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Assessing the predictive validity of cultural intelligence over time

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ABSTRACT

The study examines four core components of cultural intelligence (CQ) – Behavioral, Motivational, Cognitive and Meta-cognitive – as predictors of cross-cultural adaptation problems in a longitudinal study of international students in New Zealand and tests the hypothesis that Motivational CQ predicts better psychological and sociocultural outcomes over time. One hundred and four students completed measures of CQ during a pre-term orientation program and assessments of adaptation problems approximately three months later. In line with the hypothesis, bi-variate correlations indicated that Motivational CQ was related to fewer psychological symptoms ($r = -.30, p < .01$) and sociocultural adaptation problems ($r = -.27, p < .01$). However, hierarchical regression analysis, controlling for age, gender, length of residence abroad and region of origin, revealed that while Motivational CQ was a significant (negative) predictor ($\beta = -.36, p < .01$) of psychological symptoms, the overall amount of variance explained (14.6%) in the model was not significant. In contrast, region of origin ($\beta = .37, p < .01$) was the only significant predictor of sociocultural adaptation problems with international students from Western countries reporting fewer difficulties than those from other regions. The results are discussed in relation to contemporary theories of motivation along with recommendations for future research.

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1. Introduction

Cultural intelligence (CQ) has been defined as “a person’s capability to adapt effectively to new cultural contexts” (Earley & Ang, 2003, p. 59). CQ is a multi-dimensional construct made up of four core “intelligences”: Meta-cognitive, Cognitive, Motivational and Behavioral. Meta-cognitive CQ reflects an individual’s cultural awareness during interactions with people from different cultural backgrounds while Cognitive CQ relates to an individual’s knowledge of specific norms, practices and conventions in new cultural settings. Motivational CQ captures a person’s drive to learn more about and function effectively in culturally varied situations. Finally, Behavioral CQ is conceptualized as an individual’s flexibility in demonstrating appropriate actions in encounters with people from different cultural backgrounds. On this basis, the Cultural Intelligence Scale (CQS) was initially constructed and validated by Ang, Van Dyne, Koh, and Ng (2004) and further validated by Van Dyne, Ang, and Koh (2008).

Despite much discussion of CQ as a basis for explaining individual differences in the ability to adapt to new cultural settings, there has been limited empirical research published on its predictive validity. Ang et al. (2004, 2007) reported that Cognitive and

Meta-cognitive CQ were related to performance on a cultural judgment and decision-making task; Behavioral CQ was linked to general cultural adjustment; and Meta-cognitive and Behavioral CQ predicted work-related task performance. However, amongst the four domains of cultural intelligence, it is Motivational CQ that has most consistently related to adaptive outcomes. Studies have confirmed that Motivational CQ predicts work, interaction and general adjustment (Ang et al., 2004, 2007; Templer, Tay, & Chandrasekar, 2006; Ward & Fischer, 2008). It has also been associated with lower levels of depression and fewer social problems during cross-cultural transition (Ward, Fischer, Lam, & Hall, 2009). None of these studies to date, however, has examined the predictive validity of CQ over time, despite recent calls for longitudinal research on cultural intelligence, cultural adjustment, and cultural effectiveness (Lee & Sukoco, 2010). This is a significant omission given that Earley and Ang (2003) and Earley and Peterson (2004) have argued that CQ directly affects cross-cultural adjustment and work performance and that it may be used as an assessment tool to evaluate readiness for overseas assignments and training needs.

To address this shortcoming, this study examines the predictive validity of CQ domains in a longitudinal study of cross-cultural adaptation problems in international students in New Zealand. In accordance with contemporary models of acculturation, distinctions are made between psychological and sociocultural outcomes (Sam, 2006; Ward, 2001). The first refers to psychological or emotional well-being versus distress, and the second relates to the

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presence or absence of social skills and cultural competencies. In short, these domains encompass affective and behavioral changes, which when adaptive, reflect “feeling well” and “doing well”, respectively (van de Vijver, & Phalet, 2004). The predictive validity of all CQ domains is investigated in this study, but in light of previous research, emphasis is placed on Motivational CQ.

1.1. Motivational CQ

Individuals with high Motivational CQ have a strong desire to experience cultural novelty; they enjoy interacting with people from diverse backgrounds and set their goals accordingly; and they have a strong sense of self-efficacy in cross-cultural contexts. This conceptualization of CQ captures the drive component of cultural intelligence (Livermore, 2009). It also incorporates aspects of Ryan and Deci's (2000) Self-Determination Theory (SDT), particularly the importance of individual interests and the role of intrinsic motivation, and Bandura's (1997) Self-Efficacy Theory (SET) with its emphasis on the effects of expectations on performance.

International research guided by both SDT and SET has demonstrated the positive influence of motivation on cross-cultural adaptation. Studies by Chirkov and colleagues have shown that self-determined motivation leads to enhanced academic performance and greater subjective well-being in international students (Chirkov, Vansteenkiste, Tao, & Lynch, 2007) and that it predicts their psychological and sociocultural adaptation over time (Chirkov, Safdar, de Guzman, & Playford, 2008). In addition, self-efficacy has been linked to better psychological, sociocultural and academic adaptation in sojourners and immigrants (Leung, 2001; Mak & Nesdale, 2001; Tsang, 2001). These studies suggest that both intrinsic motivation, based on personal interest and enjoyment, and self-efficacy, based on context-specific expectations about success in navigating a new cultural environment, contribute to adaptive outcomes. As there is a substantial body of research that has demonstrated that the more general concept of self-efficacy leads to greater success in various life domains (Bandura, 1986), Motivational CQ may be the starting point for effective integration in a new cultural context and the main driving force behind successful adaptation to a new environment (Livermore, 2009). Therefore, it is hypothesized that Motivational CQ will predict fewer psychological and sociocultural adaptation problems over time.

2. Methods

2.1. Measures

In addition to personal background information (age, gender, nationality and length of residence), participants completed a measure of Cultural Intelligence at Time 1 and measures of psychological and sociocultural adaptation problems at Time 2. The psychometric properties of the scales are presented in Table 1.

2.1.1. Cultural intelligence

The 20-item CQ measure by Ang et al. (2004) was used in this study. The measure is composed of four subscales: Cognitive (6 items, $\alpha = 0.82$), Meta-cognitive (4 items, $\alpha = 0.80$), Behavioral (5 items, $\alpha = 0.78$) and Motivational (5 items, $\alpha = 0.76$). Examples include: “I know the legal and economic systems of other cultures” (Cognitive); “I am conscious of the cultural knowledge I use when interacting with people from different cultural backgrounds” (Meta-cognitive); “I vary the rate of my speaking when a cross-cultural situation requires it” (Behavioral); and “I enjoy interacting with people from different cultures” (Motivational). Responses are made on 5-point agree-disagree scales, and higher scores indicate a higher level of cultural intelligence. The proposed four-factorial

structure has been supported in various studies (Ang et al., 2004; Ward et al., 2009).

2.1.2. Psychological adaptation problems

A measure of Psychological Symptoms, originally constructed for the International Comparative Study of Ethno-cultural Youth (ICSEY), which involved over 5000 immigrant youth from 26 ethnic groups across 13 countries of settlement (Berry, Phinney, Sam, & Vedder, 2006), was used in this study. The 15-item assessment was based on work by Beiser and Fleming (1986), Kinzie et al. (1982) and Robinson, Shaver and Wrightsman (1991). Five point scales (endpoints: *not at all /very often*) are used as response options to items that tap depression, anxiety and psycho-somatic symptoms, e.g., “I worry a lot of the time”, “I feel sick in the stomach”, and “I feel unhappy and sad”. The total scale scores from 15–75 with higher scores indicating greater symptoms of psychological distress. Mean item scores are used in this study.

Although the Psychological Symptoms scale taps depression, anxiety and psycho-somatic symptoms, Berry et al. (2006) reported a robust uni-factorial structure. The measure was subjected to a standard treatment where pooled data from all immigrant youth were used as the basis for estimating an averaged covariance matrix. Then the factor structure produced by each sub-sample (each ethnic group in each country of settlement, $n = 41$) was compared to the factor structure of the pooled global matrix with the Tucker's phi to ensure structural equivalence across ethnic and national groups. Psychological Symptoms was uni-dimensional with the first factor (eigenvalue = 5.98) accounting for 40% of the variance; the mean Cronbach alpha was .88, and the Tucker's phi was $>.90$ in all sub-samples. Therefore, this measure has the advantage of demonstrated structural equivalence across culturally diverse samples, making it particularly appropriate for use with a heterogeneous sample of international students. In this study the Cronbach alpha was 0.89.

2.1.3. Sociocultural adaptation problems

Sociocultural adaptation problems were assessed with the Sociocultural Adaptation Scale (SCAS; Ward & Kennedy, 1999), a 23-item measure that taps the amount of difficulty experienced in negotiating everyday situations in a new cultural milieu (e.g., shopping, making oneself understood, making friends). Five-point rating scales (endpoints: *no difficulty/extreme difficulty*) are utilized with higher scores indicating more adaptation problems. The SCAS is a uni-dimensional measure that has been used extensively in sojourner research and has demonstrated good reliability and validity with a wide variety of cross-cultural samples. Ward and Kennedy (1999) reported a median Cronbach alpha of 0.86 over 16 cross-sectional samples; in this study the Cronbach alpha was 0.90.

To test the discriminant validity of the dependent measures, we conducted a confirmatory factor analysis with MPlus6 (Muthén & Muthén, 1998–2010). Due to the ratio of both the number of scale items and the number of parameters to the overall sample size, we used item parcels. The two dimensional solution fitted significantly better than a single factor solution: $\Delta\chi^2(2) = 140.35, p < .001$. The fit indices for the single factor model were consistently worse: CFI = .68, TLI = .55, SRMR = .16; whereas the two-factor solution showed adequate fit: CFI = .97, TLI = .95; SRMR = .06. The correlation between the two instruments was .19 and not significant, which shows their empirical independence.

2.2. Participants and procedure

Two hundred and seventy international students enrolled in a New Zealand university completed Time 1 measures of CQ during the orientation program before commencement of the academic

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