

# Personality Correlates of the Four-Factor Model of Cultural Intelligence

SOON ANG

*Nanyang Technological University*

LINN VAN DYNE

*Michigan State University*

CHRISTINE KOH

*Nanyang Technological University*

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We examine relationships between Big Five personality and the four-factor model of cultural intelligence (CQ)—metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ. Hierarchical regression analyses conducted on data from 338 business undergraduates—after controlling for age, gender, and years of experience in interacting with people from other cultures—show significant links between (a) conscientiousness and metacognitive CQ; (b) agreeableness and emotional stability with behavioral CQ; (c) extraversion with cognitive, motivational, and behavioral CQ; and (d) openness with all four factors of CQ. The intriguing finding of this study is that openness was the only Big Five that was significantly related to all four aspects of CQ. This differs from prior research on openness that found few significant relationships. Our results show that openness to experience is a crucial personality characteristic that is related to a person's capability to function effectively in diverse cultural settings (CQ).

**Keywords:** cultural intelligence; personality; Big Five

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**W**ith greater diversity in the workforce demography and business organizations entrenched in the global economy, individuals need to work and interact regularly with those who have different cultural or ethnic backgrounds. Working with people from different cultures can be difficult for individuals and for their organizations because cultural barriers can cause misunderstandings that detract from efficient and effective interactions (Adler, 2002; Gelfand, Nishii, Holcombe, Dyer, Ohbuchi, & Fukuno, 2001; Kraimer, Wayne, & Jaworski, 2001; Lievens, Harris, Van Keer, & Bisqueret, 2003;

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Takeuchi, Yun, & Tesluk, 2002). It is therefore important to understand why some individuals are more effective than others in dealing with situations that are culturally diverse.

Responding to this need, Earley and Ang (2003) conceptualized a multifactor concept of cultural intelligence (CQ) that includes mental (metacognitive and cognitive), motivational, and behavioral components. Earley and Ang defined CQ as an individual's capability to deal effectively in situations characterized by cultural diversity. Mental intelligence includes metacognitive and cognitive capabilities (i.e., cognitive processes and cognitive knowledge); motivational intelligence acknowledges that most cognition is motivated and that the magnitude and direction of an individual's energy represents motivational intelligence; while behavioral intelligence focuses on what individuals do (i.e., their overt actions) rather than what they think or feel (i.e., thoughts and emotions). In parallel fashion, metacognitive CQ reflects the processes individuals use to acquire and understand cultural knowledge. Cognitive CQ is general knowledge and knowledge structures about culture. Motivational CQ is magnitude and direction of energy applied toward learning about and functioning in cross-cultural situations. Behavioral CQ is the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures.

Given the newness and novelty of the construct, empirical research on CQ is sparse albeit growing. In a paper that presented validity evidence for the four-factor measurement of CQ, Ang, Van Dyne, Koh, and Ng (2004) showed that CQ significantly explained variance in performance and adjustment over and above effects of demographic characteristics and general cognitive ability among international executives and foreign professionals. Specifically, Ang and colleagues (2004) demonstrated that mental (metacognitive and cognitive) CQ significantly predicted cultural judgment and decision making (JDM) and task performance; motivational CQ significantly predicted general adjustment in intercultural environments, while behavioral CQ related to task performance and general adjustment in intercultural environments. In another study, Templer, Tay, and Chandrasekar (2005) showed that motivational CQ significantly predicted cross-cultural adjustment of foreign professionals, over and above pre-job assignment interventions such as realistic job previews and realistic living conditions previews.

Although it is important to understand outcomes of CQ, it is also important to examine antecedents of CQ in its broader nomological network. Theoretically, we could hypothesize a diverse set of individual difference constructs that could be related to CQ. Research on individual differences has distinguished between trait-like constructs and state-like constructs. Trait-

like individual differences such as personality characteristics are not specific to a certain task or situation and are stable over time (Chen, Gully, Whiteman, & Kilcullen, 2000). In contrast, state-like individual differences such as state anxiety and specific self-efficacy are specific to certain situations or tasks and tend to be malleable over time (e.g., Bandura, 1997b). According to Kanfer (1990), trait-like individual differences are more distal from outcomes such as performance or work behaviors than are state-like individual differences, in that the relationships of trait-like constructs are more indirect, through state-like constructs. In effect, trait-like individual differences serve as predictors of proximal state-like individual differences (see Chen et al., 2000).

In the formulation of Earley and Ang (2003), CQ is a state-like individual difference that describes an individual's malleable capability to deal effectively with people from other cultures. Earley and Ang also distinguished CQ from trait-like individual differences of personality characteristics: "In the broader nomological network of cultural intelligence, personality characteristics are conceptualized as antecedents or causal agents of cultural intelligence" (p. 160).

Given the distinction and relationship between trait- and state-like individual differences, the purpose of the current study is to examine a model of personality characteristics (trait-like individual differences that describe broad and stable predispositions) as predictors of CQ (state-like individual differences that describes malleable capabilities to interact effectively with people from different cultures). As we elaborate in our literature review below, many scholars have proposed and demonstrated that personality characteristics are significant predictors of international assignments, hence the importance of personality correlates of CQ.

## PERSONALITY AND CQ

In recent years, emphasis on the Big Five superordinate factors of personality as the basic structure of personality (Carver & Scheier, 2000) has triggered increased interest in personality in organizations (Barrick & Mount, 1991). Generally, researchers agree that the Big Five taxonomy is important because it is one of the most stable taxonomies in classifying personality traits. For example, the taxonomy consistently emerges in different age, sex, cultural, and language groups as well as in longitudinal studies and across different sources such as self and observer ratings (Costa & McCrae, 1992a; Digman, 1990). Research also demonstrates that the Big Five strongly predicts work behavior across time, contexts, and cultures—in domestic settings

(e.g., Barrick & Mount, 1991) and in overseas assignments (e.g., Caligiuri, 2000). The Big Five taxonomy therefore allows personality researchers to map various personality scales and therefore accumulate research findings in a meaningful and systematic manner (Costa & McCrae, 1995a, 1995b).

Although there is general consensus on the Big Five model of personality, different authors use different labels for each of the five factors. For example, the five factors are variously referred to as (a) extraversion: sociable, assertive, surgency, active, ambitious; (b) agreeableness: likeable, good-natured, friendly, cooperative, trusting; (c) conscientiousness: responsible, will to achieve, able to plan, organized, persistent, achievement-oriented, dependable; (d) emotional stability: emotional control, calm, secure, not nervous, not anxious; and (e) openness to experience: imaginative, intellectual, inquiring intellect, artistically sensitive.

Extensive empirical research on the Big Five has allowed meta-analytic reviews of the predictive validity of personality relative to job-related outcomes (Barrick & Mount, 1991; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Tett, Jackson, & Rothstein, 1991). These meta-analyses conclude that conscientiousness consistently predicts outcomes for a wide range of occupational groups and extraversion predicts outcomes for jobs (i.e., managers and sales representatives) where interaction with others is a significant responsibility (Barrick & Mount, 1991; Hough et al., 1990).

Cross-cultural researchers who study overseas assignments and expatriate management have long recognized the important implications of personality for overseas success. For example, Ones and Viswesvaran's (1997) review of the literature identified 37 empirical studies that examined personality-related predictors of expatriate job performance, adjustment, and completion of service. More specifically, personality facets include empathy, sensitivity, flexibility, esteem, autonomy, self-actualization, honesty, respect, nonjudgmentalness, adaptability, cognitive category width, self-orientation, other-orientation, ability to relate, open-mindedness, curiosity, self-confidence, and other traits.

Unfortunately, these studies generally reflect personality research that occurred prior to the current emphasis on the Big Five. In discussing prior research, Ones and Viswesvaran (1997) concluded that many studies were largely atheoretical. In sum, although there are many empirical studies of expatriate personality, there is very little cumulative evidence of the predictive power of measured traits. In fact, the lack of cumulative and meaningful knowledge has caused some researchers to conclude that traits are not good predictors (Brislin, 1981) and that looking for personality traits that predict adaptation to foreign environments is extremely difficult if not an impossible task (Benson, 1978; Newman, Bhatt, & Gutteridge, 1978).

Caligiuri's (2000) research that examines the Big Five as predictors of expatriate success presents a theoretically based perspective on personality and success in international assignments. According to Caligiuri (2000), the Big Five personality characteristics should predict expatriate success based on the tenets of evolutionary personality psychology (Buss, 1991). First, according to the theory of evolutionary personality psychology, the Big Five personality characteristics represent universal adaptive mechanisms that allow humans to cope with and meet the demands of physical, social, and cultural environments (Buss, 1991; MacDonald, 1998). The Big Five, thus, serves as adaptive mechanisms that predispose humans to behave in certain ways to accomplish goals, given particular situations (Buss, 1991). Second, while all individuals have some degree of these universal Big Five adaptive mechanisms, individuals vary in the extent to which they possess these personality characteristics necessary for success in goal attainment. Thus, those who possess key personality traits suited for a given role in a given physical or social environment will adapt more effectively than those that do not possess the appropriate traits or personality characteristics for that same role.

Based on Caligiuri's work using the theory of evolutionary personality psychology, we propose theoretically based predictions for relationships between specific facets of Big Five personality and specific facets of CQ. We propose that certain personality traits are associated with certain CQ capabilities. Thus, our approach is consistent with Caligiuri (2000) and the view of Ones and Viswesvaran (1997) that the Big Five conceptualization of personality offers a theoretically based and parsimonious framework for predicting outcomes with relevance to cross-cultural interactions, overseas assignments, and expatriate management. In the next section, we develop specific predictions for links between the Big Five and the four-factor model of CQ.

### CONSCIENTIOUSNESS

People who are high in conscientiousness generally perform better at work than those who are low in conscientiousness (Barrick & Mount, 1991). Conscientious individuals are dependable (responsible, careful, and reliable), efficient (planful, orderly, punctual, and disciplined), and industrious (hardworking, persistent, energetic, and achievement striving). They are predisposed to take initiative in solving problems and are methodical and thorough in their work (Gellatly, 1996; Witt, Burke, Barrick, & Mount, 2002). According to Barrick, Mount, and Strauss (1993), conscientious individuals perform better because their planful, organized, and purposeful approach leads them to set goals (which are often difficult).

In thinking about conscientiousness and the four factors of CQ, we posit that conscientiousness is related to metacognitive CQ. Metacognitive CQ is an individual's cultural consciousness and awareness during interactions with those who have different cultural backgrounds. Those who are high in conscientiousness devote time and attention to planning, questioning cultural assumptions, thinking about cultural preferences, considering cultural norms before and during interactions, plus checking and adjusting mental models based on interactions with those from other cultures (metacognitive CQ). They have the discipline and capability to think strategically about their interactions with those from other cultures. Those with high conscientiousness should also be more persistent in thinking about interactions and working hard to make sense of cross-cultural situations that initially are confusing. In sum, we predicted that:

*Hypothesis 1:* Conscientiousness will be positively related to metacognitive CQ.

#### **AGREEABLENESS**

People who are high in agreeableness are generally friendly, good-natured, cooperative, soft-hearted, nonhostile, helpful, courteous, and flexible (Barrick & Mount, 1991; Goldberg, 1981; Hogan, 1986; McCrae & Costa, 1985; Witt et al., 2002). Agreeable individuals are warm, likable, emotionally supportive, and nurturing. In work contexts, agreeable employees show higher levels of interpersonal competence (Witt et al., 2002) and collaborate effectively when joint action is needed (Mount, Barrick, & Stewart, 1998). In contrast, those who are low in agreeableness (disagreeable) are generally cold, oppositional, hostile, and/or antagonistic in their behaviors toward others (Carver & Sheier, 2000; Digman, 1990). When people are low in agreeableness, they often use power as a way of resolving social conflict more than those who are higher in agreeableness (Graziano, Jensen-Campbell, & Hair, 1996). They also experience more conflict (Asendorpf & Wilpers, 1998).

In thinking about agreeableness and the four factors of CQ, we posit that agreeableness is related to behavioral CQ and not to mental (metacognitive or cognitive) or motivational CQ. Agreeableness primarily focuses on interpersonal competence—such as behavioral skills in interacting with others in social situations (characteristics that are less directly relevant to mental and motivational capabilities of CQ).

Behavioral CQ refers to an individual's flexibility in performing appropriate verbal and nonverbal actions when interacting with people who differ in their cultural backgrounds (Earley & Ang, 2003). Behavioral norms vary

across culture in three ways: (a) the specific range of behaviors that are enacted; (b) the display rules for when specific nonverbal expressions are required, preferred, permitted, or prohibited; and (c) the interpretations of particular nonverbal behaviors (Lustig & Koester, 1999). In effect, behavioral CQ describes interpersonal skills and the capability to engage in high-quality social interactions in cross-cultural encounters.

Behavioral CQ requires flexibility in verbal and nonverbal behaviors. Because those high in agreeableness are friendly, warm, kind, polite, and good-natured, they should be more flexible in their verbal and nonverbal behaviors in a culturally intelligent manner when in cross-cultural interactions. Agreeable people should also be better able to avoid or de-escalate social conflicts. In addition, their broad behavioral repertoire (range of behaviors) should allow them to put others at ease simply by exhibiting culturally appropriate verbal, vocal, facial, and other bodily expressions. Thus, we predicted

*Hypothesis 2: Agreeableness will be positively related to behavioral CQ.*

#### **EMOTIONAL STABILITY**

People who are high in emotional stability are generally calm and even-tempered in the way they cope with daily life (Barrick & Mount, 1991; Eysenck & Eysenck, 1985; Ones & Viswesvaran, 1997). Those who are emotionally stable usually do not express much emotion. They tend to be less anxious, depressed, angry, embarrassed, worried and insecure. Neuroticism is the opposite pole of emotional stability. Those who are highly neurotic tend to be self-conscious and high self-monitors. Neurotic individuals have an excitable quality to their behavior.

In thinking about emotional stability and the four factors of CQ, we posit that similar to agreeableness, emotional stability is related to behavioral CQ and not to mental (metacognitive or cognitive) or motivational CQ. Just as with agreeableness, emotional stability focuses primarily on interpersonal competence—behavioral skills in interacting with others in social situations. As such, we do not expect emotional stability to correspond with either mental (metacognitive, or cognitive) or motivational capabilities of CQ.

Behavioral CQ, on the other hand, describes interpersonal skills and the capability to engage in high-quality social interactions in cross-cultural encounters. Research on overseas assignments has proposed emotional stability is an important personality characteristic for expatriate adjustment to the host country (Black, 1988; Mendenhall & Oddou, 1985). Those who are high in emotional stability should be better able to handle novel situations

because they respond to uncertainty with greater patience, an even temper, and without emotion. Furthermore, research has shown that those with high emotional stability are less likely to experience self-consciousness when faced with unfamiliar intercultural encounters (Gudykunst & Kim, 2003). Thus, they should be better able to deal with novel and unfamiliar intercultural interactions. In sum, those who are emotionally stable should be better able to display flexible verbal and nonverbal behaviors that put others at ease in cross-cultural situations. Thus,

*Hypothesis 3:* Emotional stability will be positively related to behavioral CQ.

### **EXTRAVERSION**

People who are high in extraversion are generally sociable, assertive, active, bold, energetic, adventuresome, and expressive (Barrick, Mount, & Piotrowski, 2002; Costa & McCrae, 1992b; Goldberg, 1992). They are self-confident, talkative, gregarious, and spontaneous. In contrast, those who are low in extraversion (highly introverted people) are timid, submissive, unassured, silent, and inhibited.

In thinking about extraversion and the four factors of CQ, we posited that extraversion is related to the motivational and behavioral facets of CQ but that there is little theoretical rationale to expect extraversion to relate to mental capabilities of CQ. Motivational CQ is an individual's drive and interest in adapting to cultural differences (Earley & Ang, 2003). Using the expectancy-value framework of motivation (Eccles & Wigfield, 2002; Kanfer, 1990), Ang and colleagues (2004) conceptualized motivational CQ as a specific form of self-efficacy (Bandura, 1986) and intrinsic motivation (Deci & Ryan, 1985) in cross-cultural situations. Self-efficacy and intrinsic motivation are important to CQ because successful intercultural interactions require a basic sense of self-confidence and interest in novel settings. Extraverted individuals, by definition, are bold, forceful, and self-confident. Thus, they are more likely to try new things, expose themselves to novel situations, and ask questions. In sum, we hypothesized a positive relationship between extraversion and motivational CQ.

We also hypothesized that extraversion is positively related to behavioral CQ. Extraverted individuals prefer the company of others and enjoy interpersonal interactions (Costa & McCrae, 1992b; Ones & Viswesvaran, 1997). Their expressive, gregarious, bold, spontaneous and less inhibited nature should allow them to vary their behavior more effectively than those who are more self-conscious and less extraverted. They are, therefore, more likely to deal with novel and unfamiliar intercultural interactions more effectively

than introverts (those low in extraversion) who are more timid, unassured, and inhibited (Barrick & Mount, 1991; Hogan, 1986). In sum, those who are highly extraverted display more flexible behaviors that put others at ease during intercultural encounters. Thus, we proposed

*Hypothesis 4:* Extraversion will be positively related to (a) motivational CQ and (b) behavioral CQ.

### OPENNESS TO EXPERIENCE

The last facet of the Big Five is openness to experience. To date, this dimension is the least understood aspect of personality in the literature on the five-factor model (Digman, 1990). Openness to experience is defined broadly in the literature, including being imaginative, creative, cultured, original, broad-minded, intelligent, and artistically sensitive (McCrae, 1996). Unlike the other Big Five factors, openness to experience has the stigma of being the only factor in the Big Five that often is not related to work outcomes (Barrick & Mount, 1991; LePine & Van Dyne, 2001). In some cases, this lack of strong relationships has led some researchers to raise questions about the utility of this personality trait (Barrick, Mitchell, & Stewart, 2003). Others, however, such as George and Zhou (2001), have demonstrated that openness is related to creativity.

In thinking about openness to experience and the four factors of CQ, we proposed that openness is related to all four factors of CQ. Past research has demonstrated that openness to experience is the only dimension of the Big Five that is related to mental ability (McCrae & Costa, 1987; Peabody & Goldberg, 1989). Extending this to our interest in CQ, we argue that openness to experience will be related to metacognitive CQ because those who are curious and high in openness spend time “thinking about thinking.” They are curious and enjoy trying to figure out new things. In other words, they adopt metacognitive strategies when thinking about and interacting with those who have different cultural backgrounds. In addition, those who are high in openness should be more likely to question their own cultural assumptions, analyze the cultural preferences and norms of others (before and during interactions), and reexamine their mental models based on interactions with those from other cultures.

We also expect that openness to experience will be related to cognitive CQ. Cognitive CQ is an individual’s knowledge of specific norms, practices, and conventions in different cultural settings (Earley & Ang, 2003). Given the wide variety of cultures in the contemporary world, cognitive CQ indicates knowledge of cultural universals as well as knowledge of cultural

differences. For example, cultural knowledge includes an understanding of economic, legal, and social systems in other cultures. Cognitive CQ allows individuals to assess their similarity to others who have different cultural backgrounds (Ang et al., 2004). Because those who are high on openness to experience are intelligent, curious, broad-minded, and cultured, they should be more knowledgeable about specific aspects of other cultures. In sum, we proposed a positive relationship between openness and cognitive CQ.

We also theorized that openness to experience will be positively related to motivational CQ and behavioral CQ. As elaborated earlier, motivational CQ refers to an individual's drive and interest in adapting to cultural differences. Ones and Viswesvaran (1997) reasoned that openness to experience should be a particularly good predictor of expatriate success in overseas assignments because those with high openness to experience are inherently curious. They are also willing to experience and enjoy new and unfamiliar environments. Thus, we proposed that openness would be associated with motivational CQ.

Finally, we expect openness to experience to be positively related to behavioral CQ. We based our reasoning on empirical evidence that shows openness to experience is less important to traditional conceptualizations of job performance (Campbell, 1990) but more relevant to adaptive performance (Pulakos, Arad, Donovan, & Plamondon, 2000). Adaptive performance is a person's proficiency in altering his or her behavior to meet the demands of new, uncertain, and unpredictable work situations (Pulakos et al., 2000). Given that openness and adaptive performance are closely associated, people who are open to learning new things should seek out, act on new experiences, and extend their repertoire of behaviors beyond the daily habits. In effect, openness should be associated with behavioral CQ. In sum, we proposed

*Hypothesis 5:* Openness to experience will be positively related to (a) meta-cognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ.

## METHOD

### SAMPLE, CONTEXT, AND PROCEDURE

Respondents were business undergraduates at a large public university in Singapore. Singapore is a multiethnic, multicultural nation with a population of Chinese, Malay, Indian, and Eurasian ethnic origins. One fourth or

300,000 of its 1.2 million workforce are nationals of foreign origins from China, India, Southeast Asia, Europe, North America, South Asia, and so on.

The university has a population of more than 15,500 students (23.1% foreign) from countries such as India, China, Southeast Asia, Australia, New Zealand, South America, Eastern Europe, North America, Scandinavian countries, and others. In terms of contact and experience with people from other cultures, we asked respondents the number of countries they have visited outside of their home country. Respondents indicated that they had visited an average of 4.2 countries ( $SD = 2.6$ , ranging from 1 to 17). In addition, we asked students to evaluate their level of experience interacting with people from other countries on a scale of 1 to 3 (1 = no experience, 2 = moderately experienced, 3 = very experienced;  $M = 1.8$ ,  $SD = .5$ ).

Our focus of the current study is on the relationship between trait-like individual differences (such as personality characteristics) and state-like individual differences (such as CQ) in a multicultural setting. As such, the current study (conducted in culturally diverse Singapore and its university environment) offers an ideal context to test the relationships in a meaningful, multicultural learning environment.

We tested our predictions with data collected at two points in time from undergraduate business students. At Time 1, 465 business students provided data on CQ. At Time 2 (6 weeks later), 338 of these students completed the personality inventory and provided demographic data (attrition rate = 27%). To assess possible attrition bias, we compared Time 1 responses for those who completed Time 1 and Time 2 surveys ( $n = 338$ ) with those who responded only at Time 1 ( $n = 127$ ). Through  $t$  tests, we found no differences in responses across the four factors of CQ ( $t_{\text{metacog}} = -.30, p > .76$ ;  $t_{\text{cog}} = 1.07, p > .28$ ;  $t_{\text{mot}} = .40, p > .68$ ;  $t_{\text{beh}} = .81, p > .41$ ). Thus, attrition between Time 1 and Time 2 did not seem to bias our findings. We used matched Time 1 and Time 2 responses ( $n = 338$ ) for our hypothesis testing. Participants were 70% female, with an average age of 20.17 years ( $SD = 1.61$ ).

## MEASURES

*Cultural intelligence.* We assessed CQ with the 20-item, four-factor model developed and validated by Ang and colleagues (2004). The inventory includes four items for metacognitive CQ ( $\alpha = .76$ ), six for cognitive CQ ( $\alpha = .84$ ), five for motivational CQ ( $\alpha = .76$ ), and five for behavioral CQ ( $\alpha = .83$ ). Sample items include “I am conscious of the cultural knowledge I apply to cross cultural interactions” for metacognitive CQ; “I know the legal and economic systems of other cultures” for cognitive CQ; “I enjoy interacting with

people from different cultures” for motivational CQ; and “I change my verbal behavior when a cross-cultural interaction requires it” for behavioral CQ.

Confirmatory factor analysis (CFA) with LISREL 8 (Jöreskog & Sörbom, 1993) demonstrated good fit of the data to a four-factor correlated model (Model A):  $\chi^2(164 \text{ df}) = 369.91$ , Goodness-of-Fit (GFI) = .92, Non-Normed Fit Index (NNFI) = .96, (Bentler's) Comparative Fit Index (CFI) = .97, standardized root mean square residual (SRMR) = .046, and root mean square error of approximation (RMSEA) = .053. All factor loadings were significant, with  $t$  values ranging from 8.14 to 12.92. We compared relative fit of this four-factor correlated model (20 items) with alternate models including four orthogonal factors (Model B), three factors (Model C), two factors (Models D and E), and one factor (Model F).

Nested model comparisons (see Table 1) demonstrate the superiority of the hypothesized four-factor model because each of the  $\Delta\chi^2$  statistics exceeds the critical value based on degrees of freedom. Model A (four correlated factors) demonstrated better fit than Model B (four orthogonal factors),  $\Delta\chi^2(6 \text{ df}) = 257.00$ ,  $p < .001$ . Model A (four factors) also had better fit than Model C (three factors) that combined metacognition and cognition,  $\Delta\chi^2(3 \text{ df}) = 646.51$ ,  $p < .001$ . Likewise, Model A (four factors) was a better fit than two alternate two-factor models: Model D (metacognition and cognition vs. the other two facets):  $\Delta\chi^2(5 \text{ df}) = 1242.51$ ,  $p < .001$ , or Model E (metacognition vs. the other three facets):  $\Delta\chi^2(5 \text{ df}) = 1565.90$ ,  $p < .001$ . Finally, Model A (four factors) was a better fit than Model F with one factor,  $\Delta\chi^2(6 \text{ df}) = 1938.69$ ,  $p < .001$ . These results replicate prior results of Ang and colleagues (2004) and provide additional evidence in support of the four-factor model of CQ.

*Personality.* We used the Personal Characteristics Inventory (PCI; Mount & Barrick, 1995) to assess the five-factor model (FFM) of personality. The PCI has been administered to more than 2,000 individuals, including students, managers, sales representatives, retail clerks, and production workers, with reasonable coefficient alpha values (ranging from 0.82 to 0.87). In the current study, the coefficient alphas for the five factors are .83 for conscientiousness, .74 for agreeableness, .71 for emotional stability, .82 for extraversion, and .86 for openness.

We assessed distinctiveness of the four factors of CQ relative to the five aspects of personality (conscientiousness, agreeableness, emotional stability, extraversion, and openness to experience) using CFA. Results demonstrated good fit for the nine-factor model,  $\chi^2(244 \text{ df}) = 475.86$ , GFI = .90, NNFI = .94, CFI = .95, SRMR = .049, and RMSEA = .054, supporting the

TABLE 1  
**Comparing the Fit of Alternative Nested Models for the Four-Factor Model of Cultural Intelligence (Time 1,  $N = 465$ )**

<i>Model</i>	$\chi^2$	df	GFI	NNFI	CFI	SRMR	RMSEA	<i>Model Comparison Test</i>		
								<i>Comparison</i>	$\Delta\chi^2$	$\Delta df$
A	369.91	164	.92	.96	.97	.046	.053			
B	626.91	170	.88	.92	.93	.150	.077	B vs. A	257.00***	6
C										
D	1016.42	167	.82	.87	.89	.095	.110	C vs. A	646.51***	3
E	1612.42	169	.74	.80	.82	.120	.140	D vs. A	1242.51***	5
F	1935.81	169	.70	.78	.81	.110	.150	E vs. A	1565.90***	5
	2308.60	170	.66	.73	.76	.120	.170	F vs. A	1938.69***	6

GFI = Goodness-of-Fit Index; NNFI = Non-Normed Fit Index; CFI = (Bentler's) Comparative Fit Index; SRMR = standardized root mean square residual;  
 RMSEA = root mean square error of approximation.  
 \*\*\* $p < .001$

distinctiveness of the four CQ factors and the Big Five personality variables. All factor loadings were significant, with  $t$  values ranging from 7.64 to 11.08.

We also compared this nine-factor model with alternate models to assess the relative fit of this model compared to a six-factor model (Model B: five personality factors and one overall CQ factor), a five-factor model (Model C: four CQ factors and one overall personality factor), and four alternate four-factor models (Models D, E, F, and G that combined overall personality with one CQ factor vs. the other three CQ factors). Nested model comparisons (see Table 2) provide further support for the distinctiveness of the four CQ factors and the Big Five personality factors because each of the  $\Delta\chi^2$  statistics exceeds the critical value based on degrees of freedom. Model A (nine factors) demonstrated better fit than Model B (six factors),  $\Delta\chi^2(21\ df) = 1595.98, p < .001$ . Model A (nine factors) demonstrated better fit than Model C (five factors),  $\Delta\chi^2(21\ df) = 52.12, p < .001$ . Model A (nine factors) also had better fit than Model D that combined metacognitive CQ and Big Five,  $\Delta\chi^2(26\ df) = 221.85, p < .001$ , and Model E that combined cognitive CQ and Big Five,  $\Delta\chi^2(26\ df) = 303.89, p < .001$ . Likewise, Model A (nine factors) was a better fit than Model F that combined behavioral CQ and Big Five,  $\Delta\chi^2(26\ df) = 307.56, p < .001$ , and Model G that combined motivational CQ and Big Five,  $\Delta\chi^2(26\ df) = 175.75, p < .001$ .

To assess the potential impact of common method variance, we conducted Harman's single-factor test using CFA techniques (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Results showed that a single-factor model did not fit the data well,  $\chi^2(280\ df) = 2218.57$ , GFI = .65, NNFI = .72, CFI = .74, SRMR = .130, and RMSEA = .150, and was a significantly worse fit compared to the hypothesized nine-factor model,  $\Delta\chi^2(36\ df) = 1742.71, p < .001$ . Furthermore, exploratory factor analysis showed that the first 9 eigenvalues were greater than 1.10. The nine factors accounted for 65.09% of the total variance; however, no one single factor accounted for more than 25% of the variance, and the highest variance explained by any single factor was 21.4%, suggesting that the common method bias was mitigated.

*Control variables.* We controlled for age (in years), gender (0 = female, 1 = male), and years of experience interacting with people from other cultures to rule out their possible effects on CQ (Bandura, 1977a, 1977b).

## RESULTS

Table 3 reports descriptive statistics, correlations, and reliabilities. We tested hypotheses with hierarchical regressions (Table 4), entering controls

TABLE 2  
**Comparing the Fit of Alternative Nested Models for the Big Five Personality and CQ Factors**  
**(Matched Time 1 and Time 2,  $N = 338$ )**

<i>Model</i>	$\chi^2$	df	GFI	NNFI	CFI	SRMR	RMSEA	<i>Model Comparison Test</i>		
								<i>Comparison</i>	$\Delta\chi^2$	$\Delta df$
A	475.86	244	.90	.94	.95	.049	.054			
Alternate nested models										
B	2071.84	265	.66	.72	.75	.110	.140	B vs. A	1595.98***	21
C	527.98	265	.89	.94	.95	.056	.055	C vs. A	52.12***	21
D	697.71	270	.85	.91	.92	.071	.069	D vs. A	221.85***	26
E	779.75	270	.84	.90	.91	.081	.076	E vs. A	303.89***	26
F	783.42	270	.84	.90	.91	.077	.076	F vs. A	307.56***	26
G	651.61	270	.86	.92	.93	.069	.066	G vs. A	175.75***	26

CQ = cultural intelligence; GFI = Goodness-of-Fit Index; NNFI = Non-Normed Fit Index; CFI = (Bentler's) Comparative Fit Index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.  
 \*\*\* $p < .001$

(age, gender, and experience) in Step 1 and the Big Five personality factors in Step 2. Hypothesis 1 predicted that conscientiousness would be related to metacognitive CQ. Results support Hypothesis 1: Conscientiousness was related to metacognitive CQ ( $\beta = .22, p < .001$ ).

Hypotheses 2 and 3 predicted that agreeableness and emotional stability would be related to behavioral CQ. After controlling for age, gender, and experience with other cultures, agreeableness was positively related to behavioral CQ ( $\beta = .17, p < .01$ ). However, contrary to expectations, emotional stability was negatively related to behavioral CQ ( $\beta = -.18, p < .01$ ). Perhaps the calm and even-tempered nature of emotional stability inhibits appropriate displays of verbal and nonverbal behavioral CQ.

Hypothesis 4 predicted that extraversion would be related to (a) motivational CQ and (b) behavioral CQ. Regression analyses support both predictions: motivational CQ ( $\beta = .16, p < .01$ ) and behavioral CQ ( $\beta = .15, p < .05$ ). Although not specifically hypothesized, results also show that extraversion was positively related to cognitive CQ ( $\beta = .18, p < .01$ ).

Finally, Hypothesis 5 was supported, demonstrating that openness to experience was related to all four factors of CQ (a) metacognitive CQ ( $\beta = .28, p < .001$ ), (b) cognitive CQ ( $\beta = .17, p < .01$ ), (c) motivational CQ ( $\beta = .25, p < .001$ ), and (d) behavioral CQ ( $\beta = .13, p < .05$ ).

## DISCUSSION

The current study is the first to examine personality and CQ. Thus, we respond to the recommendations of Ones and Viswesvaran (1997) and Caligiuri (2000) that much can be gained from considering personality as a factor that influences expatriate selection and overseas success (Spreitzer, McCall, & Mahoney, 1997). Below, we discuss our results, with special emphasis on the important role of openness to experience. This is because our results, unlike those of prior research, demonstrate that openness to experience is a crucial personality factor that is significantly related to a person's capability to function effectively when interacting with those who have different cultural backgrounds.

Overall, our research provides strong empirical evidence of the value of using a coherent organizing framework such as the Big Five in linking facets of personality with CQ. More significant, the current study provides two types of evidence for the distinctiveness of the four-factor structure of CQ. First, results demonstrated the discriminant validity of the four CQ factors compared to the Big Five personality factors. Second, results also demon-

TABLE 3  
Descriptive Statistics, Correlations, and Reliabilities

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Metacognitive CQ	4.89	.88	(.76)											
2 Cognitive CQ	3.18	.90	.24**	(.84)										
3 Motivational CQ	4.74	.91	.29**	.24**	(.76)									
4 Behavioral CQ	4.24	1.05	.37**	.35**	.30**	(.83)								
5 Conscientiousness	3.33	.56	.27**	.07	.16**	.10	(.83)							
6 Agreeableness	3.34	.44	.15**	.17**	.14*	.20**	.20**	(.74)						
7 Emotional stability	2.78	.49	.10	.00	.14**	-.04	.25**	.31**	(.71)					
8 Extraversion	3.17	.52	.24**	.29**	.34**	.27**	.27**	.29**	.17**	(.82)				
9 Openness	3.25	.54	.34**	.28**	.38**	.24**	.16**	.17**	.22**	.46**	(.86)			
10 Age (in years)	20.17	1.61	.13**	.04	.10*	.18**	.08	.01	.12*	.04	.11*	–		
11 Gender (0 = female, 1 = male)	.30	.46	.07	.05	.07	.17**	.02	.03	.17**	.06	.18**	.53**	–	
12 Experience (cultures)	1.79	.49	.12**	.10*	.25**	.12**	.02	.08	.09	.21**	.21**	.07	.02	–

CQ = cultural intelligence.  
Cronbach's alpha in parentheses.  
\* $p < .05$ , \*\* $p < .01$ .

TABLE 4  
Hierarchical Regression Analyses (N = 338)

Variable	Metacognitive CQ		Cognitive CQ		Motivational CQ		Behavioral CQ	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Age (in years)	.08	.06	-.01	-.00	.05	.04	.09	.09
Gender (0 = female, 1 = male)	.02	-.02	.06	.04	.04	-.01	.12	.11
Experience (cultures)	.12*	.05	.13*	.06	.26***	.17**	.11*	.06
Conscientiousness		.22***		.01		.06		.05
Agreeableness		.06		.11		.02		.17**
Emotional stability		-.04		-.11		.03		-.18**
Extraversion		.04		.18**		.16**		.15*
Openness		.28***		.17**		.25***		.13*
F	2.54	8.86***	2.46	5.88***	9.00***	10.72***	5.53**	7.47***
$\Delta F$		12.39***		7.79***		10.93***		8.27***
R <sup>2</sup>	.02	.18	.02	.13	.08	.21	.05	.16
$\Delta R^2$		.16		.11		.13		.11
Adjusted R <sup>2</sup>	.01	.16	.01	.11	.07	.19	.04	.14

CQ = cultural intelligence.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

strated differential relationships between specific personality characteristics and specific facets of CQ. In other words, there is value in differentiating facets of personality and facets of CQ.

In addition, results generally supported our theoretically based predictions and demonstrated that personality was associated with CQ. As expected, the current study provides insights on the relationships between specific aspects of personality and specific aspects of CQ. Those who are high in conscientiousness value planning and order. Thus, conscientiousness was positively related to metacognitive CQ. High agreeableness was positively related to behavioral CQ. This makes sense because those who are agreeable are easygoing in their social behaviors. Contrary to our expectations, emotional stability was negatively related to behavioral CQ. We speculate that individuals who are emotionally stable (less excitable and even-tempered dispositions) may be less expressive in their verbal and nonverbal expressions. Perhaps this causes them to believe that they do not have the capability to enact a wide repertoire of social behaviors in novel cultural settings. Those who are highly extraverted were high in cognitive CQ, motivational CQ, and behavioral CQ. Those with self-confidence and sociability seek opportunities to interact with those who have different cultural backgrounds, learn about other cultures in the process, and are not reticent to exhibit flexible behavior. Finally, openness to experience (which is characterized by curiosity, broad-mindedness, and imagination) was related to all four facets of CQ. When people are dispositionally open to learning new things and willing to seek out and try out novelty, they have higher metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ.

We found it especially insightful that openness to experience was the only Big Five factor that was significantly related to all four aspects of CQ. To date, results for personality research on openness to experience have been disappointing. For example, meta-analytic reviews have reported that openness relates to few job related outcomes (Barrick et al., 2003). In contrast, most research highlights the general importance of conscientiousness for most jobs. We hope that the findings of our research trigger additional research on openness to experience, particularly in dynamic situations where curiosity, broad-mindedness, and imagination are valued at least as highly as, or even more highly than, reliability and dependability. We suggest that these forms of adaptive performance will be especially relevant in international business.

Looking at this finding more deeply, we speculate that the difference in our research findings and those of prior research on conscientiousness and openness could be due to the context and criterion. Most prior personality research has focused on individual job performance in domestic contexts

(Ones & Viswesvaran, 1997). These models of job performance typically focus on well-defined job-specific task proficiencies, effort, personal discipline, and leadership (Campbell, 1990). Given the increasingly diverse and dynamic nature of work environments, adaptive performance has emerged as a new form of work performance. Adaptive performance is a person's proficiency at altering behavior to meet the demands and changes in environment and culture (Campbell, 1999; Pulakos et al., 2000). Thus, we recommend future research that focuses specifically on adaptive performance.

Our findings on openness to experience and capability to deal effectively in culturally diverse situations (CQ) suggest interesting and exciting new research streams. We encourage others to examine the extent to which openness to experience might be the key personality factor that relates to adaptability or adaptive performance. We also suggest that culturally diverse work settings offer unique contexts for studying and understanding adaptive performance. For example, George and Zhou (2001) demonstrated that openness is related to nonroutine work outcomes such as creativity. Wanberg and Banas (2000) demonstrated that openness is related to coping effectively with reorganization and structural changes at work.

Future research could also explore more complex models in specific settings. For example, future research could examine the Big Five personality traits (with special emphasis on openness) and the four-factor model CQ as predictors of an expanded conceptualization of job performance such as adaptive performance in culturally diverse work settings. Alternatively, future research could test the mediating effects of CQ on the relationship between personality characteristics and individual performance. Finally, because our model is incomplete, it also will be important to examine moderators of the relationships we have demonstrated to further specify boundary conditions for these findings.

We also note a significant positive relationship demonstrated by our analyses that we did not predict. Further exploring this link would be useful future research. Perhaps the positive relationship between extraversion and cognitive CQ could be because outgoingness and sociability induce individuals to interact more with people from different cultures. In the process of interacting with diverse others, individuals with high extraversion may learn more about other cultures and acquire greater cultural knowledge and higher cognitive CQ. A final idea for future research concerns common method variance. Although we collected self-assessments of personality and CQ at two points in time, all of our data were provided by the same individuals. It would be interesting in future research to consider multiple sources of data. For example, either personality or CQ could be assessed by observers, particularly in employment contexts. In addition, it would be interesting to

examine whether observer ratings explain performance, over and above self-ratings.

In conclusion, results of the current study demonstrate relationships between Big Five personality factors and the four-factor model of CQ (the capability to deal effectively in situations characterized by cultural diversity). Conscientious was related to metacognitive CQ; agreeableness and emotional stability were related to behavioral CQ; extraversion was linked to cognitive CQ, motivational CQ, and behavioral CQ; and finally, openness to experience was related to all four factors of CQ (metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ). We encourage additional research on personality and CQ, with special emphasis on openness to experience and adaptive performance.

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*Soon Ang, Ph.D., is T. K. Goh Endowed Chair in management and is executive director, Center of Cultural Intelligence at Nanyang Business School, Nanyang Technological University (Singapore). Her research focuses on cultural intelligence, outsourcing, and foreign talent management. She has published in Academy of Management Journal, Journal of Applied Psychology, Management Science, Organization Science, Journal of Organization Behavior, Information Systems Research, and others and has published two books on cultural intelligence (2003, 2005).*

*Linn Van Dyne, Ph.D., is an associate professor at Michigan State University. Her research focuses on proactive behaviors involving initiative, roles, work context, and international organizational behavior and has been published in Academy of Management Journal, Academy of Management Review, Journal of Applied Psychology, Journal of Organizational Behavior, Organizational Behavior and Human Decision Processes, Research in Organization Behavior, and other outlets.*

*Christine Koh is an assistant professor at Nanyang Business School, Nanyang Technological University (Singapore). She holds a MS in information science from Claremont Graduate School. Her research interests are in managing client-vendor relationships in information technology (IT) outsourcing. She also conducts research on cultural intelligence and managing IT professionals.*