34 Cultural Intelligence

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Introduction and Historical Background

Cultural intelligence refers to an individual's capability to function effectively in situations characterized by cultural diversity (Ang & Van Dyne, 2008; Earley & Ang, 2003). Earley and Ang (2003) first introduced the concept of cultural intelligence in their book *Cultural Intelligence: Individual Interactions Across Cultures*.

Cultural intelligence (CQ) was conceived at the turn of the twenty-first century, when the world was experiencing unprecedented globalization and interconnectedness, driven by advances in communication and transportation technologies. It was also conceived at a time in which ideological clashes and cultural conflict culminated in the tragic events of September 11, 2001. Nobel Prize laureate Elie Wiesel identified "cultural hatred" – hatred directed toward culturally different individuals – as *the* major source of problems between people, across all times. The *Los Angeles Times* estimates that there are more than fifty hot spots in the world where cultural conflicts occur every day. Amid the promises and perils of globalization, CQ becomes an essential capability for individuals, not only to harness the benefits of cultural diversity but also to manage the conflicts that come with it.

The driving question behind the idea of cultural intelligence is: *Why do some but not other individuals easily and effectively adapt their views and behaviors cross-culturally?* (Van Dyne, Ang, & Livermore, 2010). This question has long interested researchers across diverse disciplines in psychology, sociology, management, health care, the military, education, and other fields. Thus, it is not surprising that a wide array of frameworks and intercultural instruments purport to assess cultural competencies (see Leung, Ang, & Tan, 2014).

A challenge to this body of work, however, is the lack of a coherent theoretical foundation. In a review of the literature, Gelfand, Imai, and Fehr (2008) described the existing cultural competency models as suffering from the "jingle and jangle fallacy – where constructs with the same meaning are labeled differently while constructs with different meanings are labeled similarly" (p. 375). As a result, concerns of construct validity arise and compromise the practical utility of the concept.

It is within this context that the concept of CQ was formulated. Earley and Ang (2003) conceptualized CQ as a set of four capabilities based on Sternberg's (1986) theory of multiple loci of intelligence. Accordingly, CQ is a "cleaner" construct that offers a theoretically grounded, comprehensive, and coherent framework.

Since 2003, the concept of CQ has attracted significant attention worldwide and across diverse disciplines, including applied, cognitive, and social psychology; mental health; management; education; decision sciences; the military; engineering; and religious missions. This rapid growth of research attention on CQ attests to Matsumoto and Hwang's (2013) conclusion on the "promising evidence for assessing CQ" (p. 867).

More importantly, we have witnessed significant and exciting advancements in the theorizing and empirical research on CQ in recent years. Many of these advancements address the future research directions that we offered in the 2011 review in the first edition of this handbook. They include a deeper conceptualization of CQ and its dimensions, complementary measures of CQ, and a richer nomological network. In this chapter, we provide a comprehensive and up-to-date review of research on CQ, with a focus on these recent developments. We conclude with future directions to stimulate new theorizing and empirical research and to foster practical applications in diverse countries and cultures across the globe.

Conceptualization of Cultural Intelligence

Although early research tended to view intelligence narrowly as the ability to grasp concepts and solve problems in academic settings, there is now a consensus that intelligence applies beyond the classroom. The growing interest in "real-world" intelligence has identified new types of nonacademic intelligences (Sternberg, 1997) that focus on specific content domains such as social intelligence (Thorndike & Stein, 1937), emotional intelligence (Mayer & Salovey, 1993), and practical intelligence (Sternberg & Wagner, 2000).

Motivated by the practical reality of globalization, CQ builds on some of these ideas but with a focus on a specific domain – intercultural settings (Earley & Ang, 2003). Just as emotional intelligence (EQ) complements cognitive intelligence (IQ) in predicting work effectiveness in interdependent domestic work contexts (Joseph & Newman, 2010), CQ is another important form of intelligence that can increase our prediction of effectiveness in coping with diversity and functioning in new cultural settings (Rockstuhl et al., 2011).

Cultural Intelligence as a Multidimensional Construct

Earley and Ang (2003) conceptualized CQ as a multidimensional construct based on Sternberg's (1986) "multiple loci" of intelligence argument. Specifically, Sternberg proposed that there are different loci of intelligence within the person – metacognition, cognition, motivation, and behavior – and that a more complete understanding of intelligence requires the consideration of all four loci.

Adopting the multiple loci argument, Earley and Ang (2003) described cultural intelligence as an aggregate multidimensional construct that comprises four dimensions (commonly referred to as the four factors of CQ) – metacognitive, cognitive, motivational, and behavioral CQ. In a major conceptual refinement, Van Dyne and colleagues (2012) advanced more granular subdimensions to allow for a better-articulated conceptual space for each CQ factor. We describe the four CQ factors and their respective subdimensions next (see also Table 34.1 for a summary of the CQ factors and example items).

Metacognitive CQ. This CQ factor refers to an individual's level of conscious cultural awareness during cross-cultural interactions. Metacognitive CQ involves higher-level cognitive strategies – strategies that allow individuals to develop new heuristics and rules for social interactions in novel cultural environments. More specifically, Van Dyne and colleagues (2012) proposed three subdimensions of metacognitive CQ. They are planning (i.e., strategizing before intercultural encounters), awareness (i.e., having real-time consciousness of cultural influences on self, others, and the situation), and checking (i.e., reviewing assumptions and adjusting mental models when actual experiences differ from expectations).

People with high metacognitive CQ are more likely to be deliberate and intentional when they encounter cross-cultural interactions. They tend to plan for an interaction by taking the perspective of culturally diverse others and anticipating the actions and reactions of various parties in that cultural context. During the interaction, they are more likely to pay attention to meaningful cues, suspend judgments until sufficient information is available for accurate sensemaking, and adjust their original assumptions on new information. For instance, a Western executive with high metacognitive CQ may be more aware and mindful about when to speak up during meetings with Asians. They may also consciously look for cues during meetings to interpret what is said and not said, to develop a more accurate understanding of their Asian counterparts.

Metacognitive CQ is a critical component of CQ. It promotes active thinking about people and situations in different cultural settings, challenges rigid reliance on culturally bounded thinking and assumptions, and drives individuals to adapt and revise their strategies dynamically to achieve desired outcomes in cross-cultural encounters.

Cognitive CQ. While metacognitive CQ focuses on higher-order cognitive processes, cognitive CQ reflects knowledge of norms, practices, and conventions in different cultures acquired from education and personal experiences. It is an individual's level of knowledge of the cultural environment and knowledge of the self as embedded in the cultural context of the environment. Cognitive CQ includes subdimensions of culture-general knowledge (i.e., declarative knowledge of the universal elements that constitute a cultural environment) and culture-specific knowledge (i.e., declarative and procedural knowledge about cultural universals in a specific domain, for instance leading people across different cultures) (Van Dyne et al., 2012).

Table 34.1 *Summary of CQ factors with sample items from the 11-Dimension Expanded CQ Scale (E-CQS).* [a]

CQ dimensions	*Definition* / Sample Items
METACOGNITIVE CQ	
Subdimensions	*An individual's level of conscious cultural awareness and executive processing during intercultural interactions.*
Planning	I develop action plans before interacting with people from a different culture
Awareness	I am aware of how my culture influences my interactions with people from different cultures
Checking	I adjust my understanding of a culture while I interact with people from that culture
COGNITIVE CQ	
Subdimensions	*An individual's knowledge structures about cultural institutions, norms, practices, and conventions in different cultural settings.*
Culture-General Knowledge	I can describe the different cultural value frameworks that explain behaviors around the world
Context-Specific Knowledge	I can describe the ways that leadership styles differ across cultural settings
MOTIVATIONAL CQ	
Subdimensions	*An individual's capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences.*
Intrinsic Interest	I truly enjoy interacting with people from different cultures
Extrinsic Interest	I value the status I would gain from living or working in a different culture
Self-Efficacy to Adjust	I am confident that I can persist in coping with living conditions in different cultures
BEHAVIORAL CQ	
Subdimensions	*An individual's capability to enact a wide repertoire of verbal and nonverbal actions when interacting with people from different cultures.*
Verbal behavior	I change my use of pause and silence to suit different cultural situations
Nonverbal behavior	I modify how close or far apart I stand when interacting with people from different cultures
Speech Acts	I modify the way I disagree with others to fit the cultural setting

[a]

Individuals with high cognitive CQ are likely to have more elaborate knowledge structures about cultural institutions, norms, practices, and conventions in different cultural settings. Understanding the elements that constitute the cultural environment helps individuals appreciate how these elements shape and cause patterns of behaviors and interactions within a culture and why behaviors and interactions differ across different cultural environments (Ang & Van Dyne, 2008). For instance, understanding how a family system works becomes critically relevant when a leader develops ways to reward and motivate their employees in cultures that expect respect and care for senior members of their extended family.

Cognitive CQ is a critical component of CQ because it aids in making isomorphic attributions of behaviors observed in different cultural contexts. This in turn is critical for sound judgment and decision-making in culturally diverse settings (Ang et al., 2007). In addition, cognitive CQ can help to reduce uncertainty and anxiety during intercultural interactions.

Motivational CQ. Broadly, motivational CQ can be understood as approach versus avoidance motivation (Elliot & Covington, 2001). Those with higher motivational CQ are more likely to approach, rather than avoid, intercultural situations. More specifically, motivational CQ reflects the capability to direct attention and energy toward learning about, and functioning in, culturally diverse situations. Kanfer and Heggestad (1997) argued that such motivational capacities "provide agentic control of affect, cognition and behavior that facilitates goal accomplishment" (p. 39). The subdimensions of motivational CQ include intrinsic interest (i.e., valuing intercultural experiences in and of themselves), extrinsic interest (i.e., valuing the tangible, personal benefits that can be derived from intercultural experiences), and self-efficacy to adjust (i.e., having task-specific confidence in intercultural situations).

People with high motivational CQ are more likely to be attracted to intercultural situations because they value the tangible and intangible benefits of these interactions. They also tend to be more confident in coping with the inherent challenges of cultural differences. Motivational CQ is a critical component of CQ because it determines whether a person will approach or avoid intercultural situations and whether such interactions will be sustained. Possessing such a drive is important for crossing cultures since intercultural interactions are often fraught with cultural and language challenges. For example, a Chinese executive who likes and values interacting with people from other cultures may be less hesitant to approach a colleague from Japan, even if they do not speak Japanese or English well. In contrast, another Chinese executive who places little value on cross-cultural encounters will more likely avoid such cross-cultural interactions even if language is not a barrier.

Behavioral CQ. Behavioral CQ reflects an individual's capability to enact a wide range of verbal and nonverbal actions when interacting with people from different cultures. Behavioral CQ enables people to manage and regulate social behaviors in intercultural encounters so as to minimize misperceptions and misattributions (Gudykunst, 1993). The subdimensions of behavioral CQ include verbal behavior

(i.e., flexibility in vocalization, including accent, tone), nonverbal behavior (flexibility in communication via gestures, facial expressions, and body language, etc.), and speech acts (flexibility in using words to communicate specific types of messages such as requests, invitations, apologies, gratitude, disagreement) (Van Dyne et al., 2012).

People with high behavioral CQ are more likely to overcome the natural human tendency to exhibit habitual behaviors. Instead, they are more likely to display a wide repertoire of verbal behaviors, nonverbal behaviors, and speech acts to suit the cultural context. For example, a traveler with high behavioral CQ and a low-context communication style (i.e., who prefers to convey meaning explicitly and without reference to contextual understanding; Adair et al., 2016; Hall, 1959) may show behavioral flexibility and display high-context communication behaviors (e.g., say "no" indirectly) when it is more culturally appropriate to do so.

Behavioral CQ is a critical component of CQ because behaviors are salient and visible to others during social interactions. Mental capabilities for cultural understanding and motivation are rendered useless if they are not complemented with the ability to exhibit appropriate verbal and nonverbal actions during intercultural interactions (Hall, 1959). As such, the three behavioral CQ subdimensions may be the most critical aspects of CQ from the perspective of observers.

Conceptual Distinctiveness

To further clarify the nature of CQ, we describe what CQ is not. Specifically, we distinguish CQ from personality and other forms of intelligence.

Cultural intelligence and personality. CQ is a set of abilities, which refer to personal characteristics that relate to the capability to perform the behavior of interest. As such, CQ is clearly different from personality traits, which are nonability individual differences. CQ focuses on culturally relevant capabilities. Thus, it is more specific than personality or general cognitive ability. In addition, CQ is malleable and can be enhanced through experience, education, and training. Hence, CQ is a state-like individual difference that can evolve over time, while personality is a relatively stable, trait-like individual difference.

Cultural intelligence in relation to other intelligence constructs. CQ is similar to general cognitive ability (e.g., Schmidt & Hunter, 1998) and emotional intelligence (Mayer & Salovey, 1993) because it deals with a set of abilities. CQ differs, however, from the two intelligences in the nature of the ability examined. General cognitive ability – the ability to learn – predicts performance across many jobs and settings but it is not specific to certain contexts – such as culturally diverse situations. In addition, it does not include behavioral or motivational aspects of intelligence. Emotional intelligence (EQ) is the ability to deal with personal emotions. Thus, it is similar to CQ because it goes beyond academic and mental intelligence but it differs from CQ because it focuses on the general ability to perceive and manage emotions without consideration of the cultural context. Given that emotional cues are symbolically constructed within a culture, a person who is emotionally intelligent in one culture is

not necessarily emotionally intelligent in another culture (Earley & Ang, 2003). In other words, EQ is culture-bound. In contrast, CQ is not culture-specific and refers to a general set of capabilities with relevance to situations characterized by cultural diversity.

Empirical research has supported the conceptual distinctiveness of CQ from cognitive ability (e.g., Klafehn, Li, & Chiu, 2013; Rockstuhl et al., 2011; Varela & Gatlin-Watts, 2014) and EQ (e.g., Groves, Feyerherm, & Gu, 2015; Lin, Chen, & Song, 2012; Şahin et al., 2013). In addition, empirical evidence suggests that CQ has incremental predictive validity over cognitive ability and EQ in predicting cross-border leadership effectiveness (Rockstuhl et al., 2011) and negotiation effectiveness (Groves et al., 2015).

Measurement of Cultural Intelligence

Individual differences in cultural intelligence are measured using diverse methods, including report-based and performance-based measures. We emphasize that alternative measures of CQ are complementary and capture unique information about a person's CQ. Rather than embark on a search for the methodological "Holy Grail," we suggest that the choice of the measure should be guided by the nature of the outcome of interest (Campbell & Fiske, 1959). For instance, research shows that matching the measure and outcome in terms of observability could improve prediction (Lance et al., 2008). This suggests that a self-reported measure of CQ may be more suitable in predicting affective states and, hence, outcomes such as intercultural adaptation. By contrast, a peer-reported measure of CQ may be more suitable for observable behaviors in intercultural interaction and, hence, for outcomes such as interpersonal effectiveness.

Report-Based Measures of Cultural Intelligence

Ang and associates (2007) and Van Dyne, Ang, and Koh (2008) initiated a series of studies to develop, validate, and cross-validate (N > 1,500) the first twenty-item Cultural Intelligence Scale (CQS). From an initial item pool of fifty-three items (thirteen to fourteen items per CQ dimension), ten best items for each dimension (i.e., a total of forty items) were retained based on clarity, readability, and definitional fidelity. To validate these items, Ang and colleagues conducted five studies. In Study 1, business school undergraduates in Singapore (N = 576) completed the forty items. Items with high residuals, low factor loadings, small standard deviations or extreme means, and low item-to-total correlations were dropped, resulting in twenty items with the strongest psychometric properties. Confirmatory factor analysis (CFA) (LISREL 8: maximum likelihood estimation and correlated factors) demonstrated a good fit for the hypothesized four-factor model with the data. Scholars interested in the use of the CQS for research purposes may contact the first author for information.

In a series of four studies (Studies 2–5), Ang and colleagues (2007) cross-validated the CQS across samples, time, and countries to assess its factor validity and cross-cultural measurement equivalence. CFA results confirmed the four-factor structure in different samples and demonstrated the temporal stability of the scale across a four-month period, as well as measurement equivalence across Singapore and US samples. Finally, they cross-validated the CQS across methods using an observer-report version of the scale. Multitrait-multimethod (MTMM) analysis provided evidence of convergent, discriminant, and criterion validity of the CQS across self- and peer-ratings of CQ and interaction adjustment in a sample of executive managers.

Subsequent studies also support the psychometrics, factor structure validity, and generalizability of the CQS. The four-factor structure has been replicated across multinational samples (e.g., Shannon & Begley, 2008; Shokef & Erez, 2008; Ward et al., 2009) and multiple countries, including India (Jyoti & Kour, 2015), Korea (T. Moon 2010a), the Philippines (Presbitero, 2016), Turkey (Şahin et al., 2013), and Saudi Arabia (Al-Dossary, 2016). Across studies, the CQS also shows good internal consistency reliability.

More recently, Van Dyne and colleagues (2012) introduced the Expanded CQS (E-CQS; see Table 34.1 for example items), a thirty-seven–item scale that measures subdimensions of the four CQ factors. They also provided evidence for the convergent and discriminant validity of the E-CQS in a sample of 286 individuals from more than thirty countries.

Performance-Based Measures of Cultural Intelligence

Moving beyond the report-based measures of CQS, Ang, Rockstuhl, and Ng (2014) developed a performance-based measure of CQ in the form of an intercultural situational judgment test (iSJT). The iSJT presents respondents with short video scenarios of intercultural conflict in the workplace. For example, the video may show the conflict between a team member who prefers to schedule a detailed work plan based on cultural values of high uncertainty avoidance and a team member who prefers to proceed with trial and error based on low uncertainty avoidance. At the end of each video scenario, respondents are asked what they would do next in this situation and their open-ended responses are scored for how effectively they would resolve the underlying cultural conflict.

Rockstuhl and colleagues (2015) validated the iSJT across a series of studies with students working in culturally diverse teams, as well as professionals working in multicultural consulting teams. Across all three studies, performance on the iSJT predicted peer-rated task performance and citizenship behaviors, over and above Big Five personality, general cognitive ability, international experience, and demographic characteristics. In sum, emerging empirical evidence highlights the potential of the iSJT to complement report-based measures of CQ as a predictor of intercultural effectiveness.

Evidence of CQ Nomological Network

Empirical research on CQ has flourished since the publication of Ang and colleagues' (2007) validated CQS. Today, we have a richer understanding of the nomological network of CQ and accumulated evidence of its predictive validity in a myriad of contexts and disciplines. In this section, we review empirical articles organized around the antecedents and outcomes of CQ. We further organize research on the outcomes of CQ by three levels of analysis – individual, dyad/team, and firm.

Antecedents of CQ

Research has examined three primary types of antecedents of CQ. They are personality, identity, and international experience.

Personality. In the section on conceptual distinctiveness, we distinguished personality, a distal, trait-like individual difference, from CQ, which is a state-like and malleable capability. Consistent with this conceptual distinction, Ang, Van Dyne, and Koh (2006) showed that the Big Five personality traits are distinct from, but related to, CQ. Further, CQ is shown to mediate the effects of personality traits such as openness to experience on adaptive performance (Oolders et al., 2008) and job performance (Sri Ramalu et al., 2012).

Identity. A relatively new antecedent of CQ is multicultural identity. Multiculturals, defined as people who identify with two or more cultures (Brannen & Thomas, 2010), are increasingly common because of immigration, intercultural marriages, or extensive multicultural experiences. This poses an interesting question for CQ research: Are multiculturals more culturally intelligent?

Addressing this question using professionals in an international agency in the Netherlands, Korzilius, Bücker, and Beerlage (2017) found that individuals who reported greater multiculturalism tend to have higher overall CQ. In another study of bicultural students in the United States, Dheer and Lenartowicz (2018) found that biculturals who perceive their cultural identities as integrated and compatible (versus dissociated or difficult to integrate) are more likely to have higher CQ. Interestingly, a superordinate identification with a global culture appears to overcome challenges associated with nonintegrated identities related to specific cultures. In a study of MBA students working in culturally diverse teams, Lee and colleagues (2018) found that, when global identity was low, students with integrated or balanced home and host country identities were perceived as more culturally intelligent by their peers, compared with students who identified with either their home or their host country. However, when global identity was high, CQ was high regardless of whether or not home and host country identities were balanced.

International experience. The relationship between international experience and CQ is a fairly well-established one. A number of studies show that international work experience (e.g., Crowne, 2008; Shannon & Begley, 2008; Tay, Westman, & Chia,

2008) and nonwork experience (e.g., Moon, Choi, & Jung, 2012; Tarique & Takeuchi, 2008) are positively related to CQ. Studies have also examined more complex models, including the role of CQ in mediating the effects of international experience on intercultural outcomes and moderators of the international experience – CQ relationship. For instance, in a study of expatriates in Korea, H. Moon and colleagues (2012) found that CQ mediated the effects of prior international work and nonwork experiences on intercultural adaptation.

Interestingly, CQ does not always mediate the effect of international experience. In a study by Kim and Van Dyne (2012), CQ mediates the effects of international experience (i.e., number of countries lived in) on international leadership potential only for majority members but not for minority members. Another moderator of the international experience – CQ relationship – is learning styles. In a study of international MBA students, Li, Mobley, and Kelly (2013) found that people with a divergent learning style (which emphasizes engaging in concrete experiences and reflecting on one's observations) are more likely to translate their international experience into higher CQ.

Outcomes of CQ – Individual Level

Much of the research on outcomes of CQ is conducted at the individual level and can be grouped into four major outcomes – adaptation, job performance, leadership, and the change in CQ as a result of an intervention. Within each outcome, we further organize our review by the study context, which primarily involves global professionals, foreign workers and migrants, the military, and students.

Adaptation. Cultural adaptation comprises two dimensions: sociocultural and psychological adjustment. Sociocultural adaptation includes general adjustment to foreign living conditions; work adjustment to foreign work culture; and interactional adjustment – the extent of getting along with those from another culture. Psychological adjustment refers to a person's general mental well-being when immersed in another culture (Church, 1982).

The majority of adaptation studies focus on global professionals and expatriates. In an early study, Ang and colleagues (2007) demonstrated that IT consulting professionals with higher motivational and behavioral CQ have better general, work, and interactional adjustment, as well as enhanced mental well-being in multicultural settings. Since then, a number of studies have demonstrated that CQ, especially motivational CQ, is an important predictor of expatriate adjustment (e.g., Chen et al., 2010; Firth et al., 2014; Guðmundsdóttir, 2015; Huff, Song, & Gresch, 2014; Zhang & Oczkowski, 2016). For instance, Zhang and Oczkowski (2016) found that motivational CQ is the only CQ factor that predicted both sociocultural and psychological adjustment in a sample of Australian expatriates. Similarly, Huff and colleagues (2014) found that motivational CQ predicted general, interactional, and work adjustment of expatriates in Japan.

In a multilevel study of expatriates across thirty-one subsidiaries, Chen and colleagues (2010) showed that the effects of expatriates' motivational CQ on work adjustment depend on the context. Specifically, results showed that motivational CQ

affects expatriates' work adjustment more when cultural distance and subsidiary support are low. This is an interesting finding as it suggests that motivational CQ is less likely to be activated when the context renders it unnecessary for expatriates to put in effort (e.g., high subsidiary support). At the same time, motivational CQ alone is not sufficient when the cultural environment is difficult, such as when the cultural distance between the home and the host cultures is high.

In the first longitudinal study that tracks the adjustment of expatriates, Firth and colleagues (2014) found that motivational CQ positively relates to initial levels of work adjustment. Surprisingly, motivational CQ is negatively related to subsequent change in work adjustment. Firth and colleagues explained that, consistent with control theory, expatriates with higher initial adjustment are more likely to experience smaller discrepancy between actual and desired levels of work adjustment and, hence, tend to devote less effort subsequently.

Research has also begun to examine CQ in foreign workers (e.g., Chen, 2015; Le, Jiang, & Nielsen, 2018) and students (e.g., Crowne & Engle, 2016; Peng, Van Dyne, & Oh, 2015; Racicot & Ferry, 2016; Shu, McAbee, & Ayman, 2017). For instance, in a study of foreign laborers in Taiwan, Chen (2015) found that CQ has an indirect effect on workers' job involvement via work adjustment. This effect is accentuated for workers who received intercultural training. Peng, Van Dyne, and Oh (2015) found that motivational CQ positively predicted the cultural well-being of students in a short-term business study-abroad program.

Job performance. An important outcome of CQ is performance, which includes work performance, creative performance, and negotiation performance.

Work performance is a multidimensional construct (Campbell, 1990) and empirical evidence shows that CQ predicts different aspects of performance. In the context of global professionals, Ang and colleagues (2007) showed that international managers with higher metacognitive CQ and cognitive CQ performed better at cultural decision-making and those with higher metacognitive CQ and behavioral CQ demonstrated higher task performance. In a study of call center employees in the Philippines, Presbitero (2017) found that motivational CQ mediates the effects of language ability on agents' service performance. In a study of expatriates, Chen and colleagues (2010) showed that motivational CQ influences job performance indirectly by enhancing cultural adjustment. Chen, Liu, and Portnoy (2012) showed that motivational CQ predicted cross-cultural sales but not overall sales of real estate agents in the United States and that this effect was stronger in firms with higher organizational-level motivational CQ.

In the context of the military, Şahin and Gürbüz (2014) examined CQ and adaptive performance – a form of work performance that emphasizes the management of changing work and novel requirements (Hesketh & Neal, 1999). Results based on a sample of Turkish troops deployed in the European Union Force in Bosnia and Herzegovina showed that soldiers with higher motivational CQ and behavioral CQ are more likely to display adaptive performance as rated by peers.

Negotiation performance is another important outcome of CQ. Studies on CQ and negotiation have mostly used negotiation tasks involving undergraduate and graduate students. At the individual level, Groves and colleagues (2015) found that

cognitive and behavioral CQ affect negotiation performance indirectly through interest-based negotiation behaviors. Studying dyads of American and East Asian students, Imai and Gelfand (2010) found that the minimum motivational CQ score of the dyad predicted integrative negotiation behaviors, which in turn predicted joint profits. In an experimental study of intercultural negotiation and dispute mediation involving American and Turkish students, Salmon and colleagues (2013) found that the effects of the negotiation dyad's CQ are moderated by the style of mediation. Specifically, the dyad's motivational CQ has a positive effect on negotiation outcomes when there is no mediation or when the mediation is formulative in nature (i.e., moving parties forward by offering constructive and specific suggestions). Surprisingly, the dyad's motivational CQ is negatively related to the negotiation outcome when the mediation is manipulative in nature (i.e., moving parties off a previously held position through threats and rewards).

A relatively new outcome variable examined in CQ research is creative performance. In the context of global professionals, Xu and Chen (2017) found that expatriates' metacognitive CQ and motivational CQ affect cross-cultural job creativity through cultural learning. Similarly, Lorenz and colleagues (2018) found that metacognitive CQ and cognitive CQ influence expatriates' innovations in products, services, and processes because of their greater ability to recognize new opportunities. Chua, Morris, and Mor's (2012) study of executives from diverse backgrounds showed that metacognitive CQ increases affect-based trust among culturally different members of multicultural professional networks, which in turn fosters the exchange and cross-pollination of ideas.

In the context of students, Chua and Ng (2017) postulated an interesting interaction effect of cognitive and metacognitive CQ on individuals' creativity. Their findings showed that, while cognitive CQ provides domain knowledge that aids creativity, too much cognitive CQ (i.e., cultural knowledge) could be detrimental because of cognitive overload and entrenchment. This "too-much-of-a-good-thing" effect, however, is seen only for individuals with low metacognitive CQ. This finding suggests that individuals with high metacognitive CQ have better self-regulated mental processes to avoid the potential dark side of cognitive CQ when generating ideas for a cross-cultural creative task.

Global leadership. Global leadership has been a long-standing area of interest for CQ scholars. In the context of organizational leaders from culturally diverse backgrounds, Groves and Feyerherm (2011) showed that leaders' CQ predicts followers' ratings of leader performance and team performance only when the team is culturally diverse. CQ has no effects when team diversity is low.

In the military context, Rockstuhl and colleagues (2011) conducted a classic study that simultaneously examined domestic and global leadership effectiveness. Based on a sample of professional military officers who had leadership roles in both domestic and cross-border contexts (e.g., UN peacekeeping missions), Rockstuhl and colleagues (2011) showed that EQ is a stronger predictor of leadership effectiveness in domestic contexts while CQ is a stronger predictor of leadership effectiveness in cross-border contexts. General intelligence (IQ) predicts leadership effectiveness in both domestic and cross-border contexts.

In the context of students, Lisak and Erez (2015) examined a group of MBA students working in self-managing virtual teams to determine the characteristics of emergent leaders. Using logistic regressions, the authors found that MBA students with high CQ, coupled with high global identity and openness to cultural diversity, are more likely to emerge as leaders than other team members.

Change in CQ. In light of the predictive validity of CQ, an important question is whether and how CQ can be developed in individuals. There is now growing empirical evidence to show that direct and authentic intercultural experiences, when coupled with appropriate interventions, can facilitate the development of CQ. Most of these studies are conducted with students in education contexts such as working in virtual multicultural teams (Erez et al., 2013; Taras et al., 2013), intercultural contact experiences (MacNab, 2012), short-term overseas trips (Wood & Peters, 2014), study-abroad programs (Chao, Takeuchi, & Farh, 2017; Ramirez, 2016), and international service–learning programs (Engle & Crowne, 2014; Pless, Maak, & Stahl, 2011).

More recent studies have progressed beyond a pre-post assessment of CQ to examine trajectories of CQ development over multiple time points. In a study of Chinese exchange students in the United States, Wang and colleagues (2015) assessed students' CQ at four time points from predeparture to the third month in the United States. Results revealed four intriguing CQ trajectories – consistently high CQ scores, decreasing CQ scores, increasing CQ scores, or a sharp decrease in CQ scores over the first two months followed by a rebound. This important finding highlights the presence of boundary conditions in the development of CQ.

Existing research has suggested several boundary conditions that could affect the development of CQ. For instance, MacNab, Brislin, and Worthley (2012) found that higher-quality intercultural contact based on four conditions derived from contact theory (Allport, 1954): equal status, common goals, personalized contact, and authority support led to greater increases in CQ. Rosenblatt and colleagues (2013) replicated and extended this finding by showing that the increase is mediated by disconfirmation of expectations. In a similar vein, Alexandra (2018) found that students with lower social dominance orientation were more likely to change their stereotypes during intercultural contact and in turn were more likely to improve in their CQ.

In the context of the military, Şahin, Gürbüz and Köksal (2014) compared the CQ of military personnel before and after international deployments and found interesting personality moderators. Results showed that extraverted individuals are more likely to increase in their metacognitive and behavioral CQ, whereas those with greater openness to experience tend to increase in their motivational CQ.

Outcomes of CQ – Dyad/Team Level

With the prevalence of multicultural teams, a number of studies have examined the role of CQ in affecting team processes (e.g., Adair, Hideg, & Spence, 2013; Chen & Lin, 2013; Moynihan, Peterson, & Earley; 2006) and outcomes (e.g., Crotty & Brett, 2012; Magnusson, Schuster, & Taras, 2014). Most of these studies are conducted

with self-managing student teams. In this section, we review studies that explicitly address team processes and outcomes at the dyad and team level.

In a study that examined dyads within teams, Rockstuhl and Ng (2008) found that higher metacognitive and cognitive CQ enhance affect-based trust in culturally diverse dyad partners in the team. Further, higher behavioral CQ displayed by a dyad partner positively influences affect-based trust in the dyad partner. CQ, however, has no effect on trust in culturally homogeneous dyads. In another study, Li and colleagues (2017) examined dyads comprising German and Chinese students working virtually on a project. Findings show that dyads with higher average CQ scores reported greater satisfaction with the virtual collaboration.

Using teams comprising undergraduate students, Adair and colleagues (2013) examined the relationship between team-level CQ and teams' shared values. Results showed that team-level metacognitive CQ and behavioral CQ are positively related to shared values in culturally heterogeneous teams but not in homogeneous teams. A surprising finding was that team-level motivational CQ and metacognitive CQ are negatively related to shared values in culturally homogeneous teams, suggesting that CQ could create unintended effects in teams that do not require it. In another study of 145 global virtual teams, Magnusson and colleagues (2014) found that teams' psychic distance (i.e., perception of differences among members) is positively related to team performance, mediated by team-level efforts. This mediated relationship is strengthened in teams with higher motivational CQ.

Outcomes of CQ – Firm Level

Ang and Inkpen (2008) developed a conceptual model of firm-level CQ that comprises three components: managerial CQ, competitive CQ, and structural CQ. Adopting a resource-based view of the firm, Ang and Inkpen argued that firm-level CQ is an important competitive resource for international business ventures. Complementing Ang and Inkpen's model with a dynamic capability framework, Moon (2010b) proposed three CQ organizational capabilities. They are (1) process capability (comprising cross-cultural coordination, organizational learning, and cross-cultural reconfiguration); (2) position capability (comprising managerial, competitive, and structural CQ); and (3) path capability (comprising cross-cultural initiation, experience, and resource fungibility).

Recent studies have empirically examined the role of CQ at the firm level in three different contexts – international alliances (Pesch & Bouncken, 2017; Yitmen, 2013), exporting firms (Magnusson et al., 2013; Golgeci, Swiatowiec-Szczepanska, & Raczkowski, 2017), and small businesses (Charoensukmongkol, 2015, 2016). For instance, in a study involving German firms in the photonics and biotechnology industries, Pesch and Bouncken (2017) found that firm-level managerial CQ is positively related to task discourse – the extent to which alliance partners communicate and challenge each other's views and problem-solving methods. Further, managerial CQ determines whether socializing practices (e.g., social events, interorganizational teams) are effective in building trust between alliance partners. Interestingly, Pesch and Bouncken found that socializing practices are effective in

building trust only when firm managerial CQ is high but can backfire when managerial CQ is low.

In the context of exporting firms, Golgeci and colleagues (2017) found that a leader's metacognitive CQ accentuates the positive relationship between firm absorptive capacity and firm innovativeness. This is because leaders with high metacognitive CQ are more likely to be adept in recognizing opportunities and exploring new knowledge in the external environment.

Another interesting context for the study of firm-level CQ is small and medium businesses. For instance, Charoensukmongkol (2015) examined the relationship between owners' CQ and firm performance using 129 small and medium manufacturing firms in Thailand. Results showed that business owners' CQ is positively related to firm export performance, mediated by owners' strong relationships with foreign stakeholders such as customers, competitors, and suppliers.

Future Directions

Our review summarizes the evolution of CQ research in the past decade, from establishing the incremental predictive validity of CQ (over and above related constructs such as personality and other forms of intelligences) to a more complex understanding of the mediators and moderators of CQ; from a focus on the individual-level to more sophisticated multilevel theorizing; from examining why CQ is important to how we can develop CQ. Many of these research developments are aligned with the research directions outlined in our review in the first edition of this handbook. Given the accumulating empirical studies on CQ, the time may be ripe for a meta-analysis to synthesize research findings. We also encourage future research to continue to deepen our understanding of the conceptualization, measurement, and nomological network of CQ. In the following section, we propose new directions for future research along these lines of inquiry.

Expand Conceptualizations of CQ

Biological loci of CQ. Beyond the four-factor model of CQ, a new and exciting development is the exploration of a biological loci of CQ. Building on recent advances in sociocognitive neuroscience research, Rockstuhl and colleagues (2010) elucidated the neurological basis of CQ by mapping the four CQ factors to distinct cortical regions in the brain. Specifically, they identified the anterior rostral medial frontal cortex (including the paracingulate cortex) as the neurological mediator for metacognitive CQ; the orbitofrontal cortex for motivational CQ; and the posterior rostral medial frontal cortex and dorsal anterior cingulate cortex for behavioral CQ. Beyond identifying the neurological mediators of the CQ factors, Rockstuhl and colleagues proposed that high overall CQ may be associated with a greater capability to tune one's patterns of neural activity to different cultural contexts. The conceptualization of the biological loci of CQ offers fertile ground for future research and empirical testing.

CQ and broader diversity markers. The existing conceptualization of CQ has focused on national cultural differences because they represent highly salient markers of cultural diversity (Ang, Van Dyne, & Rockstuhl, 2015). Future research could broaden the existing conceptualization to focus on other diversity markers, such as functional, generational, gender, and socioeconomic status diversity. One approach is to repeat the construct development and validation process, starting with developing grounded theories based on qualitative research on individuals who manage such diversity challenges effectively.

Diversify Measurement of CQ

Future research should continue to develop complementary measures of CQ. For example, big data and data science present many exciting opportunities to diversify the measurement of CQ. A key advantage of big data is that it offers data granularity, which allows us to examine the "most theoretically proximal measurement of a phenomenon or unit of analysis" (George et al., 2016, p. 1494). A specific example is in the use of wearable devices to monitor interaction patterns of individuals in culturally diverse settings and to measure "sociometrics" (e.g., tone of voice, gestures, turn-taking, interruption) (Pentland, 2012). This technology not only enables an unobtrusive and real-time assessment of behavioral CQ but also allows us to ask new questions. For instance, we can begin to ask questions on the proximal processes through which culturally intelligent leaders influence their followers; or how members in multicultural teams interact with (or avoid) one another and how they develop shared values over time; or how ideas are exchanged and fused between culturally diverse individuals to spark new and creative ideas.

Broaden the Nomological Network of CQ

Future research should also continue to broaden our understanding of the nomological network of CQ. Here, we suggest several areas that seem promising.

Antecedents and outcomes of CQ. Our review highlighted several emerging constructs within the nomological network of CQ that future research could shed more light on. On the antecedents of CQ, we urge future research to explore the interplay of language and CQ. According to the Sapir-Whorf hypothesis, language and culture are inextricably linked (Kramsch, 2014). It is therefore surprising that language has not been studied as much in CQ research (for exceptions, see Peyrols-Wu & Ng, 2018; Presbitero, 2017). For instance, does language capability compensate for low CQ (and vice versa) during intercultural interactions? In a study that explores the interactive effects of English-language self-efficacy and CQ on avoidance behaviors, Peyrols-Wu and Ng (2018) found that both language self-efficacy and CQ are important to minimize avoidance behaviors, suggesting that language capabilities and CQ are not compensatory. More research is needed to replicate and extend this initial finding to a broader range of outcomes.

On the outcomes of CQ, we encourage future CQ research to examine understudied dimensions of performance such as organizational citizenship behaviors, voice behaviors, and adaptive performance. For example, scholars may examine the effects of CQ on different types of voice behaviors such as supportive, constructive, defensive, and destructive voice (Maynes & Podsakoff, 2014) in culturally diverse settings. Future research could also deepen our existing understanding of CQ effects on creativity and negotiation performance by examining proximal mediators of these relationships.

CQ actions and CQ reactions. To date, CQ research has typically focused on one "actor" – a focal person and how their CQ will affect the effectiveness of the interactions. Consider this faux pas: An American enters a Japanese friend's home without removing his shoes. In this scenario, CQ research would have much to prescribe on how the American could avoid committing such a blunder by increasing his CQ capabilities. What is neglected, though, is the role of the CQ of the "partner." In this example, the Japanese host is equally important in ensuring the effectiveness of the interaction. Research shows that violations of social norms can evoke aversive emotional reactions (Berthoz et al., 2002) and negative evaluations of the offender (Molinsky, 2005). This brings up the interesting question of what constitutes a culturally intelligent reaction to a cultural faux pas. Should the Japanese host simply ignore the incident? Should he educate the American about the appropriate etiquette? And what might be the outcomes of either course of action? Are some responses more effective than others and, if so, under what conditions? In addressing these questions, we advance CQ research toward the truism that "it takes two to tango."

Factor-specific CQ training interventions. Another important future research direction relates to interventions for developing CQ in individuals. Whereas research to date has focused primarily on the development of overall CQ, future research could explore how different training interventions might differentially impact the development of specific CQ factors. For example, mindfulness interventions hold great potential in the development of metacognitive CQ (Allen et al., 2012; Thomas, 2006). Understanding interventions that develop specific CQ factors would increase the precision and effectiveness of CQ developmental methodologies, as well as deepen our understanding of the CQ development process. In addition to interventions targeted at developing individuals' CQ, future research could also explore interventions targeted at developing team-level CQ.

On another note, most research on CQ interventions such as study-abroad programs involved participants who have self-selected into the programs. As a result, findings from existing studies are based on samples where motivational CQ is already fairly high. Yet Marin (1990) pointed out that apathy, which refers to a lack of motivation, is perhaps a more common reaction in the face of cultural differences. Thus, we urge future research to examine CQ development in people who are in a state of cultural apathy.

Culturally intelligent team processes. Although scholars have begun to examine outcomes of CQ at the team level, culturally intelligent team processes and norms have received far less attention. One such team process that requires future research relates to the management of intercultural conflict. Intercultural conflict is particularly complex as the disagreement is amplified by cultural differences in the perception of conflict and what constitutes effective conflict management. We suggest that future CQ research adopts a grounded theory approach to uncover specific conflict management moves. Moves are subunits of analysis that compose a broader concept (Goffman, 1981) and have been used in prior research to study complex behavioral units (Clark et al., 2018). Discovering effective conflict management moves in intercultural conflicts will contribute greatly to our understanding of effective multicultural team functioning.

Culturally intelligent organizational routines. To date, empirical research on firm-level CQ has focused primarily on managerial CQ. Conceptual research on organizational CQ offers many promising ideas that have yet to be empirically validated, particularly in areas related to culturally intelligent organizational routines and practices (Ang & Inkpen, 2008; Moon, 2010; Ng, Tan, & Ang, 2011). Future research will offer great theoretical and practical contributions by assessing culturally intelligent organizational routines and their effects on firm performance.

CQ in the education system. Given the incessant pace of globalization, it is imperative that we educate and equip our future generations in CQ to manage growing cultural challenges surrounding issues of race, class, gender, politics, and religion. Goh (2012) argued that, to prepare citizens for the challenges of a global society, educational systems will have to incorporate CQ into their curricula. As he aptly pointed out, "the conversation in teacher education has shifted from *whether* we should train teachers to be culturally intelligent to *how*" (Goh, 2012, p. 412). We concur with this important need and urge future research to examine a systematic infusion of CQ into school curricula that would reach every student, beyond short-term interventions that target only a selective segment of the student population (e.g., study-abroad programs). Such broader attempts to infuse CQ into broader citizen education programs appear all the more important in light of the increasing populist and xenophobic movements witnessed worldwide in recent years.

Artificial cultural intelligence. Rapid advances in the areas of affective computing and artificial intelligence (AI) have given rise to conversational agents, such as chatbots. As Krakovsky (2018) rightly pointed out, the true success of these digital assistants lies in their ability to detect and respond to human emotions with "some emotional *savoir faire*" (p. 18), which is the foray of artificial emotional intelligence. Building on this point, we suggest that the true success of such digital assistants lies in their ability to detect and respond to human emotions *across cultures*. We believe that integrating affective computing and CQ will contribute greatly to the development of smart robots or chatbots that can cross cultures. For example, most dialogue systems still follow

handcrafted rules for responding to human interaction (Schuller, 2018). A recent study by Morris, Savani, and Fincher (2019) on the role of metacognition highlights the potential of using alternative processes in cultural learning such as error monitoring and reactive error-based updating. We believe that integrating CQ work into the emerging field of affective computing could advance both fields and shape the future of how humans and machines interact.

Conclusions

CQ was conceived at the turn of the twenty-first century, when the world was experiencing unprecedented global trade, while, at the same time, witnessing the growth of ideological clashes and cultural conflicts. Almost two decades later, the relevance of CQ has remained, if not grown, as evidenced by the widespread interest in the construct in a vast array of disciplines. As summarized in this review, we have gained much insight and understanding into the nature, function, and boundary conditions of CQ at different levels of analysis. More importantly, we hope to spur future research to explore new conceptualizations, measurements, and applications of CQ. Ultimately, we hope that the continuing research on CQ will bring about real-world impact in this age of globalization.

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