication effectiveness; assessing effects of cultural simulation game on communication effectiveness
creativity	1.41	2	2017		CQ and individual and team creativity; unlocking expatriates' job creativity; CQ's effect on creativity in teams
knowledge	2.10	3	2016		effects of knowledge management in client-vendor relationships - mediating role of GM; knowledge hiding in teams; knowledge sharing in teamwork (2x); effect of cultural knowledge on creativity in teams
Organizational-level outcomes and aspects					
firm	1.72	1	2008	2008	role of mindset in a firm's decline in a new competitive landscape; framework of firm-level intercultural capability

organizational	1.93	5	2008	2012	what leads to CQ in multinational organizations (among expatriates); impact of organizational culture on employee commitment; cross-cultural organizational analysis; organizational CQ (a dynamic capability perspective); CQ among expatriates for organizational development; CQ, organizational diversity climate and cultural sales
performance	1.31	1	2013	2013	performance of offshore IT service providers; export performance; expatriate performance
talent management	1.52	1	2018		managing talent in emerging economy MNC; framework for understanding global talent management systems; talent management
Divers					
socio	1.52	1	2013	2013	effects of CQ on team knowledge sharing from a socio-cognitive perspective; a socio-analytic perspective on CC among expatriate managers
hospitality	1.23	3	2011	2013	hospitality management (2x)
motivation	2.39	3	2016		individual motivations in study abroad programs; exploring the role of motivational CQ in expatriation; motivational CQ and turnover intention; motivational CQ in task performance; intrinsic motivation for successful expatriation; expatriates' job creativity and motivational CQ
review	1.34	2	2017		systematic literature review on the definitions of GM and CQ; CQ review; review on leader individual differences, situational parameters, and leadership outcomes

We find that the concept of GM had several bursts in different periods starting in 1999, the most recent in 2016 with the addition of being related to corporations, i.e., corporate GM. CC had a burst from 2012-2013 related to various topics. CQ has a recent and ongoing burst. Among the antecedents and correlates of CQ, GM, and CC, language shows an ongoing burst from 2015. Publications look at leadership across language barriers (Tenzer & Pudelko, 2015), the role of language proficiency for adaptability and job performance (Jyoti & Kour, 2017), and the relevance of language in comparison to CQ (Presbitero, 2017). Language diversity, barriers, and proficiency are arguably important for predicting cultural-related outcomes because language is embedded across the levels of the individual, the organization, and the context (country).

Learning, training, and the focus on the development of CQ, GM, and CC peaked between 2009 and 2014. Among the individual-level and group-level outcomes, outcomes show different trends: expatriation had several bursts, starting with a focus

on development and training in 1999 to 2000, and performance studies on expatriates had a burst until 2011, a year when leadership research had a peak. More related to group-level outcomes, a burst was identified for group collaboration (2012-2013). Two keywords that also more clearly relate to group-level outcomes are “creativity”, with an ongoing burst from 2017, and “knowledge”, with an ongoing burst from 2016. Studies refer to CQ and team creativity, knowledge sharing in teams (Bogilovic et al., 2017) or to a combination of the two, namely the effect of cultural knowledge on creativity in teams looking at the role of metacognition (Chua & Ng, 2017). These ongoing bursts show the need to organize, conduct or design working teams to address cultural challenges.

Keywords identified in the burst analysis that relate to the organizational level are mainly more generic terms, such as firm or organizational. Here, performance is in focus, especially in 2013. Another keyword with an ongoing and recent burst in 2018 is *talent management.* Studies relate to managing talent in emerging economy multinational firms (Tarique & Schuler, 2018) or more generally to talent management (Cerdin et al., 2018). Capturing the best talent can drive organizational performance to impressive heights. Hence, strategies for talent management are desirable.

The burst analysis indicates few areas that entered an ongoing burst and qualify as pointing to emerging areas of interest: language, creativity, and knowledge sharing, as well as talent management. For example, future research can compare language-induced emotions and leadership strategies across different contexts (Tenzer & Pudelko, 2015). While metacognition was tested for individual creativity in multicultural teams, the other dimensions of CQ remain to be tested to expand the theoretical depth of cultural

knowledge arguments (Chua & Ng, 2017). The underlying creativity processes, together with the dimensions of CQ at the individual level, are worth investigating (Xu & Chen, 2017).

2.5. Emerging intellectual streams and future research directions

2.5.1. Trace through time and space: use bibliometrics

The dominant academic affiliations of the most prolific authors are scattered geographically: of the 15 prolific authors, five are affiliated with Oceania (33%), four with North America (27%), four with Europe (27%), and two with Asia (13%). To an extent, the findings confirm that becoming a prolific author does not demand affiliation with a specific region – though it is interesting to note that there is a somewhat stronger share of Asia-Pacific-driven publications as compared to other fields. As we also know that researchers are embedded in a certain culture, it could be interesting for future researchers to investigate the potential effects of regional academic affiliations on the research conducted or on an author's output (though we have to note that academic affiliations may change during a research career, which is hard to assess in bibliometrics).

There is a difference when we compare the most prolific authors to the most influential publications (by LCS) in the field: none of the publications by Presbitero, Bücker, Michailova, Ott, Freeman, Lorenz, Ramsey, Felicio, Furrer, and Stahl received enough LCS to be on the list. All of the most influential publications appeared before 2011, with more than half published before 2007, while the majority of the prolific authors who had not received enough LCS had their first publication after 2010. Thus, many of these publications have been around between five to ten years longer than those

publications by the most prolific authors, which at least partially explains their LCS. A publication's impact may become more relevant and stronger over time, for instance, leadership became more popular as a research topic and therefore the most cited (Ng et al., 2009). Hence, we recommend that future researchers regularly explore the same field to observe these influences.

Journal influence can be measured via the citations attained for each published article, serving as a benchmark for comparison across journals, their editors, and publishing companies, yet also to track scholarly impact of researchers at universities (Podsakoff et al., 2005). The citation analysis reveals that the most influential journals reside in human resource management, international business, strategy, marketing, psychology, and organization management. Based on the citation data, the top journals with strong article output have similar impacts in terms of citations per year. There are numerous citations of international business journals which implies that international business-related variables are dominant in the discussion of CQ, GM, and CC. The many citations of journals of marketing, strategy, and organization management also highlight the relevance of the concepts to their scholarly debates (e.g., marketing mix adaptations and organizational outcomes). It would be interesting to investigate whether the increase in citations of international business journals for the micro-oriented cultural concepts (e.g., CQ, GM, and CC) affects the citations of those journals for the macro-oriented cultural concepts (e.g., national cultures, cultural distance, values & practices). Future researchers could, therefore, compare the streams of macro-oriented cultural research with micro-oriented cultural research across international business journals.

2.5.2. Can only manage what you measure: Be mindful on measurement instruments!

Fang et al. (2018) suggest that future researchers should pay attention to CQ measurement reliability and validity, as using the right measurement instrument is key to successful research designs (as in any field, e.g., (Richter et al., 2017)). More than two dozen instruments have been developed for the quantitative assessment of CQ (Alon et al., 2016; Ang et al., 2006; Earley & Mosakowski, 2004; Thomas et al., 2008; Van Dyne et al., 2012). However, in our view, there is less need for more new instruments, but a greater need for a structured review of instruments to outline the statistical properties and suitability of instruments for different research purposes. In addition, and likewise called for in Matsumoto and Hwang (2013), research is needed that examines the best fit factor structure underlying CQ tests (see (Rockstuhl & Van Dyne, 2018)), i.e., that further elaborates on how to operationalize the overall CQ construct and individual dimensions. Third, we need further research that demonstrates incremental predictive validity of both the overall construct over other constructs and of subdimensions of the construct for different areas (e.g., (Richter et al., 2019 (forthcoming)); see also (Matsumoto & Hwang, 2013)). Fourth, researchers need to further test the statistical properties, such as measurement equivalence, discriminant validity of subdimensions of CQ, and of CQ in contrast to subdimensions of GM or CC (e.g., (Bücker et al., 2016; Schlägel & Sarstedt, 2016)).

2.5.3. Be like Victor Frankenstein: Experiment and scrutinize using solid designs!

A typical limitation outlined in quantitative empirical designs is the dataset's cross-sectional nature. Quantitative researchers often call for longitudinal designs to test

causality as we do. Yet another way to improve causality is experiments (e.g., (Skelly et al., 2012)). Good experiments have high internal validity and can directly analyse whether the dependent variables are caused by the treatment or antecedents. Replications can then produce cumulative knowledge with high external validity, i.e., that can be generalized to other populations (Bernard, 2017). An example in the field is an experiment on cultural awareness by Gannon and Poon (1997) that finds that the delivery method of training has no significant difference for the positive effects. Picking up from here, future researchers could, for instance, experiment with interventions during the delivery of training and then observe their effects on CQ, GM, or CC development. This may involve the participants' behaviour (Monkey-see-monkey-do versus material-based training), participant motivation (monetary, personal benefits versus non-monetary, social benefits) or participant cognition (meditation versus reflection, or foreign logical counting versus foreign verbal learning).

We support a stronger use of experimental designs, for instance, in the forms of simulation games (Bücker & Korzilius, 2015), randomly assigned groups, intervention groups or stimuli groups, quasi-experiments (Bogilovic et al., 2017) and field experiments. This can help to simulate effects that aid understanding the underlying processes in the association between antecedents and outcomes of CG, GM, and CC in various themes (e.g., learning, communication, teamwork). Experiments can thereby make a strong contribution to theorizing in the field (Weick, 1995). Experimental methods have limitations such as highly controlled (artificial) situations, or a focus on ensuring strong internal validity at the cost of external validity (Punch, 2014; Skelly et

al., 2012). Hence, these designs are not the only possible route yet are a promising complement to the research landscape.

2.5.4. CQ in group processes and outcomes: The roles of knowledge and CQ's moderating impact

We observe a strong and emerging research stream that discusses group-level outcomes of CQ and related team or group processes. This stream's publications discuss the knowledge component, knowledge sharing in collaborations, knowledge generation in groups, and creativity (Bogilovic et al., 2017; Chen & Lin, 2013; Chua & Ng, 2017; Dollwet & Reichard, 2014; Eisenberg & Mattarelli, 2017; Li et al., 2013; Thomas, 2006). With a growing knowledge-based economy where knowledge and information acquisition are increasingly important for performance (Earley & Mosakowski, 2004), this focus seems reasonable from a management perspective.

Hence, we see potential in continuing with this intellectual stream. We call for a deeper look into the processes that lead to knowledge creation and acquisition (including a focus on cognitive CQ) (see also (Ott & Michailova, 2018)). This may involve a better understanding of the role of 'multicultural' brokers that can recognize the benefits of shared knowledge (Eisenberg & Mattarelli, 2017). This may likewise involve a better understanding of how CQ can foster these knowledge processes and help in moderating unfavorable situations or behaviors, such as knowledge hiding (which may cause great harm in R&D, creative tasks, and security tasks).

We likewise encourage researchers to integrate the research into group-level CQ outcomes, with the broader research field looking at team processes and outcomes. From an international business perspective, this field strongly relies on analyzing

cultural diversity's impacts on various team outcomes such as creativity, conflicts, communication effectiveness, and social integration. From past studies, we know about cultural diversity's impacts on some of these outcomes, such as a higher creativity, more conflicts and less social integration (e.g., (Stahl et al., 2010)). Researchers should explore the direct and potential moderating impact of CQ on these group-level outcomes and on the associations between cultural diversity and group-level outcomes. We strongly believe that the field could profit from more integration of the cultural diversity and CQ perspectives in group-related research.

2.5.5. Collective CQ, GM, or CC: Future research from a macro perspective

A key question is how CQ, GM, or CC function at the macro level. A few authors have already begun to discuss whether these conceptualizations should be context-specific or general, similar to previous debates about universal or specific national cultures (Fang et al., 2018; Hofstede, 1980). Researchers can analyze the interplays between CQ, GM, and CC scores, traditional approaches to national culture (such as Hofstede and Schwartz), and informal and formal institutional environments.

Researchers should explore whether some countries could improve in the development of CQ, shaping unique culturally intelligent societies. More conceptual work is required to define such societies: Should a high-CQ society be explained by the number of high-CQ individuals in the society? Are there specific CQ dimensions that are more present in one particular society? Are there specific policies or laws that differentiate societies that are more culturally intelligent than others? Future research should address aggregate-level CQ scores on the national level. The within-nation and across-nation distribution of CQ scores also deserves illustration and explanation, as specific

subgroups (e.g., genders, occupational groups, cultural archetypes) (see also (Javidan et al., 2016; Richter et al., 2016)) may show significant variations that could explain differences. Researchers should explore the underlying processes of how individual CQ, GM, and CC can translate to the national level.

The within-nation distribution also translates into aggregated CQ scores on other levels, such as the organizational or firm and group levels. These scores can then be used to improve empirical studies, which must determine whether it is the individual CQ or an aggregated score for the group or a dyad that explains business outcomes. Researchers can explore whether and how CQ on different levels moderates the relationships between nationality and diversity effects (Rosenauer et al., 2016).

2.6. Limitations

Before concluding, we briefly outline the limitations of our study: first, it is limited to the use of one database, Web of Science. While the use of WoS provides a solid basis for citation analysis, the use of a combination of databases such as Scopus would have provided a more comprehensive set. Additionally, keywords like “cultural intelligence” exist across multiple fields and we limited this study to business and management literature. Due to the emerging nature of the field, our filtration of manuscripts to be included (i.e., journals and book chapters) is also less strictly oriented on journal ranking lists as implemented in other research papers (such as (Ott & Michailova, 2018)). It involved a partially subjective – though expert-based – selection of outlets. Moreover, we only applied certain types of citation and co-citation analyses and neglected other likewise potentially fruitful options, such as bibliographic coupling. Furthermore, we must acknowledge that based on bibliometric citation analysis, it is

impossible to fully understand the reasons why a certain publication was cited. Related to this, the quantitative numbers generated through our factor and cluster analyses were in parts difficult to interpret in terms of underlying content structures. In spite of using automated tools implemented in NVivo, the coding involves some level of subjectivity (e.g., with regard to assignment to a primary coding category). Finally, the conduct of burst analyses depends on specific parameters to be set and results may differ, though not considerably, if the researchers modify these settings.

2.7. Conclusion

We conducted a systematic review using bibliometric methods of 158 publications on CQ, GM, and CC. We thereby offer an objective approach to assessing the current state of the literature and emerging streams. We list the most influential journals, publications, and specific researchers in the field. We identify five different research streams that show that different researchers tackle the same management and business challenges using different constructs. Hence, we call for a stronger acknowledgement of findings generated separately for the three constructs in the literature. Finally, we outline a potential shared future research agenda on CQ, GM, and CC for advancing the theories in international business and management.

CHAPTER 3: Unpacking diversity in teams: How are variety, disparity and separation associated with collaboration barriers and team outcomes?

3.1. Introductions

The globalisation trend and advancements in information technologies, along with increased tensions surrounding immigration, refugees and prejudice, and intense economic competitions, have made research on multicultural teams within the field of IB increasingly important (Bjorvatn & Randøy, 2022; Jarvenpaa & Leidner, 1999; Presbitero, 2021; Presbitero & Toledano, 2018). The increasing demand for professional expertise from diverse international sources has made organisations more diverse in composition (Al Doghan et al., 2019; Gibson & Gibbs, 2006). Organisations are moving towards diverse work group compositions that encompass differences in functional and educational backgrounds from around the world, forming global virtual teams (GVTs) as a means to expand their expertise (Jimenez et al., 2017; Kankanhalli et al., 2006). GVTs have become integral to day-to-day business operations and are expected to become even more prevalent (Klitmøller & Lauring, 2013). To effectively engage the right talents and complete work tasks in temporary virtual teams, a recent report by BCG highlights the need to re-evaluate teamwork strategies (Bhalla et al., 2017). The unexpected outbreak of COVID-19 has had a significant impact on businesses, requiring new approaches to operations (Caputo et al., 2023; Mackenzie & Smith, 2020). This has fundamentally altered the reliance on global virtual teams and has increased the urgency to understand virtual work environments, including communication, decision-making and overcoming challenges (Jimenez et al., 2017).

Gaining insights into the fundamentals of GVTs constitutes a significant potential source of ground-breaking research and is crucial for understanding the future of work. As virtual work environments may become the norm for many businesses and employees, understanding the factors contributing to effective team performance has substantial practical value (Presbitero, 2021).

Global virtual teams embody multiple types of team member differences (Kurtzberg, 2014), making diversity a fundamental aspect of GVTs (Powell et al., 2004; Presbitero, 2021). These differences can lead to numerous potential challenges (Nicolas-Rocca & Coulson, 2007). Recent literature has focused on effectively managing team diversity to maximise the benefits and minimise potential challenges (Davaei et al., 2022; Stahl & Maznevski, 2021; Taras et al., 2019). However, previous research on team diversity has relied heavily on the distinction between simple surface-level and deep-level categories, neglecting less visible forms of differences (Minbaeva et al., 2021; Taras et al., 2019) and assuming that all sources of diversity affect team outcomes in the same manner (Stahl & Maznevski, 2021).

Moreover, in recent years, a considerable amount of research has been devoted to understanding the impact of cultural diversity in various contexts, particularly within the context of GVTs. Much of this research has, however, adopted a negative perspective, focusing on the potential negative consequences of cultural diversity (Stahl & Tung, 2015). This negative view impedes the field's growth, and a more positive outlook is necessary to fully comprehend how cultural diversity can lead to positive outcomes (Taras et al., 2019; Zellmer-Bruhn & Maloney, 2020). The dominant theoretical framework used in the study of cultural diversity is the convergence-

divergence, or process gains and process losses framework (Earley & Gibson, 2002; Kozlowski & Chao, 2012; Stahl et al., 2010), which helps to understand cultural diversity's effects on team processes (Presbitero, 2021). However, it oversimplifies the concept of cultural diversity and may overlook meaningful differences between individuals related to various categories (Minbaeva et al., 2021). Given this, the literature on diversity in GVTs is divided between studies that find benefits in terms of efficiency, cost savings and increased innovation (Lisak et al., 2016; May & Carter, 2001), and those that identify drawbacks in areas such as knowledge sharing and team performance (Ferrazzi, 2014; Malhotra et al., 2007; Straus & Mcgrath, 1994). Thus, it is crucial to move beyond the oversimplified process gains and process losses framework and consider a more nuanced understanding of cultural diversity to comprehend its impact on GVTs fully.

In addition, Harrison and Klein (2007) note that the empirical evidence on the impact of within-unit differences on team performance needs to be more conclusive and consistent due to the varied theoretical perspectives that suggest conflicting effects. This inconsistency is further compounded by the need for more clarity in the definition of diversity, as definitions often need to clearly define the nature of differences within teams or specify the collective distribution or compositional pattern of differences within a unit (Harrison & Klein, 2007). Minbaeva et al. (2021) have also outlined a gap in the literature, as most studies on diversity either use a static model with oversimplified theoretical assumptions without explanation or use the wrong form of diversity type. Researchers should adopt more complex models of diversity that consider the interplay between input, process and output factors to advance the diversity

literature in international business. Three recent studies have provided essential perspectives for future research. They analyse how surface-level and deep-level diversity attributes and team characteristics influence team creativity and innovation (Wang et al., 2019) and how personal versus contextual diversity affects task and psychological outcomes differently (Taras et al., 2019). Similarly, Tasheva and Hillman (2019) suggest a conceptual framework for understanding the relationship between diversity and team effectiveness by exploring team-level and individual-level diversity (personal range). They propose that distinguishing among three types of diversity analysed at two levels may act either as complements or substitutes.

In alignment with these studies and to fill the gap in the literature, this study aims to develop a comprehensive model of diversity in the context of global virtual teams in international business. The model incorporates four pivotal components: firstly, it addresses differences in attributes, including demographic, functional and hidden attributes; secondly, it attends to the composition of diversity by considering separation, variety and disparity of the attributes; thirdly, it applies suitable theories for each type of diversity; and fourthly, it employs appropriate measurements for each diversity dimension. The study also aims to examine the interaction between inputs and outputs in GVTs by following the nuanced model proposed by Taras et al. (2019) and distinguish between two types of team effectiveness: psychological outcome and task outcome. The research will investigate the effects of collaboration barriers on psychological and task outcomes and the mediating effect of team psychological outcomes on overall team effectiveness.

In conclusion, this study aims to enhance our understanding of diversity in teams, specifically GVTs, and evaluate the validity of existing theories and mechanisms in international business. We test the hypotheses using structural equation modelling techniques, ensuring reliable and valid results in analysing input-process-output relationships. The data for this study is from the X-Culture project, a multi-source and multi-wave data source that represents an actual GVT consultancy project in a multinational company. The sample comprises 1,300 individuals from 341 GVTs from more than 150 universities and 87 countries worldwide. This research seeks to provide insight into the intricate dynamics of diversity in GVTs and further advance the field of study.

3.2. Diversity complexities

In team literature, diversity refers to the distribution of differences among team members, i.e. the attributes that may lead to the perception that another person is different from the self (Guillaume et al., 2012; Harrison & Klein, 2007). Scholars have addressed various questions related to optimal team compositions considering the distribution of team diversity and the idea of fostering more effective teams in different aspects of industries and broader society. However, reviews of diversity research consistently note a need for more research identifying the exact impact of diversity on organisational performance despite intense interest in this relationship (Ely & Thomas, 2001; Forsythe et al., 2016; Pitts, 2009). In a recent study, Taras et al. (2019) point to several literature reviews that address the conflicting conclusions on the effects of team diversity (Mcmahon, 2010; Nielsen, 2010; Roberson et al., 2017; Williams & O'reilly

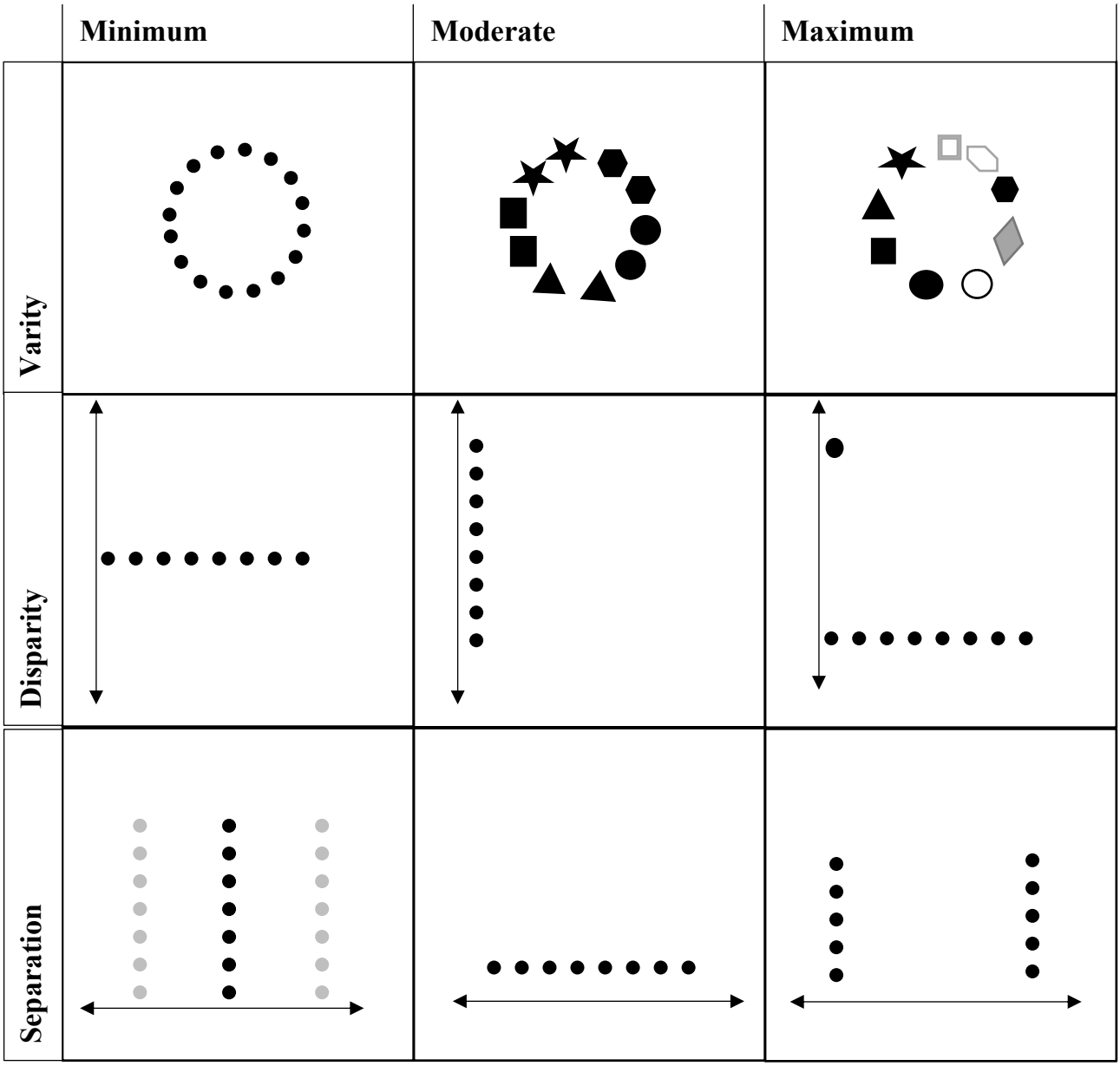
Iii, 1998). Our review of the literature points to several reasons as to why diversity is such a complex term.

First, team diversity refers to the various characteristics and attributes that make team members different. Researchers have proposed various typologies to categorise and label different types of diversity, such as heterogeneity, dissimilarity and disagreement (Harrison & Klein, 2007). However, the interchangeable use of these terms often complicates the understanding and synthesis of the literature on diversity (Harrison & Klein, 2007). Most studies focus on describing the different types of diversity, but there is a lack of research on how these types of diversity affect organisational effectiveness. Researchers in the field (Sabharwal et al., 2018; Wise & Tschirhart, 2000) therefore acknowledge the need for more research on the impact of diversity on organisational effectiveness. Given this, Harrison and Klein (2007) propose that diversity combines substance, pattern and operationalisation. They suggest that within-unit diversity can indicate variety, disparity and separation, and the likely consequences of these three diversity types differ markedly.

In this study, we aim to broaden the understanding of diversity by adopting the threefold typology proposed by (Harrison & Klein, 2007). We operationalise the concept of variety, which refers to the composition of differences in terms of the source, category or type of relevant knowledge or experience between unit members. We also consider disparity, which refers to the composition of differences in proportions of socially valued assets or resources between unit members, and separation, which refers to the composition of differences in positions or opinions of unit members. Figure 3. 1 illustrates these three types of diversity and their minimum, moderate and maximum

diversity levels. Table 3. 1 clarifies each type's meaning, theoretical implications and scales.

Figure 3. 1 Illustration of the three types of within-team diversity



Source: (Harrison & Klein, 2007)

Table 3. 1 Within-team diversity types: Meanings, outcomes, measurements

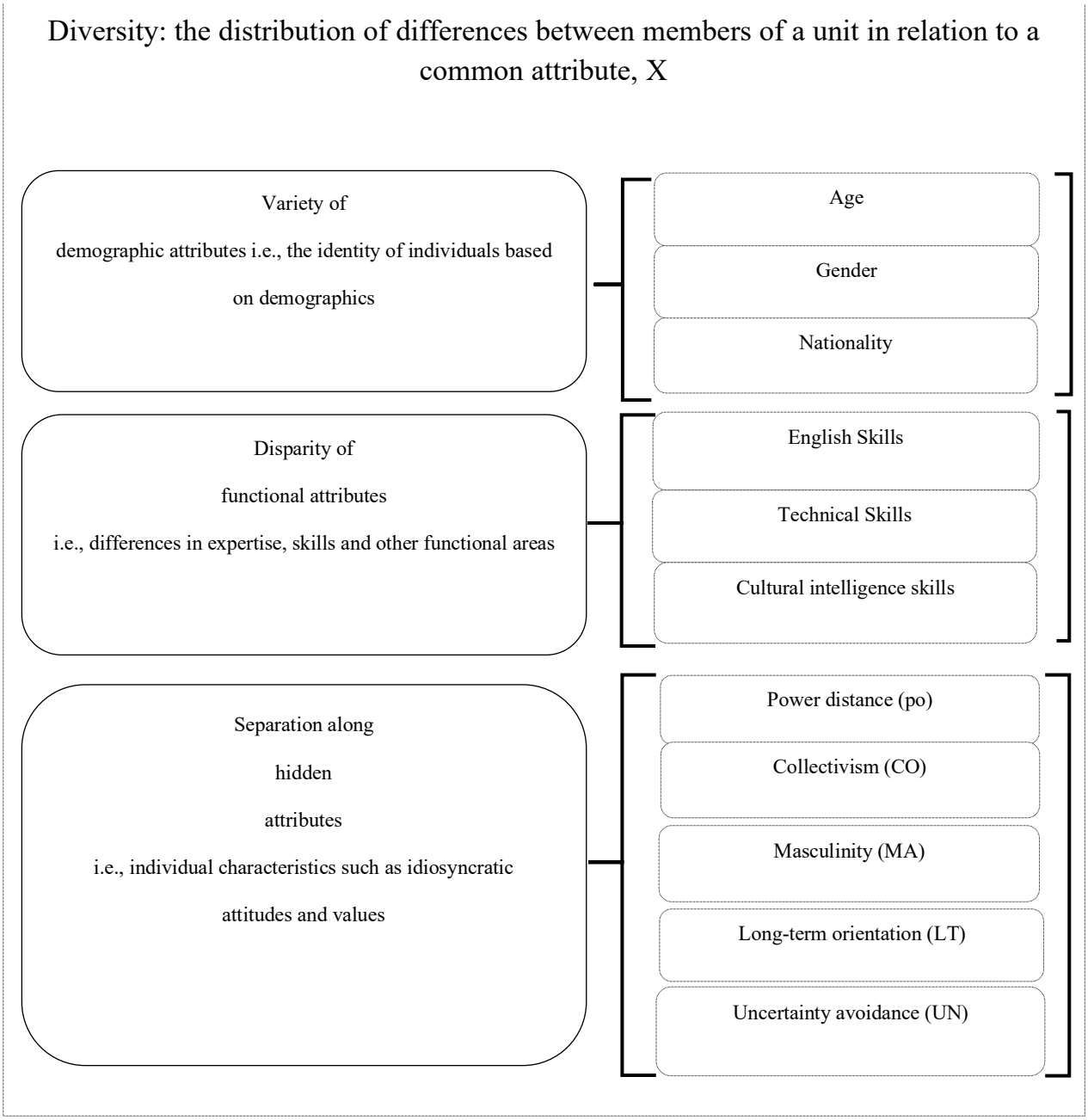
Example	Theory	Measurement	Theoretical implication	Barriers to collaboration
Demographic attributes= Variety (on attribute V)				
Composition of differences in kind, source, or category of relevant knowledge or experience among team members, e.g., different backgrounds, experiences	Information processing	Blau`s index: $1-\sum p_k^2$ Adjusted index: $1-\sum\frac{N_i(N_i-1)}{N(N-1)}$ SDI: $-\sum p_i(LNp_i)$	Greater creativity, innovation, higher decision quality, more task conflict, increased unit flexibility	Different understanding of the task, differences in opinions
Functional attributes = Disparity (on attribute D)				
Composition of differences in the proportion of socially valued assets/ resources held among team members; e.g., different skills, power, status	Injustice/ inequity	Coefficient of variation: $\frac{\sqrt{\sum(D_i-D_{mean})^2}{n}}{D_{mean}}$	More within-unit competition, resentful deviance, reduced member input, withdrawal	Problem of different enthusiasm
Hidden attributes= Separation (on attribute S)				
Composition of differences in position or opinion among team members, e.g., different values, beliefs, or attitudes	Similarity attraction, social categorization	Standard deviation: $\frac{\sqrt{\sum(S_i-S_{mean})^2}}{n}$	Reduced cohesiveness, more interpersonal conflict, distrust, decreased task performance	Problem of different cultures, working and communication styles, different understanding of the task

Note: p= the proportion of unit members in kth, K= possible categories, N_i, D_i or S_i= attribute of i^{th} member, N or n= unit size D_{mean} or S_{mean}=average unit attribute; SDI= Shanons Diversity Index; Source: Adapted from (Biemann & Kearney, 2010; Harrison & Klein, 2007)

Second, the classification of team characteristics or attributes under specific diversity dimensions and their relationship to task outcomes is of importance. A common distinction made is between primary (surface-level) and secondary (deep-level) dimensions of differences (Kirkman et al., 2006; Lauring & Selmer, 2012; Steel et al., 2021). The primary dimension of differences refers to the degree of heterogeneity

concerning demographic characteristics such as age, gender and ethnicity, which are not directly task-related (Olson et al., 2007; Pelled, 1996; Wegge et al., 2008). The secondary dimensions of diversity pertain to unobservable or hidden attributes such as educational attainment, religion, political orientation, personalities, values and attitudes (Harrison et al., 1998; Harrison et al., 2002; Jehn et al., 1999; Olukayode & Ehigie, 2005; Stahl et al., 2010) that are more directly task-related. A third form of diversity, referred to as functional diversity, is the extent to which team members differ in their functional background (Bear et al., 2010; Bell et al., 2011; Jackson et al., 2003; Jackson et al., 1995; Miller et al., 1998; Olson et al., 2007; Williams & O'reilly Iii, 1998). In some studies functional diversity is, however, classified as a sub-dimension of secondary differences (Bear et al., 2010; Liang et al., 2012; Miller et al., 1998) and is suggested to be task-related. It is worth noting that there is ongoing debate regarding which team characteristics fit best under primary or secondary diversity classifications. This study defines *diversity* as the distribution of differences between unit members concerning a common attribute, X (Harrison & Klein, 2007). To better understand the nuances of diversity, we adopt a threefold typology of diversity and differentiate between three underlying dimensions, including variety in demographic attributes, disparity in functional attributes and separation along hidden attributes. These dimensions of diversity are quantified and presented in Figure 3. 2 for further clarity.

Figure 3. 2 Diversity and underlying dimensions



Third, the selection of an appropriate measurement for diversity is crucial. Due to the complex nature of diversity, researchers often need to pay more attention to the distinctions among different types of diversity, leading to methodological errors and mistaken conclusions (Harrison & Klein, 2007). Most research uses the term variety or heterogeneity and measures the variable using Belau's index and other similar

measurements, such as the heterogeneity index. For instance, Mohr et al. (2016) proposed that diversity is a multifaceted concept comprising variety, balance and disparity, and Lisak et al. (2016) measured perceived cultural diversity using a heterogeneity scale. They found that teams with high perceived cultural diversity (variety) reach higher levels of innovation. Fewer studies have used disparity, such as Lisak et al. (2016), who found a positive relationship between power disparity and longevity of secret activities. When researchers specify one type of diversity but operationalise another, they can draw erroneous conclusions from their analyses (Harrison & Klein, 2007). Therefore, following the suggestion by Harrison and Klein (2007), we use Belau's index for variety in demographic attributes, coefficient of variation for disparity in functional attributes and standard deviation (SD) for separation along hidden attributes as measurements for diversity. Research has predominantly focused on actual diversity measures; however, scholars have acknowledged the importance of considering perceptions of diversity as an individual's behaviours and attitudes based on their perceptions rather than the objective reality (Hundschell et al., 2022; Shemla et al., 2016). Considering this, we measure the functional skills using peer evaluations to incorporate the perceived functional differences a team member experience.

Fourth, selecting appropriate underlying theories for different types of diversity is crucial. Despite the various theoretical perspectives linking team diversity to negative or positive effects on team performance (Horwitz & Horwitz, 2007). Two competing viewpoints characterise the discussion on team diversity: theories like information processing and decision-making (Bunderson & Sutcliffe, 2002) underscore the positive

outcomes, while theories such as the similarity attraction, social identity and categorisation theories (Ragins & Gonzalez, 2003; Roberson et al., 2017; Tajfel & Turner, 1986) highlight potential drawbacks. These theories offer distinct explanations for the effects of diversity on team performance and should be considered when analysing diversity in teams. The information processing and decision-making paradigms posit that diverse teams tend to outperform homogeneous teams due to the increased pool of information and variety of perspectives (Horwitz & Horwitz, 2007; Jimenez et al., 2017; Stahl & Tung, 2015), while similarity attraction theory suggests that dissimilarities in teams limit behavioural and social integration, leading to conflicts and reduced well-being (Byrne, 1971; Harrison et al., 2002; Usher & Barak, 2020; Williams & O'reilly Iii, 1998). Social identity theory emphasises the role of group identity and relative comparisons in shaping the effects of diversity on teams (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Williams & O'reilly Iii, 1998), and social categorisation theory (Tajfel & Turner, 1986; Turner et al., 1987) involves a process of grouping into the "ingroup" and the "outgroup". A less common perspective builds on the (in)justice view, as highlighted by Harrison and Klein (2007) and suggests that within-unit diversity in attributes that connote power or prestige can lead to interpersonal competition and reduced quality of communication and interpersonal undermining. This theory posits that individuals make relative comparisons among members and that within-unit diversity in attributes such as higher pay or other valued assets can lead to adverse outcomes (Jost & Kay, 2010) p. 1122)). Injustice in an organisational context, justice is associated with cognitive, affective and behavioural reactions to specific outcomes. However, current diversity literature uses this theory

sparingly (Harrison & Klein, 2007). In this study, we build our assumptions on the information processing, injustice view and categorisation theories.

Fifth, while diversity classification remains essential, another critical consideration in studying team diversity is specifying team performance or outcomes. *Team performance* is a multidimensional construct encompassing various outcome measures, such as quantitative production, qualitative team outcomes and team cohesion (Horwitz & Horwitz, 2007). This complexity contributes to the contradictory and inconclusive research findings regarding the effects of different diversity dimensions on individual-level antecedents (Lauring & Selmer, 2012). Subsequently, empirical studies on the relationship between diversity and performance also yield mixed results because different diversity measures can affect various outcomes in distinct ways (Taras et al., 2019). Despite this, most current research defines the relationship between diversity and performance as a double-edged sword, with both positive and negative effects noted (Stahl et al., 2010; Stahl & Maznevski, 2021; Taras et al., 2019). However, recent critiques suggest that the double-edged sword concept may limit alternative approaches and that it is time to focus on less well-understood relationships (Minbaeva et al., 2021). Based on the reasoning provided above, and to fully comprehend the relationship between different diversity types and their effects on team performance, we propose a model that tests the effects of diversity on both task outcomes and psychological outcomes. Task outcomes refer to objective team performance evaluations, while psychological outcomes represent subjective evaluations by team members.

Furthermore, collaboration is crucial to team performance, as it allows for sharing ideas and leveraging individual strengths (Mathieu et al., 2008). The virtual nature of global

virtual teams (GVTs) and geographical distance can, however, present barriers to collaboration (Morrison-Smith & Ruiz, 2020), which can also hinder effective collaboration (Taras et al., 2019). Pelled (1996) argues that the inconclusive nature of various findings may stem from the dynamics of demographic heterogeneity in organisations relating to group-level interactions rather than specific individual characteristics. Therefore, our model aims to investigate the dynamic role of collaboration barriers on psychological and task outcomes and how different team diversity compositions are associated with these barriers and ultimately affect team performance.

3.3. Theoretical perspective, conceptual model and hypothesis development

3.3.1. Variety in demographic attributes

As mentioned earlier, the information processing and decision-making theories are the most common theories that view diversity positively. However, demographic attributes typically do not link to these positive effects. The perspective on processing information mainly focuses on how well a group performs tasks and is often related to more task-related differences such as functional background. Some experts think that diversity can be useful for a group's performance but can also harm how people get along and feel about their team members. Demographic diversity is often categorised based on similarities and differences that impact intergroup relations and attitudes (Pelled et al., 1999). Hence, it refers to non-task-related differences that usually cause adverse effects and emphasise the relationships between group members. See, e.g., (Van Dijk et al., 2012; Van Knippenberg et al., 2004; Van Knippenberg & Schippers, 2007;

Wickramasinghe & Nandula, 2015). Although demographic diversity, encompassing separation, variety and disparity, has been acknowledged in specific research domains, with allusions to Bloom (1999), its clarity varies across different contexts. For instance, Meyer and Schermuly (2012) discovered a three-way interaction involving diverse beliefs, task motivation and fault lines (related to gender, age, and educational background). They found fault lines were positively linked to team performance only when group members held pro-diversity beliefs and had high task motivation. Pesch et al. (2015) pointed out that team members of different ages could contribute diverse experiences and expertise to the innovation process, potentially enhancing innovation performance.

Moreover, when viewed positively, the researchers use other underlying theories, such as the value-in-diversity hypothesis (Cox and Blake (1991), to advocate for the positive relationship between demographic diversity and different outcomes. For example, gender diversity has promoted innovation, creativity (Díaz-García et al., 2013; Østergaard et al., 2011; Sastre, 2015) and productivity (Wood et al., 1987) with no evidence for increased conflict (Pelled et al., 1999; Williams & O'reilly Iii, 1998). The value-in-diversity hypothesis (Cox & Blake, 1991) argues that differences among group members result in increased information availability, perspectives, knowledge and skills (Ely & Thomas, 2001; Jehn et al., 1999).

However, Harrison and Klein (2007) propose that when scholars view that men and women possess distinct knowledge and having both genders in a group can lead to increased creativity and innovation; one can view gender diversity as a form of variety within a team (this can also apply to age and nationality). Further, as suggested in

guidelines by Harrison and Klein (2007, p. 1201), the variety of diversity is consistent with the idea that an organisational unit is an information processing instrument for the organisation (Hinsz et al., 1997). For example, the idea that gender diversity within a team can amplify creativity and innovation by leveraging distinct knowledge sets of men and women signifies diversity as variety. This perspective forms the foundation for our hypothesis. This paper examines diversity in demographic attributes, mainly focusing on age, gender and nationality (Lawrence, 1997), p. 11)). Our objective is to assess the extent to which units vary in the distribution of their members across various categories, denoted as V (e.g. age, gender and nationality). In other words, we focus more on the variation of categories rather than the categories themselves. Expanding upon this foundation, we formulate our hypothesis rooted in established organisational information processing theory. This theory contends that a broader spectrum of diversity spanning different individual categories yields enhanced problem-solving, group decision-making quality and administrative performance (Harrison & Klein, 2007, p. 1201). Information processing theories (Galbraith, 1973; Tushman & Nadler, 1978) posit that teams facing complex challenges need abundant cognitive resources to process information and elevate performance effectively. Team diversity impacts performance by influencing the social dynamics within team units (Carpenter, 2002), and the demographic composition of those units further shapes this influence (Jackson & Joshi, 2004). In this vein, demographic heterogeneity can foster improved group outcomes, fostering increased interaction openness and shared understanding, which, in turn, augments the information flow (Marschan-Piekkari et al., 1999; Welch et al., 2001).

We posit that team members with diverse personal backgrounds, including age, gender and nationality, yield cognitive advantages for team efficacy (Stahl et al., 2010). This diversity enables the combination of unique knowledge and viewpoints from varied backgrounds and, thereby, enriches the team with a broader pool of resources (Williams & O'reilly Iii, 1998), which can mitigate social categorisation, stereotypes and biases (Patrício & Franco, 2022). Hence, we hypothesise:

H1*: Variety in demographic attributes (age, gender, nationality) is negatively associated with (a) collaboration barriers and (b) positively associated with psychological outcomes and (c) task outcome.*

3.3.2. Disparity in functional attributes

The effectiveness of a team is influenced by various factors, including the composition of its members, their functional backgrounds, and their ability to work together cohesively to achieve common goals. When team members come from different cognitive backgrounds (regarding their thoughts and perceived functional attributes), it can lead to increased creativity and innovation (Shin et al., 2012). If team members manage and integrate functional diversity effectively, it can lead to improved performance and outcomes. Differing viewpoints and backgrounds can, however, be challenging to achieve agreement in a diverse team. The ability of team members to collaborate and exchange information thus becomes even more essential to ensure that diverse perspectives from diverse functional backgrounds are considered and integrated synergetically into decision-making processes to enhance the quality and effectiveness of team performance (Boone & Hendriks, 2009).

In teams, diverse distributions of functional attributes among members exist. Pelled (1996) contends that variations in functional, educational or industry backgrounds capture experiences and perspectives relevant to task performance within work groups and exert a more significant impact on task-relevant group processes and overall performance (Milliken & Martins, 1996; Sessa & Jackson, 1995). As mentioned earlier, the concept of diversity as disparity is relatively less explored in organisational literature, as noted by Harrison and Klein (2007, p. 1201). This disparity perspective is rooted in (in)justice or inequality theory, which suggests that perceiving an outcome as unjust can evoke emotional reactions like anger or guilt (Chordiya, 2022), which can distract members from essential tasks and impair team cohesion and performance (Greenberg, 1987). The disparity in teams can be due to structural factors such as hierarchical position or functional background (Cho et al., 1994). It is often viewed as fostering conformity and silence among low-status team members (Jetten et al., 2006), leading to greater levels of conflict and behavioural disintegration (Cho et al., 1994). Moreover, scholars project that disparity triggers competition, differentiation and resentment-driven deviant behaviours among certain unit members within teams, e.g. (Bloom, 1999; Harrison & Klein, 2007, p. 1201; Homans, 1961; Pfeffer & Langton, 1993; Siegel & Hambrick, 2005). The investigation into functional attribute disparities in this paper therefore involves an examination of the differences in functional attributes that individuals bring to the unit. These attributes encompass English language proficiency, technical expertise and cultural intelligence competencies (Ang et al., 2007; Taras et al., 2019). The disparity in these skills peaks when one team member concentrates on a specific skill set and minimises when skills are spread uniformly

across team members (Harrison & Klein, 2007, p. 1201). Increased disparity leads to a skewed or disproportionate distribution, fostering heightened competition among members. Subsequently, this gives rise to power dynamics, manifesting as either complacency or a struggle to secure a lack of resources among team members (Harrison & Klein, 2007, p. 1201), consequently harming team performance, e.g. (Curşeu et al., 2007; Tu et al., 2020). Given this, we hypothesise:

H2: *Disparity in functional attributes is positively associated with (a) collaboration barriers, (b) negatively associated with psychological outcomes, and (c) negatively associated with task outcomes.*

3.3.3. Separation along hidden attributes

Multicultural teams contain a unique combination of diversity in their cultural backgrounds, interpersonal behaviours, preferences and values. These attributes often operate in the subconscious level of individuals; therefore, some of their effects may not be recognised or may be misattributed (Stahl & Maznevski, 2021). Thus, we delve into the unobservable or hidden attributes, characterising individual idiosyncratic attitudes and beliefs rooted in personal values. We define this aspect as the separation of values or beliefs among team members. Examining the effects of this diversity, we propose that members within units differ along a continuous attribute S (Harrison & Klein, 2007; Williams & O'reilly Iii, 1998). A higher degree of separation indicates a broader interval of differences among members, influencing perceptions of shared values and beliefs among group members. Diversity as separation often draws from the principles of similarity attraction theory (Byrne, 1971), and social categorisation theory (Tajfel & Turner, 1986; Turner et al., 1987). This categorisation involves a cognitive

process of grouping the self with others who share similar backgrounds into the "ingroup" and the " outgroup", which can eventually lead to intergroup bias, affecting collaboration and information sharing (Erez et al., 2013; Hinds & Mortensen, 2005; Richter et al., 2021; Stahl et al., 2010; Van Dick et al., 2008; Van Knippenberg & Schippers, 2007). Moreover, focusing on cultural distance within teams, which encompasses the challenges and costs associated with cross-cultural dissimilarities, it becomes apparent that substantial differences along a continuum may lead to low cohesion, heightened conflict and, ultimately, poor performance, see (Adler et al., 2008; Klitmøller & Lauring, 2013; Mannix & Neale, 2005; Mortensen & Hinds, 2001; Shenkar, 2001; Shenkar et al., 2008; Ward & Ward, 2003). This notion of research suggests that cultural differences often fuel categorisation and stereotyping, making their effects more pronounced than other forms of diversity (Mannix & Neale, 2005; Mortensen & Hinds, 2001). Given this, we hypothesise:

H3: *Separation along hidden attribute differences is (a) positively associated with collaboration barriers and negatively associated with (b) psychological outcome and negatively associated (c) task outcome.*

Social and cultural differences, embodied by membership and social identities in global virtual teams (GVTs), frequently emerge as potential causes of numerous process losses. According to social categorisation theories, GVTs show reduced collaboration and information exchange relevant to team performance (Richter et al., 2021). Differences in members' cultural values create separation within global virtual teams, producing low cohesion, high conflict, poor performance and high turnover rates (Harrison & Klein, 2007). The current literature does not adequately address the

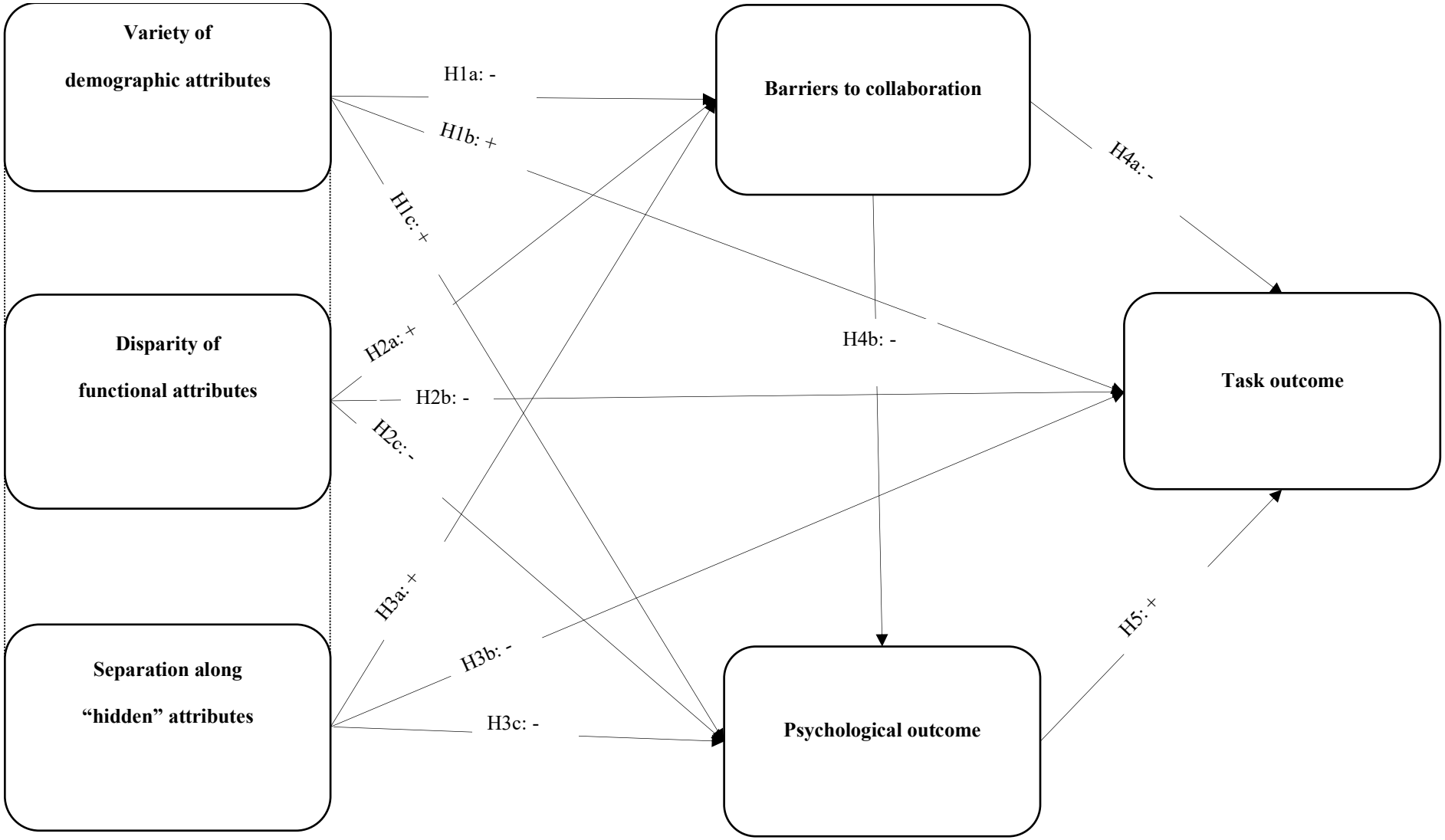
complexity of diversity in global virtual teams. Thus, exploring the dynamic effect of barriers to collaboration and its association with different types of team effectiveness merits attention (Taras et al., 2019). In conclusion, we aim to explore the relationship between team psychological outcome and task outcome, and we hypothesise that:

H4*: Collaboration barriers have a negative association with (a) psychological outcome and (b) task outcome.*

H5: *Psychological outcome is positively associated with task outcome.*

Based on existing theories, we formulate our hypotheses and present them in as a conceptual model (See Figure 3. 3).

Figure 3. 3 Conceptual Model



3.4. Method

3.4.1. Sample

In this study, we utilise data from the X-Culture project, a large-scale international business competition in which students work in global virtual teams (GVTs) to complete a real-life business case provided by company partners. The X-Culture project has evolved over time to include an extensive dataset, making it an invaluable resource for academic research. It involves students from diverse geographical locations forming global virtual teams to address complex international business challenges. These teams collaborate virtually, utilizing digital tools and technologies to solve real-world problems. The initial dataset obtained by the X-Culture team included a substantial number of individual-level data points and encompassed 822 global virtual teams, primarily composed of students from MBA and EMBA programs. To ensure our focus on team-level data, specific inclusion criteria were applied. Teams with less than three members and those with excessive missing or incomplete responses were excluded from our final sample.

Our final dataset, consisting of 1,170 students participating in 345 global virtual teams, was made possible by the X-Culture team's efforts. These teams typically comprised 3-5 members, with a gender distribution of 56.6% female and 43% male participants. On average, students had over three years of work experience, with 31% being employed at the time of the study, and 5% holding roles in business ownership or management. The teams were highly diverse, with members from 87 countries and an average of 3.4

nationalities per team. (For more information, see (Taras et al., 2013), or visit www.X-Culture.org).

3.4.2. Measures

3.4.3. Dependent variables

The X-Culture project assigns teams a client company and an international business challenge to be solved each semester. Based on the solution, teams prepare detailed reports (task outcome), which are evaluated by external experts, typically 4-6 international business professors or company representatives, on eight dimensions: economic feasibility and novelty, the creativity of the idea, analysis quality, depth and formatting of the project, the visual appeal and overall quality. The evaluations are on a standard rubric, with each dimension rated on a scale of 1=very poor to 7=excellent. The evaluators reach a consensus on a final grade for the team. The internal reliability of the scale was 0.850, and the inter-rater reliability was between 0.720 and 0.910, depending on the evaluation dimension.

The psychological outcome was obtained by averaging the team members' satisfaction with the process and overall satisfaction with the quality of the report. Students rated their satisfaction with various aspects of the team's work, such as "the business idea put forth by your group", on a scale of 1-5. The Intraclass Correlation Coefficient (ICC) was used to evaluate the reliability of the psychological outcome construct. Small-group researchers utilise ICC (1) to determine the variance ratio between groups relative to the total variance of the item or variables. The ICC (1) of the psychological outcome construct using the five items was 0.635 and had a significant F-value (p=.000). ICC (2) indexes the reliability of cluster-mean differences and provides a reliable estimate

of the group effect when between-group variance is small. The ICC (2) of psychological outcome was 0.906 and had a significant F-value (p=.000).

We used barriers to collaboration as a mediating variable concerning the degree of perceived problems among team members, based on specific elements such as "different cultures, working and communication styles", "differences in opinions, inability to reach consensus", "different levels of enthusiasm" and "different understanding of the task", on a scale of 1 ("no problem") to 5 ("big problem"). These four items were adopted from previous literature (Dupraw & Axner, 1997). Like the psychological outcome, we calculated the Intraclass Correlation Coefficient (ICC) of the four items in this construct. The ICC (1) for barriers to collaboration was 0.370 and had a significant F-value (p<.001), and the ICC (2) was 0.77 and had a significant F-value (p<.001). These items were aggregated and operationalised as averages. For the final analysis, we operationalise the items as averaged single items.

3.4.4. Independent variables

In this study, diversity was conceptualised as a team-level measure (Roberson et al., 2017) that reflected the composition of specific attributes of its team members. Variety in *demographic attributes contains* age, gender and nationality. To quantify diversity as variety in demographic attributes, Belau's Index is recommended (Bell et al., 2011). However, for the categories that are/can be larger than team size, an adjusted calculation of Belau's is advised, which has been incorporated in this study. Biemann and Kearney (2010) argue that this alternative calculation is essential to get an unbiased estimation of within-group variety. The index measures diversity in categorical variables, with

values ranging from zero (indicating all team members are the same, e.g. male) to 1 (indicating all team members are different).

The disparity in *functional attributes* were measured by variables including "technical skills", "working language skills" and "cross-cultural skills". We measured functional diversity as the disparity of functional attributes among team members. The disparity reflects both distances between unit members and the dominance of those who have a higher amount of attribute D. To measure this, we used peer-evaluated measurements, as it corresponds to perceived diversity within a unit, which may have a unique and more proximal explanatory power than actual diversity (Harrison & Klein, 2007). The individuals in teams were asked to evaluate all other team members on their technical abilities, knowledge to use advanced online communication and collaboration tools, English proficiency and cross-cultural skills by assigning a number between 1 (very poor) and 5 (very good).

Separation along hidden attributes was measured by "cultural values". The scale developed by Yoo et al. (2011) was used, which is based on Hofstede (1980) cultural dimension framework and consists of 26 items. The dimensions of masculinity, collectivism vs. individualism, power distance, uncertainty avoidance and long-term orientation were assessed using various items. All items were measured on a scale from 1 (strongly disagree) to 5 (strongly agree). Items with loadings below 0.5 were eliminated from the study, resulting in a final set of 12 items to measure five dimensions. Factor scores were created for individual team data, and diversity in hidden attributes was measured by looking into the separation of hidden attributes within team members. To do so, the individual factor scores were aggregated to the team level by

using the standard deviation of the factor scores of the team members. Because of its symmetric nature, separation on variable S is best indexed at the unit level by cumulating absolute or squared distances between pairs of individuals (Harrison & Klein, 2007). The computational formulas presented in Table 3. 1 were used to obtain the correct diversity measures. In this study, the principal component analysis (PCA) method was applied to address the collinearity between diversity measures disparity and separation. PCA reduces dataset dimensionality without losing important information and ensuring uncorrelated new variables (Hair et al., 2020; Tabachnick et al., 2013).

3.4.5. Control variables

In addition to the focal inter-member diversity variables, we also controlled for averages of English skills, technical skills and cultural intelligence skills, along with averages of hidden attributes.

3.4.6. Analysis technique

In order to test our hypotheses, we used variance-based structural equation modelling techniques known as partial least square modelling (PLS-SEM). PLS-SEM is a method that maximises the explained variance of endogenous latent variables (Ringle & Sarstedt, 2016). We obtained the results using the following settings in all steps of the analysis: path weighing scheme, 300 iterations, stop criterion 10^-7^, and replaced missing values by mean values (Hair Jr et al., 2021). A complete bootstrapping procedure was performed on 10,000 subsamples using the bias-corrected and accelerated (BCa) bootstrap method. The test type was two-tailed, and a significance level of 5% was set. The bootstrapping analysis allowed for robust inference and provided confidence intervals. PLS-SEM is an appropriate multivariate technique to

investigate causal-predictive relationships, create path models with latent variables and estimate their relationships that are inherently unobservable (Hair Jr et al., 2021; Ringle & Sarstedt, 2016). It also produces a measurement model for validity and reliability and a structural model for hypothesis testing. Table 3. 2 shows the correlation matrix for the variables.

Table 3. 2 Indicator Correlation Matrix

	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
1																									
2	.41																								
3	.35	.47																							
4	-.07	-.06	-.07																						
5	.10	.03	.06	.06																					
6	-.06	-.04	-.05	.46	.08																				
7	.09	.09	-.02	-.10	.23	-.03																			
8	.05	.04	.05	-.04	.25	.07	.34																		
9	.02	.01	-.02	-.02	-.04	-.03	.04	.01																	
10	.07	.10	.09	-.12	-.03	-.20	-.06	.00	-.01																
11	.10	.01	-.05	-.04	.05	-.10	.08	-.04	.05	-.13															
12	-.56	-.41	-.51	.13	-.05	.08	-.12	-.10	-.03	-.13	-.04														
13	-.56	-.04	.09	.04	.03	-.01	-.08	.04	-.01	.01	-.07	-.03													
14	-.12	.03	.32	.01	.00	.00	-.13	-.05	-.06	.06	-.03	.00	.01												
15	-.05	.05	-.01	.60	.14	.25	.04	.13	-.02	.00	-.08	.05	.04	-.02											
16	-.05	.11	.09	-.15	-.08	-.04	.14	.04	.04	-.04	.00	-.08	.06	-.07	.07										
17	-.12	.00	-.02	.19	.20	.35	.19	.13	.03	-.15	-.11	.10	.06	.02	.30	.16									
18	-.07	.06	.00	.03	-.12	.13	-.41	-.12	.03	-.04	.01	.04	.02	.09	.07	.13	.03								
19	.06	.15	.11	-.16	-.03	-.09	.05	-.20	.10	.01	.03	-.11	-.02	-.06	.04	.33	.03	.30							
20	-.42	-.21	-.33	-.01	-.07	-.02	-.05	-.08	.06	-.08	.15	.30	.17	-.12	-.07	.02	-.05	.09	.12						
21	.24	.29	.28	-.12	.10	-.04	.25	.18	.11	.03	.05	-.30	-.05	.01	-.01	.15	.03	-.06	.13	-.15					
22	.19	.29	.28	-.15	.07	-.10	.23	.13	.07	-.01	.08	-.28	.01	.02	-.05	.18	.02	-.03	.14	-.12	.66				
23	.30	.35	.41	-.06	.09	-.02	.18	.15	.11	.08	.00	-.44	-.02	.07	.07	.10	.01	.00	.12	-.26	.68	.64			
24	.01	.05	.06	-.19	.00	-.18	.11	-.04	.03	.07	.13	.03	-.09	.05	-.12	.04	-.01	-.08	.10	.02	.10	.15	.10		
25	.06	.04	.08	-.19	.04	-.16	.12	.01	.07	.05	.14	-.03	-.09	.01	-.11	.02	-.01	-.10	.06	-.03	.15	.17	.13	.88	

1= English skills mean, 2= Technical skills mean, 3= CQ skills mean, 4= Power distance mean, 5=Collectivism mean, 6, Masculinity mean, 7= Long-term orientation mean, 8=Uncertainty avoidance mean, 9= Age variety, 10= Gender variety, 11= Nationality variety, 12= English skills disparity, 13= Technical skills disparity, 14= CQ skills disparity, 15=Power distance separation, 16= Collectivism Separation, 17= Masculinity separation, 18=Long-term orientation separation, 19= Uncertainty avoidance separation, 20= Barriers to collaboration, 21= Psychological outcome 1, 22, Psychological outcome 2, 23= Psychological outcome 3, 24= Task outcome 1, 25= Task outcome 2

3.5. Results

3.5.1. Measurement level

To evaluate the measurement models, we ran the partial least square algorithm. All diversity measures were single-item measurements, while the endogenous variables, such as task outcome, psychological outcome and barriers to collaboration, were reflective measurements. The next step was to evaluate the reliability and validity of both endogenous and exogenous models. For the reflective measurements, such as task outcome, psychological outcome and barriers to collaboration (see Table 3. 3), we examined the outer loadings (>0.7), indicator reliability (>0.5), average variance extracted (AVE) (>0.5) and composite reliability (>0.7). These threshold values were met for all the criteria, indicating that the reliability and validity of the reflective measurements were satisfactory. Due to the complexity of the model, we used the averages of values as single items.

All measures met the discriminant validity criteria based on the heterotrait-monotrait (HTMT) ratio of correlations (Henseler et al., 2014). HTMT compares the indicator correlations between constructs within indicators of the same construct. The HTMT value should be significantly lower than unity (1) to establish discriminant validity (Hair et al., 2019), as shown in Table 3. 4**.** To evaluate the significance, we ran the complete bootstrapping method, and none of the confidence intervals included the value of 1. To test for the potential existence of common method bias, we applied Harman (1976) single-factor test. The first factor accounted for only 19.9% of the overall variance, which indicates that common method variance likely does not affect the results (Podsakoff & Organ, 1986).

Table 3. 3 Construct reliability and validity & descriptive

Construct Reliability & Validity							
Construct	*Load*	*Ind. Rel*	*VIF*	*rho_A*	*rho_C*	*AVE*	*α*
TO1	.975	.950	4.57	.899	.909	.768	852
TO2	.972	.945	4.57				
PsyO1	.922	.851	2.197				
PsyO2	.917	.841	2.105	.952	.971	.943	.940
PsyO3	.912	.831	2.018				
BtC1	.786	.618	1.756				
BtC2	.781	.611	1.562	.809	.973	.948	.804
BtC3	.761	.579	1.411				
BtC4	.843	.710	1.996				

Descriptive statistics					
	Mean	*Median*	*Min*	*Max*	*SD*
ENG M	4.69	4.67	3.00	5.00	.313
TECH M	4.39	4.33	3.00	5.00	.424
CQ M	4.57	4.67	3.00	5.00	.455
PO M	1.91	1.88	1.07	3.00	.345
CO M	3.42	3.44	2.33	4.44	.339
MA M	2.34	2.33	1.13	3.67	.473
LT M	4.21	4.22	3.44	5.00	.269
UN M	3.98	4.00	3.07	4.70	.279
Age V	0.32	0.00	0.00	1.10	.354
GEN. V	-0.02	0.50	-6.94	3.62	.968
NAT.V	-0.02	-0.33	-0.48	7.61	.949
ENG D	0.02	-0.06	-1.46	4.32	1.025
TECH D	0.01	-0.04	-3.10	2.79	.982
CQ D	0.00	-0.15	-2.29	2.75	.990
PO S	0.77	0.76	0.12	1.95	.289
CO S	0.82	0.79	0.18	1.89	.247
MA S	0.98	0.96	0.00	2.04	.318
LT S	0.63	0.63	0.00	2.18	.214
UN S	0.68	0.66	0.12	1.90	.263
BTC	-0.01	-0.15	-2.29	4.57	.985
PsyO1	4.17	4.25	1.67	5.00	.516
PSYO2	4.28	4.33	2.33	5.00	.473
PSY03	3.96	4.00	1.33	5.00	.679
TO1	5.21	5.25	1.75	7.00	.914
TO2	5.38	5.46	1.75	6.95	.836

Note: CR = Composite Reliability, α= Cronbach alpha, rho_A= reliability coefficient AVE= Average variance extracted

Table 3. 4 Discriminant validity - hetereotrait-monotrait ratio

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	1																					
2	.41	1																				
3	.34	.45	1																			
4	.05	.04	.08	1																		
5	.08	.02	.06	.03	1																	
6	.04	.03	.03	.43	.04	1																
7	.05	.09	.03	.09	.21	.00	1															
8	.04	.05	.02	.07	.27	.03	.32	1														
9	.06	.02	.08	.02	.05	.09	.01	.00	1													
10	.11	.10	.11	.09	.05	.20	.09	.04	.00	1												
11	.10	.03	.02	.04	.06	.12	.03	.05	.00	.00	1											
12	.54	.41	.50	.11	.04	.08	.13	.10	.02	.14	.06	1										
13	.58	.04	.08	.02	.03	.02	.06	.05	.04	.04	.09	.00	1									
14	.13	.02	.30	.05	.04	.02	.11	.01	.11	.04	.02	.00	.00	1								
15	.04	.07	.01	.60	.10	.26	.04	.09	.06	.00	.06	.04	.03	.03	1							
16	.03	.12	.08	.14	.08	.05	.11	.03	.06	.01	.03	.06	.04	.06	.07	1						
17	.12	.03	.03	.20	.18	.34	.17	.10	.13	.17	.11	.10	.06	.02	.32	.15	1					
18	.04	.07	.03	.03	.10	.11	.40	.14	.02	.02	.01	.03	.00	.09	.07	.13	.05	1				
19	.03	.12	.08	.15	.03	.07	.04	.20	.06	.01	.00	.07	.01	.06	.04	.33	.05	.29	1			
20	.42	.24	.33	.01	.08	.01	.01	.08	.01	.09	.10	.28	.14	.10	.04	.01	.01	.05	.11	1		
21	.29	.39	.39	.12	.12	.05	.25	.18	.02	.05	.09	.40	.04	.05	.05	.16	.01	.02	.15	.24	1	
22	.05	.04	.08	.19	.05	.17	.07	.02	.06	.11	.17	.03	.08	.03	.12	.04	.02	.05	.07	.03	.17	1

1= English skills mean, 2= Technical skills mean, 3= CQ skills mean, 4= Power distance mean, 5=Collectivism mean, 6, Masculinity mean, 7= Long-term orientation mean, 8=Uncertainty avoidance mean, 9= Age variety, 10= Gender variety, 11= Nationality variety, 12= English skills disparity, 13= Technical skills disparity, 14= CQ skills disparity, 15=Power distance separation, 16= Collectivism Separation, 17= Masculinity separation, 18=Long-term orientation separation, 19= Uncertainty avoidance separation, 20= Barriers to collaboration, 21= Psychological outcome, 22= Task outcome. Note for significance test: none of the confidence intervals included the value of 1.

3.5.2. Results for structural model

We examined the collinearity issues before assessing the structural relationships to prevent any bias in the regression results. Ideally, variance inflation factor (VIF) values should be close to 3 or lower. We applied the principal component analysis (PCA) method to address the collinearity between diversity measures. PCA reduces dataset dimensionality without losing essential information and ensures uncorrelated new variables (Hair et al., 2020; Tabachnick et al., 2013), seen in each structural model.

The next step was to evaluate the structural model. The standard assessment criteria for the structural model are the coefficient of determination R^2, the path coefficients and the statistical significance (Hair et al., 2019). Additionally, we used the redundancy measure based on PLS-Predict to obtain the Q2. We tested the direct effect of different diversity measures on task outcome and the intermediary team processes, namely barriers to collaboration and psychological outcome on task outcome. The full model (A) consists of only diversity measures. Full model (B) consists of the added averages of diversity measures. Similarly, each diversity model (models 2 and 3) has two parts: (A) the first part is solely diversity measures, and (B) the control part, which includes the averages of diversity measures. All the models show both the path coefficient results and the total effect results.

3.5.3. Results for diversity in personal level attributes full model (A)

The analysis of the full model (A) (see Table 3. 5) yielded various findings. Age variety showed a positive but non-significant association with barriers to collaboration *(β=0.040, p-value=0.458)* with corresponding effect *(TE=0.040, p-value=0.442)*, a positive and significant association with psychological outcome *(β=0.097, p-value=0.044),* but with weaker effect *(TE=0.092, p-value=0.052),* and a positive but non-significant association with task outcome *(β=0.025, p-value=0.652)* with corresponding effect *(TE=0.038, p-value=0.713).*Gender variety did not demonstrate any significant effect with any of the outcomes. Nationality variety displayed a positive association with barriers to collaboration *(β*=0.155*, p-value=0.007)*, and this finding was also supported by the total effects analysis *(TE=0.155, p-value=0.007)*. Additionally, nationality variety exhibited a statistically significant relationship with

task outcome *(β=0.136, p-value=0.064)*, and the total effect for this relationship was also statistically significant *(TE=0.139, p-value=0.062).*

Disparity in English skills exhibited a positive and statistically significant relationship with barriers to collaboration *(β=0.331, p-value=0.000),* and this effect was consistent in the total effects analysis *(TE=0.331, p-value=0.000).* Moreover, English skills disparity showed a negative and significant relationship with psychological outcomes *(β=-0.344, p-value=0.000)*, with the total effect being *(TE=-0.383, p-value=0.000).* While it also demonstrated a positive relationship with task outcome *(β=0.093, p-value=0.117),* and the total effect *(TE=0.033, p-value=0.543),* this relationship was not significant. Disparity in technical skills displayed a positive and significant relationship exclusively with barriers to collaboration *(β=0.204, p-value=0.000),* and this effect remained consistent in the total effects analysis *(TE=0.204, p-value=0.000).* Furthermore, it showed a negative relationship with psychological outcome *(β=-0.013, p-value=0.806),* and the total effect *(TE=-0.037, p-value=0.489),* the relationship was not statistically significant. Additionally, the disparity in technical skills exhibited a negative and non-significant relationship with task outcome *(β=-0.069, p-value=0.187),* and the total effect showed a similar non-significant trend *(TE=-0.076, p-value=0.142).* Disparity in CQ skill, on the other hand, revealed a negative and statistically significant association with barriers to collaboration *(β=-0.115, p-value=0.047),* which was also reflected in the total effects analysis *(TE=-0.115, p-value=0.047).* It also demonstrated a positive but non-significant relationship with both psychological and task outcomes *(β=0.049, p-value=0.328)* and *(β=0.037, p-value=0.458)*, respectively, and this trend was evident in the total effect analysis as well

(TE=0.062, p-value=0.212) for psychological outcome, and *(TE=0.047, p-value=0.345)* for task outcome.

Separation along power distance showed a negative and non-significant association with barriers to collaboration *(β=-0.068, p-value=0.203)* and *(TE=-0.068, p-value=0.203),* a positive and non-significant relationship with psychological outcome *(β=0.011, p-value=0.843)* and *(TE=0.019, p-value=0.733),* however, it showed a negative and statistically significant relationship with task outcome *(β=-0.118, p-value=0.046)*, but with a weaker effect *(TE=-0.115, p-value=0.052).* Separation along collectivism exhibited a negative but non-significant association with barriers to collaboration *(β=-0.011, p-value=0.843)* and *(TE=-0.011, p-value=0.843),* a positive and weakly significant relationship with psychological outcome *(β=0.099, p-value=0.056),* and this effect was similarly reflected in the total effects analysis *(TE=0.100, p-value=0.056)*. Separation along masculinity did not exhibit any significant relationships. However, based on the coefficient and total effect signs, it showed a negative association with barriers to collaboration, and a positive association with both the outcomes. Separation along long-term orientation showed a positive but non-significant association with barriers to collaboration *(β=0.045, p-value=0.568)* and *(TE=0.045, p-value=0.568),* and a negative still non-significant relationship with psychological outcome *(β=-0.058, p-value=0.315)* and *(TE=-0.063, p-value=0.257).* It exhibited, however, a negative albeit weak association with task outcome *(β=-0.116, p-value=0.087)*, and a slightly increased effect *(TE=-0.126, p-value=0.064).* Separation along uncertainty avoidance demonstrated a positive and significant relationship with both barriers to collaboration *(β=0.137, p-value=0.024)* with corresponding total effect

(TE=0.137, p-value=0.024), and psychological outcome *(β=0.100, p-value=0.064)*, but with non-significant total effect *(TE=0.084, p-value=0.115).* It also displayed a non-significant positive relationship with task outcome *(β=0.100, p-value=0.114)* with a weakly significant total effect *(TE=0.112, p-value=0.073).*

The relationship between barriers to collaboration and psychological outcome was statistically significant and negative *(β=-0.117, p-value=0.028)*, and this relationship was consistent in the total effects analysis *(TE=-0.117, p-value=0.028)*. The relationship between barriers to collaboration and task outcome, however, was negative and non-significant *(β=-0.006, p-value=0.923)*, with a similar trend observed in the total effect analysis *(TE=-0.023, p-value=0.682).* In contrast, the overall relationship between psychological and task outcome was positive and significant *(β=0.152, p-value=0.008),* and this trend was also reflected in the total effects analysis *(TE=0.152, p-value=0.008)*. Separation along masculinity and long-term orientation did not show any significant relationship with any of the outcomes. The explanatory power for this model was *(R^2=0.150, $R^2_{Adjusted}$=0.126)* for barriers to collaboration, *(R^2=0.195, $R^2_{Adjusted}$=0.165)* for psychological outcome and *(R^2=0.095, $R^2_{Adjusted}$=0.065)* for task outcome. The Q^2 predict values for this model were (Q^2 =0.130) for barriers to collaboration and (Q^2 =0.143) for psychological outcome, while it was below zero for task outcome (Q^2 =-0.012).

Table 3. 5 Structural results for full model (A)

Diversity in personal attributes full model a									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	*f²*	*β*	*P-value*	*f²*	*β*	*P-value*	*f²*
Age V	.040	.458	.000	.097*	**.044**	.000	.025	0.652	0.005
Gender V	-.016	.719	.002	-.003	.937	.000	.087	0.147	0.015
Nationality V	.155**	**.007**	.019	.047	.219	.006	.136†	**0.064**	0.026
Eng D	.331***	**.000**	.097	-.344***	**.000**	.112	.093	0.117	0.011
Tech D	.204***	**.000**	.029	-.013	.806	.000	-.069	0.187	0.003
CQ D	-.115*	**.047**	.012	.049	.328	.003	.037	0.456	0.001
PO S	-.068	.203	.002	.011	.843	.000	-.118*	**0.046**	0.018
CO S	-.011	.843	.002	.099†	**.056**	.007	.005	0.923	0.000
MA S	-.061	.277	.001	.030	.553	.000	.040	0.512	0.003
LT S	.045	.568	.000	-.058	.315	.002	-.116†	**0.087**	0.005
UN S	.137*	**.024**	.019	.100†	**.064**	.016	.100	0.114	0.006
Barriers				-.117*	**.028**	.026	-.006	0.923	0.001
Psy_out							.152**	**0.008**	0.021
R^2 (R^2-adjusted)		.150(.126)			.195(.165)			.095(.065)	
Q^2		.130			.143			-.012	
SRMR (d_ULS, d_G)					.024(.090,.103)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
Age V	.040	.442	1.047	.092†	**.052**	1.047	.038	.713	1.047
Gender V	-.041	.383	1.053	-.004	.928	1.055	.087	.152	1.055
Nationality V	.155**	**.007**	1.026	.029	.466	1.046	.139†	**.062**	1.052
Eng D	.331***	**.000**	1.040	-.383***	**.000**	1.141	.033	.543	1.269
Tech D	.204***	**.000**	1.015	-.037	.489	1.044	-.076	.142	1.044
CQ D	-.115*	**.047**	1.034	.062	.212	1.046	.047	.345	1.049
PO S	-.068	.203	1.136	.019	.733	1.138	-.115†	**.052**	1.138
CO S	-.011	.843	1.157	.100†	**.056**	1.160	.021	.708	1.168
MA S	-.061	.277	1.224	.037	.472	1.225	.046	.445	1.225
LT S	.045	.568	1.112	-.063	.257	1.113	-.126†	**.064**	1.115
UN S	.137*	**.024**	1.212	.084	.115	1.235	.112†	**.073**	1.254
Barriers				-.117*	**.028**	1.177	-.023	.682	1.207
Psy_out							.152**	**.008**	1.242

Note:† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$; (V)= Variety, (M)= Mean value, (D)= Disparity, (S)= Separation, psy_out= psychological outcome

3.5.4. Results for diversity in personal level attributes full model (B)

In full model (B) (see Table 3. 6), where we incorporated the averages of disparity and separation measures, the findings were as follows:

Average English skills displayed a negative and statistically significant relationship with barriers to collaboration *(β=-0.477, p-value=0.000),* with a similar result evident in the total effects analysis *(TE=-0.477, p-value=0.000).* It also displayed a negative but non-significant relationship with both psychological outcome and task outcome *(β=-0.025, p-value=0.783)* and *(β=-0.0124, p-value=0.159)*, respectively.

Table 3. 6 Structural results for full model (B)

Diversity in personal attributes full model b *(control)*									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	P_{-value}	f^2	β	P_{-value}	f^2	β	P_{-value}	f^2
Eng M	-.477***	**.000**	.098	-.025	.783	.000	-.124	.159	.001
Tech M	.046	.384	.000	.148**	**.009**	.022	.006	.924	.000
CQ M	-.142*	**.031**	.018	.182*	**.013**	.020	.105	.126	.006
Po M	.059	.388	.000	-.039	.607	.000	-.110	.151	.005
CO M	.013	.807	.000	.028	.604	.002	.014	.805	.000
MA M	-.008	.886	.001	-.005	.929	.000	-.099	.151	.006
LT M	-.041	.443	.000	.165*	**.011**	.024	.044	.508	.000
UN M	.026	.605	.000	.084	.136	.010	-.038	.499	.000
Age V	.035	.493	.000	.095*	**.037**	.000	.028	.598	.005
Gender V	-.010	.818	.001	-.009	.839	.000	.061	.321	.010
Nationality V	.164**	**.004**	.027	.037	.293	.005	.133†	**.051**	.023
Eng D	.002	.981	.002	-.187**	**.004**	.015	.074	.318	.009
Tech D	-.063	.410	.008	-.029	.707	.000	-.145†	**.051**	.004
CQ D	-.128*	**.030**	.015	.001	.991	.000	-.011	.843	.000
PO S	-.105	.115	.001	.012	.855	.000	-.033	.665	.002
CO S	-.025	.654	.004	.055	.282	.002	-.030	.595	.000
MA S	-.062	.294	.002	-.015	.778	.001	.060	.355	.005
LT S	.010	.889	.000	.027	.675	.001	-.076	.308	.002
UN S	.165**	**.005**	.023	.060	.277	.010	.053	.428	.002
Barriers				-.072	.185	.010	-.010	.870	.000
Psy_out							.125*	**.037**	.014
R^2 ($R^2_{-adjusted}$)		.295(.251)			.301(.260)			.118(.061)	
Q^2		.198			.202			-.022	
SRMR (d_ULS, d_G)					.019 (.118,.107)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	P_{-value}	*VIF*	*TE*	P_{-value}	*VIF*	*TE*	P_{-value}	*VIF*
Eng M	-.477***	**.000**	3.577	.009	.916	3.928	-.118	.177	3.928
Tech M	.046	.384	1.506	.144*	**.011**	1.506	.024	.715	1.539
CQ M	-.142*	**.031**	1.846	.193**	**.008**	1.880	.131*	**.048**	1.917
Po M	.059	.388	2.047	-.044	.570	2.047	-.116	.133	2.047
CO M	.013	.807	1.204	.027	.619	1.205	.017	.759	1.207
MA M	-.008	.886	1.426	-.005	.937	1.428	-.099	.147	1.428
LT M	-.041	.443	1.441	.168**	**.010**	1.441	.066	.320	1.442
UN M	.026	.605	1.317	.082	.152	1.317	-.028	.616	1.33
Age V	.035	.493	1.069	.092*	**.042**	1.069	.039	.453	1.069
Gender V	-.010	.818	1.101	-.008	.853	1.102	.060	.331	1.102
Nationality V	.164**	**.004**	1.055	.025	.472	1.083	.135*	**.049**	1.088
Eng D	.002	.981	2.096	-.187**	**.004**	2.100	.050	.494	2.132
Tech D	-.063	.410	2.292	-.025	.752	2.311	-.147†	**.053**	2.311
CQ D	-.128*	**.030**	1.313	.010	.870	1.333	-.008	.880	1.333
PO S	-.105	.115	1.843	.020	.769	1.844	-.030	.701	1.845
CO S	-.025	.654	1.244	.057	.271	1.249	-.023	.682	1.252
MA S	-.062	.294	1.388	-.011	.843	1.391	.060	.352	1.392
LT S	.010	.889	1.583	.027	.678	1.583	-.073	.325	1.621
UN S	.165**	**.005**	1.374	.048	.379	1.405	.057	.379	1.419
Barriers				-.072	.185	1.389	-.019	.753	1.402
Psy_out							.125*	**.037**	1.391

Note:† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$; (V)= Variety, (M)= Mean value, (D)= Disparity, (S)= Separation, psy_out= psychological outcome

However, the analysis of total effects for average English skills showed a shift of sign yet remaining non-significant for psychological outcome *(TE=0.009, p-value=0.916),* but it remained the same for task outcome *(TE=-0.118, p-value=0.177).* Average

technical skills exhibited a positive but non-significant association with barriers to collaboration *(β=0.046, p-value=0.384)* and *(TE=0.046, p-value=0.384)* However, it showed a positive and significant relationship with psychological outcome (β=0.148, p-value=0.009), which was consistent in the total effects analysis (TE=0.144, p-value=0.011). Further, it showed a positive yet non-significant association with task outcome *(β=0.006, p-value=0.924)* and *(TE=0.024, p-value=0.715).* Average CQ skills demonstrated a negative relationship with barriers to collaboration *(β=-0.142, p-value=0.031)* and a positive and significant association with psychological outcome *(β=0.182, p-value=0.013).* These effects were similarly reflected in the total effects analysis *(TE=-0.142, p-value=0.031)* for barriers to collaboration and *(TE=0.193, p-value=0.008)* for psychological outcome. The relationship between average CQ skills and task outcome was positive while not statistically significant *(β=0.105, p-value=0.126),* however it yielded a positive and significant total effect *(TE=0.131, p-value=0.048).* Averages for power distance, collectivism and masculinity did not yield to significant relationship with any of the outcomes. Average long-term orientation showed a negative but non-significant relationship with barriers to collaboration *(β=-0.041, p-value=0.0.443)* with same total effect value, a positive and significant relationship with psychological outcome *(β=0.165, p-value=0.011)* with (*TE=0.168, p-value=0.010),* and a positive but non-significant association with task outcome *(β=0.044, p-value=0.508)* with (*TE=0.066, p-value=0.320).* The average uncertainty avoidance did not yield significant relationship with any of the outcomes.

In this model as well, age variety only showed a positive and significant association with psychological outcome *(β=0.095, p-value=0.037)* with slightly weaker effect

(*TE=0.092, p-value=0.042),* and gender variety did not show significant association with any of the outcomes, while variety in nationality did show a positive and significant association with barriers to collaboration *(β=164, p-value=0.004)* with (*TE=164, p-value=0.004)*, and a positive and significant association with task outcome *(β=0.133, p-value=0.051)* with a slightly stronger effect (*TE=0.135, p-value=0.049).* English skills disparity demonstrated a negative and significant relationship with psychological outcome *(β=-0.187, p-value=0.004),* which was also observed in the total effects analysis *(TE=-0.187, p-value=0.004).* Similarly, technical skills disparity displayed negative and significant relationship with task outcome *(β=-0.145, p-value=0.051)* with (*TE0=0.147, p-value=0.053).* And CQ skills disparity showed a negative and significant association with barriers to collaboration *(β=-0.128, p-value=0.030)* with a consistent result in total effect analysis (*TE=-0.128, p-value=0.030).* In the control model, separation along power distance, collectivism, masculinity and long-term orientation did not yield to any significant results. However, separation along uncertainty avoidance showed a positive and significant association with barriers to collaboration *(β=0.165, p-value=0005.)* with equally strong effect (*TE=165, p-value=0.005).*

The relationship between barriers to collaboration and the outcomes in this model yielded non-significant. While the positive relationship between psychological outcome and task outcome remained *(β=125, p-value=0.037)* with (*TE=125, p-value=0.037)*. The explanatory power of this model was *(R^2=0.295, $R^2_{-adjusted}$ =0.251)* for barriers to collaboration, *(R^2=0.301, $R^2_{-adjusted}$ =0.260)* for psychological outcome*, and (R^2=0.118, $R^2_{-adjusted}$ =0.061)* for task outcome. The Q^2 predict values for this model were (Q^2

=0.198) for barriers to collaboration, and (Q^2 =0.202) for psychological outcome, while it was below zero for task outcome (Q^2 =-0.022).

3.5.5. Results for variety of demographic attributes: Model 1

In Model 1 (see Table 3. 7), which specifically examines the impact of variety in demographic attributes in isolation from other diversity measures, the findings are outlined as follows: Age variety showed a positive but non-significant relationship with barriers to collaboration (*β=0.050, p-value=0.418)* with (*TE=0.050, p-value=0.418)*, a positive and statistically significant relationship with psychological outcome *(β=0.121,p-value=0.018)* with *(TE=0.110, p-value=0.034),* and a positive but non-significant association with task outcome *(β=0.031, p-value=0.579)* with (*TE=0.034, p-value=0.390)*. Gender variety demonstrated a negative association with barriers to collaboration *(β=-0.058, p-value=0.231)* and a positive association with psychological and task outcome *(β=0.036, p-value=0.436), (β=0.078, p-value=0.179)*. These associations were also reflected in the total effects analysis *(TE=-0.058, p-value=0.231)* for barriers to collaboration and *(TE=0.048, p-value=0.321)* for psychological outcome and *(TE=0.084, p-value=0.149)* for task outcome. Nationality variety exhibited a positive relationship with barriers to collaboration *(β=0.140, p-value=0.015),* with effect *(TE=0.140, p-value=0.015)*. It also showed a positive and significant association with psychological outcome *(β=0.080, p-value=0.034)* and a weaker positive association with task outcome *(β=0.141, p-value=0.062)*. Although the effect for psychological outcome became non-significant *(TE=0.048, p-value=0.244),* it slightly increased for task outcome *(TE=0.149, p-value=0.052)*. Barriers to collaboration displayed a negative relationship with psychological outcome *(β=-0.225, p-*

value=0.000) and a positive yet non-significant relationship with task outcome *(β=0.008, p-value=0.889).* The relationship was similarly observed in the total effects analysis *(TE=-0225, p-value=0.000)* for psychological outcome, however the effect was non-significant yet negative for task outcome *(TE=-0.036, p-value=0.663)*. The overall relationship between psychological outcome and task outcome remained positive *(β=0.139, p-value=0.017)* with corresponding total effects *(TE=0.191, p-value=0.001)*. The explanatory effect of this model was found to be *(R^2= 0.028, R^2-adjusted =0.020)* for barriers to collaboration, *(R^2=0.066, R^2-adjusted =0.055)* for psychological outcome and *(R^2=0.047, R^2-adjusted =0.033)* for task outcome. The Q^2 predict values for this model were (Q^2 =0.009) for barriers to collaboration and (Q^2 =0.003) for psychological outcome.

Table 3. 7 Structural results for Model 1: variety

Variety of demographic attributes model 1									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	*f²*	*β*	*P-value*	*f²*	*β*	*P-value*	*f²*
Age V	.050	.418	.000	.121*	**.018**	.000	.031	.579	.003
Gender V	-.058	.231	.006	.036	.436	.000	.078	.179	.012
Nationality V	.140*	**.015**	.006	.080*	**.034**	.024	.141†	**.062**	.021
Barriers				-.225***	**.000**	.429	.008	.889	.003
Psy_out							.139*	**.017**	.027
R^2 (R^2-adjusted)		.028(.020)			.066(.055)			.047(.033)	
Q^2		.009		.009				.000	
SRMR (d_ULS, d_G)					.069(.436,.204)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
Age V	.050	.418	1.000	.110*	**.034**	1.000	.047	.390	1.000
Gender V	-.058	.231	1.000	.048	.321	1.006	.084	.149	1.030
Nationality V	.140*	**.015**	1.000	.048	.244	1.012	.149†	**.052**	1.446
Barriers				-.225***	**.000**	1.006	-.023	.663	1.006
Psy_out							.139*	**.017**	1.442

Note:† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$; (V)= Variety, psy_out= psychological outcome

3.5.6. Results for disparity of functional attributes: Model 2 (A&B)

Model 2 (A) (see Table 3. 8) delves into the analysis of separated disparity measures both independently and with the inclusion of control measures. The key findings of the

model are presented as follows: English skills disparity demonstrated a positive relationship with barriers to collaboration *(β=0.280, p-value=0.000)* and a negative relationship with psychological outcome *(β=-0.346, p-value=0.000).* These associations were further reflected in the total effects analysis *(TE=0.280, p-value=0.000)* for barriers to collaboration and *(TE=-0.384, p-value=0.000)* for psychological outcome. While English skills disparity showed a positive association with task outcome *(β=0.075, p-value=0.179),* these effects were not statistically significant *(TE=0.008, p-value=0.877)*. Technical skills disparity displayed a positive relationship with psychological outcome *(β=0.144, p-value=0.003),* which was mirrored in the total effects analysis *(TE=0.144, p-value=0.003)*. However, these effects were not significant for psychological outcome *(TE=-0.009, p-value=0.863)*. Disparity in CQ skills showcased a negative relationship with barriers to collaboration *(β=-0.102, p-value=0.040)* and a positive yet non-significant association with psychological outcome *(β=0.041, p-value=0.375)* and task outcome *(β=0.021, p-value=0.649).* These effects were further illustrated in the total effects analysis *(TE=-0.102, p-value=0.040)* for barriers to collaboration, *(TE=0.056, p-value=0.242)* for psychological outcome and *(TE=0.030, p-value=0.512)* for task outcome. For the separated disparity model, the explanatory power was *(R^2=0.109, $R^2_{-adjusted}$ =0.103),* for barriers to collaboration *(R^2=0.166, $R^2_{-adjusted}$ =0.157)*, for psychological outcome and *(R^2=0.033, $R^2_{-adjusted}$ =0.021)* for task outcome. The Q^2 predict values were *(Q^2 =0.097)* for barriers to collaboration, *(Q^2 =0.135)* for psychological outcome, however it was below zero for task outcome *(Q^2 =-0.008)*.

In Model 2(B), the inclusion of averages resulted in the following observations: Average English skills displayed a negative relationship with barriers to collaboration *(β=-0.494, p-value=0.000)* and a negative total effect *(TE=-0.494, p-value=0.000).* Average technical skills demonstrated a positive relationship with psychological outcome *(β=0.159, p-value=0.013)* and a strong positive total effect *(TE=0.191, p-value=0.000).* Average CQ skills showed a negative relationship with barriers to collaboration *(β=-0.156, p-value=0.011)* and a strong positive relationship with psychological outcome *(β=0.191, p-value=0.000)* with a significant total effect *(TE=0.173, p-value=0.006).* However, average CQ skills displayed a negative and non-significant relationship with task outcome *(β=-0.016, p-value=0.0782),* but a positive and significant total effect (*TE=0.129, p-value=0.054).* Additionally, the analysis revealed that English skills disparity maintained its negative relationship with psychological outcome *(β=-0.212, p-value=0.000)* and a negative total effect *(TE=-0.207, p-value=0.001).* Technical skills disparity and CQ skills disparity retained their negative relationships with barriers to collaboration *(β=-0.131, p-value=0.058)* and *(β=-0.119, p-value=0.021)*, respectively, which were also consistent in the total effect analysis *(TE=-0.131, p-value=0.058)* and *(TE=-0.119, p-value=0.021)*, respectively. The addition of averages did affect the relationship between barriers to collaboration as it was significantly weaker *(β=-0.081, p-value=0.094)* and *(β=-0.081, p-value=0.094).* The explanatory power of this model was notable, with *(R^2=0.232, $R^2_{-adjusted}$ =0.220),* for barriers to collaboration, *(R^2=0.222, $R^2_{-adjusted}$ =0.208)* for psychological outcome and *(R^2=0.038, $R^2_{-adjusted}$ =0.018)* for task outcome. Q^2 predict values for barriers to collaboration and psychological outcome were both positive *(Q^2=0.206 and Q^2=0.191,*

respectively), whereas the Q^2 predict value for task outcome was below zero *(Q^2=-0.013).*

Table 3. 8 Structural results for Model 2 (A & B): disparity

Disparity of functional attributes model 2 A									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	f^2	*β*	*P-value*	f^2	*β*	*P-value*	f^2
Eng D	.280***	**.000**	.012	-.346***	**.000**	.132	.075	.179	.005
Tech D	.144**	**.003**	.023	.011	.834	.000	-.076	.112	.006
CQ D	-.102*	**.040**	.088	.041	.375	.002	.021	.649	.000
Barriers				-.133**	**.005**	.019	.003	.953	.000
Psy_out							.176**	**.001**	.027
R^2 (R^2-adjusted)		.109(.103)			.166(.157)			.033(.021)	
Q^2		.097			.135			-.008	
SRMR (d_ULS, d_G)					.039(.069,.091)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
Eng D	.280***	**.000**	1.000	-.384***	**.000**	1.088	.008	.877	1.232
Tech D	.144**	**.003**	1.000	-.009	.863	1.023	-.077	.106	1.023
CQ D	-.102*	**.040**	1.000	.054	.242	1.012	.030	.512	1.014
Barriers				-.133**	**.005**	1.123	-.020	.719	1.144
Psy_out							.176**	**.001**	1.199
Disparity in functional attributes model 2 B *(control)*									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	f^2	*β*	*P-value*	f^2	*β*	*P-value*	f^2
Eng M	-.494***	**.000**	.096	-.020	.804	.000	-.010	.925	.000
Tech M	.019	.883	.000	.159*	**.013**	.033	.094	.137	.000
CQ M	-.156*	**.011**	.018	.191***	**.000**	.018	-.016	.782	.005
Eng D	-.063	.331	.003	-.212***	**.000**	.029	.101	.239	.000
Tech D	-.131†	**.058**	.000	-.012	.864	.000	-.091	.252	.004
CQ D	-.119*	**.021**	.015	-.008	.883	.000	-.007	.893	.000
Barriers				-.081†	**.094**	.007	.015	.792	.000
Psy_out							.165**	**.003**	.022
R^2 (R^2-adjusted)		.232(.220)			.222(.208)			.038(.018)	
Q^2		.206			.191			-.013	
SRMR (d_ULS, d_G)					.033(.083,.093)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
Eng M	-.494***	**.000**	3.323	.020	.793	3.641	-.014	.898	3.642
Tech M	.008	.882	1.426	.191***	**.000**	1.426	.015	.796	1.474
CQ M	-.156*	**.011**	1.801	.172**	**.006**	1.833	.120†	**.054**	1.866
Eng D	-.063	.331	1.969	-.207**	**.001**	1.975	.066	.454	2.032
Tech D	-.131†	**.058**	2.162	-.002	.981	2.184	-.094	.260	2.185
CQ D	-.119*	**.021**	1.255	.002	.972	1.274	-.008	.872	1.274
Barriers				-.081†	**.094**	1.302	.002	.977	1.311
Psy_out							.165**	**.003**	1.285

Note:† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$; (M)= Mean value, (D)=Disparity, psy_out= psychological outcom

3.5.7. Results for separation along hidden attributes: Model 3(A&B)

Model 3(A) (see Table 3. 9), focuses on the relationships between separation along hidden attributes and team outcomes. The main findings of this model are as follows: Separation along power distance demonstrated a negative relationship with all three outcomes, although it was only significantly related to task outcome *(β=-0.124, p-value=0.031)* with a significant total effect *(TE=-0.124, p-value=0.031)*. Separation along collectivism exhibited a positive relationship with psychological outcome *(β=0.102, p-value=0.043)* and a positive total effect *(TE=0.114, p-value=0.025)*. Separation along masculinity and long-term orientation did not yield any significant effects on either outcome. Separation along uncertainty avoidance showed a positive association with barriers to collaboration *(β=0.124, p-value=0.038)* and psychological outcome *(β=0.152, p-value=0.002).* These associations were further reflected in the total effects analysis, with a positive effect on barriers to collaboration *(TE=0.124, p-value=0.038)* and a positive effect on psychological outcome *(TE=0.122, p-value=0.012).* The explanatory power of this model was relatively low, with (R^2=0.01, $R^2_{\text{-adjusted}}$ *=0.004*) for barriers to collaboration*, (*R^2*=0.091,* $R^2_{\text{-adjusted}}$ *=0.076)* for psychological outcome, and (R^2=0.044, $R^2_{\text{-adjusted}}$ *=0.026*) for task outcome. The Q^2 predict values were below zero for barriers to collaboration and task outcome, but slightly above zero for psychological outcome *(*Q^2*=0.006).*

Results from Model 3 (B) revealed the following insights: Average masculinity had a negative relationship with task outcome *(β=-0.218, p-value=0.048)* and a negative total effect *(TE=-0.219, p-value=0.048).*

Table 3. 9 Structural results for Model 3 (A & B): separation

Separation along hidden attributes model 3 A									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	*f²*	*β*	*P-value*	*f²*	*β*	*P-value*	*f²*
PO S	-.039	.493	.001	-.016	.778	.000	-.124*	**.031**	.014
CO S	-.047	.386	.002	.102*	**.043**	.010	.009	.861	.000
MA S	.003	.950	.000	-.016	.750	.000	.017	.748	.000
LT S	.021	.804	.000	-.054	.334	.003	-.060	.360	.003
UN S	.124*	**.038**	.013	.152**	**.002**	.021	.071	.206	.004
Barriers				-.240***	**.000**	.062	-.008	.890	.000
Psy_out							.137**	**.007**	.018
R^2 (R^2-adjusted)		.017(.004)			.091(.076)			.044(.026)	
Q^2		-.036			.006			-.008	
SRMR (d_ULS, d_G)					.032(.066,.090)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
PO S	-.039	.493	1.118	-.006	.913	1.120	-.124*	**.031**	1.120
CO S	-.047	.386	1.143	.114*	**.025**	1.145	.025	.630	1.157
MA S	.003	.950	1.134	-.017	.754	1.134	.015	.780	1.134
LT S	.021	.804	1.094	-.059	.262	1.094	-.068	.305	1.097
UN S	.124*	**.038**	1.199	.122*	**.012**	1.215	.087	.116	1.241
Barriers				-.240***	**.000**	1.017	-.041	.454	1.080
Psy_out							.137*	**.007**	1.100
Separation along hidden attributes model 3 B *(control)*									
	Barriers to collaborate			Psychological outcome			Task outcome		
	β	*P-value*	*f²*	*β*	*P-value*	*f²*	*β*	*P-value*	*f²*
Po M	.021	.782	.000	-.051	.473	.002	-.095	.170	.005
CO M	-.073	.205	.005	.053	.283	.003	.036	.526	.001
MA M	.019	.738	.000	-.001	.991	.000	-.218*	**.048**	.011
LT M	.036	.546	.001	.197**	**.002**	.031	.009	.896	.000
UN M	-.042	.456	.001	.106*	**.033**	.010	-.038	.457	.001
PO S	-.048	.504	.001	.001	.985	.000	-.046	.514	.001
CO S	-.05	.366	.002	.175*	**.050**	.005	-.008	.880	.000
MA S	.008	.886	.000	-.065	.245	.004	.050	.387	.002
LT S	.022	.802	.000	.053	.417	.002	-.037	.592	.001
UN S	.117†	**.054**	.010	.245**	**.003**	.017	.037	.530	.001
Barriers				-.225***	**.000**	.058	-.003	.953	.000
Psy_out							.130*	**.011**	.015
R^2 (R^2-adjusted)		.026(.00)			.156(.129)			.068(.038)	
Q^2		-.051			.048			-.008	
SRMR (d_ULS, d_G)					.024(.077,.093)				
	Barriers to collaborate			Psychological outcome			Task outcome		
	TE	*P-value*	*VIF*	*TE*	*P-value*	*VIF*	*TE*	*P-value*	*VIF*
Po M	.021	.102	2.013	-.055	.953	2.013	-.103	.366	2.016
CO M	-.073	.175	1.147	.070	.430	1.152	.045	.205	1.156
MA M	.019	.437	1.376	-.005	.655	1.377	-.219*	**.048**	1.377
LT M	.036	.546	1.463	.358**	**.001**	1.464	.033	.546	1.509
UN M	-.042	.253	1.293	.116*	**.027**	1.295	-.023	.886	1.308
PO S	-.048	.936	1.792	.012	.855	1.794	-.044	.738	1.794
CO S	-.050	.855	1.213	.145*	**.031**	1.215	.003	.504	1.222
MA S	.008	.449	1.307	-.067	.141	1.307	.041	.782	1.312
LT S	.022	.802	1.397	.048	.437	1.398	-.031	.380	1.401
UN S	.117†	**.054**	1.353	.113*	**.027**	1.367	.051	.649	1.390
Barriers				-.225***	**.000**	1.026	-.037	.456	1.086
Psy_out							.130***	**.011**	1.182

Note:† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$; (M)= Mean value, (s)= Separation

Average long-term orientation displayed a positive relationship with psychological outcome *(β=0.197, p-value=0.002)* and a strong positive total effect *(TE=0.358, p-value=0.001).* Average uncertainty avoidance showed a positive association with

psychological outcome *(β=0.106, p-value=0.033)* and a positive total effect *(TE=0.116, p-value=0.027).* Additionally, separation along collectivism maintained its positive association with psychological outcome *(β=0.175, p-value=0.050)* and with a stronger total effect *(TE=0.145, p-value=0.031).* Separation along uncertainty avoidance also maintained its positive associations with both barriers to collaboration *(β=0.117, p-value=0.054*) and psychological outcome *(β=0.245, p-value=0.003),* with corresponding total effects *(TE=0.117, p-value=0.054)* for psychological outcome, but weaker total effect for task outcome *(TE=0.113, p-value=0.027)*. Furthermore, barriers to collaboration consistently maintained its negative association with psychological outcome *(β=-0.225, p-value=0.000)* with *(TE=-0.225, p-value=0.000),* and psychological outcome maintained its positive association with task outcome *(β=0.130, p-value=0.011)* with *(TE=0.130, p-value=0.000).*

The addition of averages did not increase the explanatory power for barriers to collaboration *(R^2=0.026, $R^2_{-adjusted}$ =0),* but did lead to slight increases for psychological outcome *(R2=0.156, $R^2_{-adjusted}$ =0.129)* and task outcome *(R^2=0.068, $R^2_{-adjusted}$ = 0.038).* The Q^2 values remained below zero for barriers to collaboration and task outcome but increased for psychological outcome *(Q^2=0.048).*

3.5.8. Hypothesis overview

Our findings obtained from the analysis shed light on the dynamics of diversity, collaboration barriers, psychological and task outcomes in GVT settings, and provide valuable insights (see Table 3. 10**).** Firstly, the analysis reveals that age variety does not exhibit a negative relationship with barriers to collaboration across all models. This suggests that a diverse age composition within GVTs does not inherently hamper

collaboration efforts. Conversely, while gender variety does show a tendency for negative association with collaboration barriers, this association lacks statistical significance across all the models. Notably, nationality variety reveals a positive and statistically significant relationship with collaboration barriers in all three models. This finding underscores the potential of varied nationalities to intensify barriers to collaboration within GVTs. We posited that greater demographic variety reduces barriers to collaboration. In this context, a positive sign signifies an increase in these barriers, while a negative sign denotes their reduction. However, the observed positive associations between age and nationality varieties and barriers to collaboration, coupled with only gender variety showing a positive link, suggest that part (a) of hypothesis (H1) is not well-supported. Looking into psychological outcomes, both age and nationality variety display a positive relationship. Only age variety shows statistical significance in all three models, thereby corroborating part (b) of the hypothesised relationship (H1). Task outcomes, however, portray a more consistent pattern. All demographic attributes exhibit positive associations, with nationality variety standing out as the sole attribute significantly associated with enhanced task outcomes in all three models, lending support to part (c) of hypothesis (H1).

Focusing into hypothesis (H2), our findings unfold in a nuanced manner. The relationship between English skills disparity and collaboration barriers is confirmed, with a positive association observed across all four models. This suggests that disparities in English skills within a team contribute to elevated collaboration barriers. Meanwhile, the relationship between technical skills disparity and collaboration barriers is more complex. The initial negative and significant relationship observed in both the

full model and Model 2 (A) transitions to a negative relationship upon incorporating average technical skills. Furthermore, the findings surrounding cultural intelligence skills disparity was not as expected. Across all models, a negative association is evident with collaboration barriers, with statistical significance in three instances. This implies that the presence of a highly culturally intelligent team member may mitigate collaboration barriers. Hence, part (a) of hypothesis (H2), was partly supported. In the case of psychological outcomes, English skills and technical skills disparities share a commonality, both displaying negative associations. However, it is English skills disparity that remains consistently significant in all four models, offering partial validation to part (b) of hypothesis (H2). Surprisingly, CQ skills disparity demonstrates a non-significant yet positive association with psychological outcomes, different from what we anticipated. The results for task outcome in this hypothesis was somewhat inconsistent. While technical skills disparity consistently exhibits a negative relationship, particularly significant in full model (B), both English skills and cultural intelligence skills disparities manifest non-significant positive associations. Interestingly, the inclusion of averages alters the scenario for CQ skills disparity in full model (B) and Model 2 (B), revealing a non-significant negative association. This provides limited support for part (c) of hypothesis (H2), though lacking significant statistical endorsement.

The relationships between separation along hidden attributes depended on the nature of the outcome as well as the nature of the value in question. Notably, the relationship between separation along power distance and collaboration barriers fluctuates across models yet lacks statistical significance. Separation along collectivism consistently

exhibits a negative correlation with collaboration barriers, reaffirming its potential to decrease collaborative endeavours. The anticipated relationship took place for separation along masculinity exclusively in Model 3 (A and B). Among the values, separation along long-term orientation aligns consistently with expectations, presenting a positive association with collaboration barriers. In contrast, separation along uncertainty avoidance establishes significant positive associations in full models A and B, transforming into a significant negative association in Model 3 (B). While offering partial validation to part (a) of hypothesis (H3), statistical significance remains uncertain. Turning to psychological outcomes, separation along collectivism and uncertainty avoidance demonstrate consistent and predominantly significant positive associations across all models. Separation along power distance echoes this trend in full models (A and B), but diverges in the separated models, displaying a negative association with task outcomes. Notably, separation along long-term orientation aligns with expectations in full models (A) and Model 3 (A), with results improving upon incorporating averages. Conversely, the relationship between separation along masculinity and psychological outcomes closely mirrors the anticipated negative association, observable in three out of four models. These findings lead to the rejection of part (b) of hypothesis (H3). Task outcomes reveal a consistent and supported positive relationship between separation along power distance and task outcomes across all four models, with significance in two. Separation along collectivism, while displaying a positive correlation in three out of four models, falls short of achieving statistical significance. Separation along masculinity correlates positively yet non-significantly with task outcome in all four models. The anticipated negative relationship with

separation along long-term orientation is realised in three out of four models. In contrast, separation along uncertainty avoidance is different from expectations, failing to demonstrate a consistent negative association in three out of four models. Thus, findings fail in offering support for part (c) of hypothesis (H3), and statistical significance remains limited. Nonetheless, these findings provide valuable insights for both theoretical understanding and practical application in diverse team settings. Finally, barriers to collaboration were negatively and significantly associated with psychological outcome in almost all models supporting part (a) of hypothesis (H4), while it was negatively associated with task outcome it did not yield to statistically significant results for part (b) of hypothesis (H4). Psychological outcome was significantly associated with task outcome in all models, supporting hypothesis (H5). We note that these hypothesis results were based on results of the total effects.

Table 3. 10 Hypotheses overview based on total effects

H1: Variety in demographic attribute is:

	Negatively associated with barriers to collaborate			*Positively associated with psychological outcome*			*Positively associated with task outcome*		
	fm(A)	fm(B)	m1	fm(A)	fm(B)	m 1	fm(A)	fm(B)	m 1
Age	No	No	No	**Yes†**	**Yes***	**Yes***	Yes	Yes	Yes
Gender	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Nationality	**No****	**No****	**No***	Yes	Yes	Yes	**Yes†**	**Yes***	**Yes†**

H2*:* Disparity in functional skill is:

	Positively associated with barriers to collaborate				*Negatively associated with psychological outcome*				*Negatively associated with task outcome*			
	fm(A)	fm(B)	m2 (A)	m2 (B)	fm(A)	fm(B)	m2 (A)	m2 (B)	fm(A)	fm(B)	m2 (A)	m2 (B)
English skills	**Yes*****	Yes	**Yes*****	Yes	**Yes*****	**Yes****	**Yes****	**Yes****	No	No	No	No
Technical skills	**Yes*****	No	**Yes****	**No†**	Yes	Yes	Yes	Yes	Yes	**Yes†**	Yes	Yes
CQ skills	**No***	**No***	**No***	**No***	No	No	No	No	No	Yes	No	Yes

H3*:* Separation along hidden attribute is:

	Positively associated with barriers to collaborate				*Negatively associated with psychological outcome*				*Negatively associated with task outcome*			
	fm(A)	fm(B)	m3 (A)	m3 (B)	fm(A)	fm(B)	m3 (A)	m3 (B)	fm(A)	fm(B)	m3 (A)	m3 (B)
Power distance	No	No	No	Yes	No	No	Yes	Yes	**Yes†**	Yes	**Yes***	Yes
Collectivism	No	No	No	No	**No†**	No	**No***	**No***	No	Yes	No	No
Masculinity	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No
LT-Orientation	Yes	Yes	Yes	Yes	Yes	No	Yes	No	**Yes†**	Yes	Yes	No
Un-avoidance	**Yes***	**Yes****	**Yes***	**Yes†**	**No***	No	**No***	**No***	**No†**	No	No	Yes

H4: Barriers to collaboration is:

	fm(A)	fm(B)	m 1	m2 (A)	m2 (B)	m3 (A)	m3 (B)
a)Negatively associated with psychological outcome	**Yes***	Yes	**Yes*****	**Yes****	**Yes†**	**Yes*****	**Yes*****
b)Negatively associated with task outcome	Yes	Yes	Yes	No	Yes	Yes	Yes
H5: Psychological outcome is positively associated with task outcome:	**Yes****	**Yes***	**Yes***	**Yes****	**Yes****	**Yes***	**Yes*****

Fm(A)=Full Model A, fm(B)= Full Model B, m1= Model 1, m2=Model 2, m2(A/B)= Model 2 (A/B), m3= Model 3, m3(A/B)= Model 3(A/B), LT= Long-term Orientation, Un-avoidance= Uncertainty Avoidance, **Bold=** Statistically Significant. Note: :† $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$

3.6. Discussion

Our study recognizes the fundamental divide in the literature on team diversity and its impacts on team outcomes (Stahl & Maznevski, 2021; Taras et al., 2019) and aims to address the inconsistencies between team diversity's positive and negative outcomes. Current literature on team diversity presents contrasting views, such as the advantages highlighted by (Lisak et al., 2016; May & Carter, 2001) versus the potential challenges posited by it (Ferrazzi, 2014; Malhotra et al., 2007; Straus & Mcgrath, 1994). First, this paper underscores the multitude of differences among team members in global virtual teams (GVTs) (Kurtzberg, 2014; Powell et al., 2004; Presbitero, 2021).

To provide a more comprehensive and nuanced understanding of team diversity dynamics. Our approach moves beyond the simplistic distinction between surface-level and deep-level categories (Minbaeva et al., 2021; Taras et al., 2019) by incorporating the less visible forms of differences, such as hidden values. Second, this paper attempts to reduce the uncertainties underscored by Harrison and Klein (2007), which stems from inconsistent empirical evidence concerning the influence of within-unit differences on team performance, divergent theoretical perspectives, and the ambiguity surrounding definitions of diversity. This paper contributes to overcoming the oversimplified static frameworks to holistically capture cultural diversity's impact on GVTs (Minbaeva et al., 2021). By building upon solid theoretical underpinning, e.g. (information processing theory, (In)justice theory and categorization theory) our paper aims for a more accurate assessment of diversity dynamics. Additionally, we move beyond the process gains and losses framework and the assumption that all forms of diversity exert uniform effects on team outcomes to present a more nuanced comprehension of its impacts (Stahl &

Maznevski, 2021). The diversity typology proposed by Harrison and Klein (2007) serves as the theoretical underpinning for the model developed in this study, facilitating subsequent tests of the complex interplay between variety, disparity and separation concerning different outcomes in same study.

Third, by empirically examining the influence of different types of diversity on team processes, such as barriers to collaboration and two different types of team effectiveness, such as psychological and task outcome, we elucidate the nature of disparities within teams and specify the collective distribution and composition of differences within a unit (Harrison & Klein, 2007). Specifically, the framework of personal diversity offers a tangible structure to the hypotheses, shedding light on the mechanisms and outcomes linked to the simultaneous operation of different diversity dimensions. For instance, our results highlight that age and nationality varieties in GVTs are positively associated with psychological and task outcomes. Disparities in English and technical skills increase collaboration barriers and decrease psychological outcomes. In contrast, separation along hidden values is more associated with the processes and outcomes based on the nature of each dimension of values.

In conclusion, this paper attempts to effectively address recent appeals to (a) explore more complex models of diversity, (b) delve into the mechanisms through which diversity exerts its impact, and (c) investigate the combined effects of multiple dimensions of diversity within the same study, as advocated by scholars (Harrison & Klein, 2007; Jackson & Joshi, 2004; Mayo et al., 2017; Meyer, 2017; Stahl & Maznevski, 2021; Van Knippenberg & Schippers, 2007).

3.6.1. Theoretical Implication

This paper contributes to understanding the three theoretical underpinnings suggested by Harrison and Klein (2007) utilising the three measurements, i.e., information processing theory for variety, (In)justice theory for disparity and categorisation theory for separation. Our study confirms that variety in specific demographic attributes is positively associated with psychological and task outcomes. Although research views demographic characteristics as job-unrelated forms of diversity (Hundschell et al., 2022), our research shows that treating these characteristics as variations, not categories, correlates with task-related outcomes in certain situations. Age and nationality variety, for instance, both showed a positive sign for psychological and task outcomes. Specifically, variety in age has a positive association with the psychological outcome, while variety in nationality has a positive association with task outcome. This notion is in alliance with the suggested theory of information processing (Galbraith, 1973; Tushman & Nadler, 1978), which suggests that demographic heterogeneity can foster improved group outcomes, fostering increased openness and shared understanding (Marschan-Piekkari et al., 1999; Welch et al., 2001). Moreover, our study shows that the positive effects relate to the specific outcome we investigate. For example, age and nationality variety positively correlate with barriers to collaboration, with only the relationship for nationality variety being statistically significant. However, the increased barriers to collaboration due to age and nationality variety seem unrelated to team effectiveness as their effects remained positive for both psychological and task outcomes. This finding aligns with the studies which found that members of diverse teams benefit more from a variety of information under various specific

conditions, including national diversity (Kirkman et al., 2013; Kirkman et al., 2017). Gender variety, on the other hand, did not have any statistically significant association with either team process or team outcomes. Nonetheless, the negative sign for barriers to collaboration was shown in all our models, which indicates that gender variety does tend to mitigate the barriers to collaboration.

Additionally, our study provides much-needed attention to the term disparity and the use of (In)justice theory (Bloom, 1999; Cho et al., 1994; Greenberg, 1987; Harrison & Klein, 2007, p. 1201; Homans, 1961; Pfeffer & Langton, 1993; Siegel & Hambrick, 2005). This theory suggests that team disparity can be due to structural factors such as hierarchical position or functional background (Cho et al., 1994). Our study confirms that disparity indeed can be related to negative outcomes. Specifically, English and technical skills disparities strongly affected barriers to collaboration and outcomes. Notably, English skills disparity illustrated a robust negative relation with psychological outcome across all models, and technical skills disparity showed a strong negative relationship with task outcome in full models (A and B). Disparity in these functional attributes does harm the more interpersonal outcomes. According to the theory of (In)justice, when power is concentrated within a few individuals, the involvement of less empowered members in team decisions decreases, subsequently diminishing their willingness to contribute to the team outcome (Bunderson & Sutcliffe, 2002; Bunderson & Van Der Vegt, 2018), in turn leading to sub-optimal outcomes (Bloom, 1999; Harrison & Klein, 2007; Homans, 1961; Pfeffer & Langton, 1993). Hence, the presence of disparities in English and technical skills acts as barriers to collaboration and leads to a decrease in psychological outcomes.

In contrast, a distinct trend emerged when examining cultural intelligence disparity, revealing a negative association between collaboration barriers and a positive association with both outcomes across most of our models. Cultural intelligence empowers individuals to navigate diverse cultural contexts adeptly (Ang et al., 2007; Presbitero & Teng-Calleja, 2019; Presbitero & Toledano, 2018). Our study illustrates that the presence of a team member possessing superior cultural intelligence diminishes barriers to collaboration significantly while showing a tendency to enhance psychological outcomes. This finding is consistent with the notion that CQ can serve as a moderator, changing the nature of the relationship between different predictors and various team processes and outcomes (Davaei & Gunkel, 2023).

Moreover, our study sheds light on the much-used categorisation theory (Tajfel & Turner, 1986; Turner et al., 1987), especially in its application to the separation of hidden attributes within teams. This theory has been extensively used regarding cultural differences and dissimilarities, suggesting that they often fuel categorisation and stereotyping, making their effects more pronounced than other forms of diversity (Mannix & Neale, 2005; Mortensen & Hinds, 2001). However, the results of our study found contradicting findings and inconsistent results. The research on cultural differences stems from Hofstede's (1980) cultural dimension framework (Kirkman et al., 2006; Taras et al., 2010; Yoo et al., 2011). Each dimension has its characteristics, and separation along them has a different effect on different outcomes. For instance, power distance reflects the extent to which a society accepts and expects unequal power distribution (Hofstede, 1980). Power distance determines less favourable conflict handling styles (avoiding and dominating), which are related to a forcing behaviour to

win one's position and failing to satisfy the concerns of both parties and are considered zero-sum styles (Gunkel et al., 2016). Consistent with this, our results showed that separation between teams on power distance decreased team members' task outcome.

Gunkel et al. (2016) found that long-term orientation is tied to a compromising style of conflict handling, where both parties make concessions to find mutual solutions. This finding aligns with Hofstede's (1980) perspective that cultures with a long-term orientation emphasise thrift, persistence and tradition—those with a short-term orientation value immediate gratification and adaptability (Hofstede, 1980). However, our results show that separation along long-term orientation negatively affects task outcomes and increases collaboration barriers. When team members distinctly align with either of these orientations, they could encounter increased collaboration challenges and potentially diminished task results. Separation along masculinity, which explores the degree to which a society values traditional masculine traits (such as ambition and assertiveness) versus feminine traits (such as nurturing cooperation) (Hofstede, 1980), showed a negative association with psychological outcome; however, it is not significant. Cultures high in masculinity emphasise competition and success, while those high in femininity emphasise quality of life and work-life balance (Hofstede, 1980). These conflicting views could be why teams' psychological outcome may tend to decrease. These findings support the notion of categorisation theory.

In contrast, uncertainty avoidance, which measures a society's tolerance for ambiguity and uncertainty, showed a positive association with both psychological and task outcomes, with a significant effect on psychological outcomes. In two models, it appeared to heighten collaboration barriers, yet it demonstrated a negative correlation

in the other two. Cultures with high uncertainty avoidance prioritise rules, regulations, and structured environments to minimise uncertainty. In contrast, cultures with low uncertainty avoidance embrace change and are more willing to take risks (Hofstede, 1980). While categorisation between these two values may increase the barriers to collaboration, having both traits in teams may benefit the overall outcome. Gunkel et al. (2016) show that uncertainty avoidance is linked to integrative conflict style, emphasizing collaborative problem-solving and exploring differences to reach a mutually acceptable solution. This may be an explanation to the positive association between uncertainty avoidance and team effectiveness in our study.

Similarly, collectivism places greater value on group harmony, cooperation, and shared responsibilities, while individualism emphasises personal autonomy and individual achievement (Hofstede, 1980). Our study revealed that separation based on collectivism reduced collaboration barriers and significantly enhanced psychological outcomes. Members from collectivist and individualistic cultures in the same teams tend to produce better psychological outcome. The study by Gunkel et al. (2016) demonstrate that collectivism is linked to an integrative conflict style, which is a more favourable style to adopt when team members face barriers. These results challenge the prevailing notions of categorisation theory, suggesting the need to explore alternative theoretical perspectives when examining separation based on hidden values.

We offer a comprehensive perspective by showcasing the multifaceted ways in which diversity in personal attributes inherent in GVTS collectively and independently impact team processes and outcomes and when the averages of measurements are controlled. Our examination encompasses the direct relationships between these diversity measures

and various outcomes within a single study, enhancing our current understanding and paving the way for future inquiries.

3.6.2. Practical implication

As companies increasingly adopt online collaborative teams, effective management becomes vital. Current insights into GVT management are still limited (Richter et al., 2021). Unlike regular teams, GVTs face challenges from geographical, temporal, cultural, and personal differences (Powell et al., 2004; Presbitero, 2021). These disparities can disrupt teams, fostering misunderstandings and hindering collaboration (Taras et al., 2019; Zellmer-Bruhn & Maloney, 2020). Our research enhances managerial insights by elucidating how team composition impacts outcomes. By comprehending the diverse facets of differences, managers can mitigate collaboration barriers arising from personal diversity and boost psychological and task outcomes. Managers must show awareness of the complex interplay between diverse attributes among team members and their impact on team outcomes, both positive and negative. It's essential for managers to cultivate an environment that values individual differences and promotes inclusivity. It is important for managers to adeptly navigate the disparities that may exist within team members' skill proficiencies. Our findings underscore that disparity in English and technical skills yield heightened barriers to collaboration and exert an adverse influence on teams' psychological outcome and ultimately reduced task outcome. Managers should invest in training programs to improve team members' English and technical proficiencies. By fostering an environment that encourages open communication, where team members can express concerns or challenges related to skill disparities, managers can mitigate barriers to collaboration between team

members, and in turn increase their psychological and task outcomes. Further, managers should regularly assess individual and team skill levels to identify gaps and offer targeted support in needed areas. Among the most interesting findings of this study is the role of cultural intelligence skill disparity. Our results show how disparity in this skill works throughout team processes. Therefore, managers should foster a climate encouraging cultural intelligence awareness and provide CQ development training programs. As GVT members come from geographically dispersed areas, managers should encourage mentorship within teams to share expertise and integrate online collaborative tools and resources that aid in bridging communication gaps, such as translation tools or technical tutorials. Moreover, managers of GVTs should prioritise ongoing education and development opportunities to ensure all team members can adapt and grow in their roles.

3.7. Limitation & future research direction

The current study makes valuable contributions to understanding the mechanisms of diversity and its effects on various outcomes in the context of global virtual teams (GVTs). However, it is essential to note that the study has limitations, and several avenues for future research exist. First, our findings are limited to the team level, and future studies could expand the research by considering individual experiences and testing the hierarchy models in the context of separation and disparity within teams and organisations. Secondly, this study's sample primarily consisted of students, resulting in a skewed age distribution, with a majority falling within the 20-22 age range. This potential bias in the age composition of the sample could raise questions about the sample's representativeness. Although we employed three different types of

measurements, encompassing demographic attributes, functional attributes, subjective outcomes, and objective outcomes, the predominantly youthful age of participants may limit the generalizability of our findings. Since the majority of participants are young students, the results may not accurately reflect how diversity operates in global virtual teams with participants of different age groups. Younger individuals may have different communication styles, attitudes, and cultural exposure compared to older individuals. Therefore, the findings may not capture the full range of diversity dynamics that occur in GVTs with a more diverse age distribution. Despite the increasing use of X-Culture data in recent studies (Richter et al., 2021; Stahl & Maznevski, 2021; Tavoletti et al., 2019), future research could benefit from testing the effects of different diversity types using a non-student sample. To enhance the robustness and applicability of future research, it would be valuable to investigate the effects of diverse demographic attributes on similar constructs using samples encompassing a broader spectrum of age groups, including mid-career professionals and older individuals to understand how different age group interact, collaborate and adapt in virtual teams.

Third, despite following the guidelines set by Harrison and Klein (2007), some of our results could align more closely with the underlying theories. While we treated demographic attributes as variety, scholars might also define these attributes as disparity and separation. Specifically, we invoke, for example, gender diversity as a variety with the perception that different genders may have different knowledge caches and experiences that can bring new perspectives and approaches to problem-solving and decision-making. However, scholars can conceptualise diversity as separation if they believe that gender diversity can lead to differing opinions and beliefs and negatively

impact unity and teamwork or if they believe this effect is the same, whether teams consist mainly of men or women. Moreover, if scholars intend to highlight power differences between men and women and the asymmetric consequences of within-unit gender diversity, they can conceptualise diversity as a disparity (Harrison & Klein, 2007). Scholars can use a similar specification for other demographic attributes, e.g. age and nationality. Our study serves as a foundation for prospective investigations into the complex interplay between different diversity concepts and their underlying theoretical dynamics. Researchers can delve deeper by integrating the sophisticated categorisation-elaboration model (CEM) developed by (Van Knippenberg et al., 2004), which uncovers the contextual factors that influence the potentially harmful effects of social categorisation within teams and fosters positive information processing outcomes (Van Knippenberg et al., 2004). Additionally, scholars may find value in utilising the framework outlined by Mayo et al. (2017), which involves examining how the notions of separation and disparity might moderate or mediate the advantages derived from variety, thus contributing to a more nuanced understanding of the complexities at play. Fourth, we join the call upon future research endeavours to rise beyond the conventional presumption of negative implications of cultural diversity and explore the functional attributes within teams. In our study, we postulate that the acquisition of functional attributes, such as distinct skill sets, holds the potential to be valuable resources, and the disparities within these skill sets may yield damaging effects on teams and their outcomes. In this vein, we advocate for a more nuanced examination of various configurations of these skill sets, encompassing the interplay of variety and separation among functional attributes. Notably, given the compelling findings in our study, we

emphasise the significance of delving deeper into the functional attribute of cultural intelligence skills. We note that we utilised peer evaluations to measure CQ in this study. CQ is, however, a complex contrast with several dimensions. It is essential for future research to exclusively investigate the interrelationship between this skill (and other functional skills) and the dynamics of variety, disparity and separation of CQ dimensions within teams using other CQ scales.

Fifthly, during the second phase of data collection from students, a significant number of responses were missing, resulting in an incomplete X-Culture dataset for the year 2018. This led to the exclusion of a substantial amount of data from the analyses. Notably, the absence of demographic data, particularly gender information, may have contributed to the non-significant findings observed in the study. While the remaining dataset was sufficient for testing the research models, a more comprehensive dataset would have improved the precision and accuracy of team-level results. Therefore, it is advisable that future research endeavours prioritize collecting responses from all team members to compile a comprehensive and complete set of team-level data. Finally, it is worth noting that the team outcome, especially task outcomes, was based on the project's passing, which gave teams a reward-based objective toward completion. GVTs in companies operate in a much more complex context and environment, where factors such as company culture and structure, position in the company, work responsibilities, and role in the project can influence team behaviour and performance. Thus, future research could test the same models in a real-life company setting to understand the influence of cross-cultural differences in a GVT on employees' work processes.

CHAPTER 4: Unveiling the significance of CQ configuration: A conceptual framework & illustrative example

4.1. Introduction

In In our increasingly connected world, organisations often extend across cultural and geographical borders, tapping into the diverse viewpoints and talents of a globally diverse workforce (Bücker & Korzilius, 2015; Caputo et al., 2018; Fang et al., 2018; Ott & Michailova, 2018; Yari et al., 2020). Within these organisations, teams are composed of members from different cultural backgrounds, each characterised by unique communication styles, norms and values. These heterogeneous compositions can bring a variety of fresh perspectives and innovative ideas, yet they can also lead to misunderstandings and conflicts (Jansen & Searle, 2021; Janssens & Brett, 2006). Fortunately, researchers have proposed cultural intelligence (CQ) as a potential facilitator in mitigating the adverse effects of diversity (Ang & Van Dyne, 2015; Ang et al., 2007). Cultural intelligence refers to the ability to adapt and understand other cultures, learn and gradually reshape one's thinking (Thomas et al., 2008). As globalisation continues to rise, the knowledge of CQ has become increasingly valuable, especially in digital settings (Rüth & Netzer, 2020), and has emerged as a key factor in effectively navigating the challenges caused by cultural differences (Ang et al., 2003). Encompassing dimensions such as metacognitive, cognitive, motivational and behavioural facets, CQ holds the potential to facilitate intercultural interactions, foster effective communication and enhance collaboration among team members (Ang & Van Dyne, 2015; Ang et al., 2003). As teams navigate the complexities of cross-cultural engagements, CQ provides a lens to comprehensively understand the dynamics of diverse teams.

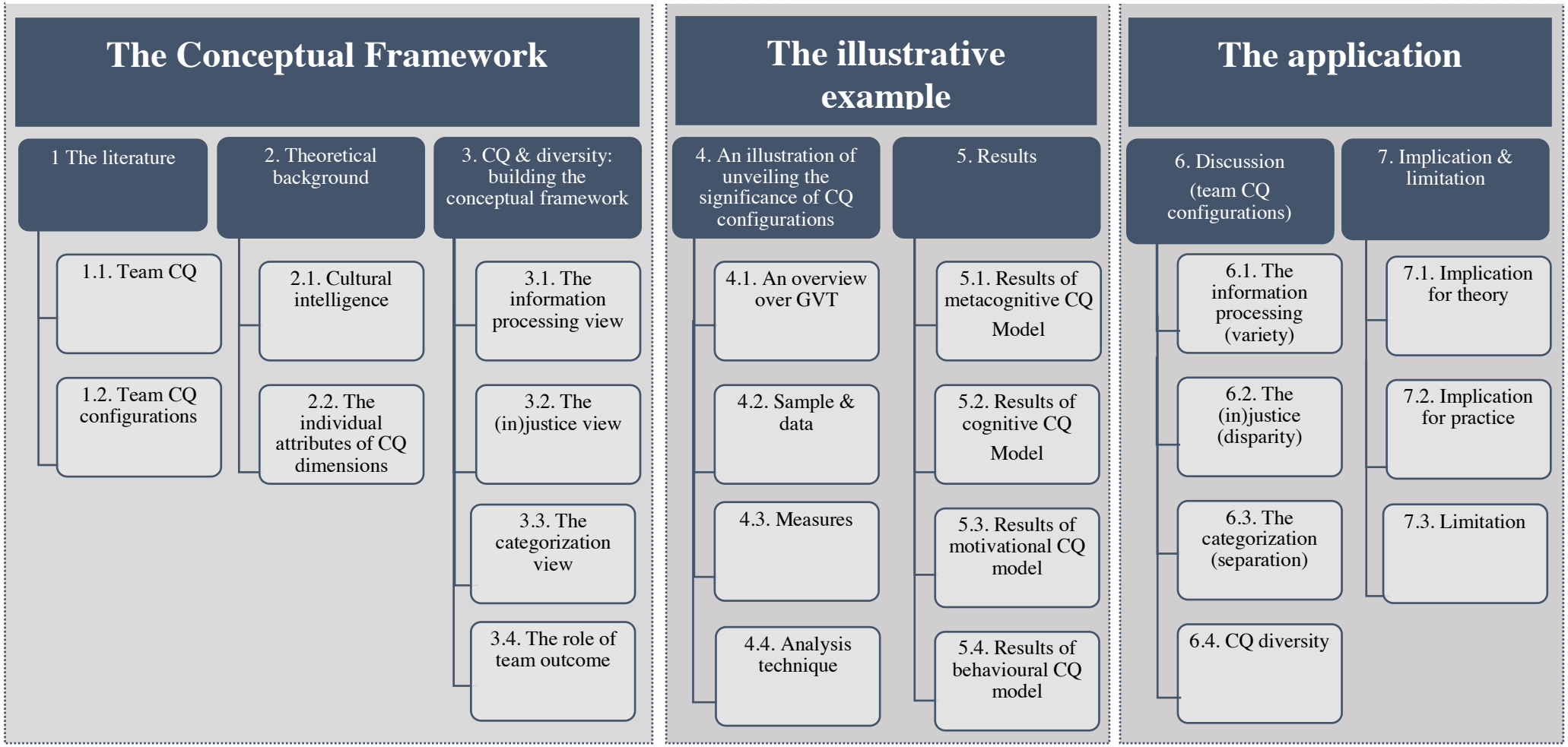
The initial conception of cultural intelligence centres on the individual level; nevertheless, this perspective has evolved to encompass team-level analysis by aggregating individual scores. Extensive research has investigated the impact of CQ at the team level, as demonstrated by prior studies (*for review see*, (Davaei & Gunkel, 2023; Fang et al., 2018; Ott & Michailova, 2018; Schlaegel et al., 2021; Yari et al., 2020)). However, research remains limited in the conceptualisation of CQ configurations within teams despite the growing demand for such examination. Given the multidimensional nature of cultural intelligence and the significant interrelationships among its four dimensions, two notable gaps persist within CQ literature, especially in team dynamics. First, the aggregation of all CQ dimensions into one overall CQ score, and second, merely looking into the aggregated averages of a single or all four dimensions to measure team-level CQ (Adair et al., 2013; Dibble et al., 2019; Gregory et al., 2009; Hu et al., 2019; Iskhakova & Ott, 2020; Mangla, 2021; Ng et al., 2019). While existing studies have highlighted that the four facets of CQ offer distinct insights and possess varying predictive value for intercultural effectiveness outcomes, an unexplored territory lies in investigating the consequences of distinct CQ configurations within teams. This conceptual uncertainty presents a challenge to the comprehensive interpretation of research findings. An evident gap persists in addressing crucial questions, such as which specific CQ scores – higher, lower, average, variance or those of particular individuals like team leaders – most potently predict dyadic or group performance and how situational factors interact (Fang et al., 2018). Moreover, as suggested by Schlaegel et al. (2021), researchers often lack in explicitly articulating whether they view CQ as a holistic construct, assess individual CQ dimensions in

isolation or emphasise the synergistic impact of CQ dimensions to enhance specific outcomes. As a result, our understanding of the complex nature of team-level CQ remains somewhat constrained (Barrick et al., 1998; Kozlowski & Klein, 2000; Ng & Van Dyne, 2005). Consequently, this present paper centres its focus on addressing these challenges. Figure 4.1 describes the approach taken in this paper. In the first part, this paper builds a conceptual framework for team CQ configurations by considering the variations within each of the four dimensions of CQ among team members. Considering their unique implications for team processes and interactions, this might yield different impacts on team outcomes. This section starts with a literature review to shed light on the importance of CQ on different outcomes. It continues with the research applied to team CQ configurations in the current literature. Drawing on the foundational theories behind CQ, such as multiple intelligence theory (Gardner, 1993; Sternberg, 1986), as well as the theories behind each individual dimension of CQ, e.g. cognitive perspectives and motivational theories (Ackerman, 1996; Bandura et al., 1987; Bandura & Walters, 1977; Kanfer, 1990), this paper recognises the significance of having team members skilled in different areas, and how the team members' unique set of capacities and mental skills contributes to the team's overall outcome. Furthermore, the conceptual framework in this paper introduces CQ as a functional attribute, which leads to functional diversity within the team. By acknowledging the complexity of team diversity and addressing the limitations of previous research on diversity (Stahl & Tung, 2015; Taras et al., 2019), and incorporating multiple theoretical perspectives, such as information processing theory (Simon, 1978), (in)justice theory (Greenberg, 1987; Harrison & Klein, 2007, p. 1201) and social categorisation theory (Tajfel & Turner,

1986), this paper aims to provide a more comprehensive view of CQ diversity configurations and their implications on team dynamics and performance.

In the second part, this paper presents an illustrative example of the conceptual framework to examine the associations of CQ variations on two different outcomes within global virtual teams (GVTs). To do so, the paper first presents a brief overview of existing literature on GVTs. Next, the paper examines configurations characterised by variety in ranges of CQ, disparities in specific CQ dimensions and the separation of team members along distinct CQ dimensions. Overall, the conceptual framework contributes to team-level CQ and team diversity literature by demonstrating the significance of considering CQ configurations within teams. Among others, the main contribution of this paper is to provide a framework which helps researchers to move beyond the aggregation methods used, which hinders the understanding of the complex nature of team-level CQ (Barrick et al., 1998; Kozlowski & Klein, 2000; Ng & Van Dyne, 2005; Schlaegel et al., 2021). Moreover, this paper contributes to the field of international business by providing practical implications and suggestions for management to utilise cultural intelligence to harness diverse teams' potential.

Figure 4. 1 The approach



4.2. The literature (Part 1)

4.2.1. Team CQ

While existing literature has extensively explored individual-level CQ (Caputo et al., 2018; Murphy et al., 2019; Zhou & Charoensukmongkol, 2022), few studies have effectively lifted the level of analysis for CQ above the individual level (Fang et al., 2018; Ott & Michailova, 2018; Yari et al., 2020). CQ is essential in teams where members come from different cultural backgrounds (Groves & Feyerherm, 2011), as it can impact team processes and outcomes (Schlaegel et al., 2021). High levels of CQ in teams can lead to many positive outcomes. Some researchers have proposed that teams with higher levels of CQ are better equipped to adapt to diverse cultures (Mangla, 2021; Presbitero & Toledano, 2018), navigate cultural differences and effectively collaborate with diverse team members (Iskhakova & Ott, 2020), overcome the perceived cultural dissimilarity (Presbitero, 2020), perform intercultural tasks more effectively (Presbitero, 2022), accommodate their communication styles (Presbitero, 2021) and engage in voice behaviour in multicultural settings (Ng et al., 2019), which can contribute to more effective communication and collaboration in diverse teams. As CQ lies within the mental ability domain, it has positively influenced students' psychological safety. For example, the study conducted by Dibble et al. (2019) found that students' cultural intelligence positively influenced their psychological safety in GVTs. Research focusing on the moderating role of CQ in teams found that knowledge spill-overs and cultural intelligence positively influenced individual and team creativity (Ali et al., 2019). However, Hu et al. (2019) suggested that cultural intelligence may be less effective when high levels of team conflict are present. The findings from Richter

et al. (2021) revealed that cultural intelligence and social integration positively influence the performance of global virtual teams. Presbitero and Teng-Calleja (2019) found that a team leader's cultural intelligence moderates the relationship between ethical leadership and team members' ethical behaviour and is positively linked to transformational leadership style (Ramsey et al., 2017). Solomon and Steyn (2017) found that metacognitive and motivational cultural intelligence in leaders emerge as more accurate predictors of empowering leadership than directive leadership. Le et al. (2021), suggested that metacognitive cultural intelligence can shape the link between leader-member exchange and subjective well-being. Similarly, Velarde et al. (2022) found that transformational leadership significantly mediates the relationship between CQ and school organisational health.

Moreover, research shows that organisations can benefit from organisational CQ in several ways, including enhancing innovation and creativity, improving decision-making and promoting effective communication and collaboration in multicultural teams (Livermore et al., 2022). Haniefa and Riani (2019) found that while ethnic harassment experience positively affects employees' intention to leave, cultural intelligence moderates this relationship, reducing the impact of ethnic harassment experience on employees' intention to leave.

4.2.2. Team CQ configurations

While there is consensus that cultural intelligence exists at individual and team levels (Groves & Feyerherm, 2011), there is less agreement on measuring and conceptualising these higher levels of CQ. The concept of cultural intelligence encompasses multiple dimensions that influence individuals' ability to thrive in diverse cultural settings. In

current CQ literature, there are two main challenges: (A) the aggregation of CQ dimensions into one overall score, or looking only at one dimension of CQ individually, and (B) the aggregation or handling of team-level CQ as averages (i.e. the different levels of CQ that exist between team members).

Research has primarily focused on either overall CQ or individual dimensions, limiting the exploration of their joint effects on specific work-related outcomes. Approximately 39% of studies analysed in the recent meta-analysis conducted by Schlaegel et al. (2021) focused on overall CQ, offering advantages such as simplicity and higher reliability, and around 41% of studies examined the effects of each CQ dimension individually, allowing for a more detailed understanding of their roles in various outcomes. However, according to Schlaegel et al. (2021), neither of these approaches captures the full nuance of CQ and its impact on different outcomes. Concentrating solely on the overall CQ does not reveal the distinct effects of individual CQ dimensions, as these dimensions can have varying degrees of strength, either weaker or more vital, compared to the general impact of overall CQ. On the other hand, solely focusing on the individual CQ dimensions overlooks the explanatory power that two or more dimensions may share. The scarcity of studies reporting on both the overall CQ and the individual CQ dimensions highlights the necessity for a more nuanced and comprehensive approach (Gelfand et al., 2008; Rockstuhl & Van Dyne, 2018; Schlaegel et al., 2021).

Moreover, the research on team CQ configurations has predominantly focused on average aggregation techniques to assess individual CQ (Adair et al., 2013; Dibble et al., 2019; Gregory et al., 2009; Hu et al., 2019; Iskhakova & Ott, 2020; Mangla, 2021; Ng et al., 2019; Richter et al., 2021) or the overall team CQ (Li et al., 2013; Livermore

et al., 2022; Pidduck et al., 2022; Presbitero, 2021; Presbitero & Toledano, 2018). Some researchers have examined the influence of team leaders' CQ (Elenkov & Manev, 2009; Groves & Feyerherm, 2011; Rosenauer et al., 2016) or the perceived CQ of both team leaders and team members' (Ng et al., 2019; Presbitero, 2020; Presbitero & Teng-Calleja, 2019). A few studies have explored the impact of the most and least culturally intelligent members by considering the team's minimum and maximum CQ values (Chua et al., 2012; Imai & Gelfand, 2010; Richter et al., 2021). However, aggregating higher-level CQ scores by averaging individual scores may mask the interactions among team members and fail to capture the collective nature of CQ as a team-level construct. The appropriate aggregation method depends on the conceptualisation of CQ at individual and team levels and the emergent processes from lower to higher levels (Kozlowski & Klein, 2000). Although the existing literature emphasises the importance of CQ as a moderator and mediator at higher levels, implying its relevance primarily in multicultural contexts, it is also essential to examine how working in multicultural teams develops CQ (Presbitero & Toledano, 2018) and how team members can effectively overcome team diversity (Adair et al., 2013). To date, the only different approach was taken by (Janssens & Brett, 2006)

who focused on structural interventions and processes rather than individual CQ scores. Based on culturally intelligent principles, their fusion team collaboration model suggests that embracing "value-in-diversity" enhances creative team solutions.

Given the multidimensional nature of CQ and the significant intercorrelations among its dimensions, there exist fundamental shortcomings in CQ literature, particularly within team CQ literature. While previous research has demonstrated that the four

factors of CQ offer unique information and have varying predictive validity for intercultural effectiveness outcomes, there is a lack of investigation into the implications of different CQ configurations within teams. This conceptual ambiguity hampers the interpretation of findings. The current paper thus focuses on the two challenges at hand. Considering challenge A) as mentioned earlier, the variations in each of the four dimensions of CQ within teams may have different impacts on team outcomes, considering their distinct implications for team processes and dynamics. Therefore, examining team CQ configurations beyond the simple aggregation of all four factors is essential to gain valuable insights into the dynamics that influence team performance. Understanding how different CQ factors interact within a team would enable researchers to determine the relative importance of each factor in achieving better team outcomes. Regarding challenge B), team members may possess varying levels of CQ, and these differences could have implications for team dynamics and performance. This paper explores how CQ configurations interact and influence overall team performance.

4.3. Theoretical background

4.3.1. Cultural intelligence

The concept of cultural intelligence stems from Sternberg's (1986) framework of multiple loci of intelligence, which distinguishes between cognitive, motivational and behavioural intelligence. It further builds upon Gardner's (1993) theory of multiple intelligences, emphasising that intelligence encompasses distinct abilities utilised in various contexts. As a result, cultural intelligence is firmly grounded in these foundational theories and sheds light on individuals' ability to adapt and flourish in

culturally diverse environments. It also enhances their effectiveness in multicultural settings by acquiring cultural knowledge, practising mindfulness and developing behavioural skills (Earley & Ang, 2003; Thomas et al., 2008; Van Dyne et al., 2009). Cultural intelligence is a comprehensive concept of various dimensions, each corresponding to a distinct capability promoting intercultural effectiveness. Research grounded in these theories indicates that cultural intelligence equips individuals with the ability to exhibit appropriate behaviours despite cultural differences, facilitated by the interplay between cognitive, metacognitive, and behavioural capabilities (Ang et al., 2007; Presbitero & Teng-Calleja, 2019; Presbitero & Toledano, 2018).

Metacognitive CQ pertains to individuals' mental processes to acquire and comprehend cultural knowledge, including understanding their thought processes concerning culture (Ang et al., 2007; Flavell, 1979). It involves the ability to recognise and adapt mental models of cultural norms for different countries or groups, as well as being consciously aware of others' cultural preferences before, during and after interactions (Brislin et al., 2006; Kistyanto et al., 2022; Triandis, 2006). C*ognitive CQ* is grounded in intelligence-as-knowledge (Ackerman, 1996), which encompasses two incremental factors: the personality trait of openness (e.g. intellect, intelligence, culture) and typical intellectual engagement. Additionally, cognitive CQ involves knowledge of economic, legal and social systems in diverse cultures and subcultures and familiarity with essential cultural values frameworks (Hofstede, 1980; Kistyanto et al., 2022; Triandis, 1994). *Motivational CQ* involves an individual's ability to focus attention and energy on learning and functioning in culturally diverse situations. It incorporates concepts such as self-determination (Deci & Ryan, 1985) and derives from social cognitive theory and

self-efficacy theory (Bandura, 1986; Bandura et al., 1987). According to Kanfer and Heggestad (1997), these motivational capacities enable control over emotions, thoughts, and behaviours, leading to goal achievement. Individuals with high motivational CQ exhibit a genuine interest in cross-cultural situations and possess confidence in their ability to navigate them effectively (Bandura, 2002). *Behavioural CQ* encompasses exhibiting appropriate verbal and nonverbal actions when interacting with individuals from different cultures (Ang et al., 2007). It draws upon ideas presented by Hall (1959) and Gudykunst (1998), and implies that those with high behavioural CQ demonstrate situational appropriateness by utilising their extensive range of verbal and nonverbal capabilities, including culturally suitable words, tone, gestures and facial expressions (Kistyanto et al., 2022). Individuals with high levels of cultural intelligence can recognise and appreciate cultural differences, reducing the likelihood of making negative judgments based on cultural backgrounds (Earley & Ang, 2003). Consequently, CQ correlate with various outcomes (for review, see (Fang et al., 2018; Ng et al., 2012; Ott & Michailova, 2018; Schlaegel et al., 2021; Yari et al., 2020). In particular, the Schlaegel et al. (2021) meta-analysis provides a comprehensive overview of theories that elucidate the relationship between CQ and work-related outcomes.

team-level CQ causes positive team dynamics, which improves the functioning and problem-solving abilities of the group and improves team member sharing and exchange of knowledge (Iskhakova & Ott, 2020). Research often draws upon social learning theory in a team dynamics context, highlighting that individuals learn from their social environment (Hu et al., 2019) through observation and imitation (Ali et al., 2019; Dibble et al., 2019). Moreover, research focuses on Bandura's (1986; 1987) social

cognitive theory, which proposes that personal, environmental and behavioural factors influence an individual's behaviour (Ramsey & Lorenz, 2016). For instance, expanding on Bandura and Walters's (1977) social learning theory, it is suggested that working in teams with high levels of diversity provides an opportunity for exposure to individuals from different cultural backgrounds, consequently enhancing the cultural intelligence of the teams (Iskhakova & Ott, 2020). Linking self-efficacy in expectancy theory with CQ and Edmondson (1999) psychological safety perspective, CQ serves as a foundation for psychological safety. In this framework, each team member's ability to adapt to new cultural contexts creates an environment where diverse members of GVTs see the workplace as a secure space to take interpersonal risks (Edmondson, 1999; Kahn, 1990). Presbitero and Teng-Calleja (2019) demonstrated how perceived ethical leadership impacts individual ethical behaviour within global teams. Their study emphasised leaders' pivotal role as ethical behaviour exemplars, guiding team members via social learning. Incorporating this with the theory of multiple intelligence (Sternberg, 1986), Presbitero and Teng-Calleja (2019) proposed that the interaction between leaders' perceived cultural intelligence and ethical leadership contributes to higher levels of individual ethical behaviour in global teams. These insights shed light on the relevance of a perceived team leader's CQ in enhancing the display of ethical behaviours among individual members of global teams. In another study, Presbitero and Toledano (2018) drew on the theory of intelligence and intergroup contact theory proposed by (Allport et al., 1954). They posited that intensive interaction with individuals from different social classes reduces stereotypes and prejudice. This research highlighted the potential of exposure and interaction with individuals from diverse cultural backgrounds to

enhance teams' cultural intelligence (Presbitero & Toledano, 2018). Building on communication accommodation theory (Giles & Powesland, 1997), Presbitero (2021) emphasised the crucial role of communication in influencing a GVT member's effectiveness in terms of synergy and dedication. The study further suggested that when a GVT member has a high overall CQ, they are more likely to be effective in interpersonal synergy. Drawing on the expectancy theory of motivation (Vroom, 1964), Ng et al. (2019) applied the multiple loci of intelligence theory to voice behaviour. The authors suggested that individuals with high CQ are more likely to speak up, particularly when faced with culturally dissimilar voice targets than those with low CQ. The study further argued that individuals with high CQ are more inclined to express their opinions. Presbitero (2020) focused on the theory of cognitive load (Paas et al., 2016), and found that foreign language anxiety mediates the relationship between foreign language anxiety and individual task performance, while cultural intelligence mitigates the effects of foreign language anxiety in GVTs. Based on a different theoretical view of *social axiom theory* (Leung et al., 2007) Presbitero (2022) emphasised the significance of an individual's generalised beliefs when analysing cultures. In particular, the research proposed that a strong belief in social complexity, which refers to recognising cultural diversity and interconnections within societies, is associated with higher effectiveness in intercultural task performance. The study argued that cultural intelligence (CQ) components are interconnected with and influenced by an individual's belief in social complexity. In other words, individuals who have a deeper understanding and appreciation of the complexity of cultures are likely to exhibit higher levels of cultural intelligence and perform better in intercultural tasks. In a different vein, the study

conducted by Hu et al. (2019) explored the concept of trait activation, which refers to how individuals express their traits in response to relevant situational cues (Tett & Burnett, 2003). The research specifically focused on teams facing conflict, as conflict affects the availability of emotional and informational resources within the team (Chuang et al., 2004). The study highlighted that the number of external emotional and informational resources influences the activation of cultural intelligence in the employee innovation process within inter-organisational teams. The study's findings identified cultural intelligence as a factor that precedes employees' creative performance. However, the study also suggested that in situations where task conflict is high, the activation of cultural intelligence may be optional. High-task conflict situations already provide sufficient informational resources for employees to generate and propose creative ideas. In such circumstances, intense conflict within the team can compensate for the need to activate cultural intelligence for creative performance (Hu et al., 2019). On leadership in multicultural teams, the study by Groves and Feyerherm (2011) examined the relationship between cultural intelligence and leadership performance, aligning with the contextual nature of CQ as a leadership competency, as theorised by Alon and Higgins (2005). The findings indicated that high CQ allowed leaders to understand the dynamics of culturally diverse teams better and devise appropriate behavioural responses, mainly when team members hailed from different cultural backgrounds (Groves & Feyerherm, 2011). Overall, the literature uses different theories and concepts to hypothesise and examine the relationship between CQ and different outcomes.

A different theoretical view was conducted by Presbitero (2022)The study drew upon social axiom theory (Leung et al., 2007) which emphasizes the significance of an individual's generalized beliefs when analysing cultures. In particular, the research proposed that a strong belief in social complexity, which refers to the recognition of cultural diversity and interconnections within societies, is associated with higher effectiveness in intercultural task performance. The study argued that the components of cultural intelligence are interconnected with and influenced by an individual's belief in social complexity. In other words, individuals who have a deeper understanding and appreciation of the complexity of cultures are likely to exhibit higher levels of cultural intelligence and perform better in intercultural tasks. In a different vein, the study conducted by Hu et al. (2019) explored the concept of trait activation, which refers to how individuals express their traits in response to relevant situational cues (Tett & Burnett, 2003). The research specifically focused on teams facing conflict, as conflict affects the availability of emotional and informational resources within the team (Chuang et al., 2004). The study highlighted that the number of external emotional and informational resources influences the activation of cultural intelligence in the employee innovation process within inter-organizational teams. The findings of the study identified cultural intelligence as a factor that precedes employees' creative performance. However, the study also suggested that in situations where task conflict is high, the activation of cultural intelligence may not be necessary. This is because high-task conflict situations already provide sufficient informational resources for employees to generate and propose creative ideas. In such circumstances, the presence of intense conflict within the team can compensate for the need to activate cultural

intelligence for creative performance (Hu et al., 2019). On the subject of leadership in multicultural teams, the study by Groves and Feyerherm (2011) examined the relationship between cultural intelligence and leadership performance, aligning with the contextual nature of CQ as a leadership competency, as theorized by Alon and Higgins (2005). The findings indicated that high CQ allowed leaders to better understand the dynamics of culturally diverse teams and devise appropriate behavioural responses, especially when team members hailed from different cultural backgrounds (Groves & Feyerherm, 2011). Overall, the literature uses different theories and concepts to hypothesize and examine the relationship between CQ and different outcomes.

4.3.2. Individual attributes of cultural intelligence dimensions

As mentioned, the concept of cultural intelligence is rooted in various foundational theories that shed light on individuals' ability to adapt and thrive in culturally diverse environments and suggest that individuals and organisations can enhance their effectiveness in multicultural settings through the acquisition of cultural knowledge, mindfulness and behavioural skills (Earley & Ang, 2003). As Gardner (1993) emphasised, intelligence is not a singular, general ability but rather a collection of distinct abilities utilised in different contexts (Earley & Ang, 2003; Kelley & Michela, 1980). CQ construct incorporates two key aspects: the mental (metacognitive and cognitive CQ) and action-focused (motivational and behavioural CQ) (Bücker et al., 2016), and each dimension of it facilitates intercultural effectiveness in significantly different and meaningful ways (Rockstuhl & Van Dyne, 2018). The four factors can be viewed as independent because these underlying dimensions have distinct influences on outcomes of interest (Altinay et al., 2021; Schlägel & Sarstedt, 2016). The mental

aspects of CQ, namely metacognitive and cognitive CQ, are crucial for understanding cultural norms, values, beliefs and practices and essential for building strong connections with diverse cultures (Chew et al., 2021; Earley & Ang, 2003; Varela, 2019). Metacognitive CQ enables adaptive learning and flexible problem-solving, while cognitive CQ acts as psychological capital, aiding in navigating unforeseen situations and fostering positive social networks (Crowne, 2013; Paris & Winograd, 1990; Reichard et al., 2014; Yunlu & Clapp-Smith, 2014). High cognitive CQ helps individuals adjust their cultural mindset swiftly, minimising misunderstandings and facilitating adaptation in new environments (Lorenz et al., 2018; Ng & Lucianetti, 2016; Yang et al., 2022). Both metacognitive and cognitive CQ have been associated with cognitive flexibility (Schlaegel et al., 2021), effective cross-cultural communication, cultural judgment, decision-making, creativity, innovation, expatriate adjustment and knowledge sharing (Ang et al., 2003; Chen & Lin, 2013; Guðmundsdóttir, 2015). Rockstuhl and Van Dyne (2018) proposed that metacognitive and cognitive CQ have different effects than motivational and behavioural CQ, especially regarding intercultural judgment, decision-making, sociocultural adjustment, and task performance. Surprisingly, their study revealed that cognitive CQ had a negative relationship with task performance, citizenship performance and leadership performance despite the positive initial correlations (Rockstuhl & Van Dyne, 2018).

Previous research on the mental aspect of CQ (metacognitive and cognitive CQ) draws upon social cognitive theory (Bandura, 2002) and other cognitive perspectives. Cultural knowledge enriches an individual's cognitive processes, leading to higher cognitive complexity, which is invaluable when interacting with people from diverse cultural

backgrounds. Studies have demonstrated that metacognition and cognitive CQ contribute to controlling and regulating one's thinking and learning capabilities, which are essential for learning foreign languages and excelling in various tasks (Presbitero, 2020). Expats with high metacognitive and cognitive CQ can overcome pre-existing culturally bound schemata, enabling them to actively learn and adapt to the cultural nuances of their new environment, free from the limitations imposed by their native cultural background. These capabilities also positively impact the self-creativity of nascent entrepreneurs since high cognitive capabilities are necessary for generating creative ideas and solutions (Altinay et al., 2021). Taking a resource-based view perspective (Barney, 1991) three of the four CQ dimensions (metacognitive, cognitive and motivational) are associated with human capital and valuable resources, strengthening entrepreneurial orientation and international performance (Sahin & Gurbuz, 2020). Moreover, middle managers with strong metacognitive CQ positively impact knowledge sharing, which enhances firms' innovative performance (Berraies, 2020). Additionally, the dynamic nature of self-efficacy means that cognitive CQ reinforces immigrants' willingness to learn, explore and gather information about new business opportunities in their host country (Yang et al., 2022).

Furthermore, metacognitive CQ acts as a boundary condition, influencing the impact of Leader-Member Exchange (LMX) on non-work outcomes, as stressful situations prompt individuals to rely on their cultural capabilities to protect their valued resources, such as subjective well-being (Le et al., 2021). From an institutional perspective, possessing these capabilities improves the quality of relationships with business partners, ultimately contributing to the institution's overall success (Sharma, 2019).

Considering a model of cross-cultural adjustment (Black et al., 1991), the study by Akhal and Liu (2019) found that the three dimensions of CQ (metacognitive, cognitive and motivational CQ) were positively associated with general adjustment and work adjustment while only behavioural CQ showed a negative association. In contrast, Shu et al. (2017) found that while their results aligned with previous studies, behavioural CQ had a negative association with general adjustment, and metacognitive CQ showed a negative association with interaction adjustment and school-related adjustments. Regarding job satisfaction, cognitive and metacognitive CQ were negatively related, while the two action-focused aspects of CQ (motivational and behavioural CQ) showed positive effects (Diao & Park, 2012). Their study also revealed that only motivational CQ had a positive association with career success and cross-cultural adjustment dimensions. Similarly, Rockstuhl and Van Dyne (2018), suggested that metacognitive and cognitive CQ had different effects than motivational and behavioural CQ on intercultural judgment, decision-making, sociocultural adjustment and task performance. Intriguingly, their study indicated that cognitive CQ had a negative relationship with task performance, citizenship performance and leadership performance despite the positive initial correlations (Rockstuhl & Van Dyne, 2018).

On the other hand, research that delves into the (action-focused), namely motivational and behavioural aspects of CQ, is rooted in motivation theories (Kanfer, 1990), self-efficacy (Bandura et al., 1987; Bandura & Walters, 1977) and intrinsic motivation (Deci et al., 1985). Positive experiences of adjustment in social settings act as vital sources of reinforcement (Bandura & Walters, 1977), fostering a genuine

interest in learning about foreign cultures (motivational CQ) and translating that knowledge into behavioural expressions of cultural practices (behavioural CQ). Cultural-psychological resources, such as hope, optimism, self-efficacy and resilience, positively impact motivational cultural intelligence, meaning that individuals possessing higher cultural-psychological capital are more likely to display greater motivational CQ, which, in turn, enhances their metacognitive awareness (Yunlu & Clapp-Smith, 2014). People with elevated motivational CQ, driven by their self-efficacy beliefs, exhibit higher openness and persistence in continuously adapting to a new culture, whether in professional or personal contexts. They demonstrate strong career intentions (Camargo et al., 2020) and willingly accept assignments in different countries, showing commitment to such programmes. Additionally, motivational states and stress cognitions influence expatriates' work adjustment patterns over time. Higher motivational states drive expatriates to concentrate on meeting their assignment goals and responsibilities immediately, which leads to enhanced initial work adjustment (Firth et al., 2014) and social adjustment (Chao et al., 2017).

When integrating research on CQ and diversity climate, Chen et al. (2012) found that firm motivational CQ and firm diversity climate are two contextual variables that can activate and amplify the effect of individual motivational CQ on employee cross-cultural effectiveness. The boundaryless mindset is partly associated with expatriate task performance and contextual performance through proactive resource acquisition tactics, with these tactics being more strongly related to expatriate task performance and contextual performance when the individual possesses a high level of behavioural cultural intelligence. Various studies provide evidence that the behavioural dimension

of cultural intelligence, especially cultural skills, consistently emerges as a robust predictor of team effectiveness (Khani et al., 2011). Cultural skills, falling within the behavioural dimension of cultural intelligence, are the most observable aspect, making assessment and evaluation easier (Thomas et al., 2015). Behavioural flexibility, encompassing adaptability in verbal and nonverbal behaviours, indicates an individual's capability to adjust to diverse cultural contexts (Ang & Van Dyne, 2015; Ang et al., 2007). Thus, higher levels of behavioural cultural intelligence can better facilitate the positive effect of proactive resource acquisition tactics on expatriate task performance and contextual performance. Behavioural cultural intelligence is a crucial social competency for successful self-employment (Baluku et al., 2019). Various studies indicate that behavioural CQ, particularly cultural skills, plays a pivotal role in addressing communication, collaboration and trust challenges, thereby enhancing overall team performance (Khani et al., 2011; Thomas et al., 2015). The research conducted by Dibble et al. (2019) reveals that metacognitive and behavioural CQ indirectly influence psychological safety through team members' exhibited behaviours (Dibble et al., 2019). Mangla (2021) focused on cognitive adjustment and self-efficacy arguments (Bandura, 1986; Bandura & Walters, 1977), and revealed that cultivating motivational and behavioural CQ among employees, particularly those engaged in technology-mediated interactions, can address trust and role clarity, which are crucial elements for the success of GVTs. In contrast to previous research, other dimensions of CQ were not reliable predictors of virtual team effectiveness in Mangla's (2021) study. However, there are contrasting findings, as certain studies suggest negative associations between behavioural CQ and specific adjustment measures (Akhal & Liu, 2019; Shu et

al., 2017). Jyoti and Kour (2015) found that behavioural CQ did not significantly correlate with general adjustment and interaction adjustment, whereas the other three dimensions did show significant associations. Similarly, Rockstuhl and Van Dyne (2018) discovered that behavioural CQ was not significantly related to intercultural adaptation and had no indirect effect on intercultural task performance (Rockstuhl & Van Dyne, 2018). Therefore, thoroughly examining the diverse facets of various CQ dimensions is of utmost significance.

4.4. Building the conceptual framework: CQ and diversity in multicultural team dynamics

Team diversity has garnered significant attention in research (Meyer, 2017). It refers to dissimilarities among team members concerning any attribute that could give rise to the perception that one individual differs from another (Van Knippenberg et al., 2004). Due to the complex nature of diversity (Harrison & Klein, 2007), previous research has assumed that all sources of differences affect team outcomes in the same manner (Minbaeva et al., 2021; Stahl & Maznevski, 2021; Taras et al., 2019) or has adopted a negative perspective, focusing on the potential negative consequences of cultural diversity (Stahl & Tung, 2015). A review of 1141 publications conducted by (Stahl & Tung, 2015) on this topic revealed that 95% of them theorised and tested the adverse effects of diversity. Hence, to overcome the simplification of the effects of diversity on team outcomes, it is crucial to select appropriate underlying theories for different types of diversity fields (Yari et al., Chapter 3)

There is a reciprocal relationship between diversity and cultural intelligence. On the one hand, diversity enhances cultural intelligence by exposing team members to various perspectives, values and norms from different cultural backgrounds. This exposure

allows individuals to develop the capabilities to navigate effectively in culturally diverse situations, thereby increasing their cultural intelligence (Ang et al., 2007). On the other hand, cultural intelligence is vital for diverse teams to function successfully. Research has shown that team members with stronger cultural identities might initially struggle to understand or work effectively with those from different cultural backgrounds, but cultural intelligence bridges this gap (Pidduck et al., 2022).

According to the theory of multiple intelligences, everyone possesses various capacities, including inherent and stable abilities and achievements that might vary depending on the situation. Gardner (1993) argued that a person's learning preferences and potential closely relate to these capacities and how adeptly they utilise them. In line with this, Gardner and Moran (2006) highlighted that organisations and teams thrive when composed of individuals with diverse intelligences. Such diversity enhances the collective capacity, offering a range of skills that would not be present in a homogenous group. Both Sternberg (1984) and Gardner (1983) agreed that individuals possess various levels of abilities and diverse mental skills. In essence, people differ from one another in their capacity to understand complex ideas, adapt to their environment effectively, learn from experiences, engage in reasoning and overcome challenges through thoughtful consideration Given this, it becomes evident that individuals possess various capacities and diverse mental skills. Some people may excel in specific areas of intelligence, while others may have strengths in different domains.

Based on the evidence, no prior literature explicitly focuses on the diversity of cultural intelligence in teams. However, existing diversity measures capture some aspects of individual CQ dimensions, such as cognitive diversity. Team cognitive diversity reflects

employees' perceptions of the extent to which team members differ in attitudes, values and norms (Kilduff et al., 2000). Such diversity creates multiple perspectives and cognitive resources crucial for knowledge-based tasks (Cui et al., 2022; Martins et al., 2013). Research suggests that cognitive diversity plays a crucial role in enhancing team effectiveness and enables teams to consider problems from various perspectives, generating a significant number of well-informed solutions (Mitchell et al., 2019; Van Knippenberg & Schippers, 2007). Additionally, exposure to diverse perspectives enhances the understanding of task-relevant issues and facilitates problem-solving (Jehn et al., 1999). When group members hold distinct cognitive styles, perspectives and problem-solving strategies, their collective efforts stimulate each other's cognitive processes and improve individual and group performance (Fjaellingsdal et al., 2021; Mitchell et al., 2019). Recognising the role of metacognitive differences is crucial when examining team dynamics and their implications. Metacognition, referring to individuals' monitoring of their own cognitive processes (Flavell, 1979), emerges as a pivotal dimension in team diversity. Studies consistently highlight a strong correlation between learning outcomes and learners' metacognitions, underscoring the relevance of metacognitive processes for effective group coordination and collaborative learning (Järvelä et al., 2015; Zheng et al., 2023). Notably, high-performance groups have been observed to exhibit more effective metacognitive transition sequences compared to low-performance groups (Wu & Ang, 2011; Zheng et al., 2023). Hence, building on social cognitive theory's insights on observation and imitation (Bandura & Walters, 1977), it becomes evident that understanding metacognitive variations is vital.

Emotion, defined as physiological and behavioural responses that precede subjective experiences (Friedman et al., 2010), and motivation, encompassing the initiation, choice and sustenance of goal-directed behaviours (Weiner, 1992), play significant roles in individual and team performance. The congruence between individuals' motives and the motivational characteristics of the situation plays a crucial role in shaping behaviour and performance (Heckhausen et al., 1989; Rheinberg, 2001). Particularly within cultural diversity, individuals' intrinsic motivation and self-confidence in their cross-cultural effectiveness are paramount (Ang et al., 2007; Bandura & Walters, 1977).

Moreover, while previous research on teams has predominantly focused on cognitive issues such as shared mental models, it is essential to consider behavioural issues or differences directly or indirectly related to task performance. However, the literature on diversity has yet to examine the influence of diversity on performance from a behavioural perspective. Individuals in teams differ in their motivations and behaviours, so recognising and appreciating the diverse motivational and behavioural differences within teams becomes essential for optimising team performance.

Moving on to the role of diversity in team outcomes, one should first be aware of the different types of diversity within a team. In this regard, (Yari et al., Chapter 3) identified various sources of diversity within teams, including demographic, hidden, and functional attributes. Functional diversity refers explicitly to the extent to which team members differ in their functional background (Bear et al., 2010; Bell et al., 2011; Jackson et al., 2003; Jackson et al., 1995; Miller et al., 1998; Olson et al., 2007; Williams & O'reilly Iii, 1998) suggesting team members' functional backgrounds, including their CQ, can contribute to the diversity of skill sets within teams (Bear et al.,

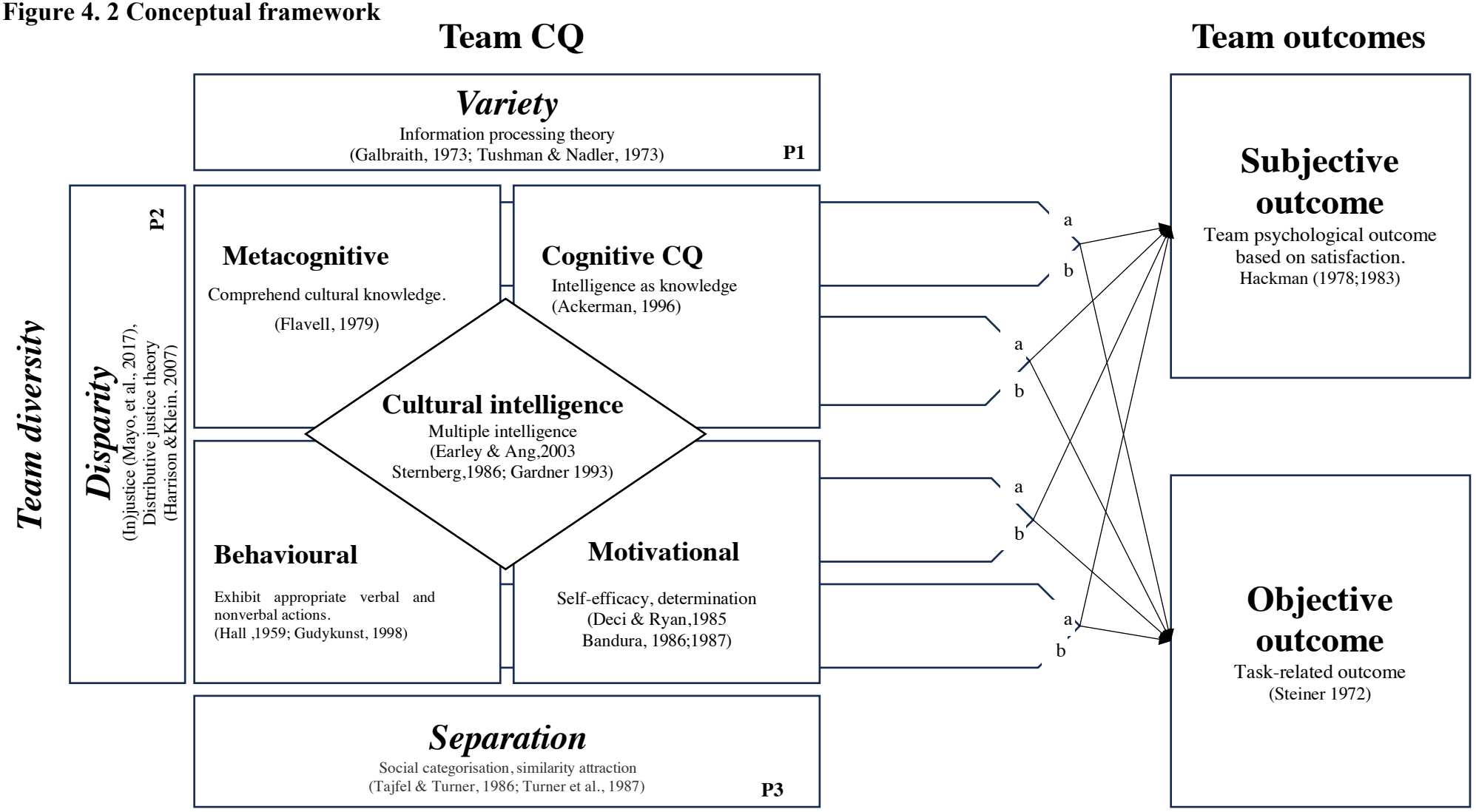
2010; Liang et al., 2012; Miller et al., 1998). Given this and the arguments mentioned above, in the upcoming chapters, this study views cultural intelligence (CQ) as a functional attribute that each team member brings along.

As mentioned earlier, Gardner's (1993) theory of multiple intelligence proposes that intelligence is not just one aspect but consists of various distinct types, such as verbal-linguistic, logical-mathematical, visual-spatial, interpersonal, and intrapersonal. In a team setting, members bring their intelligence in different proportions, with some having strengths in areas where others might not (Davaei et al., 2022; Goodnough, 2001). This view embraces the understanding that individuals from different cultural backgrounds bring unique skills and perspectives to the group and that these variations can act as a diversity measure.

In team diversity literature, a substantial amount of research relies on social categorisation and social identity theory (Tajfel & Turner, 1986; Turner et al., 1987), which assumes that individuals use easily observable primitive generic social categories and define themselves against others (Mayo et al., 2017). According to this theory, the mere cognition of belonging to a psychological group results in in-group favouritism and out-group discrimination (Tajfel & Turner, 1986; Turner et al., 1987). These theories are in conjunction with similarity attraction, which suggests that team dissimilarities limit behavioural and social integration, leading to conflicts and reduced well-being (Byrne, 1971; Harrison et al., 2002; Usher & Barak, 2020; Williams & O'reilly Iii, 1998). Another stream of literature that focuses on the bright side of diversity in teams relies on the information processing theory (Simon, 1978), which emphasises that a diverse configuration of individuals provides the group with a variety

of skills, perspectives and knowledge that can make it more productive (Kilduff et al., 2000; Mayo et al., 2017; Van Knippenberg & Schippers, 2007). A different and rarely used perspective of diversity builds on the distributive justice theory (Harrison & Klein, 2007), or (in)justice view (Greenberg, 1987; Mayo et al., 2017), which builds upon the idea that when one team member significantly outranks all other members in terms of socially valued assets or desired resources, it results in comparisons among team members and leads to internal competition and suppression of voice (Harrison & Klein, 2007) and ultimately reduced team performance. However, the use of injustice theory is minimal. The following section will elaborate upon these theories to explain the conceptual framework (see Figure 4. 2) and propositions. Please note that the citations under the model (CQ) in Figure 4.2 refer to the foundational theories that underpin the development of Cultural Intelligence (CQ), its four facets and different diversity types. These citations are not direct discussions of 'Cultural Intelligence' itself but serve as the theoretical basis for comprehending the concept and its various components.

Figure 4. 2 Conceptual framework



Note: the citations under the model (CQ) pertain to the underlying theories utilized in the development of CQ and its four facets.

4.4.1. The Information Processing Perspective View

Literature that focuses on the positive effects of diversity builds upon information processing theory to postulate that the larger the pool of information and the greater the variety of available perspectives (Simon, 1978), which means that diverse team members can tap into more diverse sources of knowledge and information (Mayo et al., 2017), resulting in enhanced group problem-solving, creativity, innovation (Qi et al., 2022) and adaptability. Moreover, individuals with higher motivational cultural intelligence exhibited stronger relational skills, reduced categorisation and improved social integration (Richter et al., 2021). This perspective has shown that working in culturally diverse teams has fostered the development of team-level CQ over time (Iskhakova & Ott, 2020).

Moreover, as proposed by Gibson and Earley (2007), an integrative model of information processing in teams can be seamlessly integrated with the four dimensions of cultural intelligence to enhance our understanding of how teams process information in culturally diverse contexts. The four stages of information processing in teams, namely accumulation, interaction, examination and accommodation, can be influenced by CQ. During the accumulation stage, where groups gather and store information, cultural intelligence plays a vital role in how teams perceive, filter and label the information they encounter from diverse cultural sources. A culturally intelligent team will be more adept at recognising and appreciating the nuances of different cultural perspectives, allowing them to effectively process a broader range of information and knowledge (Mayo et al., 2017). Cultural intelligence facilitates smooth and effective intercultural communication in the interaction stage, where information exchange and

communication occur. Culturally intelligent teams can create an environment of mutual understanding and respect, reducing miscommunications and misunderstandings that might hinder the information exchange process. As teams examine the information gathered, cultural intelligence enhances their ability to evaluate the cultural relevance and applicability of the information critically. A team with high CQ can assess how different cultural factors may influence the validity and reliability of the information, leading to more informed decision-making (Charoensukmongkol & Pandey, 2020; Zhou & Charoensukmongkol, 2022). Finally, during the accommodation stage, teams integrate the information into their existing knowledge base. Cultural intelligence helps teams adapt and assimilate diverse perspectives, ideas and information, enriching their collective knowledge and fostering a more inclusive and culturally sensitive approach to problem-solving and decision-making (Tushman & Nadler, 1978), and ultimately improving performance (Horwitz & Horwitz, 2007; Jimenez et al., 2017; Stahl & Tung, 2015).

However, as mentioned, in multicultural teams, there are a variety of these perspectives. *Variety* refers to the diversity of knowledge and experience among group members, encompassing differences in kind, source or category. It signifies a balanced distribution where members span various categories within a specific variable (Curşeu et al., 2007; Harrison & Klein, 2007). A maximum variety of information is present when each member has unique expertise (in this case, different levels of CQ dimensions) (Harrison & Klein, 2007, p. 1201). Teams with diverse CQ profiles may contribute to a broader range of perspectives, knowledge and skills, fostering creativity, problem-solving abilities and innovative thinking (Galbraith, 1973; Tushman & Nadler,

1978). Group variety contributes to a broader range of knowledge within the group, leading to a more complex cognitive map. However, the variety of knowledge group members possess must be relevant to the task at hand (Bowers et al., 2000; Schruijer & Vansina, 1997). In other words, when diversity aligns with the task requirements, the advantages of diverse knowledge (skills) within a group are observed (Curşeu et al., 2007). Individuals with higher CQ are more likely to share their expertise with others, thus reducing the semantic gap among team members and facilitating effective outcomes. Based on the above, incorporating information processing theory, multiple intelligence theory and the guideline provided by Harrison and Klein (2007, p. 1201) the study assumes assume that within-member CQ variety can benefit team performance.:

P1. Variety in team members' CQ dimensions (metacognitive, cognitive, motivational, behavioural CQ) is associated with (a) subjective outcome and (b) objective outcome.

4.4.2. The (In)justice view

Researchers, including the findings from Yari et al. (Chapter 3), have recently examined the intricate issue of diversity by distinguishing between its various types. Among these types is disparity. This study integrates the team Cultural Intelligence disparity concept based on multiple intelligence theory in conjunction with the (in)justice theory. Traditionally, the (in)justice theory elucidates individuals' perceptions and reactions to injustice related to social status, power, and prestige. According to this view, an increase in heterogeneity regarding power, status, and prestige within a team can be detrimental to both the team and its members due to heightened social comparisons among team members and increased internal competition. The Social comparison theory proposed

by Festinger in (1954) suggests that people's satisfaction and self-evaluation are influenced by how they compare themselves to others, sometimes even more so than by their objective position (Kim et al., 2015). As CQ is considered a mental ability, it is reasonable to assume that disparities in CQ among team members could lead to competition, resentment, deviant behaviour, and withdrawal, ultimately reducing team member satisfaction and individual efficacy (Harrison & Klein, 2007).

In the context of CQ, the (in)justice theory posits that individuals with lower CQ might perceive themselves as being mistreated. For example, a team may have one member with a very high level of CQ while the others have a lower level of CQ. This difference could lead to feelings of injustice among the team members with lower CQ, as they might feel excluded or marginalized, which can lead to resentment, anger, and frustration and harm team performance.

Although research explicitly focusing on disparities is limited, a few studies have presented mixed results concerning "ability" disparity and team performance. Some studies have found a positive relationship between ability disparity and team performance (Hamilton et al., 2003), while others argue that a significant variance of ability among team members can decrease work motivation and, consequently, harm team performance (e.g. (Curşeu et al., 2007; Tu et al., 2020)). Disparity creates asymmetry, and perceptions of 'non-legitimate' asymmetry may lead to feelings of injustice, distracting members from essential tasks and impairing team cohesion and performance (Greenberg, 1987).

Moreover, distributive justice, in an organizational context, is linked to cognitive, affective, and behavioural reactions to specific outcomes. In this context, CQ disparity peaks when one team member possesses a high level of CQ.

In contrast, others have lower scores, which is minimal when CQ is evenly distributed among team members (Harrison & Klein, 2007, p. 1201). The team member holding the highest power position can influence decision-making, information sharing, and access to valuable resources, potentially leading to suboptimal outcomes (Bloom, 1999; Harrison & Klein, 2007; Homans, 1961; Pfeffer & Langton, 1993; Yari et al., Chapter 3). However, as indicated by the findings of Yari et al. (Chapter 3), despite their prediction of a negative association with team outcomes, they suggest that specific attributes' disparity may positively impact team outcomes when considered alongside other diversity measures. They found that when one team member possesses high cross-cultural skills, it can mitigate collaboration barriers within the team (Yari et al., Chapter 3). Based on these insights, this study proposes that:

P2. Disparity in team members' CQ dimensions (metacognitive, cognitive, motivational, behavioural CQ) is associated with (a) subjective outcome and (b) objective outcome.

4.4.3. The social categorization view

In team dynamics, researchers have widely focused on social categorisation theory and self-categorisation theory (Tajfel & Turner, 1986; Turner et al., 1987), which proposes that individuals categorise themselves and others into social groups based on shared characteristics (Pidduck et al., 2022). This membership and categorisation can significantly impact behaviours and attitudes within teams (Erez et al., 2013). Another

well-known theory widely used is the similarity attraction theory (Byrne, 1971), which proposes that dissimilarities in teams limit behavioural and social integration, leading to conflicts and reduced well-being (Byrne, 1971; Harrison et al., 2002; Usher & Barak, 2020; Williams & O'reilly Iii, 1998). In this regard, Ali et al. (2019) suggest that employees are more likely to exchange knowledge with individuals from the same culture due to cultural similarities while sharing less knowledge with those from different cultures. Individuals tend to differentiate others based on social categories, including cultural or racial categories. Presbitero (2020) highlighted a significant negative relationship between a GVT member's perceived cultural dissimilarity and individual task performance. In line with this, Ayoko et al. (2022)
discovered that conflict is negatively linked to sociocultural adjustment, suggesting that discrimination and categorisation based on cultural differences can lead to hostility.
However, cultural intelligence drawn upon intelligence theories (Sternberg, 1986) enhances social interactions, increases similarities and promotes knowledge sharing, improving individual and team creativity among expatriate employees (Ali et al., 2019; Bogilovic et al., 2017). Moreover, drawing upon the social learning theory (Bandura & Walters, 1977), cultural intelligence as a capability is shown to influence and interact with perceived cultural dissimilarity and individual task performance (Ali et al., 2019). This mental flexibility and adaptability work as a countermeasure against the negative impact of social categorisation, leading to an increase in interpersonal trust (Kistyanto et al., 2022) by allowing individuals to gain a deeper and more profound understanding of partners from diverse cultural backgrounds (Afsar et al., 2015). Especially cognitive

CQ is crucial in enhancing sociocultural adaptation by increasing individuals' understanding of local values and norms (Ayoko et al., 2022).

The research mentioned above has examined the role of cultural intelligence either as a moderator or mediator between variables or its general impact in diverse team contexts. Based on the current state of knowledge, researchers have not directly associated the categorisation theory with the concept of cultural intelligence. Considering that CQ can be seen as a valuable skill acquired by individual team members (Yari et al., Chapter 3), variations in CQ dimensions among team members can introduce a unique form of diversity. In line with the categorisation theory, merely acknowledging one's group membership can trigger discrimination and biases and foster socio-emotional and behavioural separation among team members. Separation is when, within units, members differ from one another in their position along a single continuous attribute S (Harrison & Klein, 2007; Williams & O'reilly Iii, 1998). The stream of research that examines differences derived from differences in category membership based on similarities of team members shows that this kind of diversity leads to limited behavioural and social integration, conflicts and well-being (Byrne, 1971; Harrison et al., 2002; Usher & Barak, 2020; Williams & O'reilly Iii, 1998).

Moreover, social categorisation theory emphasises the role of group identity and relative comparisons in shaping the effects of diversity on teams (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Williams & O'reilly Iii, 1998). This perspective suggests cognitive diversity can hinder information elaboration due to biases from comparing individuals with diverse cognitive backgrounds. People are more likely to categorise themselves and others based on their differences in cognitive

abilities, such as problem-solving skills or creativity, which can further lead to feelings of inferiority or superiority and impact team performance negatively. However, according to Qi et al. (2022), these biases may only impact the strength of the positive effects of cognitive diversity, not wholly reverse them. The presence of categorical bias affects how team members interact, potentially hindering thorough information elaboration for specific individuals, though only sometimes for all team members. Bias often leads team members to share information more frequently with those in the same category than those from different categories (Qi et al., 2022; Turner et al., 1987). Categorisation occurs because team members initially categorise their peers into an "outer" and "inner" group and tend to like and trust in-group members more than out-group members (Richter et al., 2021; Turner et al., 1987). Interestingly, suppose the in-group category represents the entire team. In that case, the team can still harness the positive effects of cognitive diversity, regardless of whether in-group bias is present or absent. A similar finding was shown by (Yari et al., Chapter 3), which indicated that even when considering categorisation theory and similarity attraction theory, a separation based on specific cultural values can surprisingly lead to positive outcomes for teams. Social categorisation and similarity attraction perspectives are generally associated with adverse team outcomes. However, it is essential to note that the division based on specific attributes has shown positive relationships with team outcomes in some instances. Given this, the study proposes that:

P3. Separation along team members' CQ dimensions (metacognitive, cognitive, motivational, behavioural CQ) is associated with (a) subjective outcome and (b) objective outcome.

4.4.4. The role of team outcomes

The mechanisms underlying cultural intelligence and diversity are highly complex, as different types of diversity can impact team effectiveness in varying ways (Taras et al., 2019). Factors such as the type of tasks, demands, resources and processes influence team productivity (Richter et al., 2021; Steiner, 1966). Team effectiveness in literature has been viewed either based on objective measures, the degree of real productivity (Steiner, 1972) or a multidimensional construct, including member satisfaction (Hackman, 1978; Hackman, 1983), which is more related to the extent to which team members are content with their participation in teams. In alignment with this, Taras et al. (2019) distinguished between task-related and psychological outcomes. The authors argued that diversity tends to have a predominantly negative effect on psychological outcomes, which is less task-related.

In contrast, it mostly has a positive effect on high task-related outcomes. The effects of diversity on these types of outcomes are related to the attribute of the diversity in question. Researchers like Pelled (1996) and Simons et al. (1999) have distinguished diversity attributes based on their relation to work group performance, classifying them as either high job-related (task-related) or less job-related (Chiocchio & Essiembre, 2009). Job-relatedness refers to how well an attribute captures experiences, skills or perspectives relevant to cognitive tasks. It is crucial in determining whether a specific type of diversity enhances task-related knowledge, skills and abilities that lead to more effective team performance (Simons et al., 1999). Diversity attributes such as functional and educational background, experiences and perspectives relevant to tasks commonly performed by work teams have a more substantial impact on task-relevant team

processes and performance (Pelled, 1996; Simons et al., 1999). Therefore, various cultural intelligence diversity types might have distinct impacts on different outcomes. This study's propositions build on subjective and objective outcomes, where the objective outcome corresponds to a real business challenge, and the subjective outcome involves team members' psychological aspects of performance, satisfaction and enjoyment (Taras et al., 2019).

The assumption is that there is an association between these two outcomes when team members encounter different types of diversity. Given this, this study proposes that:

P4. The interplay of diverse cultural intelligence (CQ) configurations within teams is associated with the congruence between teams' subjective and objective outcomes.

In the next chapter, the study presents an empirical illustration of CQ configurations. The illustration builds on a GVT perspective; therefore, the study starts with a brief view of GVTs, followed by the methods applied and results.

4.5. An illustration of unveiling the significance of CQ configurations (Part 2)

4.5.1. Overview of global virtual teams

Virtual teams are defined as groups of individuals who collaborate closely using information and communication technologies (ICTs), even when they are geographically dispersed and separated by time (Bhagat et al., 2011; Dulebohn & Hoch, 2017; Martins et al., 2004; Powell et al., 2004; Velez-Calle et al., 2020). Their main objective is accomplishing one or more organisational tasks (Powell et al., 2004). The study of global virtual teams (GVTs) has encompassed diverse topics, leading to a substantial body of literature. For instance, research has explored various factors that

influence GVTs effectiveness (Salas et al., 2007; Sridhar et al., 2007), such as team processes (Marks et al., 2001), knowledge transfer (Griffith et al., 2003; Hong & Vai, 2008; Malhotra et al., 2007; Merali & Davies, 2001; Zakaria et al., 2004), team dynamics (Lippert & Dulewicz, 2018; Maznevski & Chudoba, 2000; Tavoletti et al., 2019), social integration (Richter et al., 2021), communication and outcomes (Glikson & Erez, 2020; Zakaria, 2017), learning in cross-functional virtual teams (Magnier-Watanabe et al., 2017), socialisation (Ahuja & Galvin, 2003), and the role of GVT members' characteristics when they face external adversity such as pandemics (Schlaegel et al., 2023).

Due to their virtual nature, GVTs encounter unique obstacles resulting from their geographically dispersed work environment and face common challenges observed in traditional co-located teams. These challenges encompass a wide range of factors, including individual member characteristics, contextual influences, team-level dynamics and emotional responses (Chidambaram & Tung, 2005; Edward, 2015; Flammia et al., 2010; Lurey & Raisinghani, 2001; Mathieu et al., 2008; Powell et al., 2004). Furthermore, the impact of diversity on GVTs is particularly significant, influencing team member perceptions, inter-member trust and knowledge sharing within the team (Jimenez et al., 2017; Killingsworth et al., 2016; Reiche et al., 2017; Stahl & Maznevski, 2021).

The literature on diversity in GVTs mirrors the findings in traditional teams, with mixed or conflicting results. Some studies suggest that team diversity positively impacts performance, creativity, innovation and problem-solving abilities (Bouncken et al., 2016; Distefano & Maznevski, 2000; Earley & Mosakowski, 2000; Gibson & Gibbs,

2006; Lisak et al., 2016; Ng & Tung, 1998; Williams & O'reilly Iii, 1998). On the other hand, other research emphasises the significance of constructive conflict and the integration of ideas and knowledge among team members (Jimenez et al., 2017; Paul et al., 2004; Van Knippenberg et al., 2004). Despite the extensive research on GVTs, the link between GVTs and team performance still needs to be conclusive (Richter et al., 2021). Therefore, it becomes crucial to understand the mechanisms and reasons behind why some GVTs show successful performance (May & Carter, 2001) while others face challenges and fail (Ferrazzi, 2014). In this paper, cultural intelligence is considered a functional attribute, and differences in dimensions of CQ can impact different outcomes in the GVT setting. We aim to examine three diversity measures (variety, disparity and separation) in CQ dimensions (metacognitive, cognitive, motivational and behavioural CQ) on subjective and objective outcomes. Based on the conceptual framework and propositions in Chapter 4 (Part 1), detailed hypotheses are developed and presented in Table 4. 1.

Table 4. 1 Hypothesis overview

Diversity type	Definition	Theory	Hypothesis
Based on proposition 1.			
Variety	Composition of differences in kind, source, or category of relevant knowledge or experience among team members, e.g. different backgrounds, experiences (V)	Information processing (Simon, 1978)	Variety in GVT members metacognitive CQ is associated with (a) subjective and (b) objective outcomes Variety in GVT cognitive CQ is associated with (a) subjective and (b) objective outcomes Variety in GVT members motivational CQ is associated with (a) subjective and (b) objective outcomes Variety in GVT members behavioural CQ is associated with (a) subjective and (b) objective outcomes
Based on proposition 2.			
Disparity	Composition of differences in the proportion of socially valued assets/ resources held among team members; e.g. different skills, power, status (D)	(In)justice theory (Greenberg, 1987)	Disparity in GVT members metacognitive CQ is associated with (a) subjective and (b) objective outcomes Disparity in GVT members cognitive CQ is associated with (a) subjective and (b) objective outcomes Disparity in GVT members motivational CQ is associated with (a) subjective and (b) objective outcomes Disparity in GVT members behavioural CQ is associated with (a) subjective and (b) objective outcomes
Based on proposition 3.			
Separation	Composition of differences in position or opinion among team members, e.g. different values, beliefs or attitudes (S)	Social categorisation (Tajfel & Turner, 1986; Turner et al., 1987)	Separation along GVT members metacognitive CQ is associated with (a) subjective and (b) objective outcomes Separation along GVT members cognitive CQ is associated with (a) subjective and (b) objective outcomes Separation along GVT members motivational CQ is associated with (a) subjective and (b) objective outcomes Separation along GVT members behavioural CQ is associated with (a) subjective and (b) objective outcomes

4.5.2. Sample and data

This study draws upon data from the X-Culture project. This extensive international business competition involves students collaborating in global virtual teams to solve real-world business cases provided by partnering companies. The data collection occurred during the Fall Semester of 2018, spanning two months. Initially, the dataset comprised 3,531 cases of individual-level data and 822 GVTs. However, to focus specifically on team-level data, teams with fewer than three members and those with excessive missing or incomplete responses were excluded.

Consequently, the final sample consisted of 1,170 students primarily enrolled in MBA and EMBA programs, forming 345 GVTs. Each team comprised 3-5 members on average, with a gender distribution of 56.6% female and 43.4% male. Participants possessed an average work experience of over three years, with 31% currently employed and 5% reporting ownership or managerial positions. Notably, the teams exhibited a high level of diversity, representing 87 different countries and averaging 3.4 distinct nationalities per team. Please refer to (Taras et al., 2013)for further details or visit www.X-Culture.org.

A combination of statistical tools and software applications was employed to effectively manage and analyse the extensive dataset. For the preliminary calculation and manipulation of diversity variables, including variety, disparity, and separation, we utilised the capabilities of IBM SPSS and Microsoft Excel. These tools facilitated meticulous data processing, ensuring accuracy and consistency in the initial stages of our analysis. Various criteria, such as the Intraclass Correlation Coefficient (ICC) 1 and ICC 2, were examined in SPSS to evaluate the reliability and validity of our constructs.

Additionally, Principal Component Analysis (PCA) calculations, aimed at addressing collinearity between diversity measures disparity and separation, were conducted within the SPSS environment.

Subsequently, the core analysis, which involved the application of Partial Least Squares Structural Equation Modelling (PLS-SEM), was conducted using specialised software, specifically PLS-SEM 4. PLS-SEM 4, a variance-based technique, facilitated the construction of path models with latent variables and the estimation of their intricate relationships, a critical aspect of our research design. This software's robust capabilities, coupled with its ability to handle latent variables and generate measurement and structural models, made it an ideal choice for examining causal-predictive relationships within our study. By strategically employing these software tools at various stages of our analysis, we ensured the rigour and precision required to comprehensively explore the mechanisms of diversity within global virtual teams. The analysis technique and criteria for using PLS-SEM will be elaborated further in the following sections (Section 4.6.4).

4.6 Measures

4.6.1 Dependent variables (objective outcome)

The X-Culture project assigns teams a client company and an international business challenge to be solved each semester. Based on the solution, teams prepare detailed reports (task outcome), which are evaluated by external experts, typically 4-6 international business professors or company representatives, on eight dimensions: economic feasibility and novelty of the idea, analysis quality and depth, formatting and visual appeal, and overall quality. More specifically, the evaluators rated the creativity

and overall quality of the report. Evaluators rate each dimension based on a standard rubric, using a scale from 1=very poor to 7=excellent. The evaluators reached a consensus on a final grade for the team. The internal reliability of the scale was 0.850, and the inter-rater reliability was between 0.720 and 0.910, depending on the evaluation dimension.

4.6.2 Dependent variables (subjective outcome)

The subjective outcome in this paper is based on an average of the team members' satisfaction with the process and overall satisfaction with the quality of the report. For this purpose, students were asked to rate, on a scale of 1-5, how satisfied they were with various aspects of the team's work, such as " the business idea put forth by your group". The intraclass correlation coefficient (ICC) was used to evaluate the reliability of the subjective outcome construct. ICC (1) is used by small-group researchers and is the ratio of between-group variance to the total variance of the item or variables. The ICC (1) of the subjective outcome construct using the five items was 0.635 and had a significant F-value (p=.000). ICC (2) indexes the reliability of cluster-mean differences and provides a reliable estimate of the group effect when between-group variance is small. The ICC (2) of psychological outcome was 0.906 and had a significant F-value (p=.000).

4.6.3 Independent variables (cultural intelligence)

In this study, the cultural intelligence dimensions are the independent variables assessed using the cultural intelligence scale (CQS) (Ang et al., 2007). The cultural intelligence scale (CQS) is a widely used measurement tool that assesses an individual's level of cultural intelligence across multiple dimensions. The CQS is designed and developed

by researchers in the field of cross-cultural psychology to capture cultural intelligence's metacognitive, cognitive, motivational and behavioural aspects. The scale typically consists of items that measure four key dimensions of cultural intelligence: Metacognitive CQ contains items such as "I am aware of my own cultural biases and try to overcome them in cross-cultural interactions" and "I reflect on my cultural assumptions and seek feedback to improve my intercultural competence". Cognitive CQ contains items such as "I have a good understanding of cultural norms and practices in different countries" and "I can easily adapt my behaviour when interacting with people from different cultural backgrounds". Motivational CQ contains items such as "I am genuinely interested in learning about different cultures and customs". And "I can analyse and evaluate my own cultural thinking patterns when interacting with people from diverse cultures". Behavioural CQ contains items such as "I adjust my communication style to suit the cultural preferences of the people I interact with"., and "I am comfortable adapting my nonverbal behaviour in different cultural contexts". The CQS consists of five Likert-scale items that respondents rate based on their level of agreement on a scale from 1 (strongly disagree) to 5 (strongly agree).

Belau's heterogeneity index (Biemann & Kearney, 2010; Harrison & Klein, 2007) was used to calculate the variety of CQ dimensions. The index measures diversity in categorical variables, with values ranging from zero to 1. To gain heterogeneity, first, a dummy variable was created for each scale item, and based on the categorisation of the dummy variables, the variety measures were calculated.

The formula for Belau's index is:

$$1 - \sum p_k^2$$

Where p is the proportion of unit members in kth category. Values of Belau's index can range from zero to (K – 1)/K. Harrison and Klein (2007) mention that researchers may use an alternative calculation of Blau's index to adjust the upper limit for group size. This alternative formula is:

$$1 - \sum \frac{N_i(N_i - 1)}{N(N-1)}$$

where N_i is the absolute frequency of group members in the ith category and N is the total number of group members. (Biemann & Kearney, 2010) argue that this alternative calculation is essential to get an unbiased estimation of within-group variety.

Disparity of CQ dimensions were computed using the coefficient of variation between team members. The disparity reflects both distances between unit members and the dominance of those who have a higher amount of attribute D.

The formula for coefficient of variation is:

$$\frac{\frac{\sqrt{\sum(\mathrm{D_i} - \mathrm{D_{mean}})^2}}{\mathrm{n}}}{\mathrm{D_{mean}}}$$

Where $\mathrm{D_i}$ represents each individual data point within the unit. $\mathrm{D_{mean}}$ epresents the mean of the variable within the unit, and n represents the total number of data points within the unit.

Separation along CQ dimensions in teams were calculated using standard deviation of the team level scores. In this paper the individual factor scores were aggregated to the team level by using the standard deviation of the factor scores of the team members. Because of its symmetric nature, separation on variable S is best indexed at the unit level by cumulating absolute or squared distances between pairs of individuals (Harrison & Klein, 2007).

The formula for standard deviation is:

$$\frac{\sqrt{\sum(S_i - S_{mean})^2}}{n}$$

S_i represents each individual data point within the unit. S_{mean} represents the mean of the variable within the unit, and n represents the total number of data points within the unit. In this study, the principal component analysis (PCA) method was applied to address the collinearity between diversity measures disparity and separation. PCA reduces dataset dimensionality without losing important information and ensuring uncorrelated new variables (Hair et al., 2020; Tabachnick et al., 2013).

4.6.4 Analysis techniques

The study utilised partial least squares structural equation modelling (PLS-SEM), a variance-based technique (Ringle & Sarstedt, 2016). The analysis followed standard reporting guidelines for PLS-SEM results (Hair et al., 2017; Hair et al., 2017; Hair et al., 2019; Ringle et al., 2015). The following settings in all analysis steps were applied: path weighing scheme, 300 iterations, stop criterion 10^-7^, and replaced missing values by mean values (Hair Jr et al., 2021). A complete bootstrapping procedure was performed on 10,000 subsamples using the bias-corrected and accelerated (BCa) bootstrap method. The test type was two-tailed with a significance level of 5%. The bootstrapping analysis allowed for robust inference and provided confidence intervals. PLS-SEM is an appropriate multivariate technique for examining causal-predictive relationships, constructing path models with latent variables, and estimating their relationships, which are not directly observable (Hair Jr et al., 2021; Ringle & Sarstedt, 2016). Moreover, it generated a measurement model to assess validity and reliability and a structural model for hypothesis testing.

4.7 Results

The partial least squares algorithm is applied to assess the measurement models. Cultural intelligence dimension diversity and overall CQ were assessed using single-item measurements. Reflective measurement was applied to both CQ dimension averages and the endogenous variables, namely subjective and objective outcomes. Subsequently, the reliability and validity of both endogenous and exogenous models were evaluated. Various criteria were examined for the reflective measurements (subjective and objective outcomes and CQ dimension averages). These included outer loadings (> 0.708), indicator reliability (> 0.5), average variance extracted (AVE) (> 0.5), Cronbach's alpha (> 0.6) and composite reliability (values between 0.7 to 0.9, indicating good to satisfactory reliability). All of these criteria were successfully met, indicating a high level of reliability and validity for the reflective measurements, as illustrated in Table 4. 2**.**

Table 4. 2 Measurement evaluation -validity and reliability

	Subj_Out	Obj_Out	Met	Cog	mot	Beh	VIF
sub_1	0.842						2.108
sub_2	0.868						2.205
sub_3	0.898						3.172
sub_4	0.883						3.224
Obj_1		0.926					2.560
Onj_2		0.959					2.560
Met 1			0.832				2.028
Met 2			0.802				2.026
Met 3			0.904				2.522
Met 4			0.803				1.756
Cog 1				0.769			1.871
Cog 2				0.712			1.840
Cog 3				0.874			2.633
Cog 4				0.816			2.160
Cog 5				0.832			2.248
Cog 6				0.814			2.164
Mot 1					0.723		1.473
Mot 2					0.786		1.764
Mot 3					0.835		2.063
Mot 4					0.774		2.016
Mot 5					0.794		1.932
Beh 1						0.783	1.766
Beh 2						0.845	2.301
Beh 3						0.860	2.300
Beh 4						0.839	2.285
Beh 5						0.768	1.871
Construct Reliability and validity							
Cronbach's alpha	0.897	0.877	0.858	0.891	0.843	0.878	
Composite reliability (rho_a)	0.908	0.930	0.893	0.910	0.853	0.890	
Composite reliability (rho_c)	0.928	0.941	0.903	0.916	0.888	0.911	
Average variance extracted (AVE)	0.762	0.888	0.699	0.647	0.613	0.672	

Met= Metacognitive, Cog= Cognitive, Mot= Motivational, Beh= Behavioral, V= Variety, D= Disparity, S= Separation, Subj= Subjective Outcome, Obj= Objective Outcome

All measures exhibited satisfactory discriminant validity, as evidenced by the correlations' heterotrait-monotrait (HTMT) ratio (Henseler et al., 2014). The HTMT ratio assesses the correlations between indicators of different constructs compared to indicators of the same construct. The HTMT threshold is expected to be below 0.90 for constructs with similar conceptual meanings, whereas, for constructs with distinct conceptual meanings, it should be below 0.85 (Hair et al., 2019; Henseler et al., 2015). The significance evaluation was conducted using the complete bootstrapping method,

revealing that none of the confidence intervals encompassed the value of 1, as shown in Table 4. 3.

Table 4. 3 Measurement evaluation- HTMT

		Metacognitive CQ				
		Met V	*Met D*	*Met S*	*Subj*	*Obj*
	Met V	1				
	Met D	0.123	1			
	Met S	0.138	0	1		
	Subj	0.152	0.201	0.054	1	
	Obj	0.021	0.109	0.113	0.186	1
EM1	Met M	0.084	0.476	0.066	0.271	0.096
EM2	overall CQ	0.098	0.838	0.19	0.287	0.155
		Cognitive CQ				
		Cog V	*Cog D*	*Cog S*	*Subj*	*Obj*
	Cog V	1				
	Cog D	0.089	1			
	Cog S	0.159	0	1		
	Subj	0.134	0.097	0.024	1	
	Obj	0.022	0.096	0.062	0.186	1
EM3	Cog M	0.113	0.782	0.063	0.19	0.083
EM4	overall CQ	0.084	0.476	0.066	0.271	0.096
		Motivational CQ				
		Mot V	*Mot D*	*Mot S*	*Subj*	*Obj*
	Mot V	1				
	Mot D	0.123	1			
	Mot S	0.138	0	1		
	Subj	0.152	0.201	0.054	1	
	Obj	0.021	0.109	0.113	0.186	1
EM5	Mot M	0.098	0.838	0.19	0.287	0.155
EM6	overall CQ	0.084	0.534	0.125	0.271	0.096
		Behavioral CQ				
		Beh V	*Beh D*	*Beh S*	*Subj*	*Obj*
	Beh V	1				
	Beh D	0.098	1			
	Beh S	0.203	0	1		
	Subj	0.148	0.147	0.106	1	
	Obj	0.024	0.124	0.059	0.186	1
EM7	Beh M	0.120	0.727	0.369	0.266	0.106
EM8	Overall CQ	0.087	0.481	0.335	0.271	0.096

Met= Metacognitive, Cog= Cognitive, Mot= Motivational, Beh= Behavioral, V= Variety, D= Disparity, S= Separation, Subj= Subjective Outcome, Obj= Objective Outcome, EM= Expanded Model. *None of the bias corrected HTMT confidence intervals included the value*

Collinearity is examined before assessing the structural relationships to prevent any bias in the regression results. Ideally, variance inflation factor (VIF) values should be close to 3 or lower. This study applied the principal component analysis (PCA) method to address the collinearity between diversity measures disparity and separation. PCA

reduces dataset dimensionality without losing essential information and ensuring uncorrelated new variables (Hair et al., 2020; Tabachnick et al., 2013). Once collinearity is addressed, the R^2 values of the endogenous constructs should be examined, along with (f) effect sizes and Q^2, the predictive relevance of the path models. These values are included in the corresponding structural result tables for each CQ dimension.

4.7.1. Results for Structural Model

This section presents the analysis results for each dimension of cultural intelligence. The analysis begins with examining the base model, which includes diversity measures such as variety, disparity, and separation of CQ levels among team members. This base model's impact on subjective and objective outcomes is assessed. The subsequent analysis expands the model by incorporating (1) averages of CQ dimensions and (2) the overall CQ and evaluates their influence on the outcomes (separately). The following subsections provide a structural analysis of the base and expanded models for each dimension.

4.7.2. Metacognitive CQ

The base model (see Table 4. 4) for metacognitive CQ configurations yielded interesting findings regarding their relationship with subjective and objective outcomes. Metacognitive variety demonstrated a positive and statistically significant association with subjective outcome *(β = 0.129, p-value=0.029)*, suggesting that GVTs with diverse metacognitive CQ tend to have better subjective outcomes. However, this positive relationship was not statistically significant for objective outcome *(β = -0.025, p-value=0.647),* indicating that the impact of metacognitive variety on objective performance measures is not supported by statistical significance. Metacognitive

disparity showed a negative and statistically significant relationship with subjective and objective outcomes *(β = -0.085, p-value=0.064)* and *(β = -0.085, p-value=0.064),* respectively. Regarding metacognitive separation, the results showed a negative path coefficient with subjective outcome *(β = -0.007, p-value=0.903),* which was not statistically significant. For objective outcome, metacognitive separation exhibited a positive path coefficient *(β = 0.062, p-value=0.266)*, also not statistically significant. These findings suggest that the impact of metacognitive separation on subjective and objective outcomes is not supported by statistical significance. The base model also indicated a positive and significant relationship between subjective and objective outcomes *(β = 0.166, p-value=0.001).* However, the explanatory power for subjective outcome *(R^2= 0.025, $R^2_{Adjusted}$= 0.017)* and objective outcome *(R^2= 0.039, $R^2_{Adjusted}$= 0.027)* remained very low, indicating that the metacognitive CQ configurations alone may not fully explain the variations in subjective and objective outcomes.

In the expanded model 1 (Table 4. 4), with the addition of metacognitive averages, the results revealed a significant and positive association between metacognitive averages and subjective outcome *(β = 0.215, p-value=0.004). In contrast,* the relationship with objective outcome was negative and insignificant *(β = -0.01, p-value=0.909*) suggesting that GVTs with higher metacognitive averages tend to perceive better subjective outcomes, but this does not translate to statistically significant impacts on objective performance measures. With the inclusion of metacognitive averages in the model, the effect of metacognitive variety on subjective outcome became weaker *(β = 0.117, p-value=0.053),* although it remained significant and positive. However, no other diversity measures showed any statistically significant relationship with subjective or

objective outcomes. The explanatory power for subjective outcome increased *(R^2=0.047, $R^2_{Adjusted}$=0.036),* but for objective outcome, it remained relatively unchanged *(R^2=0.038, $R^2_{Adjusted}$=0.027).* In expanded model 2 (Table 4. 4), with the addition of overall CQ, the results showed a strong positive relationship between overall CQ and subjective outcome *(β = 0.269, p-value=0.000)* and a positive but nonsignificant relationship with objective outcome *(β = 0.023, p-value=0.726).* Metacognitive variety demonstrated a positive and statistically significant relationship with subjective outcome, while the effect of other diversity measures remained unchanged. The explanatory power for subjective outcome increased *(R^2=0.079, $R^2_{Adjusted}$=0.069)*, but it remained relatively unchanged for objective outcome. In expanded model 2 (Table 4. 4), with the addition of overall CQ, the results showed a strong positive relationship between overall CQ and subjective outcome *(β = 0.269, p-value=0.000)* and a positive but nonsignificant relationship with objective outcome *(β = 0.023, p-value=0.726).* Metacognitive variety demonstrated a positive and statistically significant relationship with subjective outcome, while the effect of other diversity measures remained unchanged. The explanatory power for subjective outcome increased *(R^2=0.079, $R^2_{Adjusted}$=0.069)*, but it remained relatively unchanged for objective outcome.

Table 4. 4 Structural evaluation metacognitive CQ configurations

Base model for metacognitive CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF		*p-value*	VIF
Met Variety	0.129*	**0.029**	1.034	-0.025	0.647	1.051
Met Disparity	-0.085†	**0.064**	1.008	-0.076	0.133	1.016
Met Separation	-0.007	0.903	1.026	0.062	0.266	1.026
Subjective outcome				0.166***	**0.001**	1.026
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Met Variety	0.129*	**0.029**	0.016	-0.004	0.947	0.001
Met Disparity	-0.085†	**0.064**	0.007	-0.09†	**0.074**	0.006
Met Separation	-0.007	0.903	0.000	0.061	0.282	0.004
Subjective outcome				0.166***	**0.001**	0.028
$R^2(R^2_{Adjusted})$	0.025 (0.017)			0.039(0.027)		
SRMR	0.041					
d_ULS	0.077					
d_G	0.087					
Expanded model (1) for metacognitive CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Met Average	0.215**	**0.004**	2.112	-0.01	0.909	2.16
Met Variety	0.117†	**0.053**	1.04	-0.025	0.650	1.054
Met Disparity	0.071	0.291	2.097	-0.084	0.289	2.102
Met Separation	0.004	0.945	1.032	0.061	0.273	1.032
Subjective outcome				0.165***	**0.002**	1.049
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Met Average	0.215**	**0.004**	0.023	0.026	0.766	0.000
Met Variety	0.117†	**0.053**	0.014	-0.005	0.922	0.001
Met Disparity	0.071	0.291	0.002	-0.072	0.368	0.003
Met Separation	0.004	0.945	0.000	0.062	0.276	0.004
Subjective outcome				0.165***	**0.002**	0.027
$R^2(R^2_{Adjusted})$	0.047(0.012)			0.038(0.024)		
Q^2	0.012			-0.014		
SRMR	0.044					
d_ULS	0.179					
d_G	0.133					
Expanded model (2) for metacognitive CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Overall CQ	0.269***	**0.000**	1.305	0.023	0.726	1.383
Met Variety	0.110†	**0.052**	1.038	-0.025	0.644	1.051
Met Disparity	0.044	0.381	1.298	-0.067	0.265	1.300
Met Separation	0.012	0.821	1.033	0.063	0.256	1.034
Subjective outcome				0.159***	**0.003**	1.086
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Overall CQ	0.269***	**0.000**	0.060	0.066	0.309	0.060
Met Variety	0.110†	**0.052**	0.013	-0.008	0.888	0.013
Met Disparity	0.044	0.381	0.002	-0.060	0.325	0.002
Met Separation	0.012	0.821	0.000	0.065	0.249	0.000
Subjective outcome				0.159**	**0.003**	
$R^2(R^2_{Adjusted})$	0.079(0.069)			0.038(0.024)		
Q^2	0.049			-0.013		
SRMR	0.038					
d_ULS	0.079					

d_G	0.088

Note: † $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$

4.7.3. Cognitive CQ

The results from the base model for cognitive CQ configurations (see Table 4. 5**)** reveal essential insights into the relationship between cognitive CQ and subjective and objective outcomes. Cognitive variety showed a positive and statistically significant association with subjective outcome *(β = 0.126, p-value 0.021)*. This positive relationship was, however, not statistically significant for objective outcome *(β = -0.025, p-value 0.655),* suggesting that the impact of cognitive variety on objective performance measures is not supported by statistical significance. Cognitive disparity demonstrated a negative relationship with subjective outcome *(β = -0.029, p-value 0.571)* and a positive relationship with objective outcome *(β = 0.086, p-value 0.108).* The results showed a positive and statistically significant relationship with subjective outcome *(β = 0.105, p-value 0.069)* regarding cognitive separation. However, this relationship was negative and nonsignificant for objective outcome *(β = -0.056, p-value 0.281)*, indicating that the impact of cognitive separation on objective performance measures is not supported by statistical significance. The base model also demonstrated a positive and significant relationship between subjective and objective outcomes *(β = 0.155, p-value 0.006).* However, the explanatory power for both subjective outcome (R^2= 0.030, $R^2_{Adjusted}$= 0.022) and objective outcome *(R^2=0.032, $R^2_{Adjusted}$= 0.020)* remained very low, suggesting that the cognitive CQ configurations alone may not fully explain the variations in subjective and objective outcomes. In the expanded model 3 (Table 4. 5 cont.)**,** with the addition of cognitive CQ averages, the results showed a positive and strong relationship between cognitive CQ averages and subjective outcome

(β = 0.305, p-value 0.001). However, this relationship was positive but not statistically significant for objective outcome *(β = 0.177, p-value 0.101).* Cognitive variety in this model exhibited a positive and statistically significant relationship with subjective outcome *(β = 0.117, p-value 0.036),* while the relationship with objective outcome was negative and nonsignificant *(β = -0.026, p-value 0.634)*. Cognitive disparity, on the other hand, showed positive and significant associations with both subjective and objective outcomes *(β = 0.191, p-value 0.024)* and *(β = 0.215, p-value 0.018)*, respectively.

Cognitive separation showed a negative but nonsignificant relationship with subjective outcome *(β = -0.017, p-value 0.794)* and a negative and statistically significant relationship with objective outcome *(β = -0.125, p-value 0.032).* The total effects remained the same for subjective outcome. However, they became more substantial for objective outcome, indicating that including cognitive CQ averages enhanced the impact of cognitive separation on objective performance measures. The overall findings for this model indicated a positive and significant relationship between subjective and objective outcomes, although weaker *(β = 0.138, p-value 0.015).* The explanatory power for the model increased for both subjective (R^2=0.058, $R^2_{Adjusted}$= 0.041) and objective outcomes *(R^2=0.041, $R^2_{Adjusted}$= 0.027),* suggesting that adding cognitive CQ averages improved the model's ability to explain the variations in both subjective and objective outcomes.

Table 4. 5 Structural evaluation cognitive CQ configurations

Base model for cognitive CQ						
Path coefficient	*Subjective Outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Cog Variety	0.126*	**0.021**	1.01	-0.025	0.655	1.027
Cog Disparity	-0.029	0.571	1.005	0.086	0.108	1.005
Cog Separation	0.105†	**0.069**	1.006	-0.056	0.281	1.017
Subjective outcome				0.155**	**0.006**	1.031
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Cog Variety	0.126*	**0.021**	0.016	-0.005	0.928	0.001
Cog Disparity	-0.029	0.571	0.001	0.082	0.129	0.008
Cog Separation	0.105†	**0.069**	0.011	-0.039	0.449	0.003
Subjective outcome				0.155**	**0.006**	0.024
$R^2(R^2_{Adjusted})$	0.030(0.022)			0.032(0.020)		
SRMR	0.038					
d_ULS	0.066					
d_G	0.087					
Expanded model (3) for cognitive CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Cog Average	0.305***	**0.001**	3.258	0.177	0.101	3.357
Cog Variety	0.117*	**0.036**	1.012	-0.026	0.634	1.027
Cog Disparity	0.191*	**0.024**	2.725	0.215*	**0.018**	2.764
Cog Separation	-0.017	0.794	1.53	-0.125*	**0.032**	1.53
Subjective outcome				0.138*	**0.015**	1.062
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Cog Average	0.305***	**0.001**	0.030	0.219*	**0.041**	0.01
Cog Variety	0.117*	**0.036**	0.014	-0.01	0.854	0.001
Cog Disparity	0.191*	**0.024**	0.014	0.241**	**0.008**	0.017
Cog Separation	-0.017	0.794	0.000	-0.127*	**0.027**	0.011
Subjective outcome				0.138*	**0.015**	0.019
$R^2(R^2_{Adjusted})$	0.058(0.041)			0.041(0.027)		
Q^2	0.026			-0.006		
SRMR	0.041					
d_ULS	0.201					
d_G	0.15					
Expanded model (4) for cognitive CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Overall CQ	0.329***	**0.000**	1.732	0.208**	**0.006**	1.851
Cog Variety	0.114*	**0.033**	1.012	-0.025	0.643	1.026
Cog Disparity	0.145*	**0.017**	1.497	0.196**	**0.003**	1.520
Cog Separation	-0.015	0.795	1.237	-0.127*	**0.020**	1.238
Subjective outcome				0.114*	**0.048**	1.102
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Overall CQ	0.329***	**0.000**	0.069	0.246***	**0.001**	0.025
Cog Variety	0.114*	**0.033**	0.014	-0.012	0.819	0.001
Cog Disparity	0.145*	**0.017**	0.015	0.213***	**0.001**	0.027
Cog Separation	-0.015	0.795	0.000	-0.129*	**0.019**	0.014
Subjective outcome				0.114*	**0.048**	0.012
$R^2(R^2_{Adjusted})$	0.092 (0.082)			0.055(0.041)		
Q^2	0.065			0.017		
SRMR	0.035					
d_ULS	0.068					
d_G	0.089					

Note: † $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

In expanded model 4 (Table 4. 5 cont.)**,** with the inclusion of overall CQ, the results showed a positive and statistically significant relationship between both subjective and

objective outcomes *(β = 0.329, p-value 0.000)* and *(β = 0.208, p-value 0.006),* respectively. Cognitive variety continued to show a positive relationship with subjective outcome *(β = 0.114, p-value 0.033),* but the relationship with objective outcome remained negative and nonsignificant *(β = -0.025, p-value 0.643)*. Cognitive disparity showed positive and significant relationships with subjective *(β = 0.145, p-value 0.017)* and objective outcomes *(β = 0.196, p-value 0.003).* However, cognitive separation in this model exhibited a negative but nonsignificant relationship with subjective outcome *(β = -0.015, p-value 0.795)* and a negative and statistically significant relationship with objective outcome (*β = -0.127, p-value 0.020).* The results of total effects remained the same for subjective outcome, but the effects of variables became more robust for the objective outcome. The relationship between overall CQ and both cognitive disparity and separation on objective outcome increased in strength *(TE=0.246, p-value 0.001), (TE=0.213, p-value 0.001), (TE=-0.129, p-value 0.019)*, respectively. Finally, similar to the other models, the results indicated a positive and significant relationship between subjective and objective outcomes *(β = 0.114, p-value 0.048),* although weaker in this model. The explanatory power for the subjective outcome increased *(R^2=0.092, $R^2_{Adjusted}$= 0.082)*, while it also increased for the objective outcome *(R^2=0.055, $R^2_{Adjusted}$=0.041),* it remained relatively low.

4.7.4. Motivational CQ

The results of the base model for motivational CQ configurations (see Table 4. 6) revealed significant associations with both subjective and objective outcomes. Specifically, the motivational CQ variety exhibited a positive and statistically significant relationship with subjective outcome *(β = 0.118, p-value 0.024)*. However,

this positive association was not observed in objective outcome *(β = -0.041, p-value 0.404)*, suggesting that the impact of motivational variety on objective performance measures is not statistically significant. Motivational CQ disparity, on the other hand, showed a strong negative association with subjective outcome *(β = -0.176, p-value 0.000)*, indicating that GVTs with less diverse motivational strategies tend to have poorer subjective outcomes. However, this negative relationship was not statistically significant for objective outcome *(β = -0.080, p-value 0.122)*. Regarding motivational CQ separation, the results indicated a positive association with subjective outcome *(β = 0.033, p-value 0.559)*, but it is not statistically significant. Conversely, motivational separation exhibited a positive and significant relationship with objective outcome *(β = 0.106, p-value 0.073)*.

The results of total effects remained consistent for subjective outcome. In contrast, for the objective outcome, the total effects of motivational CQ disparity became statistically significant *(TE=-0.107, p-value 0.035)*, and the effect of motivational separation strengthened *(TE=0.152, p-value 0.061)*. The overall findings for this model indicated a positive and statistically significant relationship between subjective and objective outcomes (*β=0.152, p-value=0.007).* However, the explanatory power for both subjective (R^2=0.052, $R^2_{Adjusted}$=0.044) and objective outcomes (R^2=0.045, $R^2_{Adjusted}$=0.034) remained low

Table 4. 6 Structural evaluation motivational CQ configurations

Base model for motivational CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Mot Variety	0.118*	**0.024**	1.035	-0.046	0.404	1.050
Mot Disparity	-0.176***	**0.000**	1.016	-0.080	0.122	1.048
Mot Separation	0.033	0.559	1.020	0.106†	**0.073**	1.021
Subjective outcome				0.152**	**0.007**	1.055
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Mot Variety	0.118*	**0.024**	0.014	-0.028	0.611	0.002
Mot Disparity	-0.176***	**0.000**	0.032	-0.107*	**0.035**	0.006
Mot Separation	0.033	0.559	0.001	0.111†	**0.061**	0.011
Subjective outcome				0.152**	**0.007**	0.023
$R^2(R^2_{Adjusted})$	0.052(0.044)			0.045(0.034)		
SRMR	0.043					
d_ULS	0.082					
d_G	0.092					
Expanded model (5) for motivational CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Mot Average	0.275**	**0.002**	2.626	0.067	0.458	2.709
Mot Variety	0.128*	**0.011**	1.037	-0.043	0.434	1.055
Mot Disparity	0.037	0.655	2.579	-0.03	0.720	2.58
Mot Separation	-0.014	0.814	1.099	0.094	0.136	1.099
Subjective outcome				0.144**	**0.009**	1.088
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Mot Average	0.275**	**0.002**	0.031	0.107	0.244	0.002
Mot Variety	0.128*	**0.011**	0.017	-0.025	0.653	0.002
Mot Disparity	0.037	0.655	0.001	-0.025	0.773	0.000
Mot Separation	-0.014	0.814	0.000	0.092	0.146	0.008
Subjective outcome				0.144**	**0.009**	0.020
$R^2(R^2_{Adjusted})$	0.081(0.070)			0.046(0.032)		
Q^2	0.053			0.000		
SRMR	0.049					
d_ULS	0.256					
d_G	0.157					
Expanded model (6) for motivational CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Overall CQ	0.213***	**0.001**	1.43	-0.002	0.971	1.479
Mot Variety	0.120*	**0.022**	1.035	-0.046	0.403	1.051
Mot Disparity	-0.061	0.328	1.423	-0.082	0.170	1.427
Mot Separation	0.007	0.897	1.042	0.106	**0.082**	1.042
Subjective outcome				0.152	**0.007**	1.092
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Overall CQ	0.213***	**0.001**	0.035	0.03	0.658	0.000
Mot Variety	0.120*	**0.022**	0.015	-0.028	0.611	0.002
Mot Disparity	-0.061	0.328	0.003	-0.091	0.129	0.005
Mot Separation	0.007	0.897	0.000	0.107†	**0.079**	0.011
Subjective outcome				0.152**	**0.007**	0.022
$R^2(R^2_{Adjusted})$	0.084(0.073)			0.045(0.031)		
Q^2	0.056			-0.005		
SRMR	0.039					
d_ULS	0.083					
d_G	0.095					

Note: † $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

In the expanded model 5 (Table 4. 6 cont.)**,** the introduction of motivational CQ averages demonstrated a positive and significant relationship with subjective outcome *(β = 0.275, p-value 0.002).* However, for objective outcomes, the relationship was not statistically significant *(β = 0.067, p-value 0.458).* Regarding the specific diversity measures, motivational CQ variety maintained a positive and significant association

with subjective outcome *(β = 0.128, p-value 0.011)*. However, it exhibited a negative and nonsignificant relationship with objective outcome (*β = -0.043, p-value 0.434).* Motivational CQ disparity positively correlated with subjective outcome *(β = 0.037, p-value 0.655)* but was not statistically significant. For objective outcomes, motivational disparity demonstrated a negative relationship *(β = -0.030, p-value 0.720)* but remained nonsignificant. Similar to previous models, motivational separation showed a negative association with subjective outcome *(β = 0.014, p-value 0.814)* and a positive association with objective outcome *(β = 0.094, p-value 0.136)*. Neither of these relationships reached statistical significance. This model's overall results for subjective and objective outcomes maintained a positive and significant relationship *(β = 0.144, p-value 0.009).* However, the explanatory power remained relatively low for subjective *(R^2=0.081, $R^2_{Adjusted}$=0.070)* and objective outcomes *(R^2=0.046, $R^2_{Adjusted}$=0.032).*

The results of expanded model 6 (Table 4. 6 cont.)**,** including overall CQ, showed a positive and significant association between overall CQ and subjective outcome *(β = 0.213, p-value 0.001). T*he relationship with objective outcome was not statistically significant *(β = -0.002, p-value 0.971).* Motivational variety maintained similar results for subjective *(β = 0.120, p-value 0.022)* and objective outcomes *(β = -0.046, p-value 0.403),* with no significant associations observed. Motivational disparity and separation also did not exhibit statistically significant relationships for subjective or objective outcomes. The total effects in this model remained consistent, and the explanatory power slightly increased for subjective outcome *(R^2=0.084, $R^2_{Adjusted}$=0.073),* while slightly decreasing for objective outcome *(R^2=0.045, $R^2_{Adjusted}$=0.031).*

4.7.5. Behavioural CQ

The results of the base model for behavioural CQ configurations (see Table 4. 7) indicate significant relationships with both subjective and objective outcomes. Behavioural CQ variety demonstrated a positive and statistically significant association with subjective outcome *(β = 0.119, p-value 0.025).* However, this positive relationship was not statistically significant for objective outcome *(β = -0.023, p-value 0.669).* Behavioural CQ disparity, on the other hand, exhibited negative and significant associations with both subjective and objective outcomes (*β = -0.128, p-value 0.010)* and *(β = -0.100, p-value 0.082)*, respectively. Regarding behavioural CQ separation, the results showed a positive association with subjective *(β = 0.078, p-value 0.152)* and objective outcomes *(β = 0.043, p-value 0.413),* but these associations were not statistically significant.

Table 4. 7 Structural evaluation behavioral CQ configurations

Base model for behavioural CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Beh Variety	0.119*	**0.025**	1.054	-0.023	0.669	1.068
Beh Disparity	-0.128**	**0.010**	1.01	-0.100†	**0.082**	1.027
Beh Separation	0.078	0.152	1.043	0.043	0.413	1.05
Subjective outcome				0.154**	**0.004**	1.045
Total Effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Beh Variety	0.119*	**0.025**	0.014	-0.005	0.929	0.001
Beh Disparity	-0.128**	**0.010**	0.017	-0.12*	**0.028**	0.01
Beh Separation	0.078	0.152	0.006	0.055	0.293	0.002
Subjective outcome				0.154**	**0.004**	0.024
$R^2(R^2_{Adjusted})$	0.043(0.035)			0.04(0.029)		
SRMR	0.041					
d_ULS	0.076					
d_G	0.086					
Expanded model (7) for behavioural CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Beh Average	0.27***	**0.001**	2.366	-0.045	0.594	2.444
Beh Variety	0.124*	**0.019**	1.055	-0.025	0.644	1.072
Beh Disparity	0.055	0.433	2.1	-0.13†	**0.082**	2.103
Beh Separation	-0.017	0.771	1.334	0.059	0.369	1.334
Subjective outcome				0.158**	**0.005**	1.079
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Beh Average	0.270***	**0.001**	0.033	-0.002	0.977	0.001
Beh Variety	0.124*	**0.019**	0.016	-0.005	0.924	0.001
Beh Disparity	0.055	0.433	0.002	-0.121†	**0.089**	0.008
Beh Separation	-0.017	0.771	0.000	0.056	0.389	0.003
Subjective outcome				0.158**	**0.005**	
$R^2(R^2_{Adjusted})$	0.074(0.063)			0.040(0.026)		
Q^2	0.044			-0.01		
SRMR	0.042					
d_ULS	0.189					
d_G	0.137					
Expanded model (8) for behavioural CQ						
Path coefficient	*Subjective outcome*			*Objective outcome*		
	β	*p-value*	VIF	*β*	*p-value*	VIF
Overall CQ	0.243***	**0.000**	1.055	-0.017	0.812	1.071
Beh Variety	0.123*	**0.025**	1.525	-0.024	0.654	1.589
Beh Disparity	-0.01	0.842	1.367	-0.108†	**0.093**	1.367
Beh Separation	-0.005	0.927	1.221	0.049	0.438	1.221
Subjective outcome				0.156**	**0.005**	1.088
Total effect	*total effect*	*p-value*	*f*	*total effect*	*p-value*	*f*
Overall CQ	0.243***	**0.000**	0.042	0.021	0.776	0.001
Beh Variety	0.123*	**0.025**	0.016	-0.005	0.927	0.000
Beh Disparity	-0.01	0.842	0.000	-0.109†	**0.079**	0.009
Beh Separation	-0.005	0.927	0.000	0.048	0.447	0.002
Subjective outcome				0.156**	**0.005**	0.023
$R^2(R^2_{Adjusted})$	0.081(0.070)			0.040(0.025)		
Q^2	0.054			-0.011		
SRMR	0.038					
d_ULS	0.077					
d_G	0.087					

Note: † $p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

The total effects in this model remained relatively consistent, with only the effect of behavioural CQ disparity on objective outcome becoming stronger *(TE=-0.120, p-value 0.028).* The overall findings for this model indicated a positive and significant relationship between subjective and objective outcomes *(β = 0.154, p-value 0.004)*.

However, the explanatory power for subjective (R^2=*0.042,* $R^2_{Adjusted}$=*0.035)* and objective outcomes *(*R^2=*0.040,* $R^2_{Adjusted}$=*0.029)* remained very low.

In the expanded model 7 (Table 4. 7 cont.), including behavioural CQ averages, the results showed a positive and significant association between behavioural CQ averages and subjective outcome *(β = 0.270, p-value 0.001).* However, for objective outcome, the relationship was not statistically significant *(β = -0.045, p-value 0.594),* suggesting that statistical significance does not support the impact of behavioural CQ averages on objective performance measures. Among the specific diversity measures, behavioural CQ variety maintained a positive and significant relationship with subjective outcome *(β = 0.124, p-value 0.019),* while behavioural CQ disparity exhibited a negative but weakly significant association with objective outcome *(β = -0.130, p-value 0.082).* The total effects in this model remained unchanged, and the explanatory power slightly increased for subjective outcome *(*R^2=*0.074,* $R^2_{Adjusted}$=*0.063).*

In expanded model 8 (Table 4. 7 cont.)**,** most of the results stayed the same with the addition of overall CQ. However, the effect of overall CQ on subjective outcome was significant *(β = 0.243, p-value 0.000)*, indicating a positive and significant association between overall CQ and subjective outcome. The explanatory power for subjective outcome also increased slightly *(*R^2=*0.081,* $R^2_{Adjusted}$=*0.070).*

4.8. Discussion

4.8.1. Information processing view (variety)

Based on the foundation of proposition 1 and its corresponding hypotheses regarding the influence of CQ variety within GVTs, the results indicate that metacognitive, cognitive, motivational and behavioural CQ variety positively impacts subjective

outcome. These CQ dimensions demonstrated statistically significant relationships in all three models. These findings align with well-known organisational theories of information processing, which suggest that greater diversity among individuals across various categories leads to improved problem-solving, group decision quality and firm performance (Harrison & Klein, 2007, p. 1201). Metacognition refers to individuals' knowledge, experiences, goals or actions in monitoring their cognitive processes (Flavell, 1979). Teams dealing with complex problems require diverse cognitive resources to effectively process information and enhance performance (Galbraith, 1973; Tushman & Nadler, 1978).

Therefore, when team members possess a combination of metacognitive and cognitive CQ, it positively influences interpersonal and subjective outcomes. Similarly, the findings indicate that motivational and behavioural variety within a team significantly impacts subjective team performance. Motivation is how individuals initiate, choose and maintain behaviours to achieve their goals. When personal motives align with the motivational aspects of a situation, it affects one's actions and performance (Heckhausen et al., 1989; Rheinberg, 2001; Weiner, 1992). Team members with high motivational intelligence actively seek opportunities to interact with individuals from diverse backgrounds, leading to a better team environment and increased satisfaction (Bogilović & Škerlavaj, 2016). Additionally, team members behaviour within a given context influences the psychological and social aspects of their work environment, ultimately affecting overall group effectiveness (Borman & Motowidlo, 1997). However, regarding objective outcomes, the variety of these CQ dimensions did not yield statistically significant results despite the consistent negative direction of the path

coefficients. Given this, the influence of CQ dimensions variety on objective performance measures lacks statistical support in this study. While a variety of CQ facets in GVTs enhance interpersonal performance, it does not play any significant role in purely task-related performance.

4.8.2. (In)justice view (disparity)

Regarding proposition 2 and its corresponding hypotheses on CQ disparity, the findings showed mixed associations with subjective and objective outcomes. In the base model, metacognitive CQ disparity exhibited a weak but statistically significant negative association with both outcomes. However, these effects became nonsignificant after accounting for averages and overall CQ in expanded models (1 & 2). On the other hand, cognitive CQ disparity showed positive and statistically significant relationships with both subjective and objective outcomes in the expanded models. In contrast, motivational CQ disparity displayed a strong negative association with subjective outcome but lacked statistical significance for objective outcome. On the other hand, behavioural CQ disparity showed negative and significant associations with both subjective and objective outcomes, with a stronger negative relationship observed for the objective outcome.

According to the (in)justice view, disparities in teams can lead to heightened social comparisons among team members and a rise in internal competition (Mayo et al., 2017), resentment, deviant behaviour and withdrawal, ultimately reducing team member satisfaction and individual efficacy (Harrison & Klein, 2007). This study's result shows that disparities in motivational CQ and behavioural CQ harm both subjective and objective outcomes. A large variance of these abilities among team

members can decrease work motivation and consequently harm the performance of GVTs (Curşeu et al., 2007; Tu et al., 2020). It aligns with the presented argument that when some members possess a significantly higher level of behavioural CQ compared to others, they likely attempt to influence others to adopt their perspectives (Curşeu et al., 2007), which can lead to frustration and negative impact on the performance of the GVTs. Another possible explanation is that people with high behavioural CQ may try to impress others using impression management techniques (Sri Ramalu et al., 2010). Instead of adapting their behaviour appropriately in different intercultural situations, they may engage in mimicry, imitating others without genuine understanding. Studies have shown that excessive mimicry, especially in new cultural environments, can be seen as insincere or deceitful as a result, team members may reject them, leading to unfavourable outcomes. Cognitive CQ, referring to the cultural knowledge of team members, enriches an individual's cognitive processes, leading to higher cognitive complexity, which is invaluable when interacting with people from diverse cultural backgrounds (Bandura, 2002). When disparity is at its peak in cognitive CQ, one individual holds the highest level of cultural knowledge. In this case, the individual overcomes the pre-existing culturally bound schemata, which enables her/him to actively adapt to the cultural nuances and generate creative solutions (Altinay et al., 2021). Moreover, these individuals in teams can help to improve the quality of relationships with their team members, ultimately contributing to the overall success of the team (Fjaellingsdal et al., 2021; Hamilton et al., 2003; Mitchell et al., 2019; Sharma, 2019). The effect of disparity depends on whether it involves the mental aspects (cognitive CQ) or action-focused aspects (motivational and

behavioural CQ), giving rise to cooperative vs. adversarial mindsets, respectively (Buyl et al., 2011). The disparities in GVTs may explain some of the inconsistencies in the literature.

4.8.3. Categorization view (separation)

As for proposition 3 and its corresponding hypotheses on CQ separation, the metacognitive separation did not show statistically significant relationships with either outcome. Cognitive separation, however, exhibited a weakly significant positive association with subjective outcome and a negative relationship with objective outcome, which was more substantial and statistically significant. Motivational separation did not significantly influence subjective outcome, but it showed a positive yet statistically weak significance on objective outcome. Similarly, the presence of behavioural CQ had no significant influence on either of the outcomes.

In line with the categorisation theory, merely acknowledging one's group membership can trigger discrimination and biases and foster socio-emotional and behavioural separation among team members. This view suggests that the emphasised role of group identity caused by categorisations hampers information elaboration due to comparisons among individuals with diverse cognitive backgrounds (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Williams & O'reilly Iii, 1998). Maximum separation refers to perfect disagreement between subgroups with different beliefs, values or attitudes, significantly impairing group functioning and performance (Harrison & Klein, 2007; Williams & O'reilly Iii, 1998). The presence of categorical bias affects how team members interact, hindering thorough information elaboration among specific individuals but not all team members. Bias often leads team members to share

information more frequently with those in the same category than those from different categories (Qi et al., 2022; Turner et al., 1987). Separation reflects a bimodal distribution, with half of the group members at the highest and the other at the lowest endpoints of the considered variable's continuum (Curşeu et al., 2007). In the case of cognitive CQ, subgroup members may perceive their cognitive information as most valuable while displaying prejudice and intolerance toward diverse cognitive information from other subgroups. This separation can lead to misunderstanding and bias, constraining effective task outcomes (Lau & Murnighan, 1998).

4.8.4. Cultural intelligence diversity

By examining the relationships between team cultural intelligence dimensions and subjective and objective outcomes, this illustrative example emphasises the importance of understanding CQ configurations within teams, especially in virtual settings. Initial results indicated that all CQ dimensions, namely metacognitive, cognitive, motivational, and behavioural, positively influenced subjective outcomes. However, their impact on objective outcomes was inconclusive. When delving deeper into CQ disparity, metacognitive CQ showed a slight negative effect on both outcomes in the base model, but this diminished in expanded models. In contrast, cognitive CQ disparity had a positive effect, while motivational CQ disparity negatively affected only the subjective outcome. Behavioural CQ disparity negatively impacted both outcomes, particularly the objective one. Exploring CQ separation revealed mixed associations with outcomes. Cognitive separation exhibited a significant positive association with subjective outcome, but its relationship with objective outcomes was not statistically significant. The motivational separation did not significantly influence subjective

outcome, but it showed a positive yet statistically weak significance on objective outcome. Similarly, the presence of behavioural CQ had no significant influence on either of the outcomes.

Hence, this paper builds upon the findings mentioned earlier and outline propositions on how each diversity measure affects the different outcomes, namely, subjective or interpersonal outcome, and objective (task-related) outcome. Based on the significance levels of the results, the propositions are outlined as follows:

P1. Variety in team members' CQ dimensions (metacognitive, cognitive, motivational, behavioural CQ) is positively associated with subjective outcome. However, while negatively associated with objective outcome, it does not play a significant role on objective outcome.

P2. Disparity in team members' CQ dimensions (motivational, behavioural CQ) is negatively associated with both subjective and objective outcomes. And disparity in cognitive CQ is positively associated with both subjective and objective outcomes.

P3. Separation along team members motivational CQ is positively associated with objective outcome, while separation along team members cognitive CQ is negatively associated with objective outcome.

These propositions reflect the findings generated through preliminary research, and further research is required to establish their generalizability. Nonetheless, our findings confirm differing associations between different dimensions of CQ and different outcomes. In particular, our finding confirms the notion of variety and information processing and shows that it helps teams' subjective outcomes, such as team members' overall satisfaction.

4.9. Implication & Limitation

4.9.1. Implication for Theory

The main implication of this paper is to provide a framework which helps us to move beyond the aggregation methods used, which hinders our understanding of the complex nature of team-level CQ (Barrick et al., 1998; Kozlowski & Klein, 2000; Ng & Van Dyne, 2005; Schlaegel et al., 2021). Cultural intelligence is not a one-size-fits-all concept but rather a configuration-based concept, indicating that team members can have varying levels of CQ (Yari et al., Chapter 3). Rather than merely aggregating CQ scores into averages or overall scores, it is crucial to consider individual differences and interactions among team members (Schlaegel et al., 2021). This approach allows us to predict team dynamics and performance more accurately. Drawing on multiple intelligence theory (Gardner, 1993) this paper recognizes the significance of having team members skilled in different areas, as it enhances the collective capacity and performance of the team. Each individual's unique set of capacities and mental skills contributes to the team's overall capabilities (Sternberg, 1986). By considering these nuances, we can better understand how the diversity of skills and intelligence influences team outcomes.

Further, this paper acknowledges the complexity of team diversity and addresses the limitations of previous research that assumed uniform effects of different diversity measures or focused solely on negative consequences posed by cultural diversity (Stahl & Tung, 2015; Taras et al., 2019). By incorporating multiple theoretical perspectives, such as information processing theory (Simon, 1978), (in)justice theory (Greenberg, 1987; Harrison & Klein, 2007, p. 1201) and social categorization theory (Tajfel &

Turner, 1986), this paper aims to provide a more comprehensive view of CQ diversity implications on team dynamics and performance. These perspectives help us understand how team members process information, interact, and behave within culturally diverse teams.

Moreover, in this paper, cultural intelligence is viewed as a functional attribute that each team member brings to the group (Yari et al., Chapter 3). Functional diversity is classified as high job-related diversity (Pelled, 1996; Simons et al., 1999), which refers to how well an attribute captures experiences, skills, or perspectives relevant to cognitive work tasks. Hence examining the different types of diversity in these attributes play a crucial role in determining whether they enhance or reduce team outcomes. The framework in this paper introduces the concepts of variety, disparity, and separation (Harrison & Klein, 2007, p. 1201) in team members' CQ dimensions (functional attributes). Variety refers to the diversity of knowledge and experience among team members, enhancing creativity and innovation. Disparity, on the other hand, represents asymmetric differences in CQ levels among team members, which can lead to competition, resentment, and reduced team satisfaction. Separation is the division of team members into categories based on specific cultural ability (metacognitive, cognitive, motivational, and behavioural CQ), potentially leading to limited information sharing and biases. These aspects of CQ diversity influence team dynamics and performance in unique ways. By integrating information processing theory (Simon, 1978), with CQ, the framework explains how teams process information in culturally diverse contexts. CQ influences each stage of information processing, from information accumulation to accommodation. Culturally intelligent teams are more adept at

recognizing and appreciating the nuances of different cultural perspectives, facilitating effective intercultural communication and problem-solving. The framework acknowledges the potential negative effects of disparities and team separation in CQ dimensions and the role of (in)justice view and social categorization in shaping team interactions (Corson, 2000; Coursey et al., 2018; Kankanhalli et al., 2006; Mayo et al., 2017; Williams & O'reilly Iii, 1998). Biases and categorization can impact information elaboration and knowledge sharing within teams, leading to challenges in managing diversity effectively. Ability disparity, meaning large variance of (CQ) abilities among team members can decrease work motivation and, consequently, harm team performance (Curşeu et al., 2007; Tu et al., 2020). Overall, the conceptual framework contributes to both team-level CQ and team diversity literature, by demonstrating the significance of considering CQ configurations within teams.

4.9.2. Implication for Practice

In The results from this study will be necessary for management practices to select and train members of GVTs in a manner that may enhance their team performance. Forming teams with varied cultural backgrounds may foster innovation but can also result in misunderstandings and conflicts. Research shows that cultural intelligence is a critical factor in effectively navigating these challenges, fostering improved communication, collaboration, and team effectiveness (Ang et al., 2007; Bandura & Walters, 1977; Bogilović & Škerlavaj, 2016; Heckhausen et al., 1989; Rheinberg, 2001). Teams with high cultural intelligence engage in international business, comprehend market dynamics and tailor offerings to suit diverse customer preferences more effectively. However, cultural intelligence in teams like other functional backgrounds (education

and expertise) can be a source of diversity. Hence, managers should offer training sessions, online seminars, and team-building strategies on cultural intelligence to GVTs. By allowing sufficient time and possibilities, management can raise awareness of existing diversities in GVTS and reduce misunderstandings arising from stereotyping and other surface-level differences. Another vital aspect for managers is team configuration. When forming GVTs, managers must ensure a balance of different cultural intelligence dimensions. For instance, having members with high cognitive CQ can drive positive outcomes. However, they should be cautious about significant disparities in behavioural CQ, which can hinder team effectiveness. Managers should promote regular interactions among team members with different cultural intelligence profiles. Encouraging these interactions promotes knowledge sharing, innovative thinking and practical problem-solving (Järvelä et al., 2015; Zheng et al., 2023).

Managers could consider integrating cultural intelligence assessments into performance evaluations to understand how individual and team cultural intelligence profiles contribute to overall team success. Managers can strategically pair individuals with complementary cultural intelligence setups when forming new teams or reassigning members. This strategy can enhance team synergy and performance by capitalising on each team member's diverse skills and perspectives.

4.9.3. Limitations

This conceptual paper is grounded in a comprehensive literature review, focusing on the current gap in team CQ configurations. However, the lack of relevant theoretical and empirical research on the role of CQ diversity on team outcomes makes it challenging to address some critical theoretical and empirical issues. As one of the

initial papers proposing the exploration of CQ as a potential diversity measure, the current paper offers a valuable foundation for future research endeavours on team CQ configurations.

Moreover, this study is the first attempt to illustrate the conceptual framework empirically. Although the results are interesting, the paper acknowledges potential limitations at the current stage. One limitation of this study is that it relied on data collected from student participants, which may limit the generalisability of the findings to other contexts. Other potential limitations of X-culture data include sampling bias, as participants are students who voluntarily engage in the competition, which might attract individuals more predisposed to working effectively in diverse teams. This could limit the generalisability of findings to a broader population, especially to professionals in corporate settings where team dynamics and motivations may differ. Moreover, researchers have limited control over data collection, introducing confounding variables. While self-report surveys are valuable, they may however be subject to response bias, participants' self-perception, or misreporting and measurement error. Despite the increasing use of X-Culture data in recent studies (Richter et al., 2021; Stahl & Maznevski, 2021; Tavoletti et al., 2019), future research could include diverse samples from various industries and organisational settings to enhance the external validity of the findings.

Moreover, there is a need for further research to establish the validity and reliability of CQ measures in assessing team diversity. Replication studies and the use of multiple measures of CQ diversity would strengthen the robustness of the findings and contribute to the overall validity of the concept. Future research could also delve deeper into the

underlying mechanisms that explain the differential effects of cultural intelligence dimensions diversity on different processes and outcomes within teams.

Furthermore, other team-level factors, such as demographic, functional, and hidden attribute differences, may interact with different task characteristics to influence the effects of team CQ diversity and team outcome. This study did not account for other team-level attributes; hence, future research could explore the interaction between CQ diversity and these other diversity measures, recognising this as a limitation of the current investigation. Nonetheless, the conceptual framework in this paper provides a potential roadmap for future investigations into the role of differences in CQ levels within teams and their implications for team dynamics and performance.

Chapter 5: General conclusions of the thesis

5.1. Thesis conclusion

This thesis highlights the significance of intercultural team environments and intercultural competencies in today's interconnected world. As many researchers have pointed out, navigating cross-cultural interactions has become increasingly challenging (Earley & Ang, 2003; Leung et al., 2014). This challenge is particularly apparent in global virtual teams (GVTs), which are characterised by multiple types of team member differences, making diversity a fundamental element of GVTs (Kurtzberg, 2014; Nicolas-Rocca & Coulson, 2007; Powell et al., 2004; Presbitero, 2021). The review in Chapter 2 sheds light on research on CQ, CC, and GM, their importance, and how individuals, groups, and organisations can effectively navigate challenges arising from cultural differences to enhance performance. However, to understand the mechanisms of cultural intelligence in teams, one must first grasp the dynamics of other types of diversities, such as the personal attributes of individuals within teams. Despite extensive research on team diversity, as discussed in Chapter 3, the field remains divided (Mcmahon, 2010; Nielsen, 2010; Roberson et al., 2017; Williams & O'reilly Iii, 1998). This division has arisen due to the neglect of less visible forms of differences (Minbaeva et al., 2021; Taras et al., 2019) and the assumption that all sources of diversity affect outcomes in the same way. The findings of Chapter 3 underscore the importance of investigating different types of differences, such as variety, disparity, and separation, and their consequences on various outcomes. An important conclusion from this chapter is that researchers should shift their focus from cultural diversity and its adverse effects

(Earley & Gibson, 2002; Kozlowski & Chao, 2012; Stahl et al., 2010; Stahl & Tung, 2015) to functional attributes of diversity, particularly the disparity of functional skills, which may underlie adverse outcomes. Researchers have proposed intercultural competencies, especially cultural intelligence, to mitigate the adverse effects of diversity in intercultural settings. Extensive research has demonstrated that cultural intelligence can reduce diversity's adverse effects (Ang & Van Dyne, 2015; Ang et al., 2007) at individual, team, and organisational levels. However, while there is significant research on the impact of cultural intelligence at the team level (Fang et al., 2018; Ott & Michailova, 2018; Schlaegel et al., 2021; Yari et al., 2020), the team-level configuration of cultural intelligence remains relatively unexplored. Chapter 4 provides a comprehensive conceptual framework considering the different CQ dimensions and team configurations, incorporating diversity measures such as variety, disparity, and separation. This chapter views CQ as a functional attribute that each team member brings to the group, classifying it as a high job-related diversity form and reflecting its relevance to cognitive work tasks (Pelled, 1996; Simons et al., 1999).

Thus, the conceptual framework surpasses the average aggregation of team-level CQ and explores how different CQ configurations affect varied outcomes. The results of this chapter demonstrate that diversity in all aspects of CQ is positively linked with subjective outcomes. However, these diversities do not significantly impact objective outcomes. The findings also suggest that when there is a high dissimilarity in team members' motivational and behavioural CQ, team members are less content; however, when there is a dissimilarity in cognitive CQ, it enhances team members' subjective and objective outcomes. Conversely, when teams exhibit high separation along the

cognitive dimension of CQ, their subjective and objective outcomes diminish. This implies that having two distinct categories in the cognitive aspects of CQ, such as knowledge and strategies for navigating cultural differences, hinders team results.

5.2. Thesis theoretical contributions

The thesis makes a substantial contribution to theoretical development within the fields of cultural intelligence, team diversity dynamics, and their influence on team outcomes. It advances existing theoretical frameworks, particularly Harrison and Klein's (2007) (2007) diversity categorization theory, by applying it to the context of CQ and team diversity. By exploring the three dimensions of this theory - variety, disparity, and separation - the thesis provides nuanced insights into their effects on team processes and outcomes.

Moreover, the thesis acknowledges the complexity of team-level CQ, challenging traditional aggregation methods and adopting a configuration-based perspective. This approach recognizes that CQ is not a one-size-fits-all concept and emphasizes the importance of individual differences and interactions among team members. Drawing from multiple intelligence theory (Gardner, 1993), it underscores the significance of diverse skills and capacities within teams. This thesis is the first study that taps into the CQ configuration from a diversity perspective, considers CQ dimensions and their underlying theories, and incorporates different diversity theories such as information processing theory, (in)justice view, and categorization theory. By synthesizing these perspectives, it offers a more holistic understanding of how team members process information, interact, and behave within culturally diverse teams. Moreover, synthesizing these perspectives highlight the much-needed calls for adapting different

team CQ configurations and moving beyond the aggregation methods used (Barrick et al., 1998; Kozlowski & Klein, 2000; Ng & Van Dyne, 2005; Schlaegel et al., 2021). Overall, the thesis aims to contribute to theoretical development by expanding existing frameworks, acknowledging the complexity of team-level CQ, integrating multiple theoretical perspectives, examining functional attributes, and providing nuanced insights into the impact of cultural dimensions. These contributions enhance the theoretical foundation in the areas of CQ, team diversity, and their implications for team dynamics and performance.

5.3. Thesis limitations

The current study makes valuable contributions to understanding the mechanisms of diversity and its effects on various outcomes in the context of global virtual teams. The conceptual framework in Chapter 4, grounded in a comprehensive literature review, focuses on the gap in team CQ configurations and presents the first illustrative example of team CQ configurations. However, some limitations have been acknowledged at the end of each chapter, and here will be briefly revised—for instance, Chapters 3 and 4 use student samples of X-Culture data (Richter et al., 2021; Schlaegel et al., 2023; Stahl & Maznevski, 2021; Tavoletti et al., 2019). Due to incomplete responses and missing data, many responses were excluded from the analysis. Although the remaining data was sufficient to test the research models, a more complete dataset would have allowed for more accurate and precise team-level results. Future studies should test the conceptual model in real-life organisations to avoid the common criticism of student samples (Schlaegel et al., 2023).

Similarly, both chapters 3 and 4 focus on team-level outcomes. Future research could expand its scope by considering multiple levels at once. Future research may focus on the diversity (variety, disparity and separation) in cultural intelligence between the team leader and the team members. Cultural intelligence refers to an individual's ability to function effectively across cultural contexts (Ang et al., 2003; Thomas et al., 2008) and future research could explore how the differences in CQ between the leader and the members impact team outcomes. Moreover, these Chapters were built upon the three diversity theories suggested by (Harrison & Klein, 2007) information processing, (in)justice view and categorisation theories. Future research may include other appropriate theoretical explanations to expand the scope of the literature (Van Knippenberg et al., 2004).

Moreover, although different methodologies such as bibliometric review in Chapter 2, Empirical analysis in Chapter 3, and conceptual framework with illustrative empirical example in Chapter 4 were employed, future research could consider other methodological perspectives such as mixed methods, case studies or experimental designs to gain more understanding of how diversity and specifically CQ diversity works in GVTs and other team settings.

On a personal reflection, there was a break of about two years in my research because of health issues. When the work started again, many changes happened in the academic field with new studies and findings. Which (mainly for the better) changed the course of my research. Nonetheless, it set me off course for some time. Similarly, the unforeseen advent of the COVID-19 pandemic further impeded my progress, as many of the courses and conferences were cancelled. These structured learning opportunities

could have helped my attendance at specific courses and necessitated an increased reliance on self-directed learning to acquire essential statistical competencies. Moreover, the constraints imposed by the health challenges limited the presentation of the articles to conferences, potentially depriving the study of constructive critiques and insights. Due to my proficiency in English, I utilized tools such as ChatGPT and Grammarly to enhance the language and grammar of the text. While these tools have been invaluable, they may introduce certain limitations. Regardless of these personal and external challenges, I continued my research to the best of my abilities, hoping to contribute to the literature and get the current knowledge.

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Appendix

Appendix 2. 1 Content domains of selected CQ, GM, CC measurement instruments

Measurement instrument	Intercultural traits	Intercultural attitudes and worldviews	Intercultural capabilities
Cultural Intelligence Scale, CQS			x
Global Mindset Inventory, GMI	x	x	x
Global Competencies Inventory, GCI	x	x	x

Appendix 3. 1 Measurement overview, pre- calculations

Construct	Items	Load	Ind. Rel	α	rho_A	CR	AVE
Task Outcome (Reviewer Rating)							
TO1	Creativity of ideas (reviewer rating)	.975	.950	.852	.899	.909	.768
TO2	Overall quality of the report (reviewer rating)	.972	.945				
Psychological Outcome (Team Self-Evaluation)							
PsyO1	In general, how happy you with are… ...the business idea put forth by your team?	.9225	.8510	.940	.952	.971	.943
PsyO2	...the effort your teammates put into the project?	.9170	.8409				
PsyO3	...the overall performance of your team?	.9114	.8307				
Barriers to Collaborate (Team Self-Evaluation)							
	How much the following were problems for your team?						
BtC1	Different cultures, working and communication styles	.786	.618	.804	.809	.973	.948
BtC2	Differences in opinions, inability to reach a consensus	.781	.611				
BtC3	Differences in enthusiasm	.761	.579				
BtC4	Different understanding of the task	.843	.710				
Cultural distance (Team Self-Evaluation) adapted from (Yoo et al., 2011)							
Power distance							
PO1	People in higher positions should make most decisions without consulting people in lower positions.	.741	.546	.633	.634	.801	.573
PO2	People in lower positions should not disagree with decisions by people in higher positions	.755	.570				
PO3	People in higher positions should not delegate important tasks to people in lower positions.	.776	.602				
Uncertainty avoidance							
UN1	It is important to closely follow instructions and procedures.	.849	.72	.589	.716	.829	.709
UN2	Instructions for operations are important.	.834	.695				
Collectivism							
CO1	Group welfare is more important than individual rewards.	.908	.824	.726	.733	.879	.784
CO2	Group success is more important than individual success.	.862	.743				
Masculinity							
MA1	It is more important for men to have a professional career than it is for women.	.917	.84	.693	.941	.761	.761
MA2	Solving difficult problems usually requires an active, forcible approach, which is typical of men.	.825	.68				
Long term orientation							
LT1	Long-term planning.	.804	.646	.686	.718	.828	.614
LT2	Giving up today's fun for success in the future.	.715	.511				
LT3	Working hard for success in the future.	.827	.684				

Appendix 3. 2 HTMT-Ratio-Confidance Intervals

	(O)	(M)	2.50%	97.50%		(O)	(M)	2.50%	97.50%		(O)	(M)	2.50%	97.50%
Age_V <-> BtC	.06	.072	.003	.181	Gen_V <-> Task_O	.07	.078	.009	.189	Psy_O <-> LT_S	.038	.067	.017	.16
Age_V <-> CO_M	.055	.064	.003	.16	Gen_V <-> Tech_D	.01	.051	.002	.144	Psy_O <-> LTM	.265	.265	.162	.367
Age_V <-> CO_S	.047	.062	.002	.166	Gen_V <-> Tech_M	.099	.101	.012	.192	Psy_O <-> MA_M	.069	.084	.024	.179
Age_V <-> CQ_D	.064	.069	.003	.164	Gen_V <-> UN_M	.005	.047	.002	.131	Psy_O <-> MA_S	.046	.066	.015	.164
Age_V <-> CQ_M	.018	.049	.002	.138	Gen_V <-> UN_S	.019	.041	.001	.118	Psy_O <-> PO_M	.114	.12	.036	.228
Age_V <-> Eng_D	.026	.049	.002	.134	LT_S <-> CO_M	.122	.121	.012	.236	Psy_O <-> PO_S	.059	.08	.033	.146
Age_V <-> Eng_M	.013	.044	.002	.126	LT_S <-> CO_S	.121	.121	.006	.282	Psy_O <-> Tech_D	.031	.065	.018	.144
Age_V <-> LT_S	.035	.057	.002	.157	LT_S <-> CQ_M	.017	.044	.002	.12	Task_O <-> CO_M	.018	.05	.008	.131
Age_V <-> LTM	.04	.056	.003	.15	LT_S <-> Eng_M	.09	.093	.007	.194	Task_O <-> CO_S	.033	.054	.007	.144
Age_V <-> MA_M	.04	.055	.002	.146	LTM <-> CO_M	.25	.25	.136	.359	Task_O <-> CQ_D	.037	.057	.011	.139
Age_V <-> MA_S	.03	.049	.002	.133	LTM <-> CO_S	.142	.144	.02	.262	Task_O <-> CQ_M	.075	.081	.011	.186
Age_V <-> PO_M	.026	.047	.002	.133	LTM <-> CQ_M	.022	.048	.002	.139	Task_O <-> Eng_D	.03	.053	.013	.127
Age_V <-> PO_S	.017	.045	.002	.126	LTM <-> Eng_M	.093	.097	.007	.202	Task_O <-> Eng_M	.031	.053	.011	.132
Age_V <-> Psy_O	.114	.116	.028	.221	LTM <-> LT_S	.416	.415	.311	.51	Task_O <-> LT_S	.1	.102	.012	.216
Age_V <-> Task_O	.053	.066	.011	.163	MA_M <-> CO_M	.085	.089	.005	.198	Task_O <-> LTM	.117	.119	.017	.229
Age_V <-> Tech_D	.003	.045	.002	.13	MA_M <-> CO_S	.038	.059	.002	.163	Task_O <-> MA_M	.184	.184	.08	.289
Age_V <-> Tech_M	.009	.048	.002	.135	MA_M <-> CQ_M	.057	.064	.003	.16	Task_O <-> MA_S	.016	.05	.006	.135
Age_V <-> UN_M	.016	.047	.002	.132	MA_M <-> Eng_M	.055	.062	.003	.152	Task_O <-> PO_M	.197	.196	.089	.3
Age_V <-> UN_S	.1	.102	.006	.222	MA_M <-> LT_S	.124	.124	.021	.232	Task_O <-> PO_S	.123	.124	.018	.239
BtC <-> CO_M	.077	.084	.004	.205	MA_M <-> LTM	.035	.05	.002	.14	Task_O <-> Psy_O	.162	.162	.061	.275
BtC <-> CO_S	.023	.06	.002	.167	MA_M <-> MA_S	.363	.363	.267	.459	Task_O <-> Tech_D	.095	.098	.014	.199
BtC <-> CQ_D	.112	.113	.01	.222	MA_S <-> CO_M	.198	.197	.084	.305	Tech_D <-> CO_M	.025	.048	.002	.133
BtC <-> CQ_M	.327	.327	.23	.419	MA_S <-> CO_S	.163	.165	.041	.29	Tech_D <-> CO_S	.056	.064	.003	.155
BtC <-> Eng_D	.308	.308	.222	.391	MA_S <-> CQ_M	.002	.04	.002	.112	Tech_D <-> CQ_D	.006	.043	.002	.12
BtC <-> Eng_M	.418	.417	.316	.509	MA_S <-> Eng_M	.099	.101	.011	.198	Tech_D <-> CQ_M	.079	.084	.005	.192
BtC <-> LT_S	.11	.117	.005	.31	MA_S <-> LT_S	.029	.052	.002	.152	Tech_D <-> Eng_M	.578	.578	.478	.67
BtC <-> LTM	.06	.071	.003	.183	MA_S <-> LTM	.2	.199	.084	.311	Tech_D <-> LT_S	.029	.052	.002	.143
BtC <-> MA_M	.026	.048	.002	.132	Natio_V <-> Age_V	.045	.066	.003	.176	Tech_D <-> LTM	.077	.081	.005	.178
BtC <-> MA_S	.054	.064	.003	.16	Natio_V <-> BtC	.153	.153	.032	.267	Tech_D <-> MA_M	.003	.042	.002	.118
BtC <-> PO_M	.016	.054	.002	.148	Natio_V <-> CO_M	.05	.059	.002	.154	Tech_D <-> MA_S	.059	.066	.002	.16
BtC <-> PO_S	.078	.084	.005	.191	Natio_V <-> CO_S	.003	.034	.001	.093	Tech_M <-> CO_M	.039	.053	.002	.139
BtC <-> Psy_O	.228	.227	.124	.328	Natio_V <-> CQ_D	.022	.047	.002	.132	Tech_M <-> CO_S	.103	.104	.009	.211
BtC <-> Task_O	.025	.05	.013	.127	Natio_V <-> CQ_M	.05	.065	.003	.176	Tech_M <-> CQ_D	.026	.049	.002	.138
BtC <-> Tech_D	.169	.168	.059	.275	Natio_V <-> Eng_D	.031	.06	.003	.155	Tech_M <-> CQ_M	.453	.451	.355	.54
BtC <-> Tech_M	.203	.203	.094	.307	Natio_V <-> Eng_M	.094	.094	.02	.167	Tech_M <-> Eng_D	.407	.408	.32	.492

BtC <-> UN_M	.084	.089	.005	.196	Natio_V <-> Gen_V	.123	.178	.007	.444	Tech_M <-> Eng_M	.398	.397	.294	.495
BtC <-> UN_S	.13	.13	.008	.281	Natio_V <-> LT_S	.012	.027	.001	.078	Tech_M <-> LT_S	.053	.062	.003	.157
CO_M <-> CO_S	.087	.089	.005	.2	Natio_V <-> LTM	.078	.08	.011	.154	Tech_M <-> LTM	.093	.096	.008	.205
CQ_D <-> CO_M	.002	.042	.002	.117	Natio_V <-> MA_M	.102	.103	.009	.211	Tech_M <-> MA_M	.037	.052	.002	.137
CQ_D <-> CO_S	.071	.075	.004	.178	Natio_V <-> MA_S	.106	.106	.026	.188	Tech_M <-> MA_S	.019	.046	.002	.131
CQ_D <-> CQ_M	.313	.314	.21	.416	Natio_V <-> PO_M	.043	.059	.002	.163	Tech_M <-> PO_M	.044	.057	.002	.148
CQ_D <-> Eng_M	.13	.133	.014	.257	Natio_V <-> PO_S	.084	.088	.007	.188	Tech_M <-> PO_S	.072	.077	.004	.177
CQ_D <-> LT_S	.085	.092	.005	.207	Natio_V <-> Psy_O	.05	.066	.02	.134	Tech_M <-> Psy_O	.374	.374	.267	.474
CQ_D <-> LTM	.126	.126	.022	.232	Natio_V <-> Task_O	.148	.149	.027	.265	Tech_M <-> Task_O	.035	.055	.007	.147
CQ_D <-> MA_M	.007	.043	.002	.118	Natio_V <-> Tech_D	.079	.081	.006	.182	Tech_M <-> Tech_D	.039	.055	.002	.147
CQ_D <-> MA_S	.007	.042	.002	.117	Natio_V <-> Tech_M	.004	.042	.002	.116	UN_M <-> CO_M	.251	.25	.144	.356
CQ_M <-> CO_M	.074	.078	.004	.172	Natio_V <-> UN_M	.047	.056	.002	.145	UN_M <-> CO_S	.032	.06	.002	.161
CQ_M <-> CO_S	.081	.082	.006	.173	Natio_V <-> UN_S	.032	.053	.002	.144	UN_M <-> CQ_D	.054	.062	.003	.153
Eng_D <-> CO_M	.059	.067	.003	.168	PO_M <-> CO_M	.052	.067	.002	.176	UN_M <-> CQ_M	.056	.065	.003	.166
Eng_D <-> CO_S	.072	.073	.004	.166	PO_M <-> CO_S	.146	.144	.026	.26	UN_M <-> Eng_D	.105	.107	.008	.226
Eng_D <-> CQ_D	.003	.04	.001	.111	PO_M <-> CQ_D	.012	.042	.002	.114	UN_M <-> Eng_M	.049	.057	.003	.144
Eng_D <-> CQ_M	.503	.502	.412	.588	PO_M <-> CQ_M	.061	.068	.003	.165	UN_M <-> LT_S	.118	.118	.016	.218
Eng_D <-> Eng_M	.56	.562	.48	.638	PO_M <-> Eng_D	.119	.119	.018	.22	UN_M <-> LTM	.339	.339	.227	.442
Eng_D <-> LT_S	.052	.06	.003	.152	PO_M <-> Eng_M	.064	.07	.003	.168	UN_M <-> MA_M	.069	.076	.003	.179
Eng_D <-> LTM	.118	.118	.016	.223	PO_M <-> LT_S	.04	.068	.003	.187	UN_M <-> MA_S	.13	.13	.021	.24
Eng_D <-> MA_M	.086	.088	.006	.186	PO_M <-> LTM	.1	.101	.008	.212	UN_M <-> PO_M	.05	.064	.002	.173
Eng_D <-> MA_S	.077	.08	.006	.17	PO_M <-> MA_M	.46	.461	.372	.543	UN_M <-> PO_S	.135	.136	.028	.236
Eng_D <-> Tech_D	.024	.059	.002	.162	PO_M <-> MA_S	.192	.191	.066	.307	UN_M <-> Psy_O	.189	.188	.079	.297
Eng_M <-> CO_M	.112	.112	.013	.218	PO_M <-> PO_S	.6	.599	.526	.666	UN_M <-> Task_O	.025	.054	.011	.136
Eng_M <-> CO_S	.053	.065	.003	.167	PO_M <-> Tech_D	.036	.057	.002	.157	UN_M <-> Tech_D	.043	.059	.002	.158
Eng_M <-> CQ_M	.341	.34	.232	.44	PO_S <-> CO_M	.125	.126	.014	.244	UN_M <-> Tech_M	.032	.049	.002	.132
Gen_V <-> Age_V	.02	.049	.002	.141	PO_S <-> CO_S	.075	.082	.004	.197	UN_M <-> UN_S	.201	.203	.074	.317
Gen_V <-> BtC	.078	.082	.005	.187	PO_S <-> CQ_D	.013	.042	.002	.119	UN_S <-> CO_M	.033	.054	.002	.149
Gen_V <-> CO_M	.029	.045	.002	.119	PO_S <-> CQ_M	.004	.042	.001	.116	UN_S <-> CO_S	.323	.319	.163	.465
Gen_V <-> CO_S	.029	.048	.002	.134	PO_S <-> Eng_D	.036	.051	.002	.142	UN_S <-> CQ_D	.059	.066	.003	.169
Gen_V <-> CQ_D	.058	.065	.003	.161	PO_S <-> Eng_M	.051	.058	.003	.147	UN_S <-> CQ_M	.099	.099	.01	.194
Gen_V <-> CQ_M	.097	.098	.007	.206	PO_S <-> LT_S	.078	.085	.004	.207	UN_S <-> Eng_D	.098	.1	.011	.198
Gen_V <-> Eng_D	.138	.137	.018	.276	PO_S <-> LTM	.041	.057	.002	.149	UN_S <-> Eng_M	.053	.066	.003	.171
Gen_V <-> Eng_M	.074	.079	.004	.176	PO_S <-> MA_M	.26	.26	.153	.363	UN_S <-> LT_S	.302	.295	.115	.465
Gen_V <-> LT_S	.038	.05	.002	.128	PO_S <-> MA_S	.303	.301	.172	.421	UN_S <-> LTM	.046	.068	.003	.182
Gen_V <-> LTM	.054	.059	.003	.141	PO_S <-> Tech_D	.043	.055	.003	.15	UN_S <-> MA_M	.096	.1	.006	.223
Gen_V <-> MA_M	.206	.209	.112	.311	Psy_O <-> CO_M	.116	.119	.025	.231	UN_S <-> MA_S	.028	.06	.002	.172
Gen_V <-> MA_S	.154	.157	.043	.275	Psy_O <-> CO_S	.168	.168	.075	.262	UN_S <-> PO_M	.172	.172	.058	.282
Gen_V <-> PO_M	.111	.112	.012	.217	Psy_O <-> CQ_D	.052	.073	.02	.158	UN_S <-> PO_S	.021	.048	.002	.133
Gen_V <-> PO_S	.007	.043	.002	.121	Psy_O <-> CQ_M	.388	.388	.282	.485	UN_S <-> Psy_O	.156	.157	.064	.256
Gen_V <-> Psy_O	.056	.073	.019	.15	Psy_O <-> Eng_D	.418	.418	.324	.508	UN_S <-> Task_O	.082	.09	.017	.202
					Psy_O <-> Eng_M	.298	.297	.197	.394	UN_S <-> Tech_D	.022	.045	.002	.124
										UN_S <-> Tech_M	.155	.155	.047	.258

Original sample (O), Sample mean (M)

Appendix 5. 1 Data & Sample for Chapters 3 and 4

In Chapters 3 and 4, we employed data from the X-Culture project, a substantial international business competition that offers students the opportunity to collaborate in global virtual teams (GVTs) on real-world business challenges provided by corporate partners. The dataset we utilised was meticulously collected by the X-Culture team during a two-month period in the autumn semester of 2018.

The X-Culture initiative has undergone significant development, amassing a comprehensive dataset that proves invaluable for academic research. This project engages students from diverse geographical backgrounds, encouraging them to form global virtual teams to address complex international business problems. These teams collaborate exclusively through digital tools and technologies to solve tangible business challenges.

One notable aspect of these teams is their remarkable diversity, with members originating from 87 different countries, resulting in an average representation of 3.4 nationalities per team. This diversity provided a rich context for our exploration into the dynamics of global virtual teams and the influence of cross-cultural differences on team processes and outcomes.

The X-Culture dataset is multi-sourced, multi-level, and longitudinal in nature. It encompasses various data types, including self-report surveys, instructor evaluations, external data such as time zone information and cultural and institutional environments of countries, as well as records of deadlines and other performance metrics, among others. Data collection spanned 12 waves of surveys, starting with pre-project surveys for students and instructors and extending to weekly and post-project surveys. These surveys employed diverse measures, including pre-project training and test performance, knowledge and skills assessments, attitudes, and specific measures.

The measures utilised in these chapters were briefly introduced under variables in each respective chapter. Specifically, Chapter 3 employed variables such as demographic information, knowledge and skills (e.g., English language proficiency, cultural and technical skills), and cultural values-based measures. These variables encompassed a wide range, including general demographic data, peer evaluations, and self-report

surveys, all of which offered valuable insights. For the analysis of team processes, we employed the variable "barriers to collaboration," which was assessed through a self-report survey. Additionally, psychological outcomes were evaluated through self-report surveys, while task outcomes were based on instructor evaluations.

Similarly, in Chapter 4, the Cultural Intelligence Scale (CQS) data was utilised to conduct the analysis. The original data was collected at the individual level through self-report surveys, which were then used to compile different team Cultural Intelligence configurations (team CQ variety, disparity and separation) for analysis. We examined two types of outcomes: subjective outcomes, assessed through self-report measures, and objective outcomes, based on final grades provided by instructors. This information is also briefly provided under the description of variables in Chapter 4 (4.6).

Using X-Culture data offers researchers valuable advantages. It provides real-world insights into cross-cultural collaboration within global virtual teams, aligning with the current business landscape. The dataset's comprehensiveness, with diverse data sources, facilitates robust analysis.

However, potential limitations include sampling bias, as participants are voluntary students, limiting generalizability. Researchers have limited control over data collection, introducing confounding variables. Self-report surveys, while valuable, may be subject to response bias and measurement error as mentioned under each chapters limitations.

For additional information about the X-Culture project and its dataset, readers are encouraged to visit the project's official website at www.X-Culture.org, where detailed documentation and resources are available.