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# CULTURAL INTELLIGENCE: A REVIEW, REFLECTIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

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The challenges of working with people from different cultures are well-documented in management research. Although these challenges were largely constrained within the expatriate population 1 to 2 decades ago, rapid globalization has resulted in a much larger group of employees being faced with cross-cultural issues in daily work. Kanter (1995) argued that for organizations to become world class in today's global economy, they must develop a new breed of managers who can see beyond surface-level cultural differences.

Despite the need to better understand and operationalize the abilities this new breed of managers should possess, up until the turn of the 21st century very little systematic research had addressed this gap. Even in the research on adult intelligence, which increasingly recognizes that there are multiple forms of intelligence critical for solving different kinds of problems (beyond the traditional focus on academic and cognitive problems; Gardner, 1993, 1999), there was no focus on the ability to solve problems specifically in the cultural realm. For instance, considerable research attention has been focused on social intelligence (Thorndike & Stein, 1937) targeted-at interpersonal relations, emotional intelligence (EQ; Mayer & Salovey, 1993) targeted at understanding one's and others' emotions, and practical intelligence (Sternberg, 1997)

targeted at solving practical problems. Yet, none of these nonacademic intelligences focus on the ability to solve cross-cultural problems. This gap prompted Earley and Ang's (2003) work on cultural intelligence (CQ), which draws on Sternberg and Detterman's (1986) integrative theoretical framework on multiple loci of intelligences, to propose a set of capabilities comprising mental, motivational, and behavioral components that focus specifically on resolving cross-cultural problems.

In the history of research on cross-cultural competency, the construct of CQ has been described as a "new kid on the scientific block" (Gelfand, Imai, & Fehr, 2008, p. 376). Despite its relatively short history, CQ has undergone a remarkable journey of growth. The concept was first formally introduced by Earley and Ang in 2003 in their book *Cultural Intelligence: Individual Interactions Across Cultures*. In 2004, we organized the first symposium on CQ at the Academy of Management annual meeting. In 2006, we published a special issue devoted to the conceptualization and empirical investigation of CQ in *Group and Organization Management*. In the same year, we organized the first Global Conference on Cultural Intelligence, which started a diverse network of researchers from different cultures and different disciplines who continue to exchange ideas and work collaboratively to advance the research on CQ to this day.

In 2007, Ang et al. published the first article on the measurement and predictive validity of CQ in *Management and Organization Review*. By offering a validated scale to assess individuals' CQ, this article triggered exponential growth in empirical studies on CQ across diverse disciplines, including cross-cultural applied linguistics (Rogers, 2008), military operations (Ang & Ng, 2005; Ng, Ramaya, Teo, & Wong, 2005; Selmeski, 2007), United Nations peacekeeping operations (Seiler, 2007), immigrants (Leung & Li, 2008), international missionary work (Livermore, 2006, 2008), and mental health counseling (Goh, Koch, & Sanger, 2008). In 2008, Ang and Van Dyne published the *Handbook of Cultural Intelligence: Theory, Measurement, and Applications*, which comprises 24 conceptual and empirical contributions from scholars from different cultural and disciplinary backgrounds. In 2009, Livermore wrote *Leading With Cultural Intelligence: The New Secret to Success*, a practical book that translated academic research on CQ to easily accessible materials and useful recommendations for business leaders and students alike. More recently, Livermore (2011) wrote a new book, *The Cultural Intelligence Difference: Master the One Skill You Can't Do Without in Today's Global Economy*, that focuses on practical ways to increase CQ capabilities.

To sum up the journey of the past 7 years, we have witnessed the development of CQ from a theoretical concept to a measurable construct with strong psychometric properties and construct validity evidence, from theoretical expositions of its practical significance to empirical evidence

of its predictive validity, and from an academic construct to a practical framework for multicultural and global education and development. This extraordinary growth of CQ research can be attributed to the theoretical foundation of the construct, rigorous psychometric properties of the Cultural Intelligence Scale (CQS; Ang et al., 2007; Van Dyne, Ang, & Koh, 2008), unprecedented globalization throughout the world, and increasing cultural tensions that followed the September 11th tragedy in 2001 (Ang, Van Dyne, & Tan, 2011).

More important, the innovative integration of research on intelligence and culture offers a novel and elegant theoretical framework for thinking about intercultural competencies (Ang et al., 2007; Gelfand et al., 2008; Ng & Earley, 2006). Anchored on the intelligence research, CQ offers at least three conceptual contributions to a field that was fragmented with a myriad of intercultural competencies that lacked clarity and coherence (Ang et al., 2007; Gelfand et al, 2008). First, CQ is theoretically precise. Drawing from Sternberg and Detterman's (1986) multiple-loci-of-intelligence arguments, CQ is explicit on what it is (it consists of metacognitive, cognitive, motivational, and behavioral elements) and what it is not (it is not personality and not values; Gelfand et al., 2008). Second, the theoretical basis of CQ offers a cohesive and comprehensive framework for considering the multifaceted nature of intercultural capabilities. Because existing intercultural competency models typically focus on only one or two of the four CQ dimensions, CQ provides an integrative framework that helps to organize and integrate the disparate research on intercultural competencies (Ang et al., 2007; Gelfand et al., 2008). Third, through its connection with intelligence research, CQ opens up a wide range of important and interesting phenomena that can be studied in relation to cultural adaptation that were not particularly salient in the past (Gelfand et al., 2008). For instance, cognitive processes such as self- and other awareness, analogical reasoning, and pattern recognition become significant issues to examine in intercultural interfaces (Earley & Ang, 2003; Gelfand et al., 2008). This not only has the potential to enrich understanding of effective adaptation but also promotes interdisciplinary research.

This chapter offers a review of and reflections on our journey, which started almost a decade ago. Our aim is to take stock of what we have learned about CQ as a construct, as well as what we have learned about conducting research on CQ. The former entails an up-to-date review of the research on CQ, and the latter involves a reflection on the process and journey thus far. We then use insights from the review and reflections to suggest ways to move forward and advance the science and practice of CQ. Accordingly, we organize this chapter into three parts. The first section offers a comprehensive review of the existing CQ research. The second section describes our reflections on the rewards and challenges of conducting CQ research. The third section

concludes the chapter with key areas for future research and suggestions for how to conduct the research.


## REVIEW OF EXISTING CULTURAL INTELLIGENCE RESEARCH

In this section, we review the existing literature on CQ. We begin by describing the conceptual definition and basis of CQ. Next, we discuss research on the measurement of CQ. We then review empirical studies of CQ and its correlates, antecedents, and outcomes.

### Conceptualization of Cultural Intelligence

CQ, defined as an individual's capability to function and manage effectively in culturally diverse settings (Earley & Ang, 2003), is consistent with Schmidt and Hunter's (2000) definition of *general intelligence* (IQ) as "the ability to grasp and reason correctly with abstractions [concepts] and solve problems" (p. 3). It is built on the growing interest in real-world intelligence, which has yielded several types of intelligence that focus on specific content domains, such as social intelligence (Thorndike & Stein, 1937), EQ (Mayer & Salovey, 1993), and practical intelligence (Sternberg, 1997). CQ contributes to this research by emphasizing the specific domain of intercultural settings, which has not been examined in prior research despite the practical realities of globalization.

The CQ framework is based on Sternberg and Detterman's (1986) integration of the various loci of intelligence residing within the person. According to Sternberg and Detterman, metacognition, cognition, and motivation are mental capabilities that reside within the head, whereas overt actions are behavioral capabilities. *Metacognitive intelligence* refers to control of cognition: the processes individuals use to acquire and understand knowledge. *Cognitive intelligence* refers to knowledge structures and is consistent with Ackerman's (1996) intelligence-as-knowledge concept, which argues for the importance of knowledge as part of intellect. *Motivational intelligence* refers to the mental capacity to direct and sustain energy on a particular task or situation and recognize that motivational capabilities are critical to real-world problem-solving (Ceci, 1996). *Behavioral intelligence* refers to outward manifestations or overt actions: what a person does rather than what he or she thinks (Sternberg & Detterman, 1986).

Applying Sternberg's (1986) multiple-loci-of-intelligence framework, Earley and Ang (2003) conceptualized CQ as comprising metacognitive, cognitive, motivational, and behavioral dimensions with specific relevance to functioning in culturally diverse settings. *Metacognitive CQ* reflects mental

processes that individuals use to acquire and understand cultural knowledge, including knowledge of, and control over, individual thought processes (Flavell, 1979) relating to culture. Relevant capabilities include planning, monitoring, and revising mental models of cultural norms for countries or groups of people. Those with high metacognitive CQ are consciously aware of others' cultural preferences before and during interactions; they also question cultural assumptions and adjust their mental models during and after interactions (Brislin, Worthley, & MacNab, 2006; Triandis, 2006).

Whereas metacognitive CQ focuses on higher order cognitive processes, *cognitive* CQ reflects knowledge of norms, practices, and conventions in different cultures acquired from education and personal experiences. This includes knowledge of economic, legal, sociolinguistic, and interpersonal systems of different cultures and subcultures (Triandis, 1994) and knowledge of basic frameworks of cultural values (e.g., Hofstede, 2001). Those with high cognitive CQ understand similarities and differences across cultures (Brislin et al., 2006).

*Motivational* CQ reflects the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences. Kanfer and Heggestad (1997) argued that such motivational capacities "provide agentic control of affect, cognition and behavior that facilitate goal accomplishment" (p. 39). According to the expectancy value theory of motivation (Eccles & Wigfield, 2002), the direction and magnitude of energy channeled toward a particular task involves two elements—expectations of success and value of success. Those with high motivational CQ direct attention and energy toward cross-cultural situations based on intrinsic interest (Deci & Ryan, 1985) and confidence in their cross-cultural effectiveness (Bandura, 2002). In addition, Cattell's (1971) investment theory of intelligence would argue that motivational CQ is critical in facilitating the growth of cognitive and metacognitive CQ.

*Behavioral* CQ reflects the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures. As Hall (1959) emphasized, mental capabilities for cultural understanding and motivation must be complemented with the ability to exhibit appropriate verbal and nonverbal actions, based on cultural values of specific settings. This includes having a wide and flexible repertoire of behaviors. Those with high behavioral CQ exhibit situationally appropriate behaviors based on their broad range of verbal and nonverbal capabilities, such as exhibiting culturally appropriate words, tone, gestures, and facial expressions (Gudykunst, Ting-Toomey, & Chua, 1988).

Ang et al. (2007) further clarified that the four dimensions of CQ are qualitatively different aspects of the overall capability to function effectively in culturally diverse settings. This suggests that CQ is best described as an

aggregate multidimensional construct with two distinguishing features: (a) the four dimensions exist at the same level of conceptualization as the overall construct, and (b) the dimensions make up the overall construct (Law, Wong, & Mobley, 1998). In other words, metacognitive, cognitive, motivational, and behavioral CQ are different types of capabilities that together form the overall CQ construct.

The theory of CQ is specific on what CQ is and what CQ is not (Ang & Van Dyne, 2008; Ang et al., 2007; Earley & Ang, 2003). As a form of intelligence, CQ clearly refers to an individual's capabilities, as opposed to personality traits or interests. Ang et al. (2007) further described CQ as a specific individual difference that targets culturally relevant capabilities and, hence, is distinct from broad individual differences, such as personality. CQ is also distinct from other types of intelligence, such as general cognitive ability (Schmidt & Hunter, 1998) and EQ (Mayer & Salovey, 1993), which focus on the ability to solve problems of a different nature. General cognitive ability focuses on the ability to learn and perform across many jobs and settings, whereas EQ focuses on the general ability to perceive and regulate emotions. Both cognitive ability and EQ do not take into account the abilities required of individuals to deal with culturally diverse others, which is the focus of CQ. At the same time, CQ is not specific to any particular culture (i.e., CQ does not refer to one's capability to function in specific cultures) but is a culture-free construct that transcends cultural boundaries. Finally, CQ is a malleable state construct that can be developed over time.

## Measurement of Cultural Intelligence

A significant milestone in the CQ research journey was the development and validation of the 20-item CQS. The process began with a literature review of relevant intercultural competencies and intelligence scales. Specifically, educational and cognitive psychology operationalizations of metacognition (e.g., O'Neil & Abedi, 1996) formed the basis of items for metacognitive CQ. Items for cognitive CQ were developed on the basis of existing cultural domains identified by Triandis (1994) and Murdock's (1987) Human Relations Areas Files. Motivational CQ items were drawn from Deci and Ryan's (1985) work on intrinsic motivation and Bandura's (2002) work on self-efficacy, applied to intercultural settings. Items for behavioral CQ were based on intercultural communication research focusing on verbal and nonverbal flexibility (Gudykunst et al., 1988; Hall, 1959). In addition, we conducted interviews to obtain input from eight global executives.

Our initial item pool consisted of 53 questions, with approximately 13 items assessing each CQ dimension. All items were positively worded to avoid methodological artifacts. A panel of subject matter experts (three

faculty members and three international executives with significant global experience) independently reviewed the items for clarity, readability, and definitional fidelity. From this process, we retained the 10 best items for each dimension.

We began a large-scale data collection consisting of five studies to validate the CQS. In Study 1, business school undergraduates in Singapore ($N = 576$) completed the 40-item scale. From this study, we deleted items with small standard deviations or extreme means, low item-to-total correlations, high residuals, and low factor loadings. This resulted in a 20-item scale with four items assessing metacognitive CQ; six items for cognitive CQ; five items for motivational CQ, and five items for behavioral CQ. Confirmatory factor analysis (CFA) using maximum likelihood estimation demonstrated that the four-factor correlated model was a good fit to the data.

We then conducted four more studies to validate the 20-item scale across samples, time, methods, and two different countries. In Study 2, CFA results of a nonoverlapping cross-validation sample of undergraduate students in Singapore ($N = 447$) confirmed the four-factor structure. In Study 3, we used a subset of respondents in Study 2 to assess the temporal stability of the scale. Results demonstrated evidence of test–retest reliability. In Study 4, we used a sample of undergraduates from the United States ($N = 337$) to assess the cultural equivalence of the scale. Multigroup tests of invariance using CFA showed that the four-factor structure held across the Singapore and the U.S. samples. In Study 5, we validated an observer version across methods of measurement. The 142 managers who participated in an executive MBA program in the United States completed the 20-item scale and also reported on their interactional adjustment. Each participant was also rated by a randomly assigned peer from his or her MBA team to report on his or her CQ and interactional adjustment. Multitrait, multimethod (MTMM) analyses provided evidence of convergent, discriminant, and criterion validity of the scale across self- and peer ratings.

Taken together, our studies have demonstrated that the 20-item CQS possesses good psychometric properties across samples, time, countries, and methods. The validated scale greatly enhances the "empirical potential" of CQ (Gelfand et al., 2008) and has been instrumental in stimulating much research in the past 3 years that has advanced understanding of CQ and its relationships with other constructs, as we describe in the next section.

## Empirical Research on the Nomological Network of Cultural Intelligence

Our current review builds on and adds to the recent comprehensive review of CQ by Ang et al. (2011) with new studies conducted in 2010 and 2011. We organize our review as follows: (a) discriminant validity of CQ from
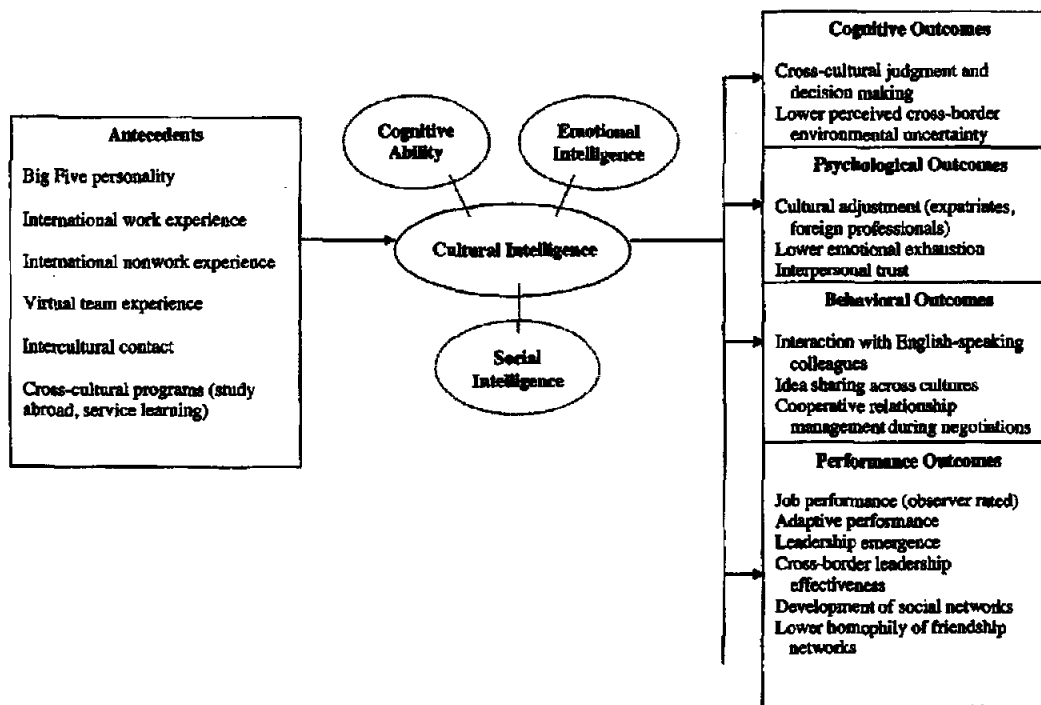
*Figure 2.1.* Summary of cultural intelligence research findings.

other types of intelligence; (b) antecedents of CQ; and (c) consequences of CQ, which can be categorized into cognitive, psychological, behavioral, and performance outcomes. Figure 2.1 summarizes our review described in the following sections.

## Discriminant Validity of Cultural Intelligence From Other Types of Intelligence

In establishing the construct validity of CQ, one of the earliest questions we addressed was how CQ is different from other forms of intelligence. Using CFA and Fornell and Larcker's (1981) procedures for assessing discriminant validity, Ang et al. (2007) provided the first evidence that CQ is distinct from (a) EQ (Mayer & Salovey, 1993; Schutte et al., 1998) in both their U.S. and Singapore samples and (b) general mental ability as assessed by the Wonderlic Personality Test (Wonderlic, 1999).

Several recent studies have corroborated these results using different measures of EQ and general cognitive ability, data from different source and from different cultures. In a study conducted in Switzerland, Rockstuhl, Seiler, Ang, Van Dyne, and Annen (in press) assessed CQ and EQ with peer ratings, and general cognitive ability. CFA results showed that all three types of intelligence are distinct and had differential relationships with general versus cross-border leadership effectiveness. In a study conducted in South Korea using self-reports of CQ and EQ, Moon (2010a) demonstrated through

CFA that both types of intelligence are distinct. K. Kim, Kirkman, and Chen (2008) assessed CQ and EQ using both self- and observer ratings in a U.S. sample, and showed that CFA results consistently demonstrated discriminant validity of the two forms of intelligence across both sets of ratings. Results of their MTMM analyses further showed that self-ratings of CQ correlated more strongly with observer ratings of CQ ($r = .43$) than with observer ratings of EQ ($r = .26$), thus demonstrating convergent validity of CQ across different methods and divergent validity of CQ from EQ. In another study, Crowne (2009) assessed the discriminant validity of CQ, EQ, and social intelligence, and found all three types of intelligence to be distinct but correlated.

Overall, empirical research has strongly supported the distinctiveness of CQ from other forms of intelligence that focus on different domains of problem solving, such as general cognitive ability, EQ, and social intelligence. Next, we review research on the antecedents of CQ.

## Antecedents of Cultural Intelligence

Personality traits, which describe what a person typically does across time and situations (Costa & McCrae, 1992), are broad and relatively stable individual difference constructs that influence choice of behaviors and experiences that should shape CQ (Ang, Van Dyne, & Koh, 2006; Earley & Ang, 2003). The first study on personality and CQ (Ang et al., 2006) demonstrated that CQ is distinct from, and has meaningful relationships with, the Big Five personality traits. As expected, Openness to Experience—the tendency to be creative, imaginative, and adventurous (Costa & McCrae, 1992)—was positively related to all four CQ factors, providing further construct validity evidence, because both CQ and Openness to Experience involve elements of novel situations. Likewise, Moody (2007) also found Openness to Experience to be the most significant predictor of CQ, followed by Conscientiousness. In a study conducted in New Zealand, Oolders, Chernyshenko, and Stark (2008) investigated the relationships between six subfacets of Openness to Experience (intellectual efficiency, ingenuity, curiosity, aesthetics, tolerance, and depth) and CQ, and found all subfacets to relate significantly to CQ. Of the six subfacets, tolerance ($r = .44$) and curiosity ($r = .39$) related most strongly to an overall measure of CQ.

Another important antecedent to CQ is international experience. Situated learning theory (Lave & Wenger, 1991) suggests that international experiences provide individuals with the social contexts and authentic activities to learn how to manage cross-cultural differences. Hence, individuals with greater international experience are more likely to acquire greater CQ. Drawing from Takeuchi, Tesluk, Yun, and Lepak's (2005) differentiation of work versus nonwork experience, several studies have examined how

international work and nonwork experience relate to CQ. Although these studies demonstrated relationships between international experience and CQ, findings were not consistent across the four factors of CQ.

For international work experience, Shannon and Begley (2008) found that international work experience, as assessed by the number of countries individuals worked in, predicted metacognitive and motivational CQ. Crowne (2008), however, found that international work experience predicted all CQ factors except motivational CQ. Tay, Westman, and Chia (2008) measured the length of international work experience and found it related only to cognitive CQ. It is interesting to note that they found that the positive relationship between international work experience and CQ was stronger for individuals with lower need for control, and they argued that those with low need for control capitalized more on their previous work experiences because they did less pretrip preparations. In a recent study based on Kolb's (1984) experiential learning theory, Li and Mobley (2010) demonstrated a main effect of international experience on CQ. More important, they found learning style moderated the relationship between international experience and CQ, such that the relationship was stronger for those with divergent learning styles, and weaker for those with convergent learning styles.

For international nonwork experience, Tarique and Takeuchi (2008) showed that the number of countries visited predicted all four CQ factors, although the length of stay predicted cognitive CQ and metacognitive CQ. On the other hand, Crowne (2008) showed that number of countries visited for educational purposes predicted cognitive CQ and behavioral CQ, although number of countries visited for vacation predicted motivational CQ. In a study of Korean expatriates, Choi, Moon, and Jung (2010) found that expatriates' international nonwork experience, rather than their work experience, predicted CQ. In addition, expatriates' goal orientation moderated the relationship, such that those high in mastery goal orientation and low in performance avoidance orientation were more likely to develop CQ from their international nonwork experience.

Other studies have examined the impact of international experience gained through specific programs on the development of CQ. For instance, Shokef and Erez (2008) found that participants of virtual multicultural teams comprising members from five different countries and lasting for 4 weeks demonstrated a significant increase in their metacognitive CQ, motivational CQ, and behavioral CQ. In a study using a pre- and postintervention design, MacNab (2011) demonstrated that a systematic program design based on experiential learning and social contact principles had a positive impact on participants' development of CQ. It is not surprising that the amount of time spent interacting with people from other cultures during programs affected the rate of CQ development. Crawford-Mathis (2010) showed that volunteers

in a service project in Belize who spent more time interacting with locals demonstrated higher increases in CQ. Likewise, Crowne (2007) found that individuals who stayed in hostels and ate with local residents developed greater CQ than those who stayed in expatriate compounds, where opportunities for contact with locals were significantly lower. Studies have also found that individual differences affect the rate of CQ development. For instance, Wilson and Stewart (2009) examined international service programs and showed that those who had experienced overseas service learning for the first time demonstrated the greatest development in their CQ. This finding suggests that cross-cultural experiences and development programs have more impact on the CQ development of individuals with lower CQ. A recent study by MacNab and Worthley (2011) of a group of managers and management students found that individuals high in general self-efficacy were more likely to improve in their CQ after attending an experiential cross-cultural training program. Drawing on the contact hypothesis and distinctiveness theory, Y. J. Kim and Van Dyne (2010) demonstrated, across two field studies of working adults, that the relationship between contact and CQ was stronger for majority members than for minorities.

In summary, research on antecedents of CQ has focused primarily on personality and international experience. There is less research on situational and environmental predictors. For instance, Ng, Tan, and Ang (2011) proposed that a firm's global cultural capital, including global mind-set and organizational routines that promote a global mind-set, should promote the development of employee CQ. It is also noteworthy that results show that the relationship between international experience and CQ is not straight-forward. Although the quantity of international experience is important for CQ development, there is little research on the quality of the experience. This is an important gap because quality of experience could be as important, if not more critical, than quantity. Individual differences are also likely to affect how international experiences translate into CQ. For example, Ng, Van Dyne, and Ang (2009) theorized that CQ moderates the extent to which individuals can transform their international experiences into experiential learning to enhance their global leadership effectiveness. Thus, CQ can be viewed as a critical learning capability that enhances the benefits of international experience.

## Cognitive Outcomes of CQ

Several studies have examined the effects of CQ on cognitive and psychological outcomes. An important cognitive outcome is *cultural judgment and decision making* (CJDM), which refers to the quality of decisions regarding intercultural interactions (Ang et al., 2007). Ang et al. (2007) proposed and

found that cognitive CQ and metacognitive CQ predicted individuals' quality of decisions across a series of cross-cultural scenarios adapted from Cushner and Brislin (1996). Consistent with expectations, motivational CQ and behavioral CQ did not affect CJDM effectiveness because judgment and decision making emphasize analytical, rather than motivational or behavioral, abilities. Another cognitive outcome examined with important implications for cross-cultural decision making is perceived cross-border environmental uncertainty (Prado, 2006). In a study of 120 managers from 27 countries, Prado (2006) found that cognitive and metacognitive CQ positively predicted managers' perceived cross-border environment uncertainty, which has important implications for accurate risk assessment in international business ventures.

### Psychological Outcomes of Cultural Intelligence

A key outcome in psychological research on sojourners and expatriates is cultural adjustment (Church, 1982). Cultural adjustment can be further delineated into *general adjustment* (general living conditions in the new culture), *work adjustment* (work culture in the new environment), and *interaction adjustment* (socializing and getting along with locals). *Psychological adjustment* refers to the general well-being when living in another culture.

A number of studies have found that CQ affects individuals' adjustment in a foreign environment. In a study of global professionals, Templer, Tay, and Chandrasekar (2006) demonstrated that motivational CQ predicted work and general adjustment over and above realistic job previews and realistic living conditions previews. Likewise, Ang et al. (2007) demonstrated in multiple studies that individuals with higher motivational and behavioral CQ reported better general, work, interactional, and psychological adjustment. In a study of American expatriates in China, Williams (2008) found that cognitive CQ predicted sociocultural adjustment and motivational CQ predicted both sociocultural and psychological adjustment. In a very recent study involving multisource and multilevel data, Chen, Kirkman, Kim, Farh, and Tangirala (2010) showed that motivational CQ influenced work adjustment of expatriates and that the effect was stronger when cultural distance and subsidiary support were lower. This study is noteworthy because it advances CQ research by focusing on boundary conditions that accentuate or attenuate the effects of CQ.

Given the increased demands placed on employees in the global workplace, an increasingly important psychological outcome examined in the CQ research is emotional exhaustion. In a study involving international business travelers, Tay, Rossi, and Westman (2010) found a negative relationship between CQ and emotional exhaustion (see also Tay et al., 2008). More

important, the authors demonstrated that CQ buffered the effects of family demands interfering with work such that the effect of family demands on emotional exhaustion was weaker for those with higher CQ.

Interpersonal trust is another psychological outcome that has received growing attention. In a study of dyads within multicultural teams, Rockstuhl and Ng (2008) found that focal persons were more likely to trust their partners when (a) focal persons had higher metacognitive CQ and cognitive CQ; (b) partners had higher behavioral CQ; and, it is important to note, (c) when both parties were from different cultural backgrounds. In other words, the effects of CQ on interpersonal trust were evident only in culturally diverse dyads and not in culturally homogeneous dyads, thereby demonstrating that CQ matters only in culturally diverse settings. Chua and Morris's (2009) study of executives from diverse backgrounds produced similar results. They showed that overall CQ increased affect-based trust (but not cognitive-based trust) only among culturally diverse members of multicultural professional networks.

### Behavioral Outcomes of Cultural Intelligence

In a study of the interactions between native-English-speaking and non–native-English-speaking employees in a large French multinational firm, Beyene (2007) found that non–native-English-speaking employees with higher CQ had more frequent interactions with native-English-speaking employees, after controlling for employees' ability to speak multiple languages. Chua and Morris (2009) demonstrated that executives' CQ indirectly affected the frequency of idea sharing in intercultural ties through increasing affect-based trust. As expected, CQ did not affect idea-sharing behaviors in intracultural ties.

In a study of intercultural negotiations between East Asian and American negotiators, Imai and Gelfand (2010) found that negotiators with higher CQ demonstrated more integrative information behaviors and cooperative relationship management behaviors. These behaviors, in turn, positively predicted joint profits of the negotiation pairs. Individual differences in cognitive ability, EQ, Openness to Experience, Extraversion, and international experience did not affect negotiation behaviors.

### Performance Outcomes of CQ

Research to date has accumulated important findings on the effects of CQ on individual-level outcomes. We broadly classify these outcomes into general job performance (comprising task and adaptive performance) and performance in specific domains, such as negotiation and leadership.

For general work performance outcomes, Ang et al. (2007) demonstrated that foreign professionals with higher metacognitive CQ and behavioral

CQ were rated by their supervisors as more effective in meeting performance expectations at work. This finding suggests that individuals who are more aware of their environment (metacognitive CQ) and who are able to adapt their behaviors accordingly (behavioral CQ) are better at understanding and enacting role expectations that are culturally appropriate. In a study of expatriates, Chen et al. (2010) found that motivational CQ positively predicted expatriates' job performance. This relationship was fully mediated by their work adjustment. Further, the indirect effect of motivational CQ on performance via work adjustment was significant when subsidiary support and cultural distance were low, thereby highlighting important contextual factors surrounding CQ's effects on performance.

In another multilevel study focusing on real estate sales performance, Chen, Liu, and Portnoy (2011) demonstrated a positive relationship between motivational CQ and agents' cultural sales, defined as the number of sales transactions involving a client from a different culture. Specifically, results based on 305 agents from 26 real estate firms demonstrated that individuals' motivational CQ was positively related to their cultural sales, and this relationship was enhanced by high firm-level motivational CQ and diversity climate.

As the business environment gets increasingly complex and dynamic, *adaptive performance*, defined as modifying behaviors to meet the changing demands of the environment (Pulakos, Arad, Donovan, & Plamondon, 2000), is another practically and conceptually relevant outcome of CQ. In a study on adaptive performance, Oolders et al. (2008) positioned CQ as a more proximal individual difference that mediated the effect of the more distal trait of Openness to Experience on adaptive performance. Results confirmed that CQ positively predicted adaptive performance and mediated the effects of five of the six subfacets of Openness to Experience on adaptive performance.

Global leadership is another domain that has received increasing research attention in relation to CQ. Several qualitative studies involving in-depth interviews with global leaders provide rich accounts and empirical support to the importance of leaders' CQ in managing subordinates of different cultural backgrounds (Dean, 2007; Deng & Gibson, 2008). In a notable quantitative study of senior expatriate leaders, Elenkov and Manev (2009) found that CQ moderated the positive relationship between visionary–transformational leadership and organizational innovation, such that leaders with higher CQ magnified the positive effect of leadership on innovation. In another study, Groves and Feyerherm's (2011) analysis of a highly diverse sample of working adults demonstrated that after controlling for demographic characteristics and EQ, leader CQ was more strongly related to leader performance and team performance in more heterogeneous groups compared with less heterogeneous groups.

In a quantitative study of multicultural teams, Rockstuhl, Ang, Ng, Van Dyne, and Lievens (2009) demonstrated that self-reported CQ positively

predicted leadership emergence as rated by team members, after controlling for IQ, EQ, Openness to Experience, and international experience. In another study involving Swiss military leaders, Rockstuhl et al. (in press) contrasted domestic and cross-border leadership effectiveness, and elucidated the role of multiple intelligences (IQ, EQ, and CQ) on both types of leadership outcomes. Results demonstrated an interesting pattern: After controlling for experience and the Big Five personality traits, IQ predicted both domestic and cross-border leadership effectiveness; EQ was a stronger predictor of domestic leadership effectiveness; and CQ was a stronger predictor of cross-border leadership effectiveness. This study highlights the unique and additional challenges faced by global leaders as compared with domestic leaders, and it underscores the role of CQ in enhancing the effectiveness of leaders who operate in diverse cultural contexts. Using polynomial regression and response surface methodology on a sample of graduate students from 35 different nationalities, Lee, Masuda, and Cardona (2010) demonstrated that CQ mediated the effects of three-way interactions between home identity, host identity, and global identity on perceptions of leadership.

Research has also begun to examine the impact of CQ on social networks. Fehr and Kuo (2008) demonstrated, in a culturally diverse sample of students studying and living in the United States and in a sample of American students in a study-abroad program, that CQ predicted the development of social networks, after controlling for international experience, host country language fluency, and cultural distance. In a study of 87 engineers from 12 countries in a multinational company in Singapore, Gjertsen, Torp, Koh, and Tan (2010) found that CQ negatively predicted homophily in friendship networks, after controlling for age, gender, rank, and organization tenure. It is interesting to note that CQ did not predict homophily in advice networks. Instead, individuals' rank and tenure were more predictive of advice ties. This pattern of result is significant because it illustrates another boundary condition of CQ. For more formal, instrumental ties (e.g., advice networks), heterophily was influenced more by indicators of competency such as rank and tenure than by CQ. This could indicate that work-related communication may be governed by strong corporate and professional norms that place less demand on individuals' CQ capability.

In summary, there is a growing body of empirical evidence on predictors and consequences of CQ. Although recent research has begun to examine more complex models, there is little research on cross-level predictors of CQ from the group or firm level. Also, although some research has begun to consider mediating mechanisms that explain the CQ–performance link, there is still relatively little research on more proximal outcomes of CQ. This could include liking, attraction, emotional states, time spent working together, and helping.

# REFLECTIONS ON OUR CULTURAL INTELLIGENCE JOURNEY

Our journey over the past 10 years has been rewarding in several aspects. From a research standpoint, we have seen burgeoning scholarly interest and attention on CQ. This not only demonstrates the recognition and acceptance of CQ in the scientific community but also offers momentum to push the boundaries of CQ research to generate more cutting-edge knowledge to help develop culturally intelligent individuals and organizations. As our review indicates, the research to date has addressed basic construct validity questions, such as what is CQ, what is not CQ, and what CQ predicts. Although we now have some answers to these basic questions, we have also uncovered issues that offer exciting avenues of research. Further, the applicability of CQ to practically any disciplinary area promises many opportunities for creative interdisciplinary research. As such, the journey has been, and will continue to be, intellectually stimulating.

The tight link between CQ research and practice is another reason our journey has been extremely rewarding. Besides research, we have continuously sought to apply our insights to teaching and executive development programs. The Nanyang Business School, Singapore, for instance, offers courses on CQ at both the undergraduate and MBA levels to develop students' CQ capabilities. The CQ concept and instrument have also been used extensively in executive programs for multinational, profit, and nonprofit organizations in more than 40 countries in Asia, Australia/Oceania, Eastern and Western Europe, the Middle East, and North America. We recently conducted a highly successful program with the International Air Transport Association (IATA) headquartered in Geneva, Switzerland, and Montreal, Canada. Every year, IATA selects 20 high-potential leaders from different country offices to participate in their elite Intercultural Leadership Engagement and Development (ILead) program. Beginning in 2009, a CQ training module was incorporated in the ILead program to raise participants' self-awareness of their CQ and to identify opportunities and ways to apply and to develop their CQ during the 5-month ILead program. Feedback from participants was extremely positive. Even though all the participants were experienced and well-traveled executives with immense cross-cultural experiences, the CQ concept provided them with a simple framework to organize their personal insights and strategies for interacting with people from different cultures. Having a measurement tool for obtaining feedback on CQ from others also helped to stimulate personal reflection, awareness, and further development.

At the same time, as with most research on new constructs, we experienced several growing pains. One of the earliest challenges we faced stemmed from the *intelligence* label, given the ongoing controversy and debate on what constitutes intelligence (Weinberg, 1989). As with EQ research, our initial

work on CQ was challenged for using the term *intelligence*. Similar to proponents of EQ, we have used the term *cultural intelligence* because it is consistent with the broader definition of *intelligence* as a capability to adapt to the environment (Sternberg & Detterman, 1986). Furthermore, the nature of CQ meets the three criteria of intelligence proposed by Mayer, Caruso, and Salovey (2000). First, CQ reflects abilities rather than personality traits or typical tendencies. Second, existing research shows that CQ correlates with, yet is distinct from, other types of intelligences, such as IQ, EQ, and social intelligence (Ang et al., 2007; Crowne, 2009; K. Kim et al., 2008; Moon, 2010a). Third, CQ can be improved and developed over time (Choi et al., 2010; Crawford-Mathis, 2010; MacNab, 2011; MacNab & Worthley, 2011; Shokef & Erez, 2008; Wilson & Stewart, 2009).

Another challenge related to developing a new construct was the immense construct validation efforts required, particularly in the initial phase of our research. For instance, to convince reviewers of the conceptual distinctiveness of CQ, we had to cull through the large and unsystematic body of literature on intercultural competencies and to compare and contrast CQ with other intercultural competency models and instruments (see Ang et al., 2007).

We also had to be comprehensive in our research design to ensure we measured as many relevant constructs as possible to demonstrate the convergent, divergent, and incremental predictive validity of CQ vis-à-vis these constructs (e.g., IQ, social intelligence, EQ, personality, other cross-cultural competencies). At the same time, we had to consider and manage respondent motivation and fatigue associated with long surveys. This required us to be systematic in prioritizing research questions and constructs to assess, as well as in identifying multiple relevant samples to address different research questions.

To have face validity and to make sure CQ would be relevant, we had to make sure that study participants had prior exposure to cultural diversity. Thus, we were faced with an additional consideration when we designed our studies. We also had to collect data from different countries and to conduct additional analyses to demonstrate the cross-cultural measurement equivalence of the CQS. Fortunately, the multicultural composition of the team facilitated the data collection.

In short, the construct validation process was intense and long drawn. It was undoubtedly an important process that cannot, and should not, be short circuited. Nonetheless, it was a journey that required great perseverance, a strong passion, and deep conviction that CQ is important both theoretically and practically. Fortunately, we worked in a team that shared that conviction, thus making the process much more enjoyable and fulfilling.

The next challenge concerns differential predictions for the four CQ capabilities. The four dimensions of CQ are critical and useful because (a) they are based on theory (Sternberg & Detterman, 1986); (b) they

highlight four different capabilities that, taken together, provide an integrative framework to synthesize the disparate intercultural competencies; and (c) they are supported by empirical data using confirmatory factor analyses. However, they also present a challenge. For very specific criterion outcomes, such as cultural judgment and decision making, which essentially involve only cognitive processes, we were able to develop arguments for precise links for cognitive CQ and metacognitive CQ (and not for motivational CQ and behavioral CQ; Ang et al., 2007). However, for broader criterion outcomes, such as adjustment and performance, that are more complex, it is difficult to theorize a priori how the four CQ dimensions will exert different effects, and research to date does not show a clear pattern.

Some studies have used an aggregated representation of CQ as opposed to the four dimensions. We suggest that future research consider the nature of the criterion variable more carefully when deciding whether to use one specific dimension, several dimensions, all four dimensions, or overall aggregation of the four CQ dimensions. Consistent with bandwidth-fidelity arguments (Cronbach & Gleser, 1957), we recommend that broad criteria should be matched with overall CQ, and specific and narrowly defined criteria can be matched with specific, relevant CQ dimensions. For instance, broad criterion outcomes, such as job performance, may be better predicted by the aggregate construct of CQ, which allows for contextual variations in performance requirements (e.g., in some contexts, metacognitive CQ may be more important than motivational CQ in driving performance, or vice versa). In contrast, specific outcomes, such as cultural judgment and decision making, may be better predicted by specific CQ dimensions—in this case, cognitive and metacognitive CQ (Ang et al., 2007). Further, specifying and measuring mediating mechanisms hypothesized to effect the criterion will strengthen theoretical development and help advance understanding of why specific factors and/or overall CQ influence outcomes.

We have also learned that it is critically important to be explicit in defining *culture* for participants because *culture* can mean different things in different contexts and to different people. The CQS items ask about interactions with people from different cultural backgrounds. Depending on the context and framing, the questions can be applied to those from different national cultures, different racial/ethnic backgrounds, different regions of the country, or different subgroups based on age, gender, religion, sexual preference, or functional background, and so on. Each of these interpretations is legitimate. The key is specifying the conceptualization of culture based on the research question and study context. To ensure that participants respond to questions with a consistent mental model, it is important to provide an explicit explanation of *culture* in the instructions of each study.

Another issue is the use of reported measures of CQ versus performance-based tests of CQ. This is similar to the debate faced by EQ scholars (e.g.,

self-report of EQ vs. ability-based measures of EQ). However, a recent meta-analysis on EQ demonstrated that both self-report and performance-based measures of EQ predict job performance equally well (O'Boyle, Humphrey, Pollack, Hawver, & Story, 2011). Drawing from their findings, O'Boyle et al. (2011) concluded that the method to assess EQ should depend "on the purposes of the project, the feasibility of administering the tests or surveys, and similar factors" (p. 808). For instance, reported measures of intelligence are often more feasible to administer and can be adapted to particular work settings without difficulty. This may enhance the predictive validity of the measure. On the other hand, performance-based tests are useful for high-stakes decisions such as promotion and selection, given that they are objective and less susceptible to faking. In sum, we argue that reported measures (self- or other report) and performance-based measures are complementary approaches to assessing CQ. We elaborate on this point in the recommendations for future research that follow in the next section.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Our review of the CQ literature highlights several key areas in which future research can significantly advance current understanding. We discuss four broad areas below.

First, we concur with Gelfand et al. (2008) that although factor analyses have supported the multidimensionality of CQ, very little is known about how the four different factors function and whether the different theoretical mechanisms account for their effects on specific outcomes. Hence, more precise theorizing and research on the nomological networks of each of the CQ factors can help researchers better understand the nature and functioning of the four CQ dimensions, and how they interact with one another to affect the outcomes of interest.

Second, existing empirical research has relied on self- and other reports of CQ using the CQS (Van Dyne et al., 2008). As reviewed earlier, existing research demonstrates that the CQS is reliable and predicts a variety of criterion outcomes. Nonetheless, developing complementary measures of CQ based on different assessment methodologies can strengthen research, allow triangulation of findings, and offer researchers and practitioners more assessment alternatives. For instance, Gelfand et al. (2008) suggested implicit measures of cultural knowledge using priming techniques, objective tests of cultural knowledge, and cognitive mapping to assess complexity of cultural knowledge. Rockstuhl et al. (2009) recently developed a performance-based measure of CQ using a multimedia situational judgment test methodology. Comparisons of self-reported CQ using the CQS and the performance-

based measure of CQ showed the value of both approaches. Self-report CQ predicted cross-cultural leader emergence over and above IQ, EQ, Openness to Experience, and international experience. Performance-based CQ explained variance in cross-cultural leader emergence over and above the self-report measure. This finding suggests that future research should consider complementary approaches to assessing CQ, depending on the research question and research design. For instance, a performance-based measure of CQ may be more appropriate when predicting criteria that rely heavily on cognitive processes, whereas a reported measure of CQ may be more appropriate for predicting outcomes that involve interpersonal interactions such as work performance in team contexts and suitability for positions with global responsibilities. Performance-based measures of CQ may be more appropriate for high-stakes settings, such as selection, transfer, and promotion decisions, where it is important to minimize social desirability and rating biases.

Third, existing empirical research on CQ is predominantly at the individual level of analysis, suggesting opportunities for future research that considers CQ at and from other levels of conceptualization and analyses. As cultural neuroscience becomes increasingly popular in management research, examining CQ at the brain level is one example of a novel unit-of-analysis approach that offers exciting research opportunities (Earley & Ang, 2003; Rockstuhl, Hong, Ng, Ang, & Chiu, 2010). Approaching CQ from this biological perspective can reveal intriguing insights on how different CQ factors map onto different regions of the medial frontal cortex and how individuals tune their neural activity to varying cultural contexts. These findings will complement existing knowledge of CQ from a psychological perspective and offer a more comprehensive understanding of why some individuals are more effective in culturally diverse situations than others.

Firm-level CQ is an example of a higher level of analysis that remains relatively unexplored and presents many exciting research opportunities for organizational behavior and strategy scholars. The recent study by Chen et al. (2011) operationalized firm-level motivational CQ using a reference-shift approach, replacing the individual-level focus in Ang et al.'s (2007) CQ scale with firm-level analysis. Their results demonstrated that the firm-level motivational CQ measure was reliable, with a significant portion of the total variance explained by firm membership.

Alternatively, firm-level CQ could be defined and operationalized using a qualitatively different framework and measure. Ang and Inkpen's (2008) conceptual framework offers a starting point for developing such a measure of firm-level CQ (see also van Driel, 2008). Likewise, Moon (2010b) argued that firm-level CQ can be viewed as comprising processes, positions, and paths capabilities. Future research could operationalize these models and test how firm-level CQ affects firm-level outcomes, such as firm performance

and international joint venture performance. For instance, with the growing interest in emerging markets, studies could examine how firm CQ affects success in new markets.

Fourth, understanding of how individuals develop CQ is still relatively limited. Several studies reviewed in this chapter have demonstrated that international experiences contribute to individuals' CQ and that CQ can improve as a result of cross-cultural training interventions and international assignments. These studies, however, have relied on two waves of data to assess change in CQ and thus cannot reveal the nature of changes (Chan, 1998). Research has yet to adopt a multiwave assessment of CQ over time with latent growth modeling focused on factors that affect growth parameters. Future research that systematically tracks and analyzes the development of CQ over time using latent growth modeling will offer great insights to both CQ research and practice. This stream of research can also shed light on how different CQ factors may develop differently by examining their growth trajectories.

Moving forward, our reflections on the past 10 years of CQ research suggest that two factors are key to sustaining this journey. First, finding research partners with similar passion and commitment to the topic is critical, particularly when the area of research is novel and the likelihood of a quick publication is lower than when conducting research on established topics. At the same time, finding collaborators with complementary core competencies is instrumental, given that the research process is highly complex and requires distinctive capabilities at various stages: conceptualization, research design and implementation, analyses, interpretation, and writing.

Second, strengthening the linkage between academic research with management practice and education is instrumental in sustaining, as well as enriching, the journey. We have been fortunate that our research addresses the heart of many challenges faced by managers and organizations in today's global environment. As a result, there is great interest and demand for CQ assessment and development programs. This not only provides opportunities for data access but also provides platforms for testing proposed relationships and identifying new research questions based on inputs from a broad spectrum of people, ranging from undergraduate students to senior executives. In short, we have adopted two guiding principles to sustain and guide our research journey: (a) an emphasis on gathering systematic empirical research to examine our theories, or what is widely termed *evidence-based practice* (Rousseau, 2006), and the equally important but sometimes neglected objective of (b) developing theories and interventions that are relevant and appropriate for real-world settings, termed *practice-based evidence* (Simons, Kushner, Jones, & James, 2003). Intertwining the two has enabled us to develop rigorous research that is being advanced by numerous academic research teams throughout the world and is also being used by practitioners across a diverse array of cultural contexts.

# CONCLUSION

A journey of a thousand miles begins with a single step.
—Lao-tzu, Chinese philosopher (604 BC–531 BC)

A decade ago, we took a step toward developing a program of research on CQ to address the growing challenges and opportunities presented by globalization. Notwithstanding the challenges we faced, the journey has been extremely rewarding because of the tight link we have built between our basic research and applied practice.

As the importance of CQ becomes increasingly salient in people's daily lives, interest in enhancing the scientific understanding as well as the practical application of CQ should continue to grow. This ongoing journey offers many exciting opportunities for researchers to develop more precise and sophisticated models of CQ that should translate into useful practical recommendations for organizations and individuals. It is our hope that the lessons and insights we have gained from our journey thus far will trigger research and practical application by others as we collectively advance our understanding of the science and practice of CQ.

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**Best Practice Recommendations**

- Select appropriate samples when cultural diversity is salient to study participants.
- Provide an explicit definition of *culture* and *cultural diversity* to participants to ensure common understanding of the CQ items.
- Formulate research questions that focus on criterion variables that are relevant to culture and cultural diversity.
- Consider the breadth of the criterion variables when deciding whether to use multidimensional conceptualizations and measures of CQ or aggregated CQ.
- Specify the measurement source and type of CQ (self-report, observer report, performance based) on the basis of the research question and research design.
- Identify the appropriate level of analysis of CQ (individual, dyadic, group, organization) and operationalize accordingly.
- Specify and measure theoretical mechanisms that explain relationships between CQ and outcomes.
- Consider the development of CQ over time as a function of specific experiences.

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