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Cognitive flexibility and cultural intelligence: Exploring the cognitive aspects of effective functioning in culturally diverse contexts

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ABSTRACT

Cultural intelligence or CQ is an important construct that is associated with effective functioning in culturally diverse contexts. More recently, research has attempted to identify factors that might relate to the strengthening or development of CQ. In this study, we examine cognitive flexibility as a possible psychological process that relates to CQ. In two studies, participants (total $N = 694$) completed different self-report measures of cognitive flexibility, need for cognitive closure, and a CQ scale. In study 1, CQ was associated with the subscale of cognitive flexibility which is related to tendency to consider multiple perspectives and generate multiple approaches to problem solving ($R^2 = .24$). In study 2, CQ was related to the executive function of shifting ($R^2 = .04$). The different effect sizes suggest that CQ might be more reflective of the cognitive preferences and tendencies that flexibly integrate various specific cognitive functions, instead of fundamental executive functions. The results add to the emerging literature on factors that might be associated with the development of CQ, and point to possible entry points for developing or training CQ in individuals.

Introduction

Cultural intelligence (also referred to as CQ) is an important construct in intergroup relations in culturally diverse contexts. It has been studied mostly in multicultural work settings (see Ang & Van Dyne, Ang, & Koh, 2008) but is conceptualized as an individual difference factor that could apply to effective functioning in all types of culturally diverse environments (Earley & Ang, 2003). Much work has been done showing the positive outcomes of CQ in such environments (e.g., Huff, Song, & Gresch, 2014; Lee, Veasna, & Wu, 2013), and some studies have inquired into factors that contribute to the development of CQ (e.g., MacNab, Brislin, & Worthley, 2012; Reichard et al., 2015). In this study, we explore whether cognitive flexibility is a possible basic psychological process that might be associated with the interrelated capacities in CQ.

Cultural intelligence: dimensions, outcomes, and antecedents

CQ has been conceptualized as the capability of an individual to function effectively in situations characterized by cultural diversity (Earley & Ang, 2003). The conceptualization of CQ is anchored on Sternberg (1985) triarchic intelligence theory that

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emphasizes the role of motivational, cognitive, and behavioral capabilities in how an individual functions in different experiential contexts. CQ specifically refers to individual functioning in intercultural social contexts or contexts where there are people from diverse cultural backgrounds. As an intercultural capability, CQ has been operationalized and measured using four factors: motivational, cognitive, metacognitive and behavioral (Ang & Van Dyne, 2008). Motivational CQ refers to the drive of an individual to engage in cross-cultural interactions despite the challenges brought about by cultural differences. Cognitive CQ refers to the collection of knowledge about various cultures including knowledge of cultural values, norms, conventions and practices. Metacognitive CQ refers to higher-order thinking capabilities, mainly the ability to take perspective and develop mental schemas that can guide cross-cultural interactions. Behavioral CQ refers to the ability to adjust both verbal and non-verbal actions to suit the requirements of various cultural contexts (Ang & Van Dyne, 2008).

CQ has attracted the attention of many scholars as it yields various positive outcomes. As an intercultural capability, CQ has been found to impact cross-cultural adjustment and adaptation (Chen, Wu, & Bian, 2014; Huff et al., 2014; Lee, Veasna, & Sukoco, 2014; Lin, Chen, & Song, 2012). Moreover, CQ has been demonstrated to impact cross-cultural performance and effectiveness (Chen, Lin, & Sawangpattanakul, 2011; Lee et al., 2013; Korzilius, Buecker, & Beerlage, 2017; Presbitero, 2017). CQ has also been found to be relevant in cross-cultural leadership (Deng & Gibson, 2009; Rockstuhl, Seiler, Ang, Van Dyne, & Annen, 2011), adaptation of international students (Presbitero, 2016a; Shu, McAbee, & Ayman, 2017) and sojourners (Kong, 2017), life satisfaction of migrant workers (Le, Jiang, & Nielsen, 2016) and virtual cross-cultural interactions (Presbitero, 2016b).

Beyond understanding the outcomes of CQ in different domains, recent research has begun exploring factors that might influence CQ. The interest in these factors relates to the broader objective of understanding how CQ might be developed or enhanced in individuals; factors found to be related to CQ are candidates for interventions or points of intermediation to enhance CQ. Some factors have been identified in the literature and these have been classified into two categories (Fang, Schei, & Selart, 2018): (a) intercultural experiences, and (b) traits and abilities. A number of factors relate to international experience and cultural exposure (Ang & Van Dyne et al., 2008). Crowne (2013) demonstrated that the number of countries visited predicted levels of CQ. However, she revealed that the type or depth of cultural exposure makes a significant difference with work/study abroad bringing about higher CQ compared to vacations/holidays abroad. Another factor that can influence CQ is cross-cultural training and formal education. Studies show that participation in experiential training programs can increase levels of CQ (MacNab, 2012; MacNab et al., 2012; Presbitero & Toledano, 2017). Cultural simulations that are experiential can increase the likelihood of developing CQ (Reichard et al., 2015).

Individual difference factors like traits and abilities also related to CQ. General self-efficacy (MacNab & Worthley, 2012) and belief in the intergroup ideology of polyculturalism are both associated with CQ (Bernardo & Presbitero, 2017). Personality factors particularly extraversion and openness to experience (Ang, Van Dyne, & Koh, 2006; Harrison, 2012; Li, Mobley, & Kelly, 2016; Presbitero, 2016b) are also related to CQ.

Personality, cognitive flexibility and cultural intelligence

To better understand how these personality traits are associated with CQ, we refer to the motivational, cognitive, and neurological dimensions of the personality traits. Research has shown that the two factors of extraversion and openness to change form a higher order factor of personality or a metatrait labeled as *plasticity* (DeYoung, Peterson, & Higgins, 2002). The plasticity metatrait represents an overarching basic need or motivation in human being to be able to incorporate novel information that may come from within (e.g., from growth and development) and from outside the person (from the environment). Thus, both extraversion and openness to change reflect a motivation to explore and to actively engage with novelty (DeYoung, Peterson, & Higgins, 2005), and both seem to be associated with the dopaminergic systems in the brain that are associated with the encounter of novelty and experience of reward (DeYoung et al., 2002; Panksepp, 1998). But extraversion reflects exploring this tendency in concrete behavioral ways, while openness reflects this tendency in abstract cognitive ways (DeYoung et al., 2002). Thus, the personality factors that relate to CQ could be characterized as motivated cognitive and behavioral flexibility.

Looking deeper into the cognitive sources of the personality correlates of CQ, we could note that the personality factor of openness to change is actually also called *intellect* (Digman, 1990; Goldberg, 1992), and others prefer to use the label *openness/intellect* (DeYoung et al., 2005; Saucier, 2003); these labels reflect the assumption that openness to change is the personality trait most closely associated with cognitive characteristics (Pytlig Zillig, Hemenover, & Dienstbier, 2002), and in particular, with cognitive flexibility (DeYoung et al., 2005), which is commonly defined as the ability to change thoughts and actions in response to demands of the problem or situation (Lezak, 2004). In this study, we consider whether cognitive flexibility is a cognitive attribute that might be associated with CQ.

Cognitive flexibility has been conceptualized and operationalized in various ways in the research literature. It is considered as one of the components of the group of higher order cognitive abilities labeled as *executive functioning* that is important in problem solving, goal pursuit and achievement (Anderson, 2002; Lezak, 2004) and involves the ability to change cognitive sets or perspectives in response to changing goals or changes in the environment. The change in cognitive sets may involve switching facets of one's thoughts or behaviors, but also involves a range of cognitive functions such as attention, perception of task parameters, monitoring of task demands, among others (Ionescu, 2012). This ability to adapt cognitive processes to different types of problems typically involves two facets; first, the ability to perceive different elements and perspectives of the problem situation, and second, the ability to judge the appropriateness of different cognitive strategies to the situation (Diamond, 2013; Payne, Bettman, & Johnson, 1988). The opposite of cognitive flexible thinking may be characterized as rigid thinking, where the individual is inclined to consistently apply cognitive and behavioral sets and not to switch or explore alternative cognitive approaches even if the task or environment demands it, or even to explore. Others describe the opposite of cognitive flexibility as cognitive inertia – an overreliance on preexisting mental

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