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International Area Studies Review 2014 17: 394
DOI: 10.1177/2233865914550727

Article

International Area Studies Review
2014, Vol. 17(4) 394–413

DOI: 10.1177/2233865914550727
ias.sagepub.com

Cultural intelligence as a predictor of individuals' adaptive performance: A study in a multicultural environment

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Abstract

As the work environment is changing rapidly, organizations need more adaptable employees who can work creatively, learn new skills and adapt to diverse social contexts and novel environments. Individual differences such as prior experience and self-efficacy have been extensively examined as predictors of adaptive performance. In contrast, the role of cultural intelligence in promoting adaptive performance has been overlooked. The primary goal of this study was to examine cultural intelligence that may account for adaptive performance beyond prior experience and self-efficacy. Moreover, we examined the moderating role of self-efficacy in terms of the relationship between cultural intelligence and adaptive performance. We tested our hypothesis with multisource data in a sample of 132 military personnel assigned in a multinational military organization. Hierarchical regression analysis demonstrated that cultural intelligence, together with self-efficacy and prior experience, was important predictors of adaptive performance. Specifically, cultural intelligence explained additional variance in adaptive performance over and above that of prior experience and self-efficacy. These findings suggested the importance of cultural intelligence as a critical predictor of adaptive performance in multicultural contexts.

Keywords

Adaptive performance, cultural intelligence, multicultural environment, prior experience, self-efficacy

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The nature of work and organizations has increasingly become dynamic, complex and often unpredictable. The need for adaptive individuals who have the proficiency to manage the challenges associated with adapting to and working effectively in a versatile environment is evident (e.g. Pulakos et al., 2000). For example, in a global economy, multicultural teams have become the reality in business and governments around the world (Connaughton and Shuffler, 2007; Ilgen and Pulakos, 1999) and success in these culturally diverse settings is greatly influenced by an individual's capability to operate effectively in a variety of different countries and with individuals who possess different cultural backgrounds (Black, 1990; Noe and Ford, 1992). Given that new work settings require individuals to adapt to changing environmental demands and opportunities to operate effectively, many scholars have identified adaptability as a crucial component of performance in many jobs (e.g. Burke et al., 2006; Hesketh and Neal, 1999; Pulakos et al., 2000).

The term "adaptive performance" has been defined as an individual's capacity to deal with changing work and novel requirements (Hesketh and Neal, 1999). Although there is discussion about whether adaptive performance is a unique dimension of performance, much of the work to date has demonstrated that adaptive performance is a component of overall performance that can be distinguished from task and contextual performance (Han and Williams, 2008; Johnson, 2001; Pulakos et al., 2000; Rosen et al., 2011). In their seminal work, Pulakos et al. (2000: 617) have conceptualized adaptive performance as a multidimensional construct and found empirical support for an eight-dimension model of adaptive performance: (a) handling emergencies or crisis situations; (b) handling work stress; (c) solving problems creatively; (d) dealing with uncertain and unpredictable work situations; (e) learning work tasks, technologies and procedures; (f) demonstrating interpersonal adaptability; (g) demonstrating cultural adaptability; and (h) demonstrating physically oriented adaptability. Generally, adaptive performance refers to the proficiency with which an individual changes his or her behavior to meet the demands of the environment, an event or a new situation (Johnson, 2001; Pulakos et al., 2000).

Individual differences have been extensively examined as predictors of individual adaptive performance (Ployhart and Bliese, 2006; Pulakos et al., 2006). For example, general and specific cognitive abilities have been related to adaptive performance (Allworth and Hesketh, 1999; LePine et al., 2000; Pulakos et al., 2002). Of the Big Five traits, openness to experience, emotional stability, conscientiousness and extraversion have been shown to be positively related to adaptive performance (Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Pulakos et al., 2006). Similarly, self-efficacy and prior experience with adaptive situations have been related to adaptive performance (e.g. Allworth and Hesketh, 1999; Eden and Kinnar, 1991; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002). More recently, Oolders et al. (2008) have demonstrated that cultural intelligence—the ability required to function effectively in culturally diverse environments (Earley and Ang, 2003)—is positively related to adaptive performance behaviors of undergraduate students in novel academic settings.

Previous research has extensively examined the predictors of adaptive performance, but limited research attention has been directed at the predictors that facilitate adaptability in multicultural settings (e.g. Oolders et al., 2008). Furthermore, given the challenges associated with working in a multicultural environment (Ang and Van Dyne, 2008), more empirical research is needed to understand the determinants of adaptive performance. In this paper, we aim to explore the relationship between cultural intelligence (CQ) and adaptive performance by focusing on ways that CQ would offer additional explanatory power in the prediction of adaptive performance over self-efficacy and prior experience in a multicultural environment. Furthermore, we examined the interactive effect of CQ and self-efficacy on adaptive performance and evaluate the extent to which self-efficacy affects the demonstration of CQ on adaptive performance.

This study differs from prior studies of CQ and adaptive performance in several ways. First, the empirical evidence for the role of CQ in fostering adaptive performance is very scarce; to our knowledge, there is only one study (Oolders et al., 2008). Furthermore, there has been a call for the investigation of the relationship between CQ and adaptive performance (Ng et al., 2012). Therefore, a study examining the effect of CQ on adaptive performance with field data could be an important contribution. Second, in general, studies have typically examined the main effects of individual differences on adaptive performance and have not considered the interactive effects of these variables on adaptive performance (Pulakos et al., 2002). Several studies suggest examining the role of self-efficacy as a moderator of the relationship between individual differences and performance (e.g. Judge et al., 2007). Hence, exploring the existence of potential moderators in the CQ–adaptive performance relationship would provide better understanding of the conditional influences of individual differences on adaptive performance. Third, although CQ has gained much attention in the international management literature, little attention has been paid to CQ in the industrial and organizational psychology literature, namely, in performance domains. Our study might fill this gap by examining the impact of CQ on adaptive performance, which is a construct that is commonly studied by industrial and organizational psychologists. Finally, this study aims to improve upon the designs of previous research using multisource data and a time lag of 5 months to measure adaptive performance in a multicultural setting.

Theoretical background and hypotheses

Prior experience and adaptive performance

Experience has proven to be a critical predictor of adaptive performance (e.g. Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Pulakos et al., 2002). For example, Pulakos et al. (2002) empirically demonstrated the existence of a positive relationship between past experience in adaptive situations and adaptive performance. Furthermore, Pulakos and colleagues indicated that prior experience was the only unique predictor that accounted for incremental variance beyond the traditional predictors (i.e. cognitive ability and personality). It should be noted that the experiences that were studied were individuals' past adaptive experiences. In line with Pulakos and colleagues, Griffin and Hesketh (2003) found prior experience to be significantly related to adaptive performance assessed via performance ratings.

Research suggests that, if an individual has experienced a variety of situations requiring adjustments to the environment, then he or she should perform effectively in a future situation that requires similar adaptation. Specifically, adaptive performance will be enhanced by gaining experience in similar situations (Pulakos et al., 2006).

Hypothesis 1: Prior adaptive experience is positively related to adaptive performance.

Self-efficacy and adaptive performance

Self-efficacy refers to an individual's judgments about his or her capabilities to successfully perform specific tasks and behaviors. It is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses" (Bandura, 1986: 391). Before selecting a choice and initiating an effort, individuals tend to evaluate their perceived capabilities. Expectations of personal efficacy determine whether an individual will initiate coping behavior, how much task-related effort he or she will expend, and

how long that effort will be sustained (Bandura, 1992, 1997). Individuals who perceive themselves as highly efficacious tend to exert more effort which, if well executed, produces successful outcomes. On the other hand, those with low self-efficacy tend to give up in difficult situations and limit their involvement in similar endeavors (Bandura, 1986). Self-efficacy has proven to be an important predictor of coping behavior when facing challenges and environmental demands (Bandura, 1986, 1992; Jerusalem, 1990).

There are different levels of self-efficacy (Bandura, 1997). Generalized self-efficacy is a more trait-like version of the concept and refers to stable and global beliefs in ability to deal efficiently with a wide range of challenging situations (Eden, 2001; Jerusalem and Schwarzer, 1992). On the other hand, specific self-efficacy involves individuals' beliefs regarding level of competence in a particular situation (Perrewé and Spector, 2002). Specific self-efficacy is a state-like version of the concept and a widely researched type of efficacy. Previous research has shown that, in a particular situation, specific self-efficacy is a better predictor of performance and behavior than generalized self-efficacy (e.g. Scholz et al., 2002). Moreover, Bandura (1997) has argued that specific self-efficacy is more useful in predicting performance. Studies have shown that the two types of self-efficacy (generalized and specific) are highly correlated (Chen et al., 2000; Scholz et al., 2002), and may act in a complementary way (Jex and Bliese, 1999). In the present study, self-efficacy is an example of specific self-efficacy, and involves individuals' subjective beliefs regarding their ability to change their behavior to meet the demands of the environment, an event or a new situation (Griffin and Hesketh, 2003; Pulakos et al., 2000).

An abundance of literature exists that describes the effect of self-efficacy on performance in a variety of domains. A significant correlation was found between individual self-efficacy and performance (Cole and Hopkins, 1995). Several other studies have supported the notion that self-efficacy is a correlate of performance (e.g. Bandura, 1991; Prussia et al., 1998; Renn and Fedor, 2001). In a meta-analysis of two decades of research, Stajkovic and Luthans (1998) reported a weighted average correlation of 0.38 between self-efficacy and work-related performance. The existing body of research demonstrates that self-efficacy beliefs pertaining to performance are predictive of performance. The relation between self-efficacy and adaptive performance is also well established in the mainstream literature (Stoke et al., 2010). Previous research identified self-efficacy as a significant predictor of adaptive performance (Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002). Research clearly suggests that individuals with high self-efficacy behave or perform adaptively. Thus:

Hypothesis 2: Self-efficacy is positively related to adaptive performance.

Cultural intelligence and adaptive performance

Although adaptive performance seems conceptually relevant to CQ, it has rarely been empirically investigated as a consequence of CQ. Defined as an individual's capability to function and manage effectively in culturally diverse situations (Earley and Ang, 2003), CQ explains why some individuals are more capable of coping with, adapting to and performing more effectively in culturally diverse environments than others (Ang and Van Dyne, 2008; Ang et al., 2007). Based on Sternberg and Detterman's (1986) framework of the multiple foci of intelligence, CQ is conceptualized as a multidimensional construct with mental (metacognitive and cognitive), motivational and behavioral components (Earley and Ang, 2003).

Metacognitive CQ refers to the level of conscious cultural awareness and is defined as the capability for consciousness during intercultural interactions (Earley et al., 2006). It reflects the mental capabilities to acquire and understand cultural knowledge (Ang and Van Dyne, 2008; Ang et al.,

2007; Earley et al., 2006), including knowledge of and control over individual thought processes relating to culture (Earley and Ang, 2003). Planning, monitoring and revising mental models of different cultural norms are relevant capabilities. Individuals with high metacognitive CQ are consciously aware of the cultural preferences and norms of different countries or groups of people prior to and during interactions (Ang and Van Dyne, 2008; Ang et al., 2007). Those with strength in metacognitive CQ also question their own cultural assumptions and adjust their mental models about intercultural experiences (Brislin et al., 2006; Triandis, 2006).

Whereas metacognitive CQ focuses on higher-order cognitive processes, cognitive CQ is general knowledge and knowledge of structures about culture (Ang et al., 2007; Ng and Earley, 2006). It refers to knowledge of norms, practices and conventions in different cultural settings that has been acquired from educational and personal experiences (Ang and Van Dyne, 2008). The cognitive factor of CQ also includes universal facets of culture as well as knowledge of cultural differences. Individuals with high cognitive CQ have cultural knowledge of environments and knowledge of how the self is embedded in the cultural context of the environment. Therefore, they are better able to appreciate the cultural systems that shape and influence patterns of social interaction within a culture (Ang and Van Dyne, 2008; Ang et al., 2007; Ng and Earley, 2006).

Motivational CQ reflects the capability to direct attention and energy toward learning about appropriate responses and functioning in intercultural situations (Ang and Van Dyne, 2008; Ang et al., 2007). The direction and magnitude of energy channeled toward a particular task are influenced by expectations of success and value of success (Eccles and Wigfield, 2002). Individuals with high motivational CQ direct attention and energy toward intercultural situations based on their intrinsic motivation (Deci and Ryan, 1985) and self-efficacy (Bandura, 1997). The motivational facet of CQ is a source of drive that triggers energy and effort to function effectively in situations characterized by cultural diversity (Ang and Van Dyne, 2008; Ang et al., 2007; Earley and Ang, 2003; Earley et al., 2006).

Behavioral CQ refers to the capability to exhibit situationally appropriate verbal and nonverbal actions when interacting with people from different cultures (Ang et al., 2007; Ang and Van Dyne, 2008). In cross-cultural situations, verbal and nonverbal behaviors are crucial since vocal, facial and other outward expressions represent a very significant proportion of the meaning that is conveyed and interpreted between peoples (Ang and Van Dyne, 2008). Those with high behavioral CQ demonstrate flexibility in their cross-cultural interactions and interact competently with individuals from diverse backgrounds (Ang and Van Dyne, 2008; Ang et al., 2007; Earley et al., 2006; Ng and Earley, 2006; Thomas, 2006).

All in all, individuals with high CQ act and display behaviors that facilitate outcomes such as adjustment and effective performance in cross-cultural settings (Ang and Van Dyne, 2008; Earley et al., 2006). To date, Oolders et al. (2008) have demonstrated a positive link between CQ and adaptive performance. Furthermore, research that has accumulated important findings on the effects of CQ on job performance can also support the link between CQ and adaptive performance. For example, Ang et al. (2007) found that individuals with higher metacognitive CQ and behavioral CQ were more effective in meeting performance expectations at work. In a study of expatriates, motivational CQ was found to be a predictor of job performance (Chen et al., 2010). Given that performance in a cross-cultural setting is, to a great extent, adaptive (Oolders et al., 2008), a significant relationship between CQ and adaptive performance is expected.

The aim of this study was to explore the relevance of three predictors—CQ, self-efficacy and personal experience—of adaptive performance. Although self-efficacy and prior experience have often been identified as significant predictors of adaptive performance, in a culturally novel or multicultural context, CQ can also explain why some individuals are more capable of coping with, adapting to and performing more effectively than others (Ang et al., 2007). CQ focuses on the

ability to interact effectively in cross-cultural situations (Earley and Ang, 2003). Individuals with high CQ know when and how to apply their cultural knowledge, direct their attention and energy toward learning about appropriate responses and functioning, and exhibit situationally appropriate verbal and nonverbal behaviors (Ang and Van Dyne, 2008; Earley and Ang, 2003; Earley and Peterson, 2004). Specifically, in a culturally novel setting, individuals with high CQ should be more effective in meeting adaptive performance expectations. Beyond predicting intercultural effectiveness, CQ also demonstrated incremental predictive validity over and above established predictors (Leung, Ang, and Tan, 2014). For example, CQ factors jointly explained additional variance in cultural adjustment measures and task performance beyond several control variables, including prior international experience (Ang et al., 2007). Moreover, many studies have indicated incremental predictive validity of CQ over and above prior international experience (Ang et al., in press). However, to our knowledge, no study has examined the incremental predictive validity of CQ over and above self-efficacy in cross-cultural context. Studies have shown that CQ is a more effective indicator of differences in intercultural effectiveness. Thus, we expect that CQ may have a better predictive validity over self-efficacy and prior experience.

Hypothesis 3: CQ will offer additional explanatory power in the prediction of adaptive performance over self-efficacy and prior experience in a multicultural environment.

The role of self-efficacy in CQ-adaptive performance relationship

Given the fact that self-beliefs are important constructs in many theories within the organizational sciences (Brief and Aldag, 1981), previous research has examined self-beliefs as general moderator variables over years. For example, self-confidence (i.e. a general personality trait that relates to how confidently people feel and act in most situations) or self-esteem (i.e. the extent to which a person likes themselves) has been studied as a moderator variable in many studies (Jex and Bliese, 1999). One type of self-belief that has been researched extensively in the organizational sciences is self-efficacy (Gist and Mitchell, 1992). This focus on self-efficacy is not surprising, given the fact that self-efficacy has much stronger predictive power on work-related performance than either self-confidence or self-esteem (Heslin and Klehe, 2006). Moreover, self-efficacy is capable of affecting the relationship between antecedents and consequences (e.g. Saks, 1995).

Despite its apparent link with adaptive performance (Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002), there has been no empirical research that has attempted to explore the role of self-efficacy as a moderator of the relationship between CQ and adaptive performance. However, self-efficacy has been studied as a moderator variable in occupational stress literature (e.g. Jex and Bliese, 1999) and human resource programs (e.g. Dierdorff et al., 2010). Several authors (Bandura, 1997; Jex and Bliese, 1999; Schwarzer, 1992) consider that self-efficacy is relevant in the study of stress and work, fulfilling a moderating role. Specifically, Jex and Bliese (1999) reported that individuals with strong efficacy beliefs reacted less negatively to long work hours and work overload than did individuals with low efficacy beliefs. In another study, Dierdorf et al. (2010) showed interaction between learning self-efficacy and performance-avoiding goal orientation, such that individuals with higher levels of learning self-efficacy lessened the negative effects of higher performance-avoiding tendencies. Speir and Frese (1997) studied generalized self-efficacy in the work context, showing that self-efficacy mediates the relationship between control and complexity and concurrent initiative and moderates the relationship between control at work and retrospective initiative.

Previous research has accumulated several findings on the moderator effect of self-efficacy on the relationship between antecedents and consequences. This may also support the role of self-efficacy

as a moderator of the relationship between CQ and adaptive performance. On the basis of the theory of self-efficacy (Bandura, 1997), we assert that self-efficacy might prove to be such a moderator, and thus represent a key predictor of behavioral reactions to novel situations or environments. Specifically, prior studies indicated that self-efficacy is a significant predictor of behavioral reactions, such as adaptive performance (e.g. Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002). Consequently, individuals' perception about their capacity to exercise control over events often can affect key behavioral outcomes. A basic premise of previous research is that adaptive performance entails behavioral and cognitive aspects of adaptability (e.g. Karaevli and Hall, 2006; Pulakos et al., 2000). Thus, within the context of adaptability, individuals who perceive their CQ abilities to be high might welcome a new cultural setting, and see it as an opportunity to demonstrate their abilities. On the other hand, this might not be the case for low-self-efficacious individuals. Those who perceive their CQ abilities to be low might not manage and function effectively in cross-cultural situations. Perhaps it is counterintuitive to think that high levels of CQ could in any way be related to lesser performance effectiveness. However, several scholars have argued that "it seems plausible for a culturally competent person to lack motivation just as a person with high IQ could lack motivation" (Gelfand et al., 2008: 379). In culturally diverse settings, individuals who are high in CQ perform better than individuals who are low in CQ (e.g. Oolders et al., 2008). However, individuals may be less effective despite their higher CQ. For example, when individuals who are high on CQ have a low level of self-efficacy, they are likely to see a negative outcome as confirming the incompetence they perceive in themselves. As expected, low levels of self-efficacy have been associated with lower effort and subsequent performance in previous studies (e.g. Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002). Ultimately, highly culturally intelligent and low self-efficacious individuals are inclined to become distressed or depressed when they perceive themselves as unable to manage novel situations, thereby preventing themselves—even with the high capabilities that they have—from performing effectively. Because of capabilities to manage and function in culturally diverse settings, individuals who have a high level of self-efficacy are likely to be more effective. In contrast, without belief in his or her capability to successfully perform a particular task, CQ will be likely to add little to performance. This moderator effect implies that CQ should have a stronger impact on adaptive performance for individuals having high self-efficacy than for low-self-efficacious individuals. Thus,

Hypothesis 4: The relation between CQ and adaptive performance will be stronger among individuals with high self-efficacy than among those with low self-efficacy.

Methods

Participants

We collected data from 132 military personnel and their peers from the Turkish troops deployed in the European Union Force (EUFOR) in Bosnia and Herzegovina. Given that the EUFOR is a multinational and multicultural military organization, this sample provides an appropriate setting for testing our prediction. Although the average number of the Turkish troops in the EUFOR was 251 from April to September 2011, a sample of 132 persons (52.5%) participated in the study. We obtained information on the characteristics of nonrespondents to check for potential response bias. Comparisons of the respondents with those who did not complete the survey showed that these two samples were highly similar with respect to rank, age, education level, years in military service and prior international experience. This suggests that the respondents were similar to nonrespondents on several socio-demographic variables and that nonresponse bias may not be a problem.

All 132 participants were male with average 6.93 years of military service (standard deviation, SD = 6.69). The sample was 11.4% officers (from second lieutenant to major) and 88.6% noncommissioned officers (from corporal to sergeant major). Average age was 28.28 years (SD = 6.55), and 68.8% of the respondents had experienced military missions abroad more than once. With respect to education level of the respondents, 1.6% held a doctorate degree, 8.3% held a master's degree, 34.8% held a bachelor's degree, 23.5% held an associate degree, 24.2% held a high school degree, and the rest (8.3%) had completed elementary school.

Procedure

We collected data in Bosnia and Herzegovina at two points during deployment of the Turkish troops. The troops had a peer support program in which peers give each other support on a reciprocal basis. Each soldier was linked to another soldier during the mission; they provided knowledge, experience and social or practical help to each other. Peers are usually on the same hierarchical level and rank. Unit leaders were asked to identify the appropriate peer for each participant. Since the number of troops was sufficiently small (251 soldiers), we included all members in the study. The Senior National Representative approved the survey. The surveys were originally in English; thus, two-way translations were performed by two bilinguals with English and Turkish proficiencies to ensure equivalency of meaning (Brislin, 1986). The questionnaires were hand-delivered to the participants in an addressed envelope and a brief explanation about the general purpose of the study was provided by the researchers. Participation in the study was voluntary and matching codes were used to link the participant and peer questionnaires.

At the beginning of the mission (time 1), 141 respondents (response rate of 56.1%) completed a survey with measures of CQ, self-efficacy and personal experience (including experience from previous missions in international military operations and service in the military). At the end of the mission (5 months later—time 2), 132 peers (response rate of 93.6%) assessed the adaptive performance of the respondents who filled out forms at the beginning of the mission. All in all, a total of 132 surveys were obtained for an overall response rate of 52.5%. We checked whether the peers who provided assessment of adaptive performance of the respondents were also included in the study. Our sample included 44 dyads, that is, of 132 participants only 44 soldiers participated in the study at time 1 and time 2 and rated each other's adaptive performance. Although it was not standard dyadic design, we also checked the degree of similarity between the two members of the 44 dyads on that variable. Results indicated that the scores on that variable were independent; thus, each member can be the unit of analysis.

Using peers for the assessment of adaptive performance is appropriate because they had experience in the military, worked closely together and were able to observe peers' adaptive performance in the multicultural context. Moreover, several scholars have argued that other-rated performance should be used for measuring intercultural effectiveness (Mol et al., 2005). Past research has indicated that most peer assessment systems offer greater reliability and validity (DeNisi and Stevens, 1981; Reilly and Chao, 1982).

Measures

Cultural intelligence. We measured cultural intelligence at the beginning of the mission using Ang et al.'s (2007) 20-item scale. The Turkish version of the CQ scale has been found to be a reliable and valid instrument to measure individuals' intercultural capabilities (Şahin et al., 2013). This scale includes four items for the metacognitive facet of CQ (e.g. "I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds"), six items for

cognitive facet of CQ (e.g. "I know the cultural values and religious beliefs of other cultures"), five items for motivational facet of CQ (e.g. "I enjoy living in cultures that are unfamiliar to me") and five items for behavioral facet of CQ (e.g. "I change my verbal behavior (accent, tone) when a cross-cultural interaction requires it"). Participants rated items on a seven-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on factors indicated a greater propensity to employ a cultural ability. The reliabilities of these scales were 0.91 for meta-cognitive CQ, 0.88 for cognitive CQ, 0.87 for motivational CQ and 0.89 for behavioral CQ.

Self-efficacy. We measured self-efficacy at the beginning of the mission with eight items adapted from Griffin and Hesketh (2003). These items were developed to measure self-efficacy beliefs pertaining to adaptive behaviors (Pulakos et al., 2000). The items were adjusted to assess self-efficacy beliefs in a multicultural military context. Participants rated items on a seven-point Likert-type scale ranging from 1 (*not at all*) to 7 (*certain*). Higher scores on the scale indicated a higher level of confidence in performing adaptable behaviors. Sample items included "Rate your level of confidence in being able to deal with sudden and urgent demands and crises" and "form good relationships with people of different cultures" (see the Appendix for a list of items). The reliability of the scale was 0.84.

Adaptive performance. Peers assessed adaptive performance of the respondents at the end of the mission with eight items adapted from Griffin and Hesketh (2003) and Pulakos et al. (2000). We modified the items to align with the adaptive behaviors in the multicultural military context. Peers rated items on a seven-point Likert-type scale ranging from 1 (*well below expected standard*) to 7 (*well above expected standard*). Higher scores on the scale indicated higher levels of adaptive performance. Sample items included "This person takes effective action to deal with crises" and "adjusts behavior appropriately when working with different people" (see the Appendix for a list of items). The reliability of the scale was 0.82.

Personal experience. At the beginning of mission, the participants presented the amount of (a) experience in the armed forces in years (rated from *none* to *10 years or more*) and (b) previous service in international military operations in numbers (rated from *none* to *three or more missions*).

Analyses and results

In preliminary analyses, we used multivariate analyses of variance (MANOVAs) to examine if any demographic item (rank and educational level) made a difference to the other study variables. There were no significant differences for rank $F(1, 124) = 1.649$, $p > 0.05$, but education level was found to be a unique variable that made differences on CQ $F(5, 124) = 2.869$, $p < 0.05$, $\eta^2 = 0.079$). Since the effect size was small (i.e. below 0.10; Cohen, 1992), we did not control for the variable in analyzing the hypotheses. Furthermore, we conducted a confirmatory factor analysis using a covariance matrix and maximum likelihood estimation to assess the discriminant validity of the constructs measured in this study. Given the sample size and the number of indicators per factors, we used item parcels to conduct confirmatory factor analysis procedures (e.g. Little et al., 2002). Results of the proposed six-factor structure (four factors of CQ, self-efficacy and adaptive performance) demonstrated a good fit with the data: χ^2 (120 df) = 299.53, $p < 0.01$; root-mean-square error of approximation = 0.074; standardized root-mean-square residual = 0.053; non-normed fit index = 0.91; (Bentler's) comparative fit index = 0.93 (Browne and Cudeck, 1993; Hoyle, 1995). To test for the discriminant validity of the constructs, we compared the six-factor model with a three-factor model (overall CQ, self-efficacy

Table 1. Means, standard deviations and scale reliabilities and intercorrelations.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. *Experience in the military*[a]	6.93	6.69	—							
2. *Previous missions*[b]	1.18	0.48	0.43**	—						
3. *Self-efficacy*	5.25	0.63	0.17*	0.15	(0.84)					
4. *Metacognitive CQ*	5.50	1.44	0.24**	0.21*	0.31**	(0.91)				
5. *Cognitive CQ*	3.96	1.35	0.00	0.22*	0.22**	0.51**	(0.88)			
6. *Motivational CQ*	5.12	1.38	0.10	0.22*	0.25**	0.41**	0.42**	(0.87)		
7. *Behavioral CQ*	4.98	1.31	0.08	0.23**	0.33**	0.57**	0.53**	0.54**	(0.89)	
8. *Adaptive performance*	5.37	0.67	0.35**	0.40**	0.38**	0.46**	0.36**	0.46**	0.55**	(0.82)

[a]Experience in the military service in years; [b] previous service in international military operations in numbers; * $p < 0.05$; ** $p < 0.01$.

and adaptive performance) and a one-factor model. Nested model comparisons demonstrated that the six-factor model was superior to the three- and one-factor models. Hence, the proposed six-factor model provided a better fit than plausible alternative models.

Table 1 presents the means, standard deviations, intercorrelations and values of Cronbach α. Owing to low correlations (below 0.85), multicollinearity is probably not a problem (Tabachnick and Fidell, 2007). Correlational analysis showed that experience in the armed forces ($r = 0.35$, $p < 0.01$) and previous missions in international military operations ($r = 0.40$, $p < 0.01$) were significantly correlated with adaptive performance. Self-efficacy ($r = 0.38$, $p < 0.01$) was significantly related to adaptive performance. In addition, metacognitive CQ ($r = 0.46$, $p < 0.01$), cognitive CQ ($r = 0.36$, $p < 0.01$), motivational CQ ($r = 0.46$, $p < 0.01$) and behavioral CQ ($r = 0.55$, $p < 0.01$) had significant correlation with adaptive performance.

We performed a hierarchical regression analysis to test our predictions. We entered experience in the armed forces and previous missions in international military operations in step 1. This was followed by self-efficacy on step 2 and, finally, the CQ factors were entered on the third step. Finally, the interaction term between self-efficacy and CQ was entered into the regression equation (Aiken and West, 1991; Cohen and Cohen, 1983).

Hypothesis 1 predicted that prior experience is positively related to adaptive performance. Both experience in the armed forces ($\beta = 0.21$; $p < 0.05$) and previous missions in international military operations ($\beta = 0.31$; $p < 0.001$) were significant predictors in the first step, explaining 20% of the variance. Both experiences retained their predictive power in the second and third step. Therefore, Hypothesis 1 was supported.

Hypothesis 2 predicted that self-efficacy is positively related to adaptive performance. When self-efficacy was entered in the second step, there was a significant change in R^2, with 9% of the variance being explained. Self-efficacy was a significant predictor of adaptive performance ($\beta = 0.31$; $p < 0.001$). Furthermore, self-efficacy retained its predictive power in the third step. Therefore, Hypothesis 2 was supported.

Hypothesis 3 predicted that CQ would offer additional explanatory power in the prediction of adaptive performance over self-efficacy and prior experience in a multicultural environment. With the addition of the CQ components in step 3, there was a significant change in R^2, with 19% of the variance being explained. Motivational CQ ($\beta = 0.16$; $p < 0.05$) and behavioral CQ ($\beta = 0.30$; $p < 0.01$) were significant predictors of adaptive performance. Among other variables, behavioral CQ was found to have the strongest impact on adaptive performance. Although metacognitive CQ and cognitive CQ were not statistically significant on the final step, results demonstrated the incremental

Table 2. Hierarchical regression analyses.

Variables	Adaptive performance			
	Step 1	Step 2	Step 3	Step 4
Experience in the military	0.21*	0.17*	0.18*	0.19*
Previous missions	0.31***	0.28**	0.17*	0.18*
Self-efficacy (SE)		0.31***	0.15*	0.15*
Metacognitive CQ (MetaCQ)			0.08	0.06
Cognitive CQ (CogCQ)			0.01	0.01
Motivational CQ (MotCQ)			0.16*	0.13*
Behavioral CQ (BehCQ)			0.30**	0.36*
MetaCQ × SE				0.06
CogCQ × SE				0.04
MotCQ × SE				0.10
BehCQ × SE				0.12
F	16.68***	18.20***	16.93***	11.339***
ΔF		17.08***	11.50***	1.280
R^2	0.20	0.29	0.48	0.50
ΔR^2		0.09	0.19	0.02
Adjusted R^2	0.19	0.28	0.46	0.47

*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

validity of the CQ components over and above prior experience and self-efficacy in predicting adaptive performance ($\Delta F = 11.50$, $p < 0.001$). Therefore, Hypothesis 3 was partially supported.

Hypothesis 4 predicted that the relation between CQ and adaptive performance will be stronger among individuals with high self-efficacy than among those with low self-efficacy. The results from Table 2 provide no evidence to support the hypothesis.

Discussion

The aim of the present study was to explore the relationship between CQ and adaptive performance and to examine whether CQ would offer additional explanatory power in the prediction of adaptive performance over self-efficacy and prior experience in a multicultural environment. Furthermore, we examined the interactive effect of CQ and self-efficacy on adaptive performance and evaluated the extent to which self-efficacy affects the demonstration of CQ on adaptive performance. Findings of the study indicated that prior experience and self-efficacy, together with CQ, significantly predict adaptive performance. Moreover, the results showed that the addition of CQ was able to explain additional variance in adaptive performance over and above that of prior experience and self-efficacy. With the exception of mental (metacognitive and cognitive) components, CQ offers additional explanatory power in the prediction of individuals' adaptive performance in a multicultural environment. In short, consistent with the existing literature (e.g. Oolders et al., 2008), the results provided support for the power of CQ in predicting adaptive performance.

The fact that our study failed to find moderator effects for self-efficacy may possibly be due to sample size. Interactions in the present study accounted for 2% of the variance in the model, but were not statistically significant. A small effect size in multiple regressions corresponds to an R^2 value of 0.02 (Cohen, 1992). Given that the interaction effect is small in the present study, a relatively large sample is needed for the effect to be significant.

The primary contribution of the present research is the empirical examination of the predictive validity of CQ on adaptive performance. Tucker and Gunther (2009) argued that military personnel should have high level of adaptive capabilities to perform effectively in international military operations. Furthermore, cultural diversity inherent in multinational military organizations can influence the performance and achievement of the mission (e.g. Ng et al., 2005; Stanton, 2011). This study provides empirical evidence that CQ is associated with individuals' adaptive performance in a multicultural setting. Specifically, individuals with higher motivational CQ and behavioral CQ were found to act and display more adaptable behaviors in a novel environment. However, the results did not verify that metacognitive CQ and cognitive CQ were related to adaptive performance. Previous research has indicated that the four factors of CQ make unique contributions to effectiveness in culturally diverse settings (e.g. Ang et al., in press). For example, several studies have shown that metacognitive and behavioral CQ predicts effectiveness in cross-cultural settings (Ang et al., 2007; Şahin et al., 2013) while other studies have shown that motivational CQ predicts effectiveness in cross-cultural settings (Chen et al., 2010; Imai and Gelfand, 2010; Templer et al., 2006). The findings of our study are perhaps not surprising; considering that CQ provides individuals with intrinsic interest and behavior flexibility, motivational and behavioral CQ seems to have an obvious relationship with adaptive performance compared with mental facets CQ. For example, individuals with higher motivational CQ enjoy unfamiliar cultural contexts and interacting with people from different cultures. Furthermore, when faced with intercultural challenges and ambiguities, individuals with higher motivational CQ persist and invest great effort in forming an understanding of unfamiliar cultural contexts. Similarly, individuals with higher behavioral CQ are adept at exhibiting appropriate behaviors in new cultural settings. They can act appropriately (both verbally and nonverbally) in a cross-cultural context (Van Dyne et al., 2012). Thus, motivational and behavioral CQ seems to be most strongly related to adaptive performance in a cross-cultural context, relative to mental components of CQ. Perhaps, one explanation for why mental components of CQ are not associated with adaptive performance is that the peers could not observe reflections of metacognitive CQ and cognitive CQ on adaptive behaviors of respondents because these mental capabilities reside within the head of the person (Ang and Van Dyne, 2008). However, it is important to note that, to function effectively in multicultural environments, role expectations for adaptive performance should require the control of cognition (i.e. metacognitive CQ) and cultural knowledge (i.e. cognitive CQ). In addition, future research on the link between CQ and adaptive performance could include leader–follower dyads to examine the importance or interplay between leaders' CQ and their followers' CQ. For instance, research has shown that the CQ of members at the interpersonal (dyadic) level is positively related to their trust in culturally diverse team members or contacts (e.g. Chua et al., 2012; Rockstuhl and Ng, 2008). This approach could also examine more specific CQ factors relevant to intercultural effectiveness. For instance, as one reviewer pointed out, military leaders with high CQ could make role expectations for adaptive performance in multicultural contexts more explicit for their followers, who in turn need to rely only on their motivation (motivational CQ) and ability (behavioral CQ) to perform these adaptive behaviors. Additional research is needed to test these predictions.

Consistent with the previous research (e.g. Allworth and Hesketh, 1999; Chen et al., 2005; Gist and Mitchell, 1992; Griffin and Hesketh, 2003; Kozlowski et al., 2001; Pulakos et al., 2002), self-efficacy and prior experience were significant predictors of adaptive performance. The result indicating that experience in terms of number of years in the armed forces was a significant predictor of adaptive performance resonates with the traditional military way of thinking. On the other hand, experience in terms of prior missions in international military operations predicted adaptive performance. Exposure to similar situations requiring knowledge, skills and abilities allows military personnel to develop a set of experiences to retrieve from when determining an effective response

to a new situation (Griffin and Hesketh, 2003; Pulakos et al., 2002; Tucker and Gunther, 2009). Moreover, this study supported the connection between self-efficacy and adaptive performance in a multicultural environment, finding that one's beliefs in his or her skills and abilities to accomplish a task or obtain a desired outcome (Bandura, 1986; Griffin and Hesketh, 2003) was a predictor of performance in novel, unpredictable or stressful situations. This study thus sheds light on the predictors of adaptive performance in a multicultural environment.

Although the findings of our study support most of the relationships that have been previously demonstrated by previous studies, there are several strengths that justify the overall contribution of our study. First, we conducted our study in a multinational military context where intercultural capabilities and performance are important. Second we tailored the self-efficacy and adaptive performance measures to this context. This is important, because previous studies have demonstrated that constructs that are matched to the specific context are superior to more general constructs (e.g. Rockstuhl et al., 2011; Scholz et al., 2002). For example, Rockstuhl et al. (2011) argued the differences between domestic and cross-border contexts and proposed that these contexts require different leadership capabilities. They found that emotional intelligence was a stronger predictor of domestic leadership effectiveness while cultural intelligence was a stronger predictor of cross-border leadership effectiveness. Third, given that Oolders et al. (2008) tested the CQ–adaptive performance relationship with the data obtained from undergraduate university students, our study examining the effect of CQ on adaptive performance with field data adds to generalizability of the findings. We improved upon the designs of previous research by collecting data for individuals' adaptive performance from their peers and with a time lag of 5 months to measure adaptive performance. This could eliminate the impact of common method variance and disadvantage of cross sectional study design that were reported in previous studies as important study limitations. Finally, our study demonstrated the context-specific predictors of adaptive performance. Specifically CQ was found to be important predictor of adaptive performance in a multicultural context. Thus, our research contributes to the literature on CQ and adaptive performance by showing that, in the cross-border context, individuals' CQ can positively influence adaptive performance.

Implications for research and practice

Our findings provide several implications for research and practice as well. In line with Oolders et al. (2008), our results support the notion that CQ, together with prior experience and self-efficacy, is critical for performing effectively in a multicultural setting. As such, training programs directed at preparing military personnel for international assignments should ensure that individuals acquire CQ that enables adaptability (Ang et al., 2007; Earley and Peterson, 2004). However, the relative importance of the proposed predictors of adaptive performance differs across situations. Specifically, future research should consider the characteristics of different settings because they each may require a different mix of adaptive capabilities for maintaining a high level of performance (Tucker and Gunther, 2009). For example, since CQ focuses on specific domain–intercultural settings (Earley and Ang, 2003), it may not contribute to effectiveness in domestic contexts (Rockstuhl et al., 2011). Undoubtedly, more research is needed to test these predictions.

The results also extended the taxonomy of adaptive performance suggested by Pulakos et al. (2000). Specifically, consistent with Griffin and Hesketh (2003), there were similarities in the relationships among efficacy beliefs and individuals' adaptive performance, despite the use of different measurement approaches. The result indicating that self-efficacy related to adaptive performance is consistent with social–cognitive theory (Bandura, 1997), according to which efficacy beliefs translate into performance through effort and persistence. Despite the positive relationship between self-efficacy and performance found in many studies, efficacy beliefs may differ over time

and lead to overconfidence (Vancouver et al., 2002). In this case, self-efficacy may not contribute to higher performance.

This research is a response to earlier calls for examining CQ in the prediction of adaptive performance (e.g. Ng et al., 2012; Oolders et al., 2008). The results of our study provide a more informed understanding of the predictors of adaptive performance in a multicultural environment. Previous research identified several predictors of adaptive performance (Pulakos et al., 2006), such as general and specific cognitive abilities and personality factors (e.g. Allworth and Hesketh, 1999; Griffin and Hesketh, 2003; LePine et al., 2000; Pulakos et al., 2002). However, these predictors were not included in the present study; instead, we focused our attention on CQ, which is a specific individual difference that focuses on a specific domain–intercultural settings (Ang and Van Dyne, 2008). We believe that future research should examine other predictors that are of central concern in studies of adaptive performance.

This study also has practical implications for international and/or multinational assignments. Findings of this research may provide multinational organizations with valuable directions and tools in the area of personnel selection, orientation, training and development. First, since our results indicated CQ to be a significant predictor of adaptive performance, individuals with higher CQ are more likely to have capacity to deal with challenges inherent in multinational assignments. Enhancing CQ might be one avenue for increasing adaptive performance. Researchers have suggested ways to develop CQ through several techniques, such as experiential cross-cultural training programs (e.g. Ng et al., 2012). Second, our results showed that previous experience in international military operations was associated with all facets of CQ, whereas previous experience in military service was only related to metacognitive CQ. Exposure to different cultural environments provides individuals with the social context and authentic activities to learn how to live and work in novel environments. Because the individual has actually experienced another culture by visiting it, working or residing in it, cross-cultural experiences are more significant and related to CQ than experiences in the home environment (Earley and Ang, 2003; Earley and Peterson, 2004). Moreover, previous research indicated that international experience affects CQ capabilities (e.g. Şahin et al., 2014; Shannon and Begley, 2008; Tarique and Takeuchi, 2008; Tay et al., 2008). Thus, individuals who have prior international experience are more likely to have higher CQ and might function effectively in a novel environment. Given the increasing diversity of work organizations, more emphasis should be placed on prior international experience and organizations may consider recruiting individuals with prior international experience in selecting candidates for multinational assignments and expatriation.

Third, given prior research that demonstrates self-efficacy as important predictor of adaptive performance (e.g. Pulakos et al., 2006), it seems reasonable that organizations should encourage self-efficacy beliefs to enhance adaptive performance. In summary, although one should be careful in drawing conclusions about causal relationships found in the present and previous research, the results seem to suggest that, by increasing CQ and self-efficacy beliefs, individuals could manage and perform better in a novel environment.

Limitations of the research

The present study has some limitations that should help guide future research. First, one limitation of our research concerns the populations sampled. In our study, all participants were military personnel and male. This may raise questions about the generalizability of the findings. Therefore, the results found here should not be generalized until the findings have been replicated in other job types as well as across nationalities. Second, we measured adaptive performance and self-efficacy with items adapted from Griffin and Hesketh (2003). Although the preliminary findings for the

psychometric properties of these measures were reasonably good (i.e. internal consistency and distinctiveness), future efforts at validating these measures are warranted.

Third, as stated above, we limited the number of constructs included in our study. To address this limitation, we recommend that future research considers other predictors of adaptive performance. In the conceptual model of CQ suggested by Ang and Van Dyne (2008), proximal and distal factors are differentiated. The distal factors include more trait-like individual differences (for example personality traits) and demographic and biographical individual differences (for example intercultural experiences). Since CQ is a current set of capabilities, it is conceptualized as more state-like than trait-like individual differences. The trait-like individual differences influence more proximal state-like individual differences. Ang and Van Dyne's (2008) model suggests that trait-like individual differences influence performance effectiveness through their effects on more proximal capabilities (CQ). There are many studies that provide empirical support for Ang and Van Dyne's (2008) conceptual model of CQ. Although we did not find support for interactive effect of self-efficacy and CQ (Hypothesis 4), future research may apply Ang and Van Dyne's (2008) notion and develop a moderated mediation model of adaptive performance. Specifically, the researcher may posit and test the mediating role for CQ and a moderating role for self-efficacy in influencing the relationship between trait-like individual differences (personality, previous experience) and adaptive performance.

A final limitation of our study is the focus on adaptive performance. Although adaptive performance is practically important for multicultural or multinational organizations, task and contextual performance should be also considered in performance effectiveness. In our study, we could not obtain data on other forms of performance. Thus, we recommend that future research consider including task and contextual performance.

Conclusion

We expanded the adaptive performance predictor set by examining prior experience, self-efficacy and CQ, and found empirical evidence that suggests the importance of CQ in predicting of individuals' adaptive performance in a multicultural environment. The results of our study demonstrated that CQ, together with self-efficacy and prior experience, was an important predictor of adaptive performance. Specifically, CQ explained additional variance in adaptive performance over and above that of prior experience and self-efficacy. Since this was a preliminary examination of new research directions, given the promising results, we recommend future research on further exploring, confirming and extending the present findings.

Authors' note

The views expressed in this paper are solely those of the authors and do not necessarily reflect the views of the Ministry of National Defense or the Turkish Armed Forces.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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Appendix

The *Self-efficacy for Adaptive Performance Scale* (adapted from Griffin and Hesketh, 2003) consists of the following eight items.

Rate your level of confidence in being able to …

1. Solve new or complex problems on my multinational assignment.
2. Deal with sudden and urgent demands and crises on my multinational assignment.
3. Learn new skills and knowledge in cope with change on my multinational assignment.
4. Form good relationships with soldiers of different cultures.

5. Change my interpersonal approach to suit a wide variety of cultures.
6. Adjust to working with different teams that have soldiers of different cultures or methods.
7. Cope with stressful situations on my multinational assignment.
8. Work in ambiguous/uncertain situations on my multinational assignment.

The *Adaptive Performance Scale* (adapted from Griffin and Hesketh, 2003; Pulakos et al., 2000) consists of the following eight items.

While on multinational assignment, this person …

1. Develops solutions to problems.
2. Takes effective action to deal with crises.
3. Adjusts behavior appropriately when working with different people.
4. Integrates well into teams that have soldiers of different cultures.
5. Modifies approach in order to maintain relationships with soldiers of different cultures.
6. Adjusts easily to new work processes and procedures.
7. Remains calm and composed when faced with stressful circumstances.
8. Is able to function in the face of uncertainty.