CHAPTER 6

Cultural Intelligence

Origins, Conceptualization, Evolution, and Methodological Diversity

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Abstract

Research on cultural intelligence (CQ)—the capability to function effectively in intercultural contexts—presents a marked shift in research from focusing on the elucidation of cultural differences toward asking how to bridge such differences. Although this research program is just over a decade old, it has already seen remarkable theoretical progress and had a practical impact. This chapter provides an overview of the historical origins and theoretical conceptualization of the CQ construct. It also reviews the accumulating empirical evidence and theoretical and methodological advances that this research has seen since the program's inception. This chapter highlights the importance of CQ both as a coherent theoretical framework integrating the historically fragmented field of intercultural competence research and a crucial practical capability for individuals, teams, and companies operating in a global world. The chapter closes with a look ahead at the rich opportunities for advancing the CQ research program further.

Keywords: Cultural Intelligence, Intercultural Competence, Intercultural Effectiveness, Cross-cultural Training

I. INTRODUCTION

Today's workplace is more global than ever. Whereas expatriates were the primary population working with people from other cultures just one to two decades ago, today a much larger group of employees does so on a daily basis. As is well-documented in management research, working across cultures can be challenging (Gelfand, Erez, & Aycan, 2007). As a result, global

companies struggle to identify global talent. For example, in a recent survey of 441 global executives from across the world, 70% said that scarcity of global talent is likely to affect their bottom line in the next five years (EIU, 2011). Thus, understanding why some people can function more effectively in intercultural contexts than others has never been more crucial than today.

To address this need, Earley and Ang (2003) introduced the concept of cultural intelligence (CQ). They defined CQ as the capability to function effectively in intercultural contexts. Since its initial conception, research on CQ has evolved rapidly. In our journey over the past 10 years, CQ has developed from a theoretical concept to a measurable construct with strong psychometric properties and evidence of construct validity. Accumulating empirical evidence of predictive and incremental validity has pushed CQ from an academic construct to a practical framework for global selection, training, and development that organizations in over 60 countries have applied. Recognizing this evolution, two recent reviews of predictors of intercultural effectiveness both identified CQ as particularly promising (Leung, Ang, & Tan, 2014; Matsumoto & Hwang, 2013).

To give readers a sense of these developments, we provide an overview of our research program on CQ. We structure this overview as follows: the origins of our research program, the conceptualization of CQ, the evolution of empirical research on CQ, and the increasing methodological diversity in CQ research. A diverse network of researchers from different cultures and different disciplines continues to exchange ideas and work collaboratively to advance research on CQ. Thus, we emphasize not only our own research on CQ but also the work of others, which continues to inform and inspire our own research.

II. ORIGINS: FROM COMPARATIVE RESEARCH TO CAPABILITY RESEARCH

Research on CQ arose from two related needs in the literature on culture and psychology. First, the concept of CQ addresses a need in cross-cultural psychology to go beyond describing and explaining cultural differences in behavior. Although understanding cultural differences is an important part of the puzzle, being able to function effectively across cultures also requires the capability to bridge such differences. CQ research addresses capabilities that facilitate the bridging of cultural differences. Second, the

introduction of CQ offered a coherent theoretical approach to the literature on intercultural competencies, which was fragmented with a myriad of inductively derived characteristics relevant to crossing cultures. In the following paragraphs, we briefly review historical trends in cross-cultural psychology and intercultural competency research to provide some context for the origins of CQ research.

Interest in culture and psychology is as old as civilization. For example, Herodotus, in the fifth century BC, noted that all humans are ethnocentric (i.e., they use their own culture as the standard to evaluate other cultures and prefer similar over different cultures). Research on cross-cultural psychology as a scientific inquiry took off when Darwin published his theory of evolution in the nineteenth century. Between 1900 and 1920, Wilhelm Wundt summarized many early comparative findings by anthropologists, linguists, and historians in his ten-volume *Völkerpsychologie*. However, for the most part, "mainstream psychology" set aside cross-cultural psychology in the decades immediately following World War II.

As Shweder (2011) notes in his foreword to the first volume of the present series, the buzz surrounding cross-cultural psychology re-emerged in the 1980s and 1990s. One driver of this re-emergence was the publication of the first *Handbook of Cross-Cultural Psychology* (Triandis, 1980–1981) and its second edition (Berry et al., 1997). Both volumes provided early summaries of the field of cross-cultural psychology. Other drivers of this re-emergence were the landmark publications by Hofstede (1991), Markus and Kitayama (1991), and Schwartz (1992). Hofstede's seminal work on culture and organizations suggested that cultures differ along cultural value dimensions of individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity. Markus and Kitayama (1991) documented how cultural differences in individualism-collectivism affect a variety of psychological processes, including self-concept, motivation, perception, emotion, and cognition. Finally, Schwartz (1992) presented a theory of value structure and data from 20 countries, which he later extended to include 50 countries. The research of Hofstede, Markus and Kitayama, and Schwartz has stimulated a wealth of cross-cultural psychology research.

The primary goal of cross-cultural psychology is explaining how culture influences behavior and vice versa. As the volumes of this series attest, we have made tremendous strides in understanding the interplay between culture and behavior. More importantly, this research has documented crucial cultural differences in behavior that help explain why intercultural interactions

can be challenging. For example, Matsumoto and Hwang (2011) reviewed culture-based differences in emotion display rules and the implications for judging emotions in others. As another example, Shavitt, Torelli, and Riemer (2011) reviewed research showing how cultural differences in horizontal and vertical individualism and collectivism affect self-presentation and social perception, with special attention to the meaning and purpose of power. Such cultural differences can lead to misunderstandings, tensions, and conflict in intercultural interactions.

Along with these scientific advances in understanding cultural differences, the world has experienced unprecedented and rapid globalization and interconnectedness between people of different cultures. Yet the outcomes of globalization are often uncertain (Chiu, Gries, Torelli, & Cheng, 2011). Although globalization has led some to regard the world as "flat," globalization also increases hot spots of cultural conflict. In fact, Nobel Prize laureate Elie Wiesel identified "cultural hatred"—hatred directed toward culturally different individuals—as the major source of conflicts among people across all times (Wiesel & Heffner, 2009). Indeed, Ginges and Atran (2014) demonstrated how culturally-bound sacred values can fuel cross-cultural conflicts. In sum, globalization not only offers exciting intercultural contact in the emerging global village but also increases challenges based on misunderstandings, tensions, and conflicts.

In this context of globalization, it is crucial to understand why and how some people thrive in intercultural contexts whereas others do not. Notably, this presents a marked shift in research paradigm that requires moving from understanding cultural differences toward understanding how to bridge such differences.

Initial attempts at answering this second question took an inductive approach. In one of the earliest efforts, Hammer, Gudykunst, and Wiseman (1978) compiled 24 personal abilities (e.g., dealing effectively with frustration, initiating interaction with strangers, empathizing with another person) and asked North American sojourners to rate how important these abilities were in facilitating their functioning in another culture. Based on exploratory factor analyses, the authors derived a three-factor model of intercultural effectiveness: (1) the ability to deal with psychological stress, (2) the ability to communicate effectively, and (3) the ability to establish interpersonal relationships.

Research aimed at replicating this inductively-derived factor structure across cultures (e.g., Abe & Wiseman, 1983) has generated a wealth of studies.

Recent reviews of this burgeoning literature on intercultural competence (Holt & Seki, 2012; Leung et al., 2014; Spitzberg & Changnon, 2009) have identified more than 30 intercultural competence models and over 300 related personal characteristics.

The sheer number of relevant personal characteristics is overwhelming. Moreover, a closer inspection of these characteristics suggests that many intercultural competence models cover widely differing content domains, including traits, attitudes, worldviews, and capabilities (see also Leung et al., 2014; Spitzberg & Changnon, 2009). This raises questions about the construct validity and theoretical precision of many intercultural competence models.

Our own research program has taken a markedly different direction. Following a deductive approach, we grounded our research program in theories of intelligence. Furthermore, we limited our focus to intercultural capabilities because theories of job performance propose that distal constructs such as traits, attitudes, and worldviews affect performance via more proximal capabilities (Campbell, McCloy, Oppler, & Sager, 1993). We elaborate on the central role of intelligence theories for our conceptualization of CQ next.

III. CONCEPTUALIZATION: GROUNDING IN INTELLIGENCE RESEARCH

A. What Is Intelligence?

The definition of intelligence plays a central role in our conceptualization of CQ. Historically, there have been many different definitions of intelligence (Sternberg & Detterman, 1986). According to Sternberg (2012), a consensus definition emphasizes that intelligence refers to the capability to adapt effectively to the environment.

Research on intelligence has advanced different types of intelligences to explain adaptation to different types of environments. For example, the initial work on intelligence arose from a need to identify children who were likely to experience problems in adapting to school environments (Binet & Simon, 1908). Social intelligence (Thorndike & Stein, 1937) is the capability to understand and manage others and focuses on adaptation to social environments. Emotional intelligence (Mayer & Salovey, 1993) is the capability to deal effectively with emotions—both one's own and those of others. Thus, emotional intelligence is the capability to adapt effectively to emotional environments.

Practical intelligence (Wagner & Sternberg, 1985) is the capability to solve real-world problems that occur outside of school environments.

A second key feature of intelligence is that intelligence resides in different loci within an individual (Sternberg, 1986). Integrating myriad views on intelligence, Sternberg proposed four major loci of intelligence: biology, cognition, motivation, and behavior. Biological loci of intelligence include structural aspects (e.g., hemispheres of the brain), process aspects (e.g., the neuronal processes that give rise to brain activities), and the interaction between structure and process (e.g., how regions of the brain generate brain activities). Cognitive loci of intelligence include ordinary cognition (i.e., what one knows) and metacognition (i.e., understanding one's own and other's cognitions). Motivational loci of intelligence include the intensity and direction of cognitions. Finally, behavioral loci of intelligence include the actions a person engages in as a function of mental processes.

This focus on adaptability to environmental demands and the multilocus framework provide the theoretical foundations that ground our conceptualization of CQ within broader intelligence research. We now turn to this conceptualization of CQ.

B. Definition and Conceptualization of Cultural Intelligence

1. Definition

CQ refers to a person's capability to function effectively in intercultural environments (Ang & Van Dyne, 2008; Earley & Ang, 2003). This definition of CQ focuses on a person's potential to meet the demands of a wide range of intercultural contexts. Thus, the definition is consistent with the broader definition of intelligence in that it emphasizes adaptability to a specific type of environment: the intercultural context.

CQ differs from other perspectives on culture and intelligence. It differs from the capability to function effectively in a specific culture. Instead, it reflects a general set of capabilities that facilitate effectiveness across different intercultural environments. This distinction recognizes that one can learn to function effectively in one culture without being able to transfer this learning to functioning in another culture. For example, a female manager from China might be very effective on an expatriate assignment in Canada but would struggle when posted to Saudi Arabia.

CQ also differs from cross-cultural views of intelligence that emphasize how particular cultural and ecological contexts influence lay theories of

intelligence (Berry, 1976; Sternberg, 2012). For example, western notions of intelligence emphasize going beyond given information, reaching solutions with minimal moves, and thinking creatively (see Serpell, 2000; Sternberg & Kaufman, 1998). By contrast, African notions of intelligence emphasize facilitating and maintaining harmonious and stable social relationships, in particular across tribal groups (Ruzgis & Grigorenko, 1994). While CQ does not refer to these culturally-bound notions of intelligence, knowledge of these other views of intelligence does reflect high CQ (specifically cognitive CQ, as described in the following).

2. Conceptualization

Here we provide an overview of our conceptualization of CQ (for more detailed discussions, see Ang, Rockstuhl, & Tan, 2015; Ang & Van Dyne, 2008; Ang, Van Dyne, & Tan, 2011). Building on the multilocus framework of intelligence offered by Sternberg (1986), we conceptualize CQ as a multidimensional construct. At a broad level, our conceptualization comprises four factors: (1) metacognitive CQ, or one's mental capability to acquire and understand cultural knowledge; (2) cognitive CQ, or one's knowledge about cultures and cultural differences; (3) motivational CQ, or one's capability to direct and sustain effort toward functioning in intercultural situations; and (4) behavioral CQ, or one's capacity for behavioral flexibility in cross-cultural interactions (Ang & Van Dyne, 2008; Earley & Ang, 2003).

In recent years we have expanded this initial conceptualization in two directions. First, responding to calls for conceptual refinements of CQ (Ang et al., 2011; Gelfand, Imai, & Fehr, 2008), we have advanced narrower subdimensions for each of the four broad CQ factors (Van Dyne, Ang, Ng, Rockstuhl, Tan, & Koh, 2012). Specifically, metacognitive CQ includes planning, awareness, and checking. Cognitive CQ encompasses both cultural-general and culture-specific knowledge. Motivational CQ distinguishes between intrinsic interest, extrinsic interest, and self-efficacy for intercultural encounters. Finally, behavioral CQ includes flexibility in verbal behaviors, nonverbal behaviors, and speech acts. Specifying subdimensions of the four broad CQ factors facilitates (1) more nuanced theorizing, especially in terms of explicating underlying processes of CQ effects; (2) more precise matching of CQ predictors and outcomes; and (3) identifying concrete ways to train CQ (see also Van Dyne et al., 2012).

Second, we have advanced a theoretical foundation for the culturally intelligent brain to elucidate the biological loci of CQ (Rockstuhl, Hong, Ng,

Ang, & Chiu, 2010). Drawing upon advances in sociocognitive neuroscience-research, we proposed distinct cortical regions as neurological mediators of metacognitive (i.e., anterior rostral medial frontal cortex, including the paracingulate cortex), motivational (i.e., orbitofrontal cortex), and behavioral CQ (i.e., posterior rostral medial frontal cortex and dorsal anterior cingulate cortex). Cognitive neuroscience of human memory further suggests that cognitive CQ is mediated by an interaction between medial-temporal/diencephalic and neocortical brain regions (Gabrieli, 1998). Drawing on advances in cultural neuroscience showing that neurological responses can change as people adapt to new cultural environments, we also developed the neural tuning hypothesis of CQ. This hypothesis suggests that greater overall CQ correlates with greater neurological flexibility in response to varying demands across intercultural environments.

Finally we note that our conceptualization builds on insights from the bioecological theory of intellectual development (Bronfenbrenner & Ceci, 1994) and positions CQ as a malleable form of intelligence. The bioecological theory has three core tenets: (1) people have multiple rather than single innate capabilities; (2) innate capabilities develop based on exposure to and interactions with different ecological contexts (e.g., schooling, parent-child interactions, mentor-protégé interactions); and (3) that motivation determines the extent to which specific ecological contexts aid the development of innate capabilities.

Consistent with bioecological theory, we conceptualize CQ as a malleable form of intelligence that may develop through exposure to different cultural contexts. Bioecological theory also highlights the crucial role of motivational CQ within the conceptualization of CQ. Motivational CQ provides not only agentic control of affect, cognition, and behavior to guide goal accomplishment in intercultural environments but also the drive to actualize one's CQ potential.

3. *Operationalization*

Based on the four-factor CQ model, Ang et al. (2007) developed an initial 20-item scale (cultural intelligence scale, or CQS; see Table 6-1, Appendix) to measure the four CQ factors. We have reviewed the extensive validation efforts taken to derive this scale in detail elsewhere (Ang et al., 2011; Ng, Van Dyne, & Ang, 2012; Van Dyne, Ang, & Koh, 2008a).

Intercultural measurement instruments need to demonstrate construct validity and measurement equivalence across cultures (Schaffer & Riordan,

2003; Van de Vijver & Leung, 2009). The CQS satisfies both criteria. The four-factor structure of the instrument has been replicated using confirmatory factor analyses methods across multinational samples (Shannon & Begley, 2008; Shokef & Erez, 2008; Ward, Fischer, Lam, & Hall, 2009) and multiple countries, including Korea (T. Moon 2010a; H. Moon, Choi, & Jung, 2012), Singapore (Ang et al., 2007), Turkey (Şahin, Gürbüz, Köksal, & Ercan, 2013), and the United States (Ang et al. 2007; Imai & Gelfand 2010). Across studies, the CQS also demonstrates good internal consistency reliability. In addition, two studies have used confirmatory factor analyses to show that the four-factor structure of the CQS remains stable for repeated measures four weeks (Shokef & Erez, 2008) and four months apart (Van Dyne, Ang, & Koh, 2008a). Research has also demonstrated measurement equivalence of the CQS across two countries—Singapore and the United States (Ang et al. 2007). Having the validated CQS scale greatly enhances the "empirical potential" of CQ (Gelfand et al., 2008) and has stimulated the growth of empirical research.

More recently, Van Dyne et al. (2012) introduced the expanded CQS (E-CQS), a 37-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 30 countries. Research has also begun to complement self-reported CQ measures with informant- and performance-based measures of CQ. We describe these efforts to increase the methodological diversity in CQ research separately in section V below.

C. Conceptual Distinctiveness of Cultural Intelligence

Beyond defining what CQ is, we also describe what CQ is not in relation to other individual differences. In this section, we therefore explain how CQ relates to but is distinct from other types of intelligence, personality traits, and other cultural competencies.

1. Cultural Intelligence and Other Intelligences

CQ is similar to but distinct from general cognitive ability. Whereas general cognitive ability focuses on the cognitive loci of intellectual abilities, CQ encompasses biological, motivational, cognitive, and behavioral loci of intercultural capabilities. Both general cognitive ability and CQ are posited

as key predictors of performance. However, whereas general cognitive ability is a key predictor of performance across jobs and settings, we expect CQ to be uniquely relevant to performance in intercultural contexts (Ang & Van Dyne, 2008).

Consistent with these differences, CQ relates positively but weakly to general cognitive ability (Ang et al., 2007; Rockstuhl, Ang, Ng, Lievens, & Van Dyne, 2014a; Rockstuhl, Presbitero, Ng, & Ang, 2013b; Rockstuhl, Seiler, Ang, Van Dyne, & Annen, 2011; Van Dyne et al., 2008; Ward et al., 2009). Specifically, correlations between CQ and general cognitive ability range from – .02 (Ang et al., 2007; Van Dyne et al., 2008) to .42 (Rockstuhl et al. 2014a). Empirical evidence further suggests that CQ has incremental validity over general cognitive ability in predicting performance in intercultural situations (Ang et al., 2007; Rockstuhl et al., 2011, 2013b, 2014a).

CQ is also similar to but distinct from other interpersonal intelligences, such as emotional or social intelligence. CQ shares similarities with these interpersonal intelligences in that CQ includes capabilities that facilitate effective interpersonal interactions. However, in contrast to emotional and social intelligence, CQ focuses explicitly on intercultural interactions.

Consistent with these similarities and differences, CQ relates positively to emotional intelligence and is empirically distinct from the latter (Ang et al., 2007; Kim, Kirkman, & Chen, 2008; Lin, Chen, & Song, 2012; T. Moon, 2010a; Rockstuhl et al., 2011; Ward et al. 2009; Van Dyne et al., 2008). Except for Ward et al. (2009) who did not test for discriminant validity using confirmatory factor analyses (CFA), all of these studies demonstrate the distinctiveness of CQ and emotional intelligence using CFA. Correlations between CQ and emotional intelligence range from .26 (Ang et al., 2007) to .82 (Ward et al., 2009). As with general cognitive ability, empirical evidence demonstrates that CQ incrementally predicts performance in intercultural contexts over and above emotional intelligence (Rockstuhl et al., 2011).

2. *Cultural Intelligence and Personality Traits*

Personality traits describe a person's general and enduring behavioral tendencies across situations and time (Costa & McCrae 1992; Funder 2001). By contrast, CQ refers to malleable capabilities that determine what a person can do to be effective in intercultural environments. Hence, personality traits and CQ are conceptually distinct. At the same time, personality should also

relate to CQ because associated behavioral tendencies affect a person's experiences and subsequent development of CQ (Ang & Van Dyne, 2008).

To date, research has examined relations between the "big-five" personality traits and CQ (Ang, Van Dyne, & Koh, 2006; Ang et al., 2007; G. Chen, Kirkman, Kim, Farh, & Tangirala, 2010; Duff, Tahbaz, & Chan, 2012; Kim et al., 2008; Oolders, Chernyshenko, & Stark, 2008; Rockstuhl et al., 2011; Sri Ramalu, Shamsudin, & Subramaniam, 2012b; Ward & Fischer, 2008; Ward et al., 2009). Although not all studies do so, a number of these studies test the distinctiveness of the big-five personality dimensions and the four CQ factors using confirmatory factor analyses (Ang et al., 2006; Ang et al., 2007; G. Chen et al., 2010; Rockstuhl et al., 2011; Ward & Fischer, 2008). All of those studies that test the distinctiveness of big-five personality traits and CQ show that both constructs are indeed empirically distinct.

According to Ang et al. (2006), openness to experience should relate most consistently to CQ. Such openness pertains to people's behavioral tendencies in novel situations—for example, how adventurous they are (Costa & McCrae, 1992). Openness to experience should be related to CQ because both relate to novel situations. Empirical evidence supports this hypothesis. Openness to experience was related to all four CQ factors. By contrast, extraversion predicted cognitive, motivational, and behavioral CQ only; emotional stability and agreeableness predicted behavioral CQ only, and conscientiousness predicted metacognitive CQ only.

3. Cultural Intelligence and Other Cultural Competencies

Cultural competencies is an umbrella term for capabilities that facilitate intercultural effectiveness. As noted earlier, research on cultural competencies precedes research on CQ, and reviews of cultural competence models have identified more than 30 cultural competence models, with over 300 concepts related to cultural competence (Holt & Seki, 2012; Leung et al., 2014; Spitzberg & Changnon, 2009). In the history of cultural competence research, CQ has been described as a "new kid on the scientific block" (Gelfand et al., 2008, p. 376).

According to Gelfand et al. (2008), CQ offers at least three conceptual contributions to the fragmented field of cultural competence research. First, rooted in the multilocus view of intelligence, the concept of CQ is theoretically precise about what is and is not part of its construct space. Second, the CQ framework is both parsimonious and comprehensive. The CQ framework is parsimonious in that it focuses on four primary factors rather than

a vast number of narrower capabilities (e.g., ability to accommodate behavior [Gudykunst, 1993], ability to communicate interpersonally [Abe & Wiseman, 1983], facework management [Ting-Toomey & Kurogi, 1998], ability to relate [Deardorff, 2006], and so on). Although these specific capabilities from other cultural competence models can be mapped onto the CQ framework, other cultural competence models rarely consider all four factors simultaneously and thus lack the comprehensiveness offered by the CQ framework for describing the capabilities domain. Third, through its connection with intelligence research, CQ opens up a wide range of important and interesting phenomena in relation to intercultural effectiveness that were less salient in the past. In particular, research on CQ has opened up metacognitive CQ (Chiu, Lonner, Matsumoto, & Ward, 2013; Chua, Morris, & Mor, 2012) and motivational CQ (G. Chen, et al., 2010; X. Chen, Liu, & Portnoy, 2012; Peng et al., in press) as new frontiers in cultural competence research.

Beyond these conceptual contributions, empirical evidence on the predictive and incremental validity of CQ makes the CQ construct particularly promising for furthering our understanding of intercultural effectiveness (Leung et al., 2014; Matsumoto & Hwang, 2013). We review some of this empirical evidence in the following section.

IV. EVOLUTION: THE HISTORY OF THE CULTURAL INTELLIGENCE RESEARCH PROGRAM

Empirical research on CQ has evolved along several themes. Early work focused on establishing the predictive validity of the CQ construct. The primary aims of this work were (1) to link CQ with important outcomes in intercultural contexts and (2) to show that CQ predicts these outcomes over and above other established predictors.

These early promising results raised the question of whether CQ is uniquely relevant to intercultural effectiveness or facilitates interpersonal interactions independent of cultural context. In response to this question, a second stream of research compared the predictive validity of CQ in intercultural versus general (e.g., monocultural) contexts.

Together, these first two streams of research highlight the relevance and importance of CQ to intercultural effectiveness. In light of its importance to intercultural effectiveness, we and other researchers became increasingly interested in understanding the broader nomological network of CQ and how to develop CQ in individuals. Thus, we have witnessed an increase in the

complexity and sophistication of empirically tested CQ models. This third stream of research examines CQ as a mediator and moderator, considering boundary conditions that qualify CQ effects and multilevel models of CQ. Finally, a fourth stream of research has emerged in recent years exploring the development of CQ.

In the following we highlight examples of each theme. Notwithstanding the progression suggested by the four themes, research on all of them continues to be active and evolving.

A. Initial Research: Positive and Incremental Effects of Cultural Intelligence

Recall that the main driving question behind research on cultural competence was understanding why some people function more effectively in intercultural contexts than others. Thus predicting intercultural effectiveness is the sine qua non for any cultural competence construct (Matsumoto & Hwang, 2013). Beyond predicting intercultural effectiveness, cultural competence constructs must also demonstrate incremental predictive validity over and above established predictors (Leung et al., 2014).

Mol, Born, Willemsen, and Van der Molen (2005) argue that other-rated performance should be the primary measure of intercultural effectiveness. At the same time, cultural adjustment is another crucial criterion of intercultural effectiveness (Bhaskar-Shrinivas, Harrison, Shaffer, & Luk, 2005; Church, 1982) because failure in intercultural contexts often stems from the inability to adjust to working within other cultures (Caligiuri, Tarique, & Jacobs, 2009). Cultural adjustment comprises general adjustment (adjustment to general living conditions in another culture), work adjustment (adjustment to work culture in another culture), interaction adjustment (adjustment to socializing and getting along with locals in another culture), and psychological adjustment (general well-being when living in another culture).

Our initial research thus focused on demonstrating that CQ predicts cultural adjustment and performance outcomes in intercultural contexts over and above established predictors. Ang et al. (2007) developed the 20-item CQS (see Table 6-1, Appendix) from a larger pool of items using two student samples in Singapore (n = 576 and n = 447). They then demonstrated that CQ predicts cultural adjustment and task performance in four additional intercultural samples. The first two samples consisted of 235 undergraduate students in the United States and 358 undergraduate students in Singapore. In the US sample, participants completed an online survey that included measures

of cultural adjustment, CQ, general cognitive ability, emotional intelligence, big-five personality, international experience, and demographic information. We expanded on this design in the Singapore sample to assess the predictors and criteria at two different points in time. Participants first completed measures of CQ, emotional intelligence, a widely-used cultural competence measure (i.e., Cross-Cultural Adaptability Inventory, CCAI: Kelley & Meyers, 1995), international experience, and demographic information. Twelve weeks later, participants rated their cultural adjustment. In both samples, motivational and behavioral CQ significantly predicted cultural adjustment. In addition, the four CQ factors jointly explained 4% (US sample) and 3% (Singapore sample) of the variance in cultural adjustment beyond all other control variables.

The third sample consisted of 98 participants in a three-day executive development program. As part of the program, participants worked in randomly-assigned culturally diverse dyads on a property development simulation. For this simulation, executives wrote a property development plan and presented the marketing and financial aspects of their proposal to the other executives in the group. At the end of the simulation, their peers rated their task performance during the simulation. In addition to measuring participant's CQ, Ang et al. (2007) controlled for participant's general cognitive ability, rhetorical sensitivity, social desirability, international experience, and demographic information. Results showed that metacognitive and behavioral CQ predicted peer-rated task performance. In addition, the four CQ factors jointly explained 24% of the variance in task performance over and above the control variables.

For the fourth sample, we collected data from 103 foreign professionals and their supervisors working for an information technology consulting organization in Singapore. Participants completed online measures of cultural adjustment (interactional, work, and general adjustment in addition to well-being), CQ, international experience, and demographic information. Supervisors rated participant's cultural adjustment (interactional and work adjustment) and also rated their task performance. Replicating findings from the first two samples, motivational and behavioral CQ consistently predicted self- and supervisor-rated cultural adaptation. Replicating findings from the third sample, metacognitive and behavioral CQ predicted supervisor-rated task performance. Furthermore, the four CQ factors jointly explained 19% and 29% of variance in cultural adjustment measures and 36% of variance in task performance beyond control variables.

Numerous studies have since replicated the basic finding that CQ relates positively to both cultural adjustment (Abdul Malek & Budhwar, 2013; G. Chen et al., 2010; Huff, 2013; Lee & Sukoco, 2010; Lin et al., 2012; H. Moon et al., 2012; Sri Ramalu, Che Rose, Uli, & Kumar, 2012a; Templer, Tay, & Chandrasekar, 2006; Ward & Fischer, 2008; Ward et al., 2009; Ward, Wilson, & Fischer, 2011; Wu & Ang, 2011) and observer-rated performance (G. Chen et al., 2010; X. Chen et al., 2012; Duff et al., 2012; Liu & Chen, 2013; Rockstuhl et al., 2013b, 2014a; Şahin et al., 2013).

Beyond cultural adjustment, CQ has also been linked to other psychological outcomes. For example, CQ is negatively related to emotional exhaustion (Tay, Westman, & Chia, 2008), culture shock (A. Chen, Lin, & Sawangpattanakul, 2011), and turnover intentions (Huff, 2013; Wu & Ang, 2011). Global leadership is another performance domain that has received substantial attention from CQ researchers. Indeed, empirical evidence shows that CQ positively predicts a range of global leadership outcomes such as leadership performance (Groves & Feyerherm, 2011) and leadership emergence (Lee, Masuda, & Cardona, 2010; Rockstuhl, Ang, Lee, & Paunova, 2013a) in multicultural teams, or international leadership potential (Kim & Van Dyne, 2012; Rockstuhl, Ang, Sığrı, Gürbüz, & Şahin, 2014b; Van Dyne, Ang, Ng, & Koh, 2008b).

In sum, initial empirical research on CQ showed that CQ predicts important psychological and performance outcomes associated with intercultural effectiveness. More importantly, CQ predicts both psychological and performance outcomes over and above demographic characteristics, international experience, language fluency, personality traits, goal orientations, emotional intelligence, general cognitive ability, and other cultural competence measures. Although these results strongly support the relevance of CQ to intercultural effectiveness, they do not address the unique relevance of CQ to intercultural contexts directly. Evidence for the unique relevance of CQ to intercultural contexts comes from studies that compare the predictive validity of CQ for outcomes in intercultural versus culturally homogeneous contexts. We describe such studies next.

B. Beyond Positive Halo: Cultural Intelligence as Uniquely Relevant to Intercultural Contexts

Rockstuhl and Ng (2008) provided an initial test of the unique relevance of CQ to intercultural contexts. They examined affect-based trust between members of student teams at the interpersonal (dyadic) level. The unique

feature of their design was that some dyads shared the same cultural (ethnic) background and some differed in their cultural background. This allowed them to contrast the effects of CQ in culturally diverse dyads with the effects of CQ in culturally homogeneous dyads.

Over the course of four months, teams collaborated to prepare a major presentation on an international management topic. Before students started their team projects, they completed measures of CQ. At the end of their team projects, team members provided data on their affect-based trust in each of their team members. Findings showed that team member's metacognitive and cognitive CQ was positively related to their trust in culturally diverse team members. Similarly, team member's behavioral CQ predicted trust from culturally diverse team members. Supporting the unique relevance of CQ to intercultural contexts, CQ was unrelated to trust in culturally homogenous team members.

A follow-up study further showed that CQ influenced the development of trust between culturally diverse team members over time (Rockstuhl, Ng, Ang, & Van Dyne, 2010). Results in a similar sample as in the previous study showed that affect-based trust in culturally diverse others was lower than affect-based trust in culturally similar others at the beginning of the team project. Controlling for trust at the beginning of the team project, cognitive ability, big five personality traits, international experience, and demographic information, CQ was positively related to intercultural affect-based trust at the end of the group project. When culturally similar others rated affect-based trust, CQ was unrelated to trust at the end of the group project.

Chua et al. (2012) replicated and extended this finding. These authors asked 60 managers attending an executive MBA course to list up to 24 contacts in their professional networks. For each contact, executives also indicated that contact's cultural background, their level of affect-based trust in that contact, and the extent to which they would be likely to share new ideas with that contact. Several weeks prior to completing the social network survey, participants had also completed a measure of metacognitive CQ. Replicating the earlier findings by Rockstuhl and Ng (2008), executive's metacognitive CQ related positively to affect-based trust in intercultural contacts. Metacognitive CQ was unrelated to affect-based trust for contacts with the same cultural background as executives. Extending this finding, Chua et al. (2012) further showed that metacognitive CQ predicted new idea sharing only for culturally diverse but not for culturally homogeneous contacts and that affect-based trust mediated the effects of metacognitive CQ on new idea sharing.

Two studies support the unique predictive validity of CQ for leadership in culturally diverse as compared with culturally homogeneous contexts. Groves and Feyerherm (2011) examined leadership performance in a sample of work unit leaders from 99 organizations. Although all leaders were in charge of culturally diverse samples, work units differed in the degree of cultural diversity (ethnicity and nationality). Leaders completed measures of CQ, emotional intelligence, and provided information on their demographic background. Direct reports independently rated leader's performance and also provided information on their demographic background. Results showed that CQ interacted with work-unit diversity to predict leader performance. The interaction showed that CQ was significantly and positively related to leader performance when work-unit diversity was high. By contrast, CQ was unrelated to leader performance when work-unit diversity was low. Interestingly, emotional intelligence was unrelated to leader performance and work-unit diversity did not moderate the effects of emotional intelligence. This suggests that emotional intelligence represents a general interpersonal capability that has less relevance to leader performance in diverse teams.

A study by Rockstuhl et al. (2011) provides further insights on the contrast between CQ and emotional intelligence in terms of culture specificity. Rockstuhl and colleagues theorized that emotional capabilities would be culture-bound, such that emotional intelligence would be more relevant to leadership effectiveness in general as opposed to cross-border contexts. By contrast, because CQ emphasizes cross-cultural capabilities, they expected CQ to be more relevant to leadership effectiveness in cross-border as opposed to general contexts. They tested these hypotheses with field data from Swiss military officers who engaged in both general and cross-border military assignments. Two peers rated each officer's leadership effectiveness in general and cross-border leadership contexts. Officers reported on their levels of cultural and emotional intelligence. Controlling for general mental ability and personality data from archival records, results demonstrated that general mental ability predicted leadership effectiveness in both contexts. In contrast, supporting the culture-bound quality of emotional intelligence, results showed that emotional intelligence predicted general leadership effectiveness and not cross-border effectiveness. Finally, as expected, CQ predicted cross-border leadership effectiveness and not general effectiveness. This finding supports the unique relevance of CQ as an intercultural capability.

Another powerful implication of this study is that CQ research should focus on outcomes that are matched to the research question and focus specifically on culturally relevant outcomes. If we had only used a generic

leadership effectiveness scale, we would have underestimated the importance of CQ in this context. Another illustration of the importance of specifying intercultural as opposed to general criteria comes from a study by X. Chen et al. (2012). These authors examined the relationship between motivational CQ and cultural sales (i.e., the number of sales to people from cultures differing from one's own) with data from 305 real estate agents working for 26 organizations. Real estate agents provided ratings of motivational CQ and X. Chen and colleagues collected archival data on both individual total sales (i.e., the total number of sales transactions) and individual cultural sales. Again, motivational CQ predicted cultural sales but not total sales.

In sum, accumulating evidence shows that CQ comprises capabilities that are uniquely relevant to effectiveness in intercultural contexts. Coupled with evidence of (1) the discriminant validity of CQ relative to more stable individual differences and (2) the predictive and incremental validity of CQ for performance and cultural adjustment outcomes, these newer results provide a sound theoretical and empirical basis for viewing CQ as a distinct theoretical construct. Thus, research has enhanced our understanding of the nomological network of CQ and is now testing increasingly sophisticated theoretical models. We highlight some of these efforts in the following.

C. More Complex Cultural Intelligence Models: Mediators, Moderators, Boundary Conditions, and Multilevel Models

Ang and Van Dyne (2008) proposed a nomological network of CQ that situated it within the context of four major relationships. First, they proposed that CQ mediates the effects of distal individual characteristics (e.g., personality traits, worldviews, demographic and biographical differences) on intercultural effectiveness. Second, they posited that CQ affects intercultural effectiveness through perceptual (e.g., perceived uncertainty) and behavioral (e.g., participation in cultural activities) intermediate processes. Third, their nomological network recognizes that other types of capabilities (e.g., general cognitive ability, emotional intelligence) may also contribute to intercultural effectiveness along with CQ. Finally, they emphasized that contextual variables (e.g., cultural distance) could moderate relationships within the nomological network of CQ. Empirical research supports and extends this nomological network.

1. Cultural Intelligence as a Mediator

CQ researchers typically consider personality and international experience as antecedents of CQ. As noted earlier, this expectation is grounded in theories of job performance (e.g., Campbell et al., 1993) that hypothesize capabilities as an important mediator of more distal predictors of job performance, such as personality and experience. Empirical studies show that CQ mediates the effects of both. For example, CQ mediated the effects of personality traits such as cultural empathy, open-mindedness, and flexibility on general adjustment of international exchange students in New Zealand (Ward & Fischer, 2008). CQ also mediated the effects of the big-five personality dimension of openness to experience on self-rated job performance of expatriates in Malaysia (Sri Ramalu et al., 2012b). Similarly, CQ mediated the effects of openness to experience on adaptive performance for exchange students in New Zealand (Oolders et al., 2008).

Regarding international experience, CQ mediated the effects of prior international work and nonwork experiences as well as length and comprehensiveness of prior intercultural training on general and work adjustment of expatriates in Korea (H. Moon et al., 2012). CQ also mediated the effects of international experience on international leadership potential of culturally diverse participants of an executive development program (Van Dyne et al., 2008).

2. Perceptual and Behavioral Mediators of Cultural Intelligence Effects

One important perceptual mediator of CQ effects is perceived cross-border environment uncertainty (Prado, 2006). Such perceived environment uncertainty is crucial for international business managers because it affects the accuracy of risk assessments in international business ventures. In a study of 120 managers from 27 countries, Prado (2006) showed that cognitive and metacognitive CQ correlated positively with perceived cross-border environment uncertainty.

Other research suggests that metacognitive CQ is positively related to expectations of cooperative and relationship-oriented goals—both for oneself and others—when preparing for mixed-motive interactions with culturally diverse others (Mor, Morris, & Joh, 2013). Cooperative and relationship-oriented goals in turn are positively associated with cooperative behavior in intercultural interactions. Similarly, Imai and Gelfand (2010)

showed that metacognitive and motivational CQ predicted cooperative negotiation heuristics.

Recent studies also shed light on more proximal behaviors that culturally intelligent people exhibit in intercultural interactions. For example, Beyene (2007) observed interactions between native English-speaking and non-native English-speaking employees in a large French multinational organization. Nonnative English speaker's CQ predicted how frequently they interacted with native English speakers even after controlling for the ability to speak multiple languages.

Other studies show that metacognitive CQ relates positively to sharing information and engaging in cooperative behaviors with culturally diverse others. As noted previously, Chua et al. (2012) found that metacognitive CQ predicted new idea sharing with culturally diverse others. In another study, these authors asked culturally diverse observers (superiors, peers, and subordinates) of 43 mid-level managers to rate the manager's creative collaboration behaviors during intercultural interactions. Managers provided self-ratings of their metacognitive CQ. Results showed that manager's metacognitive CQ was positively associated with observer-ratings of intercultural creative collaboration.

Perhaps because they are more willing to share information and to engage in cooperative behavior with culturally diverse others, individuals with higher CQ develop social networks that are more culturally diverse. Fehr and Kuo (2008) examined the development of social networks for American students studying abroad and international students studying in the United States. CQ predicted the size of social networks abroad, even after controlling for international experience, host country language fluency, and cultural distance. In another study, Gjertsen, Torp, Tan, and Koh (2010) examined the heterophily (i.e., cultural diversity) of friendship and advice tie networks in a sample of 87 engineers from 12 countries in a multinational organization in Singapore. CQ predicted heterophily of friendship networks even after controlling for age, gender, rank, and organizational tenure. By contrast, individual's rank and organizational tenure, rather than their CQ, predicted heterophily of advice networks. Rank and organizational tenure might be interpreted as indicators of competency. Thus, some organizational contexts may have strong corporate and professional norms that govern work-related communication. For example, norms may cause employees to seek work-related advice from more senior and competent individuals regardless of personal relationships. This is one possible explanation for why CQ was related to heterophily of friendship networks and not to heterophily of advice networks.

3. Cultural Intelligence as a Moderator

To date, two studies have explored CQ as a moderator. One study examined the interplay between transformational leadership (i.e., leaders displaying behavioral attributes of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) (Bass, 1985) and CQ as antecedents of organizational innovation (Elenkov & Manev, 2009). Because culture influences the appropriate expression of many leadership behaviors (House, Hanges, Javidan, Dorfman, & Gupta, 2004), Elenkov and Manev (2009) expected CQ to moderate the effective expression of transformational leadership behaviors that predict innovation. To test this hypothesis, they collected self-ratings of CQ from 153 senior expatriate leaders in various European countries, subordinate ratings of transformational leadership, and organizational records of innovation adoptions during a two-year period. Consistent with their theoretical arguments, CQ of the leader strengthened the positive relationship between transformational leadership and organizational innovation.

Another study examined the interplay between cultural diversity and CQ as predictors of voice instrumentality (i.e., perceptions that voicing behaviors will lead to desired organizational changes) and actual voice behaviors (Ng, Ang, & Van Dyne, 2011a). CQ moderated the effects of perceived cultural diversity on voice instrumentality. Specifically, cultural diversity was negatively related to voice instrumentality when CQ was low but was positively associated with voice instrumentality when CQ was high. In turn, voice instrumentality mediated the effect of the cultural diversity–CQ interaction on actual voice behaviors.

4. Boundary Conditions of Cultural Intelligence Effects

More recent studies have refined theoretical arguments about CQ effects and have examined boundary conditions for antecedents of CQ and for effects of CQ on intercultural effectiveness. Many of these studies also tested moderated and mediated CQ effects jointly.

In terms of antecedents of CQ, research has focused primarily on moderators of the relationship between international experiences and CQ. Initial studies (e.g. Crowne, 2008; Shannon & Begley, 2008; Tarique & Takeuchi, 2008) reported inconsistent relationships between international experience and CQ. For example, Tarique and Takeuchi (2008) found that international travel experiences predicted CQ, but Crowne (2008) found no relationship between international travel experiences and CQ. In light of such findings,

later research considered more complex models with moderators. Such research suggests that mindful attention (Brown & Ryan 2003) to intercultural encounters is crucial to translating international experience into higher CQ. Kim and Van Dyne (2012) proposed that because intercultural contact is less common for majority members, they would benefit more from intercultural contact than minority members. Results across two studies showed that the relationship between international experience and CQ was stronger for majority than minority members. Furthermore, CQ mediated the effects of international experience on international leadership potential for majority members but not for minority members. Li, Mobley, and Kelly (2013) hypothesized and found that a divergent learning style strengthened relations between international experience and CQ because people with such a learning style emphasize attending to and reflecting upon concrete experiences. Last, Tay et al. (2008) found that lower need for control strengthened relationships between international experience and CQ for short-term business travelers. They suggested that people with greater need for control prepare more before international experiences and those with less need for control tend to be more attentive and responsive to cues during international experiences.

Beyond mindful attention, research also suggests that counterfactual thinking influences the extent to which individuals learn from failure in intercultural experiences. Specifically Liu and Chen (personal communication) compared the effects of downward and upward counterfactual thinking in a sample of 135 expatriates from 27 countries working in China. Downward counterfactual thinking occurs when expatriates experiencing culture shock recognize that they could have suffered even more. By contrast, upward counterfactual thinking occurs when expatriates experiencing culture shock acknowledge that better outcomes would have been possible. Controlling for initial levels of CQ, downward counterfactual thinking was negatively related to subsequent CQ, whereas upward counterfactual thinking was positively associated with subsequent CQ. An interaction with the severity of culture shock qualified these main effects. Specifically, weak culture shocks strengthen the negative relationship between downward counterfactual thinking and CQ. By contrast, strong culture shocks strengthened the positive relationship between upward counterfactual thinking and CQ. CQ, in turn, predicted time-lagged supervisor-rated job creativity and mediated the joint effects of culture shock and counterfactual thinking on job creativity.

Recent research has started to explore cultural capital (i.e., international education and international experiences of one's parents) as a boundary condition to the relationship between international experience and CQ. This research emphasizes the crucial role of the home environment during childhood in enabling effective intercultural relationships later in life. Results from two related studies suggest that international experience relates positively to CQ when cultural capital is high but is unrelated to CQ when cultural capital is low (Rockstuhl et al., 2013a, 2014b). Furthermore, CQ mediated the effects of international experience on (1) supervisor-rated international military officer potential (Rockstuhl et al., 2014b) and (2) peer-rated leadership emergence in multicultural teams (Rockstuhl et al., 2013a) for people with high rather than low cultural capital.

Research on boundary conditions to the effects of CQ on interpersonal effectiveness has identified both suppressors and enhancers that qualify the effects of motivational CQ. Furthermore, such research has examined both individual and contextual characteristics that moderate the effects of motivational CQ.

In terms of individual characteristics, Peng et al. (in press) examined cultural identity as a moderator of the effects of motivational CQ on cultural effectiveness during study abroad. According to cultural identity theory (Sussman, 2000), a strong cultural identity may hinder adaptation in intercultural contexts because exposure to other cultures threatens one's own cultural identity and may trigger reactance. Thus motivational CQ should be especially valuable in helping those with strong cultural identities to overcome their reactance and engage in learning processes that facilitate cultural effectiveness. Data from 98 students and their peers participating in a five-week study abroad program support their hypothesis. Students reported on their motivational CQ and cultural identity strength before entering the program. Peers rated suitability for overseas work both before participants entered the program and at the end of the program. Controlling for suitability perceptions at the beginning of the program, the interaction between motivational CQ and cultural identity significantly predicted suitability for overseas work at the end of the program. Consistent with their hypothesis, motivational CQ was unrelated to suitability when cultural identity was weak but positively predicted suitability when cultural identity was strong.

In terms of contextual moderators, G. Chen et al. (2010) argued that cultural distance—the extent to which another culture differs from one's

own (Shenkar, 2001)—suppresses the effects of motivational CQ. Based on Kanfer and Ackerman's (1989) resource allocation perspective, G. Chen and colleagues reasoned that allocating effort to a task based on personal motivation helps only if one is familiar with that task. The task for expatriates is adjusting to the work norms in the host country. However, when cultural distance is high, expatriates are less likely to be aware of appropriate work norms, making motivational CQ less useful. G. Chen and colleagues also argued that subsidiary support—the extent to which the subsidiary provides expatriates with career, financial, and adjustment support—would suppress the effects of motivational CQ because expatriates in subsidiaries with more support need to exert less discretionary effort to adjust to their new work environment. This hypothesis draws on trait activation theory (Tett & Burnett, 2003), which suggests that situational characteristics may trigger or mute the need to express personality traits. In a sample of 556 expatriate managers, results support both hypotheses. Specifically, greater cultural distance and subsidiary support weakened the positive effects of motivational CQ on work adjustment, and subsequent supervisor-rated job performance.

Also drawing on trait activation theory, X. Chen et al (2012) proposed that an organization's diversity climate (i.e., employee's shared perceptions about the extent to which their organization valued diversity) would enhance the effects of motivational CQ on intercultural effectiveness. A positive diversity climate should function as a contextual cue that "activates" motivational CQ as a driver of intercultural effectiveness. Similarly, they proposed that organizational-level motivational CQ should act as a contextual cue that activates individual-level motivational CQ as a driver of intercultural effectiveness. Findings showed that the positive effect of motivational CQ on cultural sales performance in a sample of 305 real estate agents was stronger within companies characterized by more positive diversity climates and higher organizational-level motivational CQ. Together, these studies begin to highlight important boundary conditions of CQ effects.

The study by X. Chen et al. (2012) is further noteworthy because it assessed organizational-level motivational CQ. An emerging body of research has begun to adopt multilevel models of CQ, comprising dyadic-, team-, and organizational-level conceptualizations of CQ.

5. *Multilevel Models of Cultural Intelligence*

Ang and Inkpen (2008) conceptualized organizational-level CQ as including managerial, competitive, and structural aspects. Managerial CQ aggregates

individual-level CQ of members of the top management team. Competitive CQ refers to the extent to which organizations have processes and routines for international knowledge integration. Structural CQ refers to an organization's capability to organize and develop effective routines for hierarchical relationships with international business partners. T. Moon (2010b) extended this conceptualization and suggested that organizational-level CQ also encompasses process capabilities (i.e., processes related to intercultural coordination and integration, intercultural learning, and intercultural reconfiguration) and path capabilities (i.e., early internationalization, extent of international experience, and ease of deployment of resources in intercultural contexts).

Emerging empirical research shows promising results. Organizational-level CQ based on the conceptualization by T. Moon (2010b) related positively to performance of international strategic alliances in the Turkish construction industry (Yitmen, 2013). Magnusson, Westjohn, Semenov, Randrianasolo, and Zdravkovic (2013) found moderation effects of export manager's CQ in a sample of US export organizations. Specifically, motivational CQ strengthened the positive effect of perceived environmental differences between home and export market on marketing mix adaptations. In turn, metacognitive CQ strengthened the positive relationship between marketing mix adaptations and export performance.

By contrast, research on dyadic- and team-level CQ has produced more ambiguous results. Empirical studies suggest that dyadic CQ relates positively to affect-based trust (Chua et al., 2012), creative collaboration performance (Chua et al., 2012), as well as cooperative relationship management behaviors and joint outcomes in dyadic negotiations (Chua et al., 2012; Imai & Gelfand, 2010). Although this research suggests that dyadic CQ benefits relational processes in dyads, there is ambiguity about how to conceptualize dyadic CQ. For example, minimum motivational and behavioral CQ within the dyad predicted relational processes and negotiation outcomes in one study (Imai & Gelfand, 2010). By contrast, maximum metacognitive CQ within the dyad predicted relational processes and outcomes on negotiation and creative collaboration tasks in another study (Chua et al., 2012).

Researchers have also tested relationships of CQ with relational processes and outcomes in multicultural teams. For example, CQ should alleviate negative interpersonal dynamics that often occur in diverse teams and be positively associated with team performance. In support of this notion, studies have shown positive relationships between team CQ and a range of team process variables, including team trust and cohesion (Moynihan, Peterson, & Earley, 2006), shared team values (Adair, Hideg, & Spence,

2013), knowledge sharing (M. Chen & Lin, 2013), and fusion teamwork (i.e., teamwork that encourages meaningful participation and coexistence of different cultures; Crotty & Brett, 2012). Initial research suggests that CQ predicts team performance as well. For instance, CQ predicted the team performance of project teams (Groves & Feyerherm, 2011) and team creativity (Crotty & Brett, 2012).

There is also ambiguity about how to conceptualize team-level CQ. Some studies conceptualized team CQ using additive models (Adair et al., 2013; Crotty & Brett, 2012; Moynihan et al., 2006) whereas others conceptualized team CQ based on CQ of team leaders (M. Chen & Lin, 2013; Groves & Feyerherm, 2011). Similar ambiguities exist about effects of different factors of CQ. Some studies show positive relationships between overall CQ and team outcomes (Groves & Feyerherm, 2011; Moynihan et al., 2006) whereas other studies observe that different CQ factors predict team outcomes, i.e., metacognitive and behavioral CQ (Adair et al., 2013); motivational, cognitive, and metacognitive CQ (M. Chen & Lin, 2013); and metacognitive CQ (Crotty & Brett, 2012).

Work on multilevel conceptualizations of CQ remains an open frontier for CQ research. Although such models potentially offer a rich understanding of how CQ affects organizational outcomes, conceptual work is still needed to realize this potential. In particular, we need a much better understanding of composition models of CQ and how different aspects of performance might influence the choice of composition model. Such work would help to clarify what now appear to be conflicting findings—for example that both maximum CQ (Chua et al., 2012) and minimum CQ (Imai & Gelfand, 2010) might drive outcomes in intercultural negotiations.

D. Training and Development of Cultural Intelligence

In light of the well-documented benefits of CQ to intercultural effectiveness, questions about how such a capability can be developed are a natural extension of the CQ research program. Three related research paradigms influence our thinking regarding CQ development (see also Ng, Tan, & Ang, 2011b; Ng, Van Dyne, & Ang, 2009a; 2009b): the literature on leader and executive development (DeRue & Wellman, 2009), theories of situated learning (Lave & Wenger, 1991), and experiential learning theory (Kolb, 1984). All three perspectives emphasize the importance of actual experiences for the development of complex capabilities such as CQ.

For example, the literature on leader and executive development contends that the vast majority of personal development occurs via direct on-the-job experience, with formal training and mentoring playing a supporting role at best (DeRue & Wellman, 2009). Situated learning theory also posits that "knowing" cannot be separated from "doing" and that working on authentic or realistic tasks facilitates learning (Lave & Wenger, 1991). In addition, situated learning theory highlights the benefits of collaborative learning (i.e., the sharing of cultural practices, collective problem-solving, and reflections). Finally, experiential learning theory provides an account of how individuals might develop their CQ from intercultural experiences. In particular, this theory suggests that learning occurs in a cycle of (1) engaging in concrete experiences, (2) reflecting critically on the experiences, (3) abstracting these reflections into general theories to guide future behavior, and (4) active experimenting with the new behaviors to assess their effectiveness.

Together, these three perspectives have informed the design of a number of CQ development interventions. Results across different studies reinforce the importance of direct experience for developing CQ. For example, Shokef and Erez (2008) had 191 MBA students from five different countries work in 55 virtual multicultural teams for four weeks. Across those four weeks, they observed significant increases in participant's metacognitive, motivational, and behavioral CQ but no changes in cognitive CQ. The investigators therefore suggested that cognitive CQ may not have increased because items focused more on knowledge about economic systems, religions, and rules of languages than on managerial practices that were relevant to working in virtual multicultural teams.

MacNab (2012) developed a successful experiential CQ development program. Based on experiential learning theory, they required participants to engage in a new cultural experience and reflect upon the experience. Drawing on situated learning theory, he emphasized collaborative learning and required participants to discuss their experiences in small groups. Similar to Shokef and Erez (2008), results from 373 participants in an executive management education program demonstrated significant increases in metacognitive, motivational, and behavioral CQ.

Pless, Maak, and Stahl (2011) provided rich qualitative accounts of the processes through which CQ development occurs in authentic intercultural experiences. They interviewed 70 participants in an integrated service-learning program, which sent participants in teams to developing countries to work in cross-sector partnerships with nongovernmental organizations, social entrepreneurs, and international organizations. Content

analysis of these interviews suggests that participants developed their CQ as a result of their experiences abroad. Moreover, processes of resolving cultural and ethical paradoxes, developing a new perspective of self and the world, and making sense of emotions experienced abroad were important drivers of CQ development.

Research has also begun to deepen our understanding of contextual boundary conditions for the development of CQ. One important contextual boundary condition emerging from this research is the quality of intercultural contact. For example, Fischer (2011) conducted a training program that emphasized lectures about culture and simulated instead of authentic intercultural contact. Participants in this program showed decreases in cognitive and metacognitive CQ and no changes in motivational and behavioral CQ. As Fischer (2011, p. 773) noted, "the sessions made students realize their limits in terms of intercultural competence" without offering them the opportunity to develop their CQ.

MacNab, Brislin, and Worthley (2012) examined the role of quality of contact directly. These authors had 370 participants complete the experiential CQ development program developed by MacNab (2012). They also had participants rate the quality of their intercultural contact using four dimensions derived from contact theory (Allport, 1954): equality of status between contact parties, establishment of common goals, meaningful interpersonal contact, and support from authorities. Results indicate that higher quality of intercultural contact led to greater increases in CQ over the course of the program.

Rosenblatt, Worthley, and MacNab (2013) replicated and extended these findings. Data from a sample of 212 participants in an identical experiential CQ development program replicated the earlier finding that the quality of intercultural contact predicted CQ development. They further showed that experiencing disconfirmed expectations mediated this effect. Participants experiencing intercultural contact under the four conditions outlined above (equal status, common goals, personalized contact, and authority support) were more likely to have their expectations disconfirmed than other participants. Importantly, greater expectancy disconfirmation predicted greater CQ development.

Erez et al. (2013) explored team trust as another contextual boundary condition for developing CQ based on intercultural contact in virtual teams. Trust in multicultural teams reflects the quality of contact because greater trust enhances sharing of cultural practices and collaborative learning.

Consistent with situated learning theory, Erez and colleagues expected team trust to strengthen increases in CQ. Results in a sample of 1,221 MBA students from 12 different countries, working in 312 virtual multicultural teams on a four-week team project were supportive. Participant's overall CQ increased across the four weeks of working in multicultural teams and higher team trust led to greater increases in CQ. Interestingly, CQ did not change at low levels of team trust. Follow-up analyses six months later further revealed that these changes in CQ remained stable even after team projects had ended. Together with the research on CQ as a predictor of trust (Chua et al., 2012; Rockstuhl & Ng, 2008; Rockstuhl et al., 2010), this suggests reciprocal influences between CQ and trust.

In sum, research has shown that CQ can be developed through training interventions. This research supports the crucial role of intercultural experiences in this developmental process. Researchers have also begun to examine aspects of intercultural experiences that make such experiences more or less developmental. Understanding moderators of CQ development is important for continuing research because practitioners need to understand the features of CQ training programs that drive learning and development.

V. METHODOLOGICAL DIVERSITY: A COMPLEMENTARITY PERSPECTIVE

A. Calls for Greater Measurement Diversity in Cultural Intelligence Research

To date, most empirical CQ research has relied on self-reported measures of CQ. As reviewed above, existing research shows that self-reported measures of CQ are reliable. Furthermore, self-reported CQ predicts important criteria in intercultural contexts. Notwithstanding this demonstrated value of self-reports of CQ, we recognize that providing self-reports is a complex process (Stone et al., 2000; Tourangeau et al., 2000). Thus, research also benefits from the development of complementary measures of CQ based on different assessment methodologies (Ang et al., 2011; Ng et al., 2012). Others have similarly called for greater measurement diversity in the assessment of CQ (Gelfand et al., 2008).

Leung et al. (2014) distinguished three broad measurement approaches applicable to CQ: (1) self-reported measures where focal individuals report their own capabilities (e.g., standardized scales such as the CQS, E-CQS, or behavioral description interviews); (2) informant-based measures where

knowledgeable observers report on a focal person's capabilities (e.g., observer ratings or multisource observer ratings based on supervisors, peers, or subordinates); and (3) performance-based measures where individuals demonstrate their capabilities in standardized tests (e.g., situational judgment tests or implicit association tests).

The development of informant-based and performance-based measures of CQ can strengthen research, allow triangulation of findings, and offer researchers and practitioners more assessment alternatives (Ng et al., 2012). For example, practitioners might find self-reports of CQ attractive when they want to adapt measures to specific work contexts or when ease of administration is a concern. In contrast, practitioners might find performance-based measures of CQ attractive in high-stakes selection contexts when they want to minimize social desirability and rating biases.

This suggests the value of using different measurement approaches to CQ because there are strong conceptual and empirical reasons to consider alternative measures of CQ as complementary. Conceptually, the methodological literature has long suggested that method-specific variance reflects theoretically meaningful aspects of a construct rather than bias (Campbell & Fiske, 1959; Cronbach, 1995; Diener & Eid, 2006). Thus, different measures of the same construct reveal unique and complementary information. For example, Campbell and Fiske (1959, p. 102) have noted that "more likely, what we have called method variance will be specified theoretically in terms of a set of constructs.... It will then be recognized that measurement procedures usually involve several theoretical constructs in joint application."

For example, self-reported measures of CQ reflect one's self-efficacy in CQ because they measure perceived capabilities. By contrast, informant-based measures of CQ reflect one's CQ reputation because they are based on informants' observations about a person's external manifestation of CQ. Still, informant-based measures may depend more heavily on one's typical display of culturally intelligent behaviors whereas performance-based measures may reflect a person's maximum CQ capabilities. In sum, conceptual arguments suggest that different measurement approaches capture unique information regarding a person's CQ.

Empirical research supports the conclusion that different measurement approaches capture unique information rather than measurement bias. As Lance, Hoffman, Gentry, and Baranik (2008) have noted, if different measurement approaches capture unique and complementary information instead of measurement bias, then they should incrementally predict

outcomes over and above each other. Across a variety of domains such as general cognitive ability (Chamorro-Premuzic, Harlaar, Greven, & Plomin, 2010), emotional intelligence (Joseph & Newman, 2010), and attitudes (Greenwald, Poehlman, Uhlmann, & Banaji, 2009), research has shown that self-reports and performance-based measures of the same construct predict outcomes incrementally over and above each other.

In the research which we review in the following section, results show that different measures of CQ follow the same pattern. Thus, the complementary perspective should guide thinking about measurement diversity in CQ research. Hence it is important to understand the incremental and unique predictive validities of different CQ measures. Against this backdrop, the following section highlights CQ research that has developed and applied both informant-based and performance-based CQ measures.

B. Development and Application of Informant-Based Cultural Intelligence Measures

Informant-based measures of CQ are a fundamental source of information about a person's external manifestation of CQ and reflect a person's CQ reputation (Ang et al., 2015). Van Dyne et al. (2008a) introduced an informant-based measure of CQ based on the 20-item CQS. In an initial validation study with 142 executive MBAs, they demonstrated the convergent validity between self-reported and informant-based CQ. In this study, executives completed self-reported measures of CQ and interactional adjustment, and completed the same measures for one randomly-assigned peer from their team. Multitrait-multimethod analyses and confirmatory factor analyses using the correlated trait-correlated method model supported the convergent and discriminant validity of self-reported and informant-based CQ measures. The correlations between self-reported and informant-based measures of the same CQ factors ranged from .41 to .54. Self-reported CQ showed the same pattern of relationships with peer-rated interaction adjustment, as did informant-based CQ with self-rated interaction adjustment. This finding further supports the predictive validity of CQ across self-reported and informant-based CQ measures. Another study by Van Dyne et al. (2008b) also supports the predictive validity of informant-based CQ. Results demonstrated that informant-based CQ mediated the effects of international experience on peer-rated international leadership potential in a sample of 212 working adults.

Kim and Van Dyne (2012) further supported the predictive validity of informant-based CQ in a sample of 181 working adults. Participants provided information on their previous international experience and demographic characteristics. Two independent sets of informants then provided informant-based ratings of CQ and international leadership potential. Informant-based CQ significantly predicted international leadership potential. Moreover, informant-based CQ mediated the effects of international experience on international leadership potential for members of the cultural majority and not for minority members.

Taken together, these initial studies suggest that informant-based CQ measures complement self-reported CQ measures. Beyond informant-based CQ measures, more recent research has developed and validated a series of performance-based measures of CQ.

C. Development and Application of Performance-Based Cultural Intelligence Measures

Recently Ang, Rockstuhl, and Ng (2014) drew on the situational judgment test (SJT) paradigm (Motowidlo, Dunnette, & Carter, 1990) and developed performance-based CQ measures. SJTs require one to identify the best course of action in response to work-related situations that are presented in a written or video- based format (Weekley & Ployhart, 2006). We describe our development of the intercultural SJT (iSJT) below and highlight studies that have applied the iSJT to predict intercultural effectiveness.

1. Development of the Intercultural Situational Judgment Test

A major appeal of SJTs is their fidelity, defined as the correspondence to real situations encountered in the workplace (Callinan & Robertson, 2000; Goldstein, Zedeck, & Schneider, 1993). Two types of fidelity are relevant to SJTs—task fidelity and response fidelity (Chan & Schmitt, 2002; Lievens, Buyse, & Sackett, 2005). Task fidelity is the extent to which the situations in a SJT portray rich and detailed information that realistically reflects challenges in the workplace (Callinan & Robertson, 2000; Goldstein et al., 1993). Response fidelity refers to how much the response format corresponds to how individuals would respond in similar work situations (Sackett, 1987; Weekley, Ployhart, & Holtz, 2006).

For task fidelity, SJT research has primarily compared text-based and multimedia SJTs. Multimedia SJTs are higher in task fidelity than text-based

SJTs. In particular, multimedia SJTs provide nonverbal behaviors such as voice inflections or facial expressions that are more similar to what is experienced during face-to-face interactions on the job compared to text-based SJTs (Olson-Buchanan & Drasgow, 2006). The opportunity to display rich verbal and nonverbal behavior makes multimedia SJTs particularly attractive for contexts where the accurate interpretation of behavior is an important capability. In intercultural interactions the accurate interpretation of verbal and nonverbal behaviors is both challenging and important (Hall, 1959; Earley & Ang, 2003). More importantly, multimedia SJTs tend to have stronger criterion-related validities than text-based SJTs, especially in interpersonal domains. Christian, Edwards, and Bradley (2010) meta-analyzed the predictive validity of text-based and multimedia SJTs designed to measure interpersonal skills. Results show that multimedia SJTs (ρ = .47) were stronger predictors of job performance than text-based SJTs (ρ = .27).

Although response stimulus fidelity is just as important as task stimulus fidelity, it is more under-researched for SJTs. Almost unilaterally, SJTs have adopted the selected-response (i.e., multiple-choice) format based on ease of scoring (Motowidlo et al., 1990). However, lack of fidelity is a downside of the selected-response format. As Ryan and Greguras (1998) have pointed out, "life is not multiple choice." The practical problems presented in SJT items often have multiple effective solutions (Schmitt & Chan, 2006). The selected-response format also offers participants less opportunity to perform compared to real work situations because responses are constrained to the presented options (Nield & Wintre, 1986; Zeidner, 1987). Moreover, selected-response formats "cue" respondents and do not require them to generate effective solutions and strategies. Instead, they need to recognize solutions and strategies (Funke & Schuler, 1998; Thornton & Rupp, 2006). Accordingly, we used a constructed (i.e., open-ended) response format for our multimedia iSJT. Thus, a major task was the development of multimedia vignettes.

Walker, Cucina, and Kannan (2008) recommended three key steps for developing high-quality multimedia vignettes: (1) draft and revise scripts using subject matter experts, (2) produce vignettes using professional actors in realistic settings, and (3) include subject matter experts on site during recording to ensure accuracy and clarity of content.

We followed Weekley et al.'s (2006) recommendations for scripting multimedia SJT items. First, we developed a taxonomy of intercultural work interactions to define the situational domain for the iSJT. Second, we collected critical incidents from interviews with five subject matter experts (executives

in international assignments, experienced cross-cultural researchers, and cross-cultural trainers). We supplemented these interviews with an extensive review of critical incidents from cross-cultural training materials (e.g., Bhawuk, 1998; Cushner & Brislin, 1996). Third, we identified prototypical incidents for scripting based on our situational taxonomy. Incidents not only represented the situational taxonomy but also covered a wide range of different national cultures including North America, South America, Europe, Asia, and the Middle East.

We hired a professional scriptwriter to draft the initial scripts for each SJT item. Next, we obtained input from six subject-matter experts (executives from the countries depicted in the scripts and experienced cross-cultural professors and researchers). We then worked iteratively with the scriptwriter until each script represented cultural realism and met professional scriptwriting standards. On average, scripts went through 10 iterations before being endorsed for production.

We recorded the multimedia SJT items professionally in authentic work-related settings with professional actors from the Screen Actors' Guild (SAG) from countries and ethnicities depicted in the scripts. Intercultural experts worked closely with the film director to select actors, settings, and cultural artifacts used as props and to assure cultural fidelity of verbal and nonverbal communications and speech acts. Intercultural experts were actively involved with the production crew during recording of all SJT items.

After the multimedia SJT items were produced, six-subject matter experts (experienced professors and researchers in the field of cross-cultural management who were otherwise not involved in the iSJT development) independently matched each item to the intended situational taxonomy. The Cohen's kappa agreement between expert ratings and the intended situational taxonomy averaged .92 (range from .83 to 1). Having developed the stimulus material for the intercultural SJTs, we examined predictive validity of the iSJT, which we now summarize.

2. *Predictive Validity of the Intercultural Situational Judgment Test*

Rockstuhl et al. (2014a) examined the predictive validity of the iSJT for task performance and interpersonal citizenship behaviors across two samples in the context of multicultural teams. Their first sample consisted of

132 undergraduate senior students representing 24 countries across five continents. Students worked in randomly-assigned teams on an intensive three-month project where they had to produce a 10-minute multimedia dramatization of a challenging intercultural interaction. Team members completed measures of big-five personality traits, general cognitive ability, international experience, and demographic characteristics before their group projects started. At the beginning of the group project, they also completed the iSJT. Finally, at the end of the project, peers rated team member's task performance and interpersonal citizenship behaviors. Performance on the iSJT predicted both task performance and interpersonal citizenship behaviors. Furthermore, iSJT scores explained 11% of variance in task performance and 6% of variance in interpersonal citizenship behaviors over and above the controls.

Rockstuhl et al. (2014a) replicated these findings in a second sample of 188 working adults representing 26 countries across five continents. As part of a MBA course, these adults worked in multicultural consulting teams providing recommendations on intercultural management challenges to organizations from a wide range of industries (e.g., manufacturing, retail, information, finance, insurance, service, professional service, and so on). Team projects lasted three months. At the beginning of their projects, consultants completed measures of big-five personality traits, cognitive and affective intercultural empathy, self-reported CQ, international experience, and demographic characteristics. In addition, consultants completed the iSJT. Archival data was also available on consultant's general cognitive ability. At the end of their consulting projects, team members rated consultant's task performance and interpersonal citizenship behaviors. Replicating findings from the undergraduate student sample, performance on the iSJT predicted subsequent task performance and interpersonal citizenship behaviors. Scores on the iSJT explained 9% of variance in task performance and 8% of variance in interpersonal citizenship behaviors beyond the control variables. Notably, and consistent with our view on the complementarity of different CQ measures, self-reported CQ incrementally predicted task performance over and above the performance-based measure of CQ. Taken together, results across these two samples support the predictive validity of the iSJT for intercultural effectiveness.

Moving from educational to field settings, we have since applied the iSJT in an offshoring context and in the aviation industry. For example, Rockstuhl

et al. (2013b) examined the predictive validity of the iSJT for job performance in a sample of 176 employees working for an offshoring organization based in the Philippines. CQ is relevant for offshoring professionals because they must work effectively with team members, clients, and customers from different cultures (Ang & Inkpen, 2008; Koh, Joseph, & Ang, 2010). Employees completed a demographic survey, a test of general cognitive ability, and the iSJT. Three months later, supervisors rated the job performance of participants. Scores on the iSJT predicted supervisor-rated job performance and explained 4% of variance in job performance over and above the controls. Furthermore, results from a relative importance analysis indicated that iSJT scores explained 64% of the overall variance explained in job performance (overall R^2 = .38). This suggests that performance on the iSJT is an important predictor of job performance.

In sum, emerging empirical evidence demonstrates that the iSJT, as a performance-based measure of CQ, is a strong predictor of intercultural effectiveness. We recommend future research on the complementary nature of self-report, informant-report, and performance-based measures of CQ. This could include examination of the incremental validity of different measures of CQ over and above each other and research on whether different measures of CQ predict unique criteria.

VI. CONCLUSION

We hope that the broad and diverse research program we have described in this chapter gives readers a sense of the young and burgeoning research program on CQ. The CQ research program began just a decade ago and aimed to address the growing opportunities and challenges associated with globalization. The ensuing journey has been extremely rewarding in two respects. First, results show tight links between the scholarly research and applied practice worldwide (Livermore, Van Dyne, & Ang, 2012; Van Dyne, Ang, & Livermore, 2010). Second, as this review attests, a growing network of diverse researchers from all corners of the world has joined us to advance research on CQ.

The relevance and salience of CQ in people's daily lives will grow further in the future as globalization forges ahead. This offers many exciting opportunities for researchers to enhance our understanding of CQ. Likewise, we foresee a growing interest in translating this understanding into useful practical applications for individuals and organizations. In closing this chapter,

we offer a few potential areas of study that we believe are important next frontiers for CQ research.

Although CQ is a relatively young construct, our review attests to the tremendous amount of empirical research on CQ over the past few years. Importantly, this research shows that CQ predicts a plethora of important outcomes in intercultural contexts. Yet, as Gelfand et al. (2008) have noted, theorizing and empirical findings about the effects of the four factors of CQ is often less consistent across studies (Gelfand et al., 2008). An important area for future research is thus the theoretical and empirical integration of findings regarding the differential effects of the four CQ factors. Meta-analyses of empirical CQ research would be particularly useful to address inconsistent findings across individual studies because meta-analyses control for sampling error variance associated with individual studies (Hunter & Schmidt, 2004).

Two areas of CQ research have remained largely conceptual and are ripe for empirical verification: neurological correlates of CQ and organizational-level conceptualizations of CQ. The conceptualization of neurological correlates of CQ advanced by Rockstuhl et al. (2010) offers rich grounds for empirical research to deepen our understanding of the role biology plays in intercultural interactions. For example, future research could test the neurological tuning hypothesis. A better understanding of neurological changes and their facilitating and inhibiting factors could have important practical implications for the design of CQ development interventions.

Conceptual work on organizational-level CQ also offers promising ideas for empirical testing. Although the conceptualizations by Ang and Inkpen (2008), T. Moon (2010b), and Ng et al. (2011b) highlight organizational routines as an important aspect of organizational-level CQ, empirical research to-date has focused on how to aggregate individual-level CQ to the organizational level. A deeper understanding of culturally intelligent organizational practices would greatly benefit organizations struggling in an ever more competitive global business environment.

Similarly, we note that studies of team-level CQ remain rare and require more conceptual and empirical work. To date, researchers have explored different composition models for CQ and results have been conflicting. Thus, future research could explore team composition models of CQ and boundary conditions for different composition models. Beyond team composition models, future research should also explore processes and norms associated with high CQ teams and high levels of team effectiveness.

Leung et al. (2014) have highlighted a need for research on how decontextualized competencies translate into effective behaviors in specific intercultural contexts. They introduced the concept of in situ intercultural competence to describe "demonstrated sets of coordinated behaviors that are instrumental for achieving desired results or outcomes in intercultural contexts" (Leung et al., 2014, p. 38). We echo their sentiment and believe that CQ research would benefit from opening the "black box" of how CQ affects intercultural effectiveness outcomes. The delineation of subdimensions of the four CQ factors offered by Van Dyne et al. (2012) offers fertile avenues for such research. For example, these authors suggest that metacognitive CQ relates to intercultural effectiveness because people with higher metacognitive CQ think proactively about intercultural interactions (planning), go beyond culturally bound habits and thinking when making sense of intercultural interactions (awareness), and revise their mental models in light of new information about culturally diverse others (checking).

Finally, we foresee an increasing diversity in the measurement of CQ and the design of CQ training interventions. Regarding measurement, the development and continuing validation of the iSJT is important for increasing the breadth of measurement approaches to CQ. Future research could also explore direct behavioral assessments, such as assessment center exercises. Another direction might include developing implicit measures of CQ, such as implicit association tests (Greenwald et al., 2009) to measure aspects of motivational CQ.

Regarding training interventions, the focus to-date has been primarily in developing overall CQ. Future research could explore how different training interventions might differentially impact the development of the four factors of CQ. Understanding program components that enhance different CQ factors would broaden the CQ development toolbox. Likewise, such understanding would increase the comprehensiveness of CQ development interventions.

In closing, we hope this chapter will provide a useful overview of the research to date on CQ. More importantly, we hope that it will trigger research projects involving new teams of researchers across a wide range of cultural contexts.

APPENDIX

TABLE 6-1: **Cultural Intelligence Scale (CQS): Self Report**[a,b,c]

CQ factor	Questionnaire items
Metacognitive CQ	
MC_1	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
MC_2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
MC_3	I am conscious of the cultural knowledge I apply to cross- cultural interactions.
MC_4	I check the accuracy of my cultural knowledge as I interact with people from different cultures.
Cognitive CQ	
COG_1	I know the legal and economic systems of other cultures.
COG_2	I know the rules (e.g., vocabulary, grammar) of other languages
COG_3	I know the cultural values and religious beliefs of other cultures.
COG_4	I know the marriage systems of other cultures.
COG_5	I know the arts and crafts of other cultures.
COG_6	I know the rules for expressing nonverbal behaviors in other cultures.
Motivational CQ	
MOT_1	I enjoy interacting with people from different cultures.
MOT_2	I am confident that I can socialize with locals in a culture that is unfamiliar to me.
MOT_3	I am sure I can deal with the stresses of adjusting to a culture that is new to me.
MOT_4	I enjoy living in cultures that are unfamiliar to me.
MOT_5	I am confident that I can get accustomed to the shopping conditions in a different culture.
Behavioral CQ	
BEH_1	I change my verbal behavior (e.g., accent, tone) when a cross-cultural situation requires it.
BEH_2	I use pause and silence differently to suit different cross-cultural situations.

(continued)

TABLE 6-1: **(continued)**

CQ factor	Questionnaire items
BEH_3	I vary the rate of my speaking when a cross-cultural situation requires it.
BEH_4	I change my nonverbal behavior when a cross-cultural situation requires it.
BEH_5	I alter my facial expressions when a cross-cultural interaction requires it.

Note: Use of this scale is granted to academic researchers for research purposes only. For permission to use the CQS scale in academic research aimed at publication in scholarly journals, send an email from your university email address to vandyne@culturalq.com. For information on using the CQS scale for purposes other than academic research (e.g., consultants and nonacademic organizations), send an email to info@culturalq.com.

[a] Copyright © Cultural Intelligence Center, LLC 2005-2014. Used by permission of the Cultural Intelligence Center, LLC.

[b] Read each statement and select the response that best describes your capabilities. Select the answer that BEST describes you AS YOU REALLY ARE (1 = strongly disagree; 7 = strongly agree).

[c]The citation for this scale is
Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Templer, K. J., Tay, C., & Chandrasekar, N. A. (2007). Cultural intelligence: Its measurement and effects on cultural judgment and decision making, cultural adaptation and task performance. *Management and Organization Review, 3*, 335–371.

An informant-based version of the CQS is available in the Appendix to *The Handbook of Cultural Intelligence* edited by S. Ang and L. Van Dyne.

An extended 37-item version of this scale (E-CQS) was developed in
Van Dyne, L., Ang, S., Ng, K.-Y., Rockstuhl, T., Tan, M. L., & Koh, C. (2012). Sub- dimensions of the four factor model of cultural intelligence: Expanding the conceptualization and measurement of cultural intelligence. *Social and Personality Psychology Compass, 6*, 295–313.

For information on using the E-CQS for scholarly research purposes, send an email from your University email address to vandyne@culturalq.com.

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