

## **Personality, Cultural Intelligence, and Cross-Cultural Adaptation**

### **A Test of the Mediation Hypothesis**

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COLLEEN WARD AND RONALD FISCHER

For more than three decades the advancement of psychological research on cross-cultural transition and adaptation has been largely guided by theories grounded in social and health psychology (Ward, Bochner, & Furnham, 2001). Two major conceptual frameworks have been used to understand, explain, and predict cross-cultural adaptation. The first, culture learning, has arisen from Argyle's (1969) work on social skills and interpersonal behaviors and focuses on the social psychology of intercultural interactions. This approach is based on the assumption that cross-cultural problems arise because cultural novices have difficulty managing everyday social encounters. Adaptation, therefore, comes in the form of learning the culture-specific skills that are required to negotiate the new cultural milieu (Bochner, 1986; Masgoret & Ward, 2006). From this perspective, empirical research investigating the predictors of adaptive outcomes has highlighted the importance of factors such as length of residence in a new culture, culture-specific knowledge, cultural distance, interactions with host nationals, and acculturation strategies (Furnham & Bochner, 1982; Kurman & Ronen-Eilon, 2004; Searle & Ward, 1990). The second conceptual framework has been strongly influenced by Lazarus and Folkman's (1984) work on stress, appraisal, and coping. This approach conceptualizes cross-cultural transition as a series of stress-provoking life changes that tax resources used in adjustment and require coping responses. From this perspective, adaptation is reflected in psychological well-being, and its predictors have been linked to life changes, personality, stress appraisal, coping styles, and acculturation strategies (Berry, 2006; Berry & Sam, 1997; Ward & Kennedy, 2001).

More recently, Earley and Ang (2003) introduced a new perspective on cross-cultural transition and adaptation that arose from contemporary work on intelligence (Sternberg, 1988, 2000) and is situated in the literature on expatriate effectiveness (e.g., Avcan, 1997;

ences on the success in global work assignments (GWAs). More specifically, they have highlighted the importance of cultural intelligence (CQ), defined as “a person’s capability to adapt effectively to new cultural contexts” (Earley & Ang, 2003, p. 59). Earley and Ang’s multilevel model specifies that CQ leads to success in global work assignments, including general adjustment and work performance, but that the relationships between CQ and the adaptive outcomes are affected by individual factors such as personality and technical competence, familial factors, job and organizational factors, and characteristics of the host culture.

CQ represents a multidimensional construct of intelligence based on four components—cognitive, metacognitive, motivational, and behavioral—giving the construct both process and content features (Earley & Ang, 2003). The cognitive component of CQ relates to an individual’s knowledge of specific norms, practices, and conventions in new cultural settings. Metacognitive CQ is defined as an individual’s cultural awareness during interactions with people from different cultural backgrounds. Motivational CQ is conceptualized as a person’s drive to learn more about and function effectively in culturally varied situations. Finally, behavioral CQ is defined as an individual’s flexibility in demonstrating appropriate actions when interacting with people from different cultural backgrounds. Ang, Van Dyne, Koh, and Ng (2004) have advanced research on CQ with the construction and validation of a scale for its measurement confirming the four-factor structure based on data from Singapore and the United States. More recently, Ward, Fischer, Lam, and Hall (in press) corroborated the structure with a sample of international students in New Zealand.

As CQ is a relatively new construct, there has been limited empirical research published on its predictive validity. Preliminary evidence from Ang and colleagues, however, appears promising. Over a series of studies, the researchers reported that metacognitive CQ was related to performance on a cultural judgement and a decision-making task; motivational CQ was linked to general adjustment; behavioral CQ predicted both task performance and general adjustment; and the four CQ factors explained variance in general adjustment and task performance over and above that accounted for by a test of cognitive ability (Ang et al., 2004). More recent research has confirmed that motivational CQ predicts work and general adjustment (Templer, Tay, & Chandrasekar, 2006). None of these studies, however, has addressed the complex relationship between personality, CQ, and adaptive outcomes.

In their seminal work on cultural intelligence Earley and Ang (2003) advanced two suppositions about the relationship between personality, CQ, and success on global assignments. First, they stated that “personality characteristics are conceptualized as antecedents or causal agents of cultural intelligence” (p. 160). However, they later posited that personality “can moderate the relationship between CQ and adjustment in GWA” (p. 218). More specifically, they suggested that the Big Five personality factors may only engender expatriate success for those who are high in CQ.

Ang et al. (2006) examined the first of these propositions in their study of CQ and the

by openness and conscientiousness; cognitive and motivational CQ were predicted by extraversion and openness; and behavioral CQ was predicted by agreeableness, extraversion, openness, and neuroticism. Although the research did not examine the links between personality and CQ to adaptive outcomes, Ang et al. suggested that “trait-like” individual differences, such as personality characteristics, are more distal to performance outcomes than are “state-like” individual differences, such as CQ, and that the former exerts indirect effects on outcomes through the intervening, more malleable “state-like” qualities.

The first study to link CQ, personality, and cross-cultural adaptation was conducted by Ward et al. (in press) with international students in New Zealand. This earlier research used van der Zee and van Oudenhoven’s (2000) multicultural personality questionnaire, Ang et al.’s (2004) measure of cultural intelligence, and Raven’s advanced progressive matrices (Raven, 1998) as a test of cognitive ability and assessments of psychological, sociocultural, and academic adaptation in a sample of 102 international students. Hierarchical regression analyses failed to document the incremental validity of the four CQ subscales in the prediction of psychological, sociocultural, and academic adaptation over and above the variance explained by demographic variables (age, gender, and English language proficiency), cognitive ability, and personality. In each adaptation domain, however, the emotional stability subscale of the multicultural personality questionnaire (MPQ) remained a significant predictor of the outcome in the final step of the analysis.

The failure of CQ to demonstrate incremental validity in this study tacitly undermines the mediation hypothesis. Despite the initial results, however, we believe that the mediation model deserves further attention for at least two reasons. First, in our original study, both the CQ and MPQ domains were combined for analysis; that is, the five MPQ factors and the four CQ subscales were entered in blocks on respective steps in the regression analyses. The block entry, particularly with the strong effects of emotional stability, may have obscured more subtle influences of specific CQ domains on specific MPQ factors. Exploration of these links warrants more refined theorizing about the specific relationships among CQ and MPQ factors and their influences on cross-cultural adaptation. Second, more sophisticated theorizing about the relationship between CQ and MPQ domains should be accompanied by more precise statistical analyses. More specifically, a test of the mediation hypothesis might be better achieved with causal modeling. Accordingly, this study aims to test an integrated model of general adjustment linking personality and CQ using structural equation modeling.

## PERSONALITY, CQ, AND CROSS-CULTURAL ADAPTATION

Personality has traditionally occupied a central role in studies of cross-cultural transition and adaptation. Research has shown that an internal locus of control (Neto, 1995; Ward & Kennedy, 1993), hardiness (Ataca, 1996), mastery (Sam, 1998), curiosity (Ones & Steinbock,

ies with the Big Five have reported that extraversion, agreeableness, conscientiousness, and emotional stability are associated with psychological and sociocultural adaptation in international students and expatriate businesspeople (Ward, Leong, & Low, 2004), that extraversion and agreeableness are related to a reduced likelihood of terminating an expatriate posting, and that conscientiousness is positively related to supervisory ratings of job performance (Caligiuri, 2000). Selection and training instruments (e.g., Cross-Cultural Adaptability Inventory, Kelley & Meyers, 1989; Intercultural Adaptation Potential Scale, Matsumoto & Le Roux, 2003; Multicultural Personality Questionnaire, van der Zee & van Oudenhoven, 2000) designed to predict or enhance intercultural effectiveness have further substantiated the importance of personality, linking emotional resilience and stability, flexibility, openness, perceptual acuity, social initiative, and cultural empathy to psychological, social, and work adjustment across groups of expatriate employees, expatriate spouses, and international students (Ali, van der Zee, & Sanders, 2003; van Oudenhoven, Mol, & van der Zee, 2003; Ward, Berno, & Main, 2002).

Although there is a range of assessment instruments that might be used to investigate the relationship between CQ, personality, and cross-cultural adaptation, we believe the MPQ is best suited to this objective. The MPQ is a 91-item instrument composed of five subscales: cultural empathy, openmindedness, emotional stability, social initiative, and flexibility. Cultural empathy refers to the ability to empathize with the feelings, thoughts, and behaviors of members of different cultural groups. Openmindedness is defined as a nonjudgmental attitude toward different cultural groups, norms, and practices. Emotional stability reflects an ability to remain composed in stressful situations while social initiative refers to the tendency to approach social situations in a proactive manner. Finally, flexibility represents a tendency to adjust behaviors to changing circumstances. The MPQ has been widely used in research on cross-cultural transition and adaptation and has demonstrated good reliability and validity with a range of cross-cultural and international samples of both expatriates on overseas assignments and international students; it has also been recommended as a selection tool for global work assignments and as a diagnostic tool for assessing training needs (Ali et al., 2003; Leone, van der Zee, van Oudenhoven, Perugini, & Ercolani, 2005; van der Zee & van Oudenhoven, 2000, 2001; van Oudenhoven et al., 2003; van Oudenhoven & van der Zee, 2002). More importantly, the MPQ has demonstrated incremental validity over and above the Big Five in predicting an international orientation, aspiration for an international career in students (van der Zee & van Oudenhoven, 2000), and behavioral competence in job applicants (van der Zee, Zaal & Piekstra, 2003).

Cultural intelligence has cognitive, behavioral, and motivational components that may mediate the relationship between personality and cross-cultural adaptation. Theoretical and empirical factors have led us to hypothesize that motivational CQ is the most promising component to investigate in a parsimonious mediation model. First, motivational domains have been relatively neglected in research on cross-cultural transition and adaptation (Berry & Ward, 2006). Although the importance of motivational factors has been highlighted in the literature (Earley & Ang, 2003), the definition, measurement, and situation of motivational CQ in Earley and Ang's (2003) model of success in global work assignments constitute the most original aspects of their contribution to the study of cross-cultural transition and adaptation. Cognitive and behavioral elements have traditionally occupied a significant position and have been extensively investigated, albeit not with specific reference to intelligence, in the culture learning framework (Ward, 2004). Second, it is easy to see how motivational factors may act as effective mediators of personality dispositions. Individuals with greater perceived flexibility, cultural empathy, openmindedness, or social initiative are likely to feel more motivated to engage in intercultural interactions, due to a greater perceived efficacy (Bandura, 1977, 1986). Third, from a statistical perspective, a number of empirical relationships need to be found. In the traditional regression model, mediation is said to occur if the mediator is related to both the predictor and the criterion variable and if the path from the predictor variable to the criterion becomes insignificant (full mediation) or reduced in strength (partial mediation) when the mediator is introduced in the regression model (Baron & Kenny, 1986).

Motivational CQ has already emerged as a significant predictor of general adjustment in studies of international executives by Ang et al. (2004) and Templer et al. (2006). Our previous research on CQ, personality, and adaptation also showed that each of the MPQ subscales correlated significantly with general adjustment and moderate correlations ( $r$ 's = 0.20–0.30) were found among the MPQ and CQ subscales. Furthermore, motivational CQ showed the most consistent relationship to the MPQ and was significantly related to flexibility, openmindedness, cultural empathy, and social initiative. These findings converge to suggest that motivational CQ is a good candidate for a mediator. In addition, as previously mentioned, emotional stability was the only one of the nine CQ and MPQ factors to remain a significant predictor of adaptation on the final step of a series of hierarchical regression analyses, suggesting a direct and unmediated path from this factor to general adjustment.

Based on a theoretical and empirical rationale, our proposed model is presented in Figure 10.1. The model proposes a direct link between emotional stability and general adjustment. Furthermore, it proposes that the effects of social initiative, openmindedness, flexibility, and cultural empathy on general adjustment are mediated by motivational CQ.

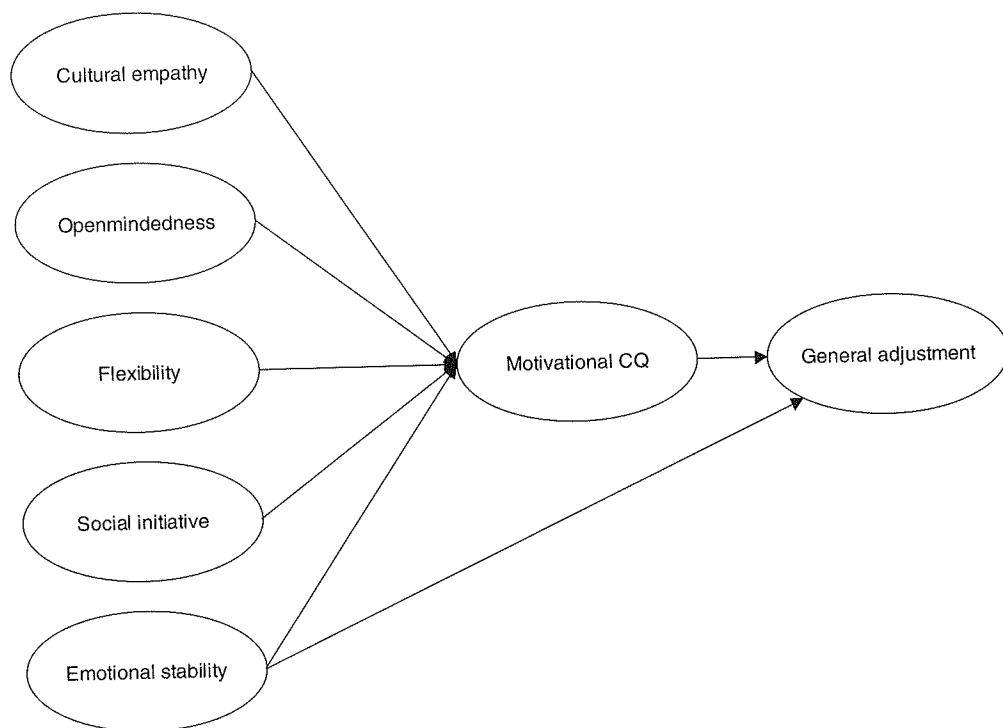
## METHOD

### Participants and Procedure

Three hundred and forty-six international students (65 percent females) recruited through a New Zealand university's international orientation program participated in the research. Participation was anonymous and voluntary.

Students originated from 30 countries with the largest groups coming from the United States (38.6 percent), Malaysia (16 percent), and the People's Republic of China (15.4

Figure 10.1 The Proposed Model



days). Almost half of the respondents (48.9 percent) were self-rated fluent English speakers, with a further 19 percent nearly fluent; 16.7 percent indicated that they did not speak English very well.

### Materials

The survey included personal background information (e.g., age, gender, nationality, English proficiency, and length of residence in New Zealand) and assessments of CQ, personality, using MPQ, and general adjustment, using the sociocultural adaptation scale (SCAS).

Participants completed the five-item motivational subscale of CQ (Ang et al., 2004; Ang et al., 2007). Responses were made on five-point "agree-disagree" scales with higher scores reflecting greater CQ. A sample item is, "I enjoy interacting with people from different cultures." Ang and colleagues (2004, 2006, 2007) have produced convincing evidence of the measure's reliability and validity.

The MPQ consists of 91 items measuring five factors: flexibility (18 items), cultural empathy (18 items), social initiative (17 items), openmindedness (18 items), and emotional stability (20 items). All statements are rated on a six-point dimension of applicability

four of the 91 items explicitly mentioning culture, e.g., "I feel uncomfortable in a different culture." Past research has shown the MPQ to be a valid and reliable instrument for international and multicultural samples (Leone et al., 2005; van der Zee & van Oudenhoven, 2000, 2001; van Oudenhoven et al., 2003; van Oudenhoven & van der Zee, 2002).

General adjustment was assessed using the SCAS, a 23-item measure that taps the amount of difficulty experienced negotiating everyday situations in a new cultural milieu (e.g., shopping, making oneself understood). Five-point rating scales (endpoints: no difficulty/extreme difficulty) are used with higher scores indicating greater adaptation problems. The SCAS has been used extensively in sojourner research and has demonstrated good reliability and validity with a wide variety of cross-cultural research (Ward & Kennedy, 1999). The scale is most commonly used in acculturation research to tap the construct of sociocultural adaptation as distinct from psychological well-being. However, the SCAS incorporates all of the domains included in Black's (1988) measure of general adjustment, which also forms the basis of the general adjustment measures used in CQ research (Ang et al., 2004, 2007; Templer et al., 2006). As this construct is more commonly discussed in the expatriate effectiveness literature in which the CQ research has been situated, the SCAS is referred to as *general adjustment* in this study.

## RESULTS

### Initial Analyses

We conducted a confirmatory factor analysis using LISREL 8.71 and maximum likelihood (ML) estimation. For the MPQ and SCAS we used item parcels (using four-item parcels with randomly allocated items for each of the MPQ dimensions and the SCAS). The fit for this seven-factor model was acceptable:  $\chi^2(356) = 857.65$ , Tucker Lewis Index (TLI) = 0.96, comparative fit index (CFI) = 0.97, root mean square error of approximation (RMSEA) = 0.066. A model in which we forced all the MPQ dimensions and motivational CQ to load on a single factor did not fit as well:  $\chi^2(376) = 2154.49$ , TLI = 0.91, CFI = 0.92, RMSEA = 0.12. Since two of the MPQ dimensions (cultural empathy and openmindedness) correlated quite highly (see Table 10.1), we also tested a model in which we combined these two dimensions. This model did fit significantly worse:  $\Delta \chi^2(5) = 50.55$ ,  $p < 0.01$ . Therefore, our measures show discriminant validity. Cronbach's alphas were calculated to check scalar reliability of measures, and all scales demonstrated good internal consistency (see Table 10.1).

### Model Testing

The purpose of this study is to assess the adequacy of a model of cross-cultural adaptation that proposes a mediating role of motivational CQ in determining general adjustment.

A model was tested that proposed direct and indirect links between the five subscales of

Table 10.1

**Descriptive Statistics**

	Mean	SD	1	2	3	4	5	6	7
1. Motivational CQ	5.08	.92	(.82)						
2. Cultural Empathy	4.42	.62	.54**	(.82)					
3. Openmindedness	4.32	.59	.57**	.72**	(.76)				
4. Social Initiative	3.96	.57	.44**	.57**	.59**	(.84)			
5. Emotional Stability	3.67	.49	.37**	.28**	.33**	.46**	(.80)		
6. Flexibility	3.82	.51	.51**	.41**	.47**	.50**	.45**	(.76)	
7. General Adjustment	4.00	.57	.46**	.42**	.44**	.44**	.36**	.34**	(.87)

\*\**p* < .001. Cronbach's alpha is printed on the diagonal.

among the latent variables. A path model was adopted, as this is superior to traditional tests of mediation (Iacobucci, Saldanha & Deng, 2007).

A single indicator model incorporating random measurement error was specified. Williams and Hazer (1986) suggested fixing the loadings from indicator to constructs to the square root of the coefficient alpha estimate for each construct, and to fix the error variance to the product of the variance of the observed indicator multiplied by the quantity one minus the estimated reliability of each construct. This approach has been frequently used in applied psychological research (e.g., Clugston, 2000; Frone, Russell, & Cooper, 1992; Moorman, 1991) and has been shown to yield identical results to latent model estimates (Netemeyer, Johnston, & Burton, 1990). This procedure is appropriate if the number of indicators is large.

The proposed model was tested using the LISREL 8.71, and the data provided mixed support for the model (Figure 10.2). The fit indices for CFI was 0.99, and for the Tucker-Lewis index 0.95, which is excellent (Hu & Bentler, 1999; Marsh, Balla, & McDonald, 1988). However, the RMSEA was 0.10, which is above the traditionally recommended level of 0.08 or more recent recommendations of 0.06 (Browne & Cudeck, 1993; Hu & Bentler, 1999; Marsh et al., 1988). Furthermore, modification indices suggested that the model was not fitting very well. Examining residuals and modification indices for this model, direct paths from the MPQ dimensions to the outcome measure seemed appropriate. More specifically, the residuals between cultural empathy, openmindedness, and social initiative on one hand and adaptation on the other were all larger than 3.4 and the modification indices were all in the range between 15.6 and 16.6 (which is substantial considering the overall chi square of 22.2). We therefore decided to free the direct path between social initiative and adaptation since this pair showed the highest standardized residual (3.75). We also removed the direct path between social initiative and motivational CQ since the completely standardized path between the two constructs was negative, not significant and close to zero (-0.08). This revised model provided excellent fit:  $\chi^2(5) = 8.01, p = 0.16, TLI = 0.99, CFI = 1.00, RMSEA = 0.043$ . This revised model is shown in

Figure 10.2 Test of the Proposed Model

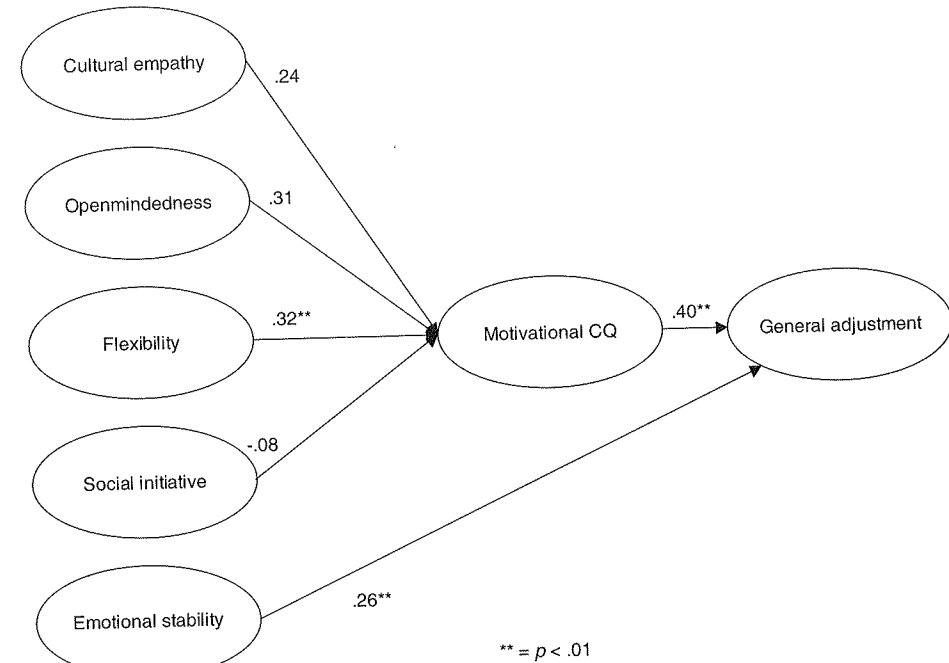
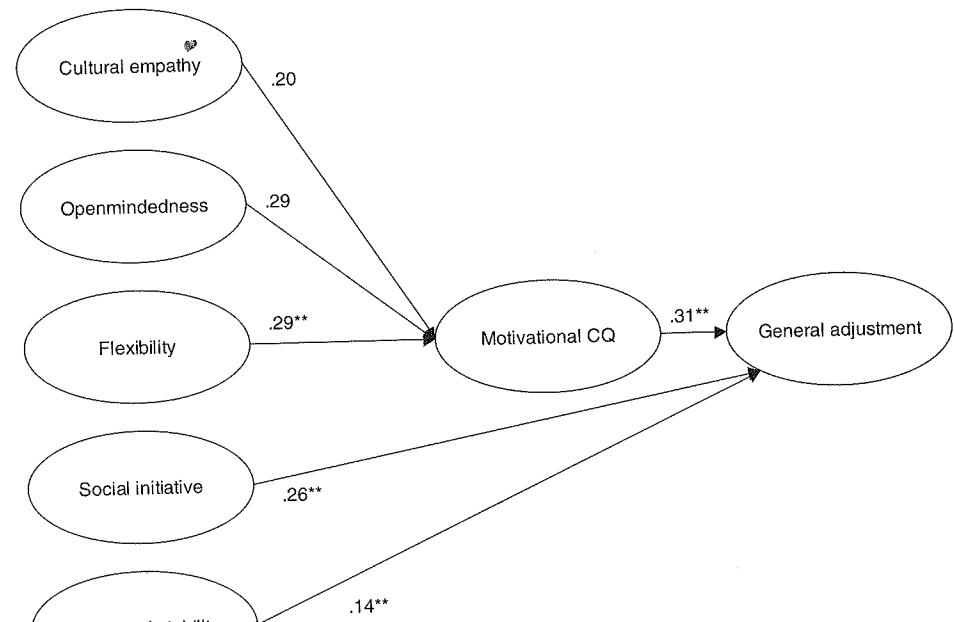


Figure 10.3 The Revised Model



## DISCUSSION

The relationship between CQ and personality, and their influences on adaptive outcomes, are core issues for the theoretical and empirical precision of CQ research. Arising from theorizing by Ang et al. (2004) and guided by empirical research by Ward et al. (in press), the research tested a structural model of cross-cultural adaptation with a direct path from emotional stability to general adjustment and mediated paths from cultural empathy, flexibility, openmindedness, and social initiative through motivational CQ. The data did not provide a strong fit to the model, and modification indices suggested direct paths from the MPQ subscales to the outcome measure. A modified model with a direct path from social initiative to general adjustment provided an excellent fit to the data; however, the results indicated that flexibility alone was mediated by motivational CQ. As such, the findings provide limited support for Ang et al.'s (2004) mediation model of personality, CQ and cross-cultural adaptation.

Motivational CQ has been described as a drive and interest in learning about and functioning in new and different cultural settings (Ang et al., 2004). Individuals with high motivational CQ have a strong desire to experience cultural novelty; they enjoy interacting with people from diverse backgrounds, and they have a strong sense of self-efficacy in cross-cultural contexts. Templer et al. (2006) propose that motivational CQ "stimulates and channels an individual's knowledge and strategies into guided action in novel cultural experiences" (p. 157). Our findings suggest that motivational CQ may "channel" flexibility to enhance general adjustment.

At the most basic level, Earley and Ang (2003) acknowledged the importance of flexibility in their theory of CQ, noting that constant reshaping and adaptation are required to operate effectively in a new cultural milieu. They also postulate that a consistency motive is negatively related to CQ. From this perspective, then, the personality trait of flexibility may be seen as a prerequisite of motivational CQ. Motivational CQ, in turn, leads to better cross-cultural adaptation. Such an interpretation is consistent with theorizing by Earley and Ang (2003) and Ang et al.'s (2004) proposed mediation model.

In addition to the mediated influence of flexibility on general adjustment, social initiative and emotional stability exerted direct effects on the adaptation outcome. Social initiative refers to the tendency to approach social situations in a proactive manner and to take initiative. Research has previously demonstrated a link between social initiative and peer support and psychological well-being, both of which are associated with general adjustment (van Oudenhoven et al., 2003; van Oudenhoven & van der Zee, 2002). Emotional stability reflects the tendency to remain calm in stressful situations. Research with the MPQ has revealed that emotion stability is the most robust predictor of adaptive outcomes, including expatriates' personal, professional, and social adjustment, and international students' psychological, sociocultural, and academic adaptation (van Oudenhoven et al., 2003; Ward et al., in press).

Cultural empathy and openmindedness were positively correlated with motivational CQ

mindedness and cultural empathy. Both domains share common characteristics of being open, transcending one's own perspective, and remaining nonjudgmental in intercultural interactions. Although both dimensions are associated with an increase in motivation to engage in intercultural encounters, the unique effect of each dimension controlling for the other is not significant.

The main objective of the current research was to test a mediation model of personality, CQ, and cross-cultural adaptation. Two of our studies have now directly or indirectly examined this proposition. The first produced no evidence of mediation in that CQ failed to explain any additional variance in psychological, sociocultural, and academic adaptation in international students above and beyond that accounted for by the MPQ (Ward et al., in press). The second study, reported here, found only partial support for a mediation model with motivational CQ mediating the influence of flexibility on general adjustment. In both studies, personality factors appeared to be strong predictors of adaptation outcomes.

Recently, Ang et al. (2007) have advanced more sophisticated theorizing about the four CQ domains and their influences on specific adaptive outcomes. In particular, they have hypothesized and confirmed that motivational CQ is related to cultural adaptation in both affective and behavioral domains. Motivational CQ predicted interaction adjustment and well-being, and demonstrated incremental validity over and above either the Big Five personality traits or the four domains (emotional resilience, perceptual acuity, autonomy, and flexibility) of the Cross-Cultural Adaptability Inventory (Kelly & Meyers, 1989). However, in all of these cases personality factors remained significant predictors of the adaptive outcomes, again undermining the proposed mediational role of CQ. The relative and specific influences of personality and CQ require further research.

In the broader context, however, there are a number of issues that must be considered before firm conclusions can be drawn about the relative roles and influences of personality and CQ on cross-cultural adaptation. One issue that deserves serious attention is the relationship between theory and measurement. In their discussion of the measurement of cultural intelligence, Lee and Templer (2003) noted that various approaches may be adopted: surveys, interviews, observations, computer simulations, critical incidents, cultural assimilators, and assessment centers. The self-report survey method in current use has obvious limitations. It shares the same weaknesses of other self-report instruments (e.g., response biases) and has particular limitations with respect to the measurement of intelligence. More specifically, the CQ measure asks respondents to describe aspects of their CQ rather than to demonstrate it objectively. This is problematic. A more valid test of intelligence would not ask respondents if they have the knowledge or ability to solve a problem, it would require respondents to engage in problem solving! The development of alternative measurement techniques should be considered in future research.

The limitations of self-report measures raise additional issues for our research. The sole reliance on this format may increase the problem of common method variance and lead to inflated correlations. Despite research showing constructs that can be verified externally (e.g., through observer reports on personality and adjustment) are less prone

A notable weakness of our current study is the cross-sectional design; testing mediation using measurements at only one point in time is problematic as it does not adequately address the mechanism of causality inherent in mediation models. Mediation theoretically involves one variable affecting another variable, which then leads to changes in a third variable. To test the causality of any mediation model properly, longitudinal designs would be needed. It would be necessary to measure personality dimensions at time 1, which would then predict changes in CQ at time 2, which, in turn, are associated with increased adjustment at time 3. It would also be worthwhile to measure both predictor and criterion variables at all time points to establish more firmly which are the causal variables. This is currently being undertaken in our research program. Alternatively, experimental designs could be used to test the causal mediation path more directly. If CQ is state-like, as maintained by Ang et al. (2006, 2007), it may be possible to manipulate its salience in experimental settings.

In conclusion, the theory and measurement of cultural intelligence is in its infancy. It holds promise for the future in offering a novel perspective on cross-cultural transition and adaptation, one that can potentially complement existing stress and coping and culture learning perspectives. It also potentially has strong areas of application in relation to selection and training of expatriate employees and international students. However, before the potential and promise can be realized, there are a number of obstacles to overcome and goals to be achieved. First, more sophisticated designs in CQ research should be undertaken. This refers particularly to longitudinal research to assess causal relationships and experimental studies with training interventions and the assessment of adaptation outcomes. Second, translating theory into measurement is a major challenge. The current measurement has demonstrated a robust structure and some evidence of predictive and incremental validity; however, it is subject to the same criticisms as other self-report measures of intelligence and may not always be sufficiently sensitive to test for complex relationships among key predictor and outcome variables. Finally, a critical mass of CQ research is needed, conducted by international scholars and collaborative teams, using a wide range of sojourning samples in diverse cultural settings. This chapter and others in the *Handbook on Cultural Intelligence* take one step toward achieving those goals.

## REFERENCES

- Ali, A., van der Zee, K.I., & Sanders, G. (2003). Determinants of intercultural adjustment among expatriates. *International Journal of Intercultural Relations, 27*, 563–580.
- Ang, S., Van Dyne, L., & Koh, C. (2006). Personality correlates of the four-factor model of cultural intelligence. *Group and Organization Management, 31*, 100–123.
- Ang, S., Van Dyne, L., Koh, C., & Ng, K.Y. (2004). The measurement of cultural intelligence. Working paper, presented at the Academy of Management Symposium on Cultural Intelligence in the 21st Century, New Orleans, LA.
- Ang, S., Van Dyne, L., Koh, C., Ng, K., Templer, K.J., Tay, C., & Chandrasekar, N.A. (2007). Cultural intelligence: Its measurement and effects on cultural judgment and decision making, cultural adapta-

- Turks. Working paper, presented at the XIII Congress of the International Association for Cross-cultural Psychology, Montreal, Canada.
- Aycan, Z. (1997). Expatriate adjustment as a multifaceted phenomenon: Individual and organizational level predictors. *International Journal of Human Resource Management, 8*, 434–456.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator distinction in social psychological research. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Berry, J.W. (2006). Stress perspectives on acculturation. In D.L. Sam & J.W. Berry (Eds.), *Cambridge handbook of acculturation psychology* (pp. 43–57). Cambridge: Cambridge University Press.
- Berry, J.W., & Sam, D.L. (1997). Acculturation and adaptation. In J.W. Berry, M.H. Segall, & C. Kagitçibasi (Eds.), *Handbook of cross-cultural psychology. Volume 3. Social behavior and applications* (pp. 291–326). Boston, MA: Allyn & Bacon.
- Berry, J.W., & Ward, C. (2006). Commentary on "Redefining interactions across cultures and organizations." *Group and Organization Management, 31*, 64–77.
- Black, J.S. (1988). Work role transitions: A study of American expatriate managers in Japan. *Journal of International Business Studies, 19*, 533–546.
- Black, J.S., Gregersen, H.B., & Mendenhall, M. (1992). *Global assignments*. San Francisco, CA: Jossey-Bass.
- Bochner, S. (1986). Coping with unfamiliar cultures: Adjustment or culture learning? *Australian Journal of Psychology, 38*, 347–358.
- Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Caligiuri, P. (2000). The Big Five personality characteristics as predictors of expatriate's desire to terminate the assignment and supervisor-rated performance. *Personnel Psychology, 53*, 67–88.
- Clugston, M. (2000). The mediating effects of multidimensional commitment of job satisfaction and intent to leave. *Journal of Organizational Behavior, 21*, 477–486.
- Crompton, S.M., & Wagner, J.A. (1994). Percept-percept inflation in micro-organizational research: An investigation on prevalence and effect. *Journal of Applied Psychology, 79*, 67–76.
- Earley, P.C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Stanford, CA: Stanford University Press.
- Frone, M.R., Russell, M., & Cooper, M.L. (1992). Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology, 77*, 65–78.
- Furnham, A., & Bochner, S. (1982). Social difficulty in a foreign culture. In S. Bochner (Ed.), *Cultures in contact: Studies in cross-cultural interactions* (pp. 161–198). Oxford: Pergamon Press.
- Hu, L.T., & Bentler, P.M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.
- Iacobucci, D., Saldanha, N., & Deng, Z. (2007). A meditation on mediation: Evidence that structural equations models perform better than regressions. *Journal of Consumer Psychology, 17*, 139–153.
- Kelley, C., & Meyers, J.E. (1989). *The Cross-Cultural Adaptability Inventory*. Minneapolis, MN: National Computer Systems.
- Kurman, J., & Ronen-Eilon, C. (2004). Lack of knowledge of a culture's social axioms and adaptation difficulties among immigrants. *Journal of Cross-Cultural Psychology, 35*, 192–208.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, coping and appraisal*. New York: Springer.
- Lee, C.-H., & Templer, K.J. (2003). Cultural intelligence assessment and measurement. In P.C. Earley & S. Ang (Eds.), *Cultural intelligence: Individual interactions across cultures* (pp. 185–208). Stanford, CA: Stanford University Press.

- Marsh, H.W., Balla, J.R., & McDonald, R.P. (1988). Goodness of fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, *103*, 391–410.
- Masgoret, A.-M., & Ward, C. (2006). Culture learning approach to acculturation. In D.L. Sam & J.W. Berry (Eds.), *Cambridge handbook of acculturation psychology* (pp. 58–77). Cambridge: Cambridge University Press.
- Matsumoto, D., & LeRoux, J.A. (2003). Measuring the psychological engine of intercultural adjustment: The intercultural adjustment potential scale (ICAPS). *International Journal of Intercultural Relations*, *36*, 37–52.
- Moorman, R.H. (1991). Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? *Journal of Applied Psychology*, *76*, 845–855.
- Netemeyer, R.G., Johnston, M.W., & Burton, S. (1990). Analysis of role conflict and role ambiguity in a structural equations framework. *Journal of Applied Psychology*, *75*, 148–157.
- Neto, F. (1995). Predictors of life satisfaction among second generation migrants. *Social Indicators Research*, *35*, 93–116.
- Ones, D.S., & Viswesvaran, C. (1997). Personality determinants in the prediction of aspects of expatriate job success. *New Approaches to Employee Management*, *4*, 63–92.
- Raven, J.C. (1998). *Raven's advanced progressive matrices manual*. London: Harcourt Assessment.
- Sam, D.L. (1998). Predicting life satisfaction among adolescents from immigrant families in Norway. *Ethnicity and Health*, *3*, 5–18.
- Searle, W., & Ward, C. (1990). The prediction of psychological and sociocultural adjustment. *International Journal of Intercultural Relations*, *14*, 449–464.
- Sternberg, R.J. (1988). *The triarchic mind: A new theory of human intelligence*. New York: Cambridge University Press.
- Sternberg, R. (2000). The concept of intelligence. In R.J. Sternberg (Ed.), *Handbook of intelligence* (pp. 3–15). New York: Cambridge University Press.
- Taft, R., & Steinkalk, E. (1985). The adaptation of recent Soviet immigrants in Australia. In I. Reyes Lagunes & Y.H. Poortinga (Eds.), *From a different perspective: Studies of behavior across cultures* (pp. 19–28). Lisse, the Netherlands: Swets & Zeitlinger.
- Templer, K., Tay, C., & Chandrasekar, N.A. (2006). Motivational cultural intelligence, realistic job preview, realistic living conditions preview and cross-cultural adjustment. *Group and Organization Management*, *31*, 154–171.
- van der Zee, K.I., & van Oudenhoven, J.P. (2000). The Multicultural Personality Questionnaire: A multidimensional instrument of multicultural effectiveness. *European Journal of Personality*, *14*, 291–309.
- van der Zee, K.I., & van Oudenhoven, J.P. (2001). The Multicultural Personality Questionnaire: Reliability and validity of self and other ratings of multicultural effectiveness. *Journal of Research in Personality*, *35*, 278–288.
- van der Zee, K.I., Zaai, J.N., & Piekstra, J. (2003). Validation of the Multicultural Personality Questionnaire in the context of personnel selection. *European Journal of Personality*, *17*, 77–100.
- van Oudenhoven, J.P., Mol, S., & van der Zee, K.I. (2003). A study of the adjustment of Western expatriates in Taiwan ROC with the Multicultural Personality Questionnaire. *Asian Journal of Social Psychology*, *6*, 159–170.
- van Oudenhoven, J.P., & van der Zee, K.I. (2002). Predicting multicultural effectiveness of international students: The Multicultural Personality Questionnaire. *International Journal of Intercultural Relations*, *26*, 679–694.
- Ward, C. (2004). Theories of culture contact and their implications for intercultural training and interventions. In D. Landis, J.M. Bennett & M.J. Bennett (Eds.), *Handbook of intercultural training* (3rd ed.) (pp. 185–216). Thousand Oaks, CA: Sage.

- Ward, C., Bochner, S., & Furnham, A. (2001). *The psychology of culture shock*. London: Routledge.
- Ward, C., Fischer, R., Lam, F.S.Z., & Hall, L. (in press). The convergent, discriminant and incremental validity of the scores of a self-report measure of cultural intelligence. *Educational and Psychological Measurement*.
- Ward, C., & Kennedy, A. (1993). Where's the culture in cross-cultural transition? Comparative studies of sojourner adjustment. *Journal of Cross-Cultural Psychology*, *24*, 221–249.
- Ward, C., & Kennedy, A. (1999). The measurement of sociocultural adaptation. *International Journal of Intercultural Relations*, *23*, 659–677.
- Ward, C., & Kennedy, A. (2001). Coping with cross-cultural transition. *Journal of Cross-Cultural Psychology*, *32*, 636–642.
- Ward, C., Leong, C.-H., & Low, M. (2004). Personality and sojourner adjustment: An exploration of the "Big Five" and the cultural fit proposition. *Journal of Cross-Cultural Psychology*, *35*, 137–151.
- Williams, L.J., & Hazer, J.T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods. *Journal of Applied Psychology*, *71*, 219–231.



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**Editors Soon Ang and Linn Van Dyne**

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