

The Impact of Emotional Intelligence and Cultural Intelligence on Job Performance in Russia

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Submitted:

January 31, 2026

Accepted:

February 20, 2026

Revised:

March 6, 2026

Published:

May 2, 2026

Citation:

Engle, R., Dimitriadi, N., & Toskin, K. (2026). The Impact of Emotional Intelligence and Cultural Intelligence on Job Performance in Russia. *Journal of Management Policy & Practice*, 27(1), 47–65.

A great deal of work has been done in recent decades examining the impact of emotional intelligence (EQ) and cultural intelligence (CQ) on extra-role job performance. However, little of this research has used both EQ and CQ constructs together in the same analytical model. In addition, the available literature is virtually silent with regards to the relationships of these constructs in Russia, a country with a significant multicultural environment. This study examines these relationships, using a sample of 189 supervisory and non-supervisory subjects in Russia. The results suggest that motivational CQ may be seen as an antecedent of CQ and EQ, both of which significantly impact extra-role job performance. EQ and CQ factors were also found to mediate the relationship between motivational CQ and extra-role job performance. In addition, necessary condition analysis was completed adding to model insights. These results extend our knowledge to a Russian sample, and not only support the Thomas et al. (2015) approach to CQ, but also suggest significant implications for current EQ-CQ model theories.

Keywords: emotional intelligence, cultural intelligence, motivation, extra-role job performance, extra-role behavior, necessary condition analysis

INTRODUCTION

The belief that there could be different kinds of “intelligence” goes back as far as the earliest attempts to define the term. Thorndike (1920) suggested the existence of a “social intelligence” and over the following decades, researchers began developing and exploring various constructs of social

intelligence, and eventually they found themselves repeatedly asking why business executives who, as measured by IQ, were highly intelligent varied so much in their performance as managers and leaders, and why conceptual ability, or IQ alone, could not accurately predict their performance (Ceci & Liker, 1986). In one possible solution, Gardner (1983) proposed several intelligences, including “interpersonal intelligence” and “intrapersonal intelligence,” suggesting that these might explain some of the differences in human performance.

Drawing heavily from the works of researchers such as Gardner (1983) and Sternberg and Wagner (1986) among others, Salovey and Mayer (1990) developed, and formally introduced the term “emotional intelligence,” defining it as a “subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (p. 189).

Some years later, another “intelligence” construct, labeled “cultural intelligence” (CQ), was developed and defined as an individual’s capability to function and manage effectively in culturally diverse settings (Early & Ang, 2003). This definition is consistent with Schmidt and Hunter’s (2000) definition of general intelligence as “the ability to grasp and reason correctly with abstractions (concepts) and solve problems” (p. 3). It also appeared to fit the more global approach to intelligence as suggested by theories of practical and multiple intelligences (Sternberg & Wagner, 1986; Sternberg & Detterman, 1986). Cultural intelligence is not only seen as one of these “multiple intelligences”, it is also seen as conceptually and measurably distinct from others such as general or analytical intelligence (IQ), social intelligence (SI), and emotional intelligence (EQ) (Elenkov & Pimentel, 2008), with a distinguishing characteristic being that cultural intelligence applies to multiple cultural settings, while social and emotional intelligences may apply in only one cultural setting for a given individual (Thomas, 2006; Crowne, 2009). Multicultural differences can be experienced both within and across countries, and can be seen as resulting in differences in behavior between individuals and groups in both environments, with cultural differences being seen as important in organizational environments (Hofstede, 2001; Hofstede, Hofstede & Minkov, 2010)

Emotional intelligence has been found to be impacted by a country’s particular culture (Gunkel, Schlägel and Engle, 2014), and together with cultural intelligence have been shown to have significant impacts on many behaviors and outcomes, such as interpersonal, task and process conflicts (Davai et al., 2022), job performance (Ang & Van Dyne, 2008), and job satisfaction (Bal & Kökalan, 2022). However, these two intelligences are often used separately in studies of job performance and are rarely combined in research models. Research by Van Dyne, Ang, and Koh (2008) identified four factors that comprise cultural intelligence (CQ): Metacognitive CQ; Cognitive CQ; Motivational CQ; and Behavioral CQ. More recent work by Thomas et al. (2015) has suggested that one of these cultural intelligence factors, motivational CQ, should more accurately be seen as separate, or an antecedent of CQ, and not a core dimension of the CQ construct, pointing out the importance of human motivation as an antecedent of behavior – a point argued to be potentially applied to emotional intelligence as well. In addition, while a great deal of research has been done in Western, Asian, and even Middle Eastern and Latin countries, little work using motivation, emotional intelligence, cultural intelligence, and job performance constructs can be found in the research literature for Russia, which is a country with a significant multicultural environment (Mallaev, 2013; Sitdikov, Abdullina & Shergeng, 2019; de Waal & de Boer, 2017), and clearly a country of global economic and political influence and importance (Rumer, 2017).

Job performance has been seen to have multiple dimensions, including in-role and extra-role (Varela & Landis, 2010), with extra-role’s focus on interactions between employees suggesting a potential relationship with cultural differences (Hofstede, Hofstede & Minkov, 2010; Engle & Schlaegel, 2023). There is, however, no available research examining the potential relationships between cultural and emotional intelligence and extra-role behavior in Russia.

Given this apparent lack of research examining extra-role job performance using both cultural and emotional intelligence model constructs with a Russian sample, as well as the lack of research using the relatively new statistical process of necessary condition analysis, we have chosen to use an exploratory research approach in this study. The objective of this exploratory research is to begin to address these gaps in the research literature by examining a model using Russian subjects and investigate the potential role of

cultural motivation on not only cultural intelligence, but also on emotional intelligence, as well as these intelligence variables' potential impact on a measure of extra-role job performance. This study also uses multiple control variables that may potentially contribute to our understanding of these relationships. To the authors' knowledge, this study is the first to address these specific relationships using Russian subjects.

LITERATURE REVIEW

Emotional Intelligence and Extra-Role Job Performance

Salovey and Mayer's (1990) construct of emotional intelligence consisted of 15 factors and sub-factors under the major headings of "appraisal & expression of emotion," "regulation of emotion," and "utilization of emotion." Their work, and that of others such as Goleman (1995), Bar-On (1997), and Davies et al. (1998), continued to develop the emotional intelligence construct, with both significant commonalities and differences. According to Law et al. (2004), these differences have been grouped into two primary orientations - "ability" and "mixed" models - with ability models focusing on emotion and intelligence (e.g., Salovey & Mayer, 1990; Mayer & Salovey, 1997), and "mixed" models focusing on non-ability traits and motivation (e.g., Bar-On, 1997).

While researchers have a number of EQ instruments from which to choose within each of these categories, this study uses the "ability oriented" instrument developed by Wong and Law (2002) whose definition was consistent with that of Mayer and Salovey (1997) and defined EQ as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth"(p. 10). Wong and Law (2002), therefore, are using the four-dimension construct of Mayer and Salovey (1997) which includes: 1) appraisal and expression of emotion in the self; 2) appraisal and recognition of emotion in others; 3) regulation of emotion in the self; and 4) use of emotion to facilitate performance. These four factors are defined by Wong and Law (2002, p. 246) as follows:

- Self-Emotional Appraisal (SEA): "This relates to the individual's ability to understand their deep emotions and be able to express these emotions naturally. People who have great ability in this area will sense and acknowledge their emotions well before most people."
- Others' Emotional Appraisal (OEA): "This relates to peoples' ability to perceive and understand the emotions of those people around them. People who are high in this ability will be much more sensitive to the feelings and emotions of others as well as reading their minds."
- Regulation of Emotion (ROE): "This relates to the ability of people to regulate their emotions, which will enable a more rapid recovery from psychological distress."
- Use of Emotion (UOE): "This relates to the ability of individuals to make use of their emotions by directing them towards constructive activities and personal performance."

Wong and Law's (2002) initial examination of EQ and its four factors was conducted in two studies: one using a sample from a Hong Kong university and the other from Hong Kong government employees. Among the things they examined were the EQ supervisor-non-supervisor relationships, job performance, and satisfaction. They concluded that the EQ-job outcome relationship "is more complicated than recent proposals" (p. 268). Their results suggested a relatively strong connection of EQ with job satisfaction, which according to Ocampo et al. (2017) is also closely related to organizational citizenship behavior, a construct which may be seen as similar to extra-role job performance. However, EQ was not found to be related to overall job performance. While their results regarding job performance did not support those found in previous studies, it may be observed that they perhaps overlooked the possibility that this difference in results might be connected to a cultural issue - national culture of Hong Kong versus the USA - where most of the other EQ studies were done.

Van Rooy and Viswesvaran (2004), found support for the independence of the emotional intelligence construct in their meta-analysis. They found that emotional intelligence had operational validity across the studies used, with only a .22 correlation with general mental ability and only weak to low-moderate

correlations with the Big Five personality factors, and they concluded that EQ is a potentially important predictor of behavior.

Later research by Matsumoto (2008), which did not specifically examine sub-factors of EQ, did conclude that understanding and subsequent expression of emotion differed across cultures, in significant part due to the cultural dimension of Individualism-Collectivism. Some subsequent research has also found that culture, including the cultural dimension of collectivism (a characteristic that differs between Anglo countries and Russia), is a significant antecedent of emotional intelligence (Gunkel et al., 2014; Sharma et al., 2009). Gunkel et al. (2014) also concluded that collectivism had a significant positive impact on three of the four factors of EQ (all except OEA), as well as finding that in Germany, India, and the United States collectivism had a significant positive impact on SEA in India and the USA; OEA in Germany and the USA; ROE in the USA; and UOE in none of the three countries. Research has also suggested that using individual EQ factors rather than an aggregated score is important (Gunkel et al., 2014).

It has been argued that “despite the centrality of performance to I/O psychology, a general taxonomy detailing its [performance] composition remains elusive” (Varela & Landis, 2010, p. 633). A review of the literature reveals many variations in classifications and measurement of job performance. Probably the most common approach observed is based upon the “in-role” and “extra-role” classifications of Katz and Kahn (1966). They see in-role performance as well-defined roles and activities typically found in formal job descriptions, and extra-role performance as those roles and activities that are not specifically prescribed or required. Extra-role performance has also been labeled or seen as closely related to “contextual” performance or “organizational citizenship behavior” (see Motowidlo, 2000; Varela & Landis, 2010; Ocampo et al., 2017). Extra-role performance includes activities such as assisting or helping others and/or doing “extra” to assist the organization – addressing things that may not technically be part of the specific job tasks assigned to the employee (Varela & Landis, 2010). Extra-role performance has been found to be of particular importance in explaining overall employee performance ratings as well as contributing to the efficiency and effectiveness of organizations (Hughes et al., 2019; Ocampo et al., 2018; Van Dyne & LePine, 1998).

There has been limited research reported in the available English literature regarding Russian job performance measurement, including observations of how challenging and different Russia is in this regard due to cultural differences, especially the importance of the need “to recognize the affective dimensions in the work” within Russia and the strong role of collectivism (Gilbert & Cartright, 2008, p. 516), and the importance of “belonging” in the Russian workplace (Gibbs & Ashill, 2013). In addition, Astrakhova’s (2015) results suggest “harmonious work passion is a positive driver of OCB to a point” (p. 370). However, despite a significant degree of research in the general research literature summarizing the impacts of emotional intelligence on individual and organizational performance (e.g., Grobelny et al., 2021; Cherniss & Goleman, 2001; Schulze & Roberts, 2005), including emotional intelligence’s impact on organizational citizenship behavior (Abraham, 2005), these relationships have little coverage in the available literature with regards to Russia.

Cultural Intelligence, Cultural Motivation and Extra-Role Job Performance

As conceived by Earley and Ang (2003) and further developed by Van Dyne, Ang, and Koh (2008), this widely used model is made up of four factors that make up the discrete construct of the broad measure of cultural intelligence (CQ) and include: Metacognitive CQ; Cognitive CQ; Motivational CQ; and Behavioral CQ. Metacognitive CQ refers to the conscious awareness which an individual has regarding cultural interactions. Cognitive CQ is seen to reflect the knowledge of a group’s values, beliefs, and norms. Motivational CQ reflects the capability to direct energy to learning about cultural differences. Finally, behavioral CQ reflects the ability to choose appropriate verbal and nonverbal actions when interacting with people from different cultures. While each of these elements may be combined into an overall cultural intelligence score (Ang & Van Dyne, 2008), research has also suggested, when using models with cultural intelligence, examining the individual factors that make up cultural intelligence, rather than looking at only the aggregated score, is clearly beneficial by allowing for important insights (Engle & Nash, 2015).

The Earley and Ang (2003) cultural intelligence model has recently been challenged by Thomas et al. (2015), who see the inclusion of motivation within the four-factor model as potentially a poor fit, with the other three CQ factors clearly seen as ability-focused factors. They see the presence of motivational CQ as making the model more prone to error than if it were without the motivation factor. They, therefore, see the three-factor model as optimal. While recognizing that motivation and each of the various intelligences may have some degree of recursive relationship, the authors point out they are not the same and that “Specifying a motivational component of cultural intelligence casts a prosocial (positive) halo over the construct...that we do not believe exist” (p. 2). Thus, they indicate

“the main difference in terms of constituent elements is the absence here of a motivational facet – the motivation to direct energy positively toward intercultural interaction... Motivation is concerned with the willingness to behave in a particular way, while cultural intelligence is the ability to interact effectively. Therefore, we consider motivation, while potentially an important element in cross-cultural interactions, to be external to cultural intelligence.” (pp. 2-3)

Diefendorff’s (2007) view of motivation would appear to support the view of Thomas et al. (2015) as he indicates motivation “refers to an internal set of nonability [sic] processes that channel, energize, and sustain behavior over time” (p. 489). In addition, Kim, Brady & Wolters (2020) found that cognitive, motivational, and behavioral constructs have distinctive yet close relationships in their model. As a result, this study will use the three-factor model of CQ (cultural metacognition, cultural knowledge, and cultural skills) and the survey instrument as developed and validated by Thomas et al. (2015).

An overview of the literature regarding individual and interpersonal outcomes of culture intelligence, both the four-factor model and three-factor model, suggest CQ’s potential impact on a broad range of performance and organizational behavioral outcomes including communication effectiveness and competence, task performance, organizational citizenship behavior, adaptive performance, multicultural team functioning (conflict, trust, cohesiveness, cooperation), and cultural adaption including subjective well-being, general adjustment, work adjustment and interactional adjustment (Ang & Van Dyne, 2008; Thomas et al., 2015; Schlaegel et al., 2021). However, the available research literature does not appear to have addressed the construct of cultural intelligence as it relates to many of these outcomes, including extra-role job performance in Russia.

Research Questions

The following are the specific exploratory research questions to be addressed in this study based on the research model presented in Figure 1:

RQ1: *To what degree will the motivational cultural intelligence construct directly impact each of the cultural intelligence (CQ) factors?*

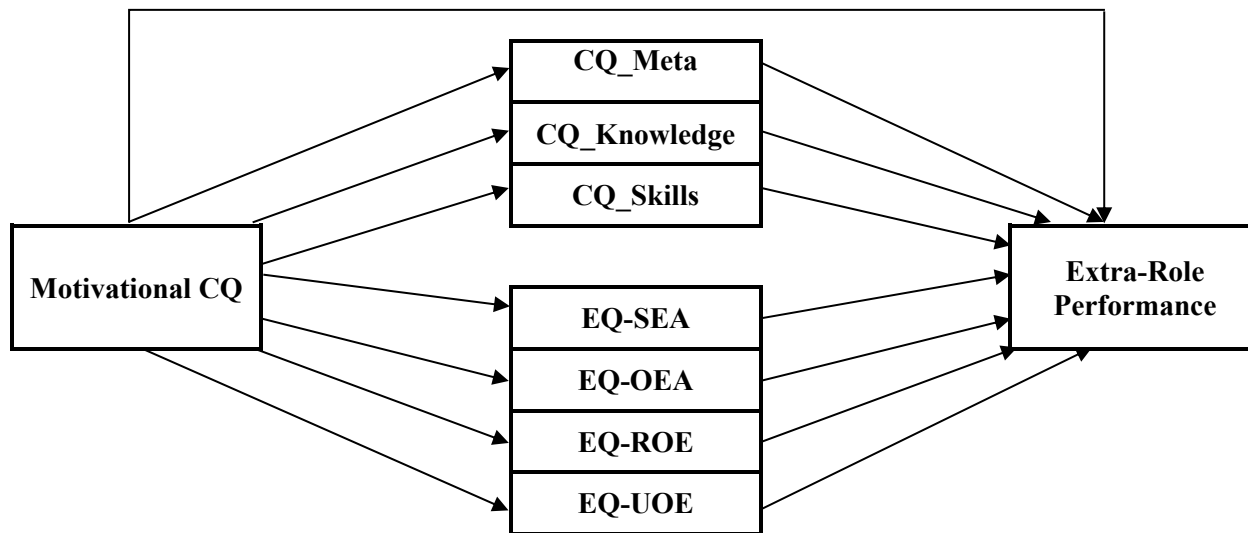
RQ2: *To what degree will the motivational cultural intelligence construct directly impact each of the emotional intelligence (EQ) factors?*

RQ3: *To what degree will the motivational cultural intelligence construct directly and/or indirectly impact extra-role job performance?*

RQ4: *To what degree will each of the EQ and CQ factors impact extra-role job performance?*

RQ5: *Are any significant model antecedents identified as necessary conditions for extra-role job performance?*

FIGURE 1
RESEARCH MODEL (NOT INCLUDING CONTROL VARIABLES)



In addition to the model elements discussed above, previous research in the literature addressing constructs such as cognitive processes, social interactions in the workplace, and job performance have suggested the need for a number of control variables including age, gender, education, years of work experience, hierarchical work position (supervisory vs. non-supervisory), and work environment, among others (Janssen & Yperen, 2004; Varela, Salgado & Lasio, 2010; Fu & Deshpande, 2014; Carnabuchi & Dioszegi, 2015; Wong & Law, 2002). As a result, a number of controls were used in this study including age, gender, education, years of work experience, and degree of interpersonal interaction during a typical workday (work environment).

METHODOLOGY

Measures

The measure of emotional intelligence used in this study was developed by Wong and Law (2002) and subsequently validated by, e.g., Law, Wong, and Song (2004), Wei et al. (2016), among others. The instrument consisted of 16 questions (e.g., “I have a good sense of why I have certain feelings most of the time”) each with a 7-point scale with “1 = totally disagree” and “7 = totally agree.” This self-report measure has been widely used among researchers for many years and was among those used in a major meta-analysis by O’Boyle et al. (2011) which concluded that “The three streams of EI research, ability measures, self- and peer-report measures, and mixed models, all predict job performance equally well” (p. 807).

Culture intelligence was measured using Thomas et al.’s (2015) three-factor model. The validity of this 10-question instrument was established using 3,526 participants across 5 language groups from 14 global samples. They found evidence for the measure’s construct and criterion-related validity and confirmed that cultural intelligence is a single latent factor reflected in three intermediate facets. In support of construct validity, they found CQ to be distinct from emotional intelligence and personality, and to be positively correlated with several indicators of multicultural experience. With 10 items such as “I know the ways in which cultures around the world are different” they used a 5-point Likert scale (1 = not at all, 5 = extremely well) with instructions “Below are 10 statements about one’s experience when interacting with people from other cultures. Please indicate to what extent each of the following statements describes you.”

Extra-role job performance was measured with a four-question instrument developed by Varela and Landis (2010), which demonstrated construct and criterion-related validity and emphasizes the importance of activity-based criteria for this classification. This instrument used a 5-point scale with “1 = strongly

disagree” and “5 = strongly agree” (“I assist and care for others in my workplace”; “I coach and develop others at work”; “I update and use relevant knowledge in my work”; “I think creatively in my workplace”). This extra-role performance measure by Verela & Landis (2002) overlaps with the Organizational Citizenship Behavior (OCB) instrument developed by Lee & Allen (2002).

Motivational cultural intelligence was measured using four questions developed by Van Dyne, Ang, and Koh (2008) to assess that construct in their *Cultural Intelligence Scale*. The 7-point Likert Scale questions used in this survey were: “I am confident I can socialize with locals in a culture unfamiliar to me.”; “I am sure I can deal with the stresses of adjusting to a culture that is new to me.”; “I enjoy (or would enjoy) living in cultures that are unfamiliar to me.”; and “I enjoy interacting with people from different cultures.” This is a widely used measure of Motivational CQ (Ang & Van Dyne, 2008) and was used in this study as the Thomas et al. (2015) 3-factor CQ scale did not include Motivational CQ.

In addition, a number of controls were used in this study using single questions including *age* (1 = under 18; 2 = 18-25; 3 = 26-40; 4 = 41-55; 5 = over 55), *gender* (1 = female; 0 = male), *education* (1 = No High School Degree; 2 = High School Graduate; 3 = some university/no degree; 4 = University Associate Degree (2 year); 5 = 4 year degree (Baccalaureate); 6 = Master Degree; 7 = Doctorate or equivalent), *work role* (1 = supervisory; 0 = nonsupervisory), and “*interaction size*” (the approximate number of people in the workplace with whom the subject interacts on a typical day: 1 = 1-5; 2 = 6-10; 3 = 11-20; 4 = more than 20).

Pilot Testing and Sample

The survey was developed in English in the United States and pilot-tested with a U.S. sample of 10 respondents to assess the clarity of instructions and question wording. Another larger pilot test of the survey was then conducted among students ($N = 62$) at a private university in the Northeastern United States. The survey was administered using Qualtrics, a web-based survey tool and the results were analyzed for validity and reliability. The survey was then translated to Russian and back translated to assess accuracy of the translation. It was then pilot tested in Russia with a sample of 31 subjects which confirmed validity and reliability. Multiple versions of the Russian survey were then prepared for distribution, varying the question order to reduce the potential for common method variance. The survey was completed by 227 part-time graduate students at a university in southern Russia. All subjects with no work experience were eliminated resulting in 189 usable surveys, resulting in a survey of working subjects. The work experience mean for the final sample was 4.1 years. Table 1's descriptive statistics suggest a typical subject is approximately a 27-year-old female with an undergraduate degree who, in a typical day, interacts with between 10 and 20 people at work. Approximately 50% of the sample subjects had supervisory responsibilities.

Analysis

To examine the strength and significance of the hypothesized effects (paths) between the model variables, a path analysis was performed using IBM SPSS AMOS Graphics version 26. The model fit was determined based on chi-square statistics and multiple indices including: Tucker-Lewis Index TLI (Tucker & Lewis, 1973) and comparative fit index CFI (Bentler, 1990) where values of at least .90 are required for a model to be considered ‘acceptable’ and values greater than 0.95 represent a ‘good’ fit (Hox & Bechger, 1998). Furthermore, two absolute fit indexes were assessed, which measure the proportion of the sample covariances explained by the model. The root mean square error of approximation (RMSEA) represents the average standardized residual per degree of freedom. Models with RMSEA values between .03 and .08 have traditionally been considered acceptable (Hox & Bechger, 1998; Hair et al., 2006). The second index, Standardized Root Mean-Square Residual (SRMR) index represents the “square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model.” (Hooper et al., 2008, p. 54). SRMR values of less than .08 are generally desired for an acceptable model (Hu & Bentler, 1999), and values of less than .05 for well-fitting models (Byrne, 1998).

Model variable interactions were examined, as were variance inflation factors and a test for common method variance. Additionally, a multivariate Necessary Condition Analysis (NCA) with the bottleneck technique was applied using the NCA R Package Version 3.0.1 (Dul, 2016) to test the necessary but not

sufficient contributions of motivational CQ, cultural intelligence dimensions, and emotional intelligence dimensions to the extra-role performance outcome. Traditional data analysis, such as multiple linear regression on which path analysis is based, assumes that each independent variable is sufficient to cause the outcome, but none of the predictors are truly necessary, as the absence of one independent variable is compensated for by the increased values of the other predictors. In the NCA, on the other hand, the absence of a necessary independent variable results in the outcome failure irrespective of any other predictors in the model (Dul, 2016). Furthermore, each necessary variable needs to reach a minimum level at which the outcome can occur. Since a necessary variable must be present for the outcome to occur, it is considered a constraint or bottleneck that must be managed for extra-role performance to be achieved. In this study, we used the NCA technique to determine which independent variables have the potential to become the biggest bottlenecks and to identify the minimum levels of each variable necessary to reach desired levels of extra-role performance.

Per Dul (2016), NCA can be used in conjunction with traditional analyses to examine causal relations and to provide additional insights into the necessary but not sufficient conditions that are typically not detected by traditional analyses. More specifically, variables that have small effects in traditional approaches, can turn out to be critical in the NCA. Also, variables with large effects in traditional approaches may not be critical in the NCA. The NCA analysis performed in this study includes three key outputs: a scatter plot, effect size estimates, and a bottleneck table. Each output is discussed in more detail in the subsequent paragraph.

For each independent variable - dependent variable combination, a scatter plot is created that separates the area with observations from the empty area of the plot (see example output, Figure 3). The separation between the two sections of the plot is denoted with a ceiling line. The empty area without any observations is called a ceiling zone (typically found in the upper left corner of the plot), and the total area where observations can be detected is called a scope. The larger the empty area of the scatter plot (the ceiling zone), the larger the strength of the constraint that the independent variable has on the outcome indicating the presence of the necessary condition. To calculate the ceiling lines, a Ceiling Envelopment with Free Disposal Hull (CE-FDH) technique was used. It was selected due to its applicability to discrete data, flexibility, and 100% accuracy as it does not include observations above the ceiling line (Dul, 2016). The effect size in the NCA analysis represents the extent of the constraint on the outcome, or, stated differently, the significance of the necessary condition. Therefore, the larger the effect size, the stronger the necessary condition, and the greater the constraint that must be managed in order for the outcome to be achieved.

Benchmarks for NCA effect size (d) proposed by Dul (2016) were used to interpret the findings with $0 < d < 0.1$ being considered a “small effect”, $0.1 \leq d < 0.3$ a “medium effect”, and $0.3 \leq d < 0.5$ a “large effect.” In addition, based on his research, he concludes that medium effects have both practical and theoretical implications and may therefore be considered “significant.” Finally, the bottleneck table is especially helpful in multivariable NCA because it shows the minimum levels of constraint the necessary variables impose on the outcome and reveals how they fluctuate as the desired level of the outcome changes.

RESULTS

Descriptive statistics in Table 1 include bivariate correlations and Cronbach alpha scale reliabilities. These alpha scores for the 8 antecedents of extra-role are all acceptable ranging from .75 to .90. However, despite the .69 alpha score for the pilot test, extra-role for the study sample has alpha of .56. Hair et al. (2006) suggest that for exploratory research, a score in the range of .60 may be seen as acceptable. Ursachi et al. (2015) acknowledged issues related to internal factors, such as a relatively low number of questions, and also identified potential external factors, such as age, gender, and education, among others, that can result in variations in Cronbach's alpha. Tavakol and Dennick (2011) argue that Cronbach's alpha alone is insufficient for assessing homogeneity or unidimensionality in a sample of test items and suggest that potential insufficiencies may be addressed by adding factor analysis, which can help confirm the validity of the construct. All constructs' validities were confirmed, with extra-role performance comprising of 4 items on a 5-point Likert scale, explaining 44% of the variance and showing factor loadings of .57 to .71.

TABLE 1
DESCRIPTIVE STATISTICS, CORRELATIONS, AND SCALE RELIABILITIES
(ON THE DIAGONAL)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Extra Role Perf	4.10	0.60	(0.56)													
2. Age	2.25	0.47	-0.08	--												
3. Education	4.76	0.81	-0.03	0.10	--											
4. Gender	0.69	0.48	-0.02	-0.13	0.11	--										
5. Interaction Size	2.94	1.04	0.31**	0.05	-0.08	0.00	--									
6. Supervisor	0.50	0.50	0.23**	0.26**	-0.01	-0.16*	0.24**	--								
7. Motivational CQ	4.92	1.27	0.36**	0.00	0.04	-0.11	0.13	0.15*	(.84)							
8. CQ Knowledge	3.55	0.97	0.18*	-0.15*	0.13	-0.16*	0.15*	0.10	0.24**	(.84)						
9. CQ Skills	3.39	0.77	0.31**	-0.04	-0.01	-0.02	0.19**	0.15*	0.58**	0.32**	(.78)					
10. CQ Metacognition	3.42	0.92	0.33**	-0.15*	-0.06	-0.10	0.08	0.03	0.50**	0.37**	0.69**	(.75)				
11. SEA	5.48	1.10	0.30**	-0.13	0.08	-0.11	0.04	0.04	0.49**	0.30**	0.25**	0.27**	(.75)			
12. OEA	5.22	1.14	0.37**	-0.09	0.07	-0.08	0.09	-0.01	0.56**	0.19**	0.37**	0.39**	0.67**	(.90)		
13. UOE	5.42	1.04	0.45**	-0.06	0.16*	-0.09	0.24**	0.19*	0.51**	0.29**	0.24**	0.26**	0.63**	0.55**	(.80)	
14. ROE	5.12	1.26	0.29**	-0.06	0.05	-0.23**	0.10	0.12	0.46**	0.17*	0.21**	0.18*	0.66**	0.48**	.56**	(.85)

Note. n = 189

** . Correlation is significant at the 0.01 level (2-tailed).

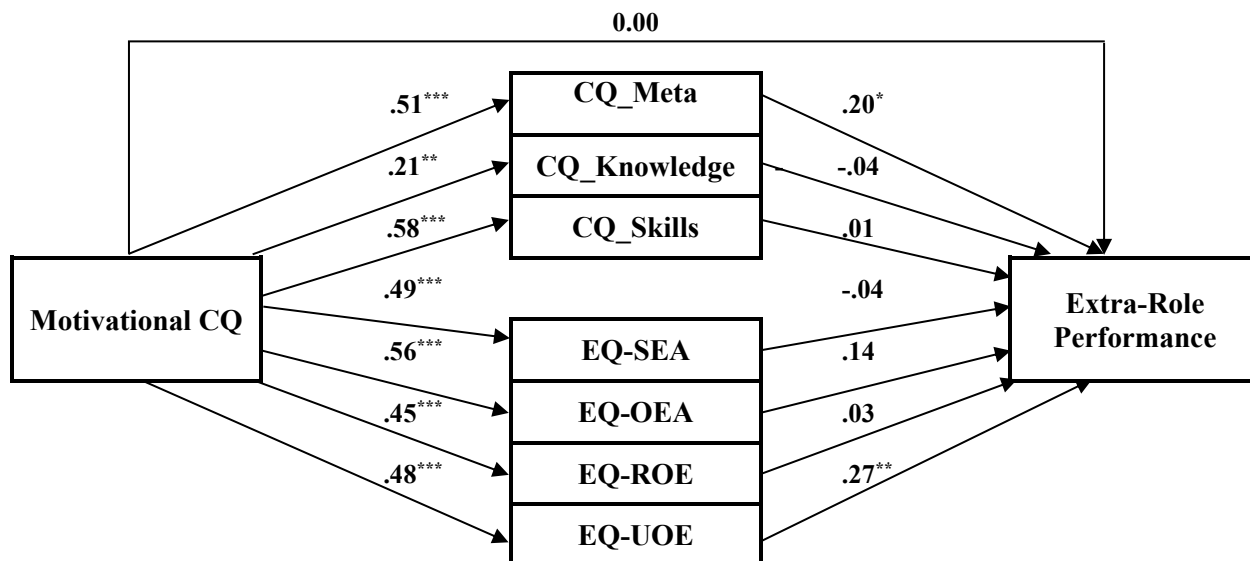
* . Correlation is significant at the 0.05 level (2-tailed).

Additionally, variance inflationary factors (VIF) scores for all regression relationships were examined in SPSS, with values ranging from 1.1 to 2.8, suggesting that results may be interpreted without concern for excessive collinearity (Hair et al., 2006). In addition, an examination of potential model variable interactions using SPSS also did not reveal any significant variable interactions.

The path analysis model with nine variables indicated a good fit ($X^2[42] = 60.23$, $p = .03$; $TLI = .95$, $CFI = .98$, $RMSEA = .05$, $SRMR = .05$). The results of the path analysis including standardized regression weights are presented in Figure 2. The model revealed a significant positive association between motivational CQ and the three dimensions of cultural intelligence ($\beta = .51$, $p < .001$ for metacognition; $\beta = .21$, $p < .01$ for knowledge; and $\beta = .58$, $p < .001$ for skills), suggesting that higher levels of motivational CQ lead to higher levels of cultural intelligence in respect to metacognition, knowledge, and skills. Similarly, the association between motivational CQ and all four dimensions of emotional intelligence are strong and significant indicating that higher levels of motivational CQ increase all facets of emotional intelligence ($\beta = .49$ for SEA, and $\beta = .56$ for OEA, $\beta = .45$ for ROE, and $\beta = .48$ for UOE; $p < .001$). Among the paths from cultural intelligence dimension to extra role performance, only the metacognition dimension had a significant positive effect on extra-role performance ($\beta = .20$, $p < .05$). Similarly, the paths from emotional intelligence dimensions to extra-role performance were non-significant, with exception of UOE (Use of Emotion) dimension ($\beta = .27$, $p < .01$). The direct path from motivational CQ to extra-role performance is nonexistent and non-significant ($\beta = .00$, $p = .987$), indicating that extra-role performance is not directly affected by Motivational CQ.

In addition, our path analysis model included five control variables: age, education, gender, supervisor, and interaction size. Age was a significant and negative factor on two dimensions of cultural intelligence; metacognitive CQ ($\beta = -.13$, $p < .05$) and CQ knowledge ($\beta = -.18$, $p < .01$). Education had a positive effect on CQ Knowledge ($\beta = .18$, $p < .01$) and UOE ($\beta = .12$, $p < .05$). Gender had a negative effect (0 = male; 1 = female) on CQ Knowledge ($\beta = -.17$, $p < .05$) and ROE (Regulation of Emotion, $\beta = -.15$, $p < .01$). Interaction size (number of people an employee interacts with in a typical day during work) had a positive effect on UOE ($\beta = .19$, $p < .001$) as well as extra-role performance ($\beta = .19$, $p < .01$). Finally, the supervisory work role had a positive effect (non-supervisory = 0; supervisory = 1) on extra-role performance ($\beta = .13$, $p < .05$).

FIGURE 2
PATH ANALYSIS RESULTS WITH STANDARDIZED ESTIMATES



Note. $n = 189$, Controls (Age, Gender, Education, Interaction Size, and Supervisor) are not shown for ease of presentation.

* $p < .05$

** $p < .01$

*** $p < .001$

A path analysis was also run for this model without control variables resulting in: $X^2[12] = 26.47$, $p = .009$; TLI = .939, CFI = .98, RMSEA = .08, SRMR = .0466. This suggested an acceptable fit as well, although the path analysis with controls as indicated above ($X^2[42] = 60.23$, $p = .03$; TLI = .95, CFI = .98, RMSEA = .05, SRMR = .05), was a better fit.

The mediation test was performed using a recommended bias-corrected bootstrapping approach (Preacher & Hayes, 2004). The results are presented in Table 2. Our mediation analysis revealed a presence of two statistically significant indirect effects; an indirect effect of Motivational CQ on extra-role performance through cultural intelligence metacognition dimension (unstandardized indirect effect = 0.05, 95% CI [0.01, 0.10]), and indirect effect of Motivation CQ on extra-role performance mediated through UOE (Use of Emotion) dimension of emotional intelligence (unstandardized indirect effect = 0.06, 95% CI [0.02, 0.11]).

TABLE 2
UNSTANDARDIZED INDIRECT EFFECTS OF MOTIVATIONAL CQ ON
EXTRA ROLE PERFORMANCE

	Estimate	Lower Conf. Int.	Upper Conf. Int.	p- value
Motivational CQ -> CQ Metacognition -> Extra Role Perf	0.05*	0.01	0.10	0.021
Motivational CQ -> CQ Knowledge -> Extra Role Perf.	0.00	-0.03	0.01	0.510
Motivational CQ -> CQ Skills -> Extra Role Perf.	0.00	-.05	0.06	0.910
Motivational CQ -> CQ SEA -> Extra Role Perf.	-0.01	-0.06	0.05	0.738
Motivational CQ -> CQ OEA -> Extra Role Perf.	0.04	-0.02	0.09	0.158
Motivational CQ -> CQ ROE -> Extra Role Perf.	0.01	-0.04	0.06	0.839
Motivational CQ -> CQUOE -> Extra Role Perf.	0.06**	0.02	0.11	0.006

Note: n=189. Number of bootstraps samples = 10,000. Bias-corrected confidence intervals at 95% confidence level.

* $p < .05$

** $p < .01$

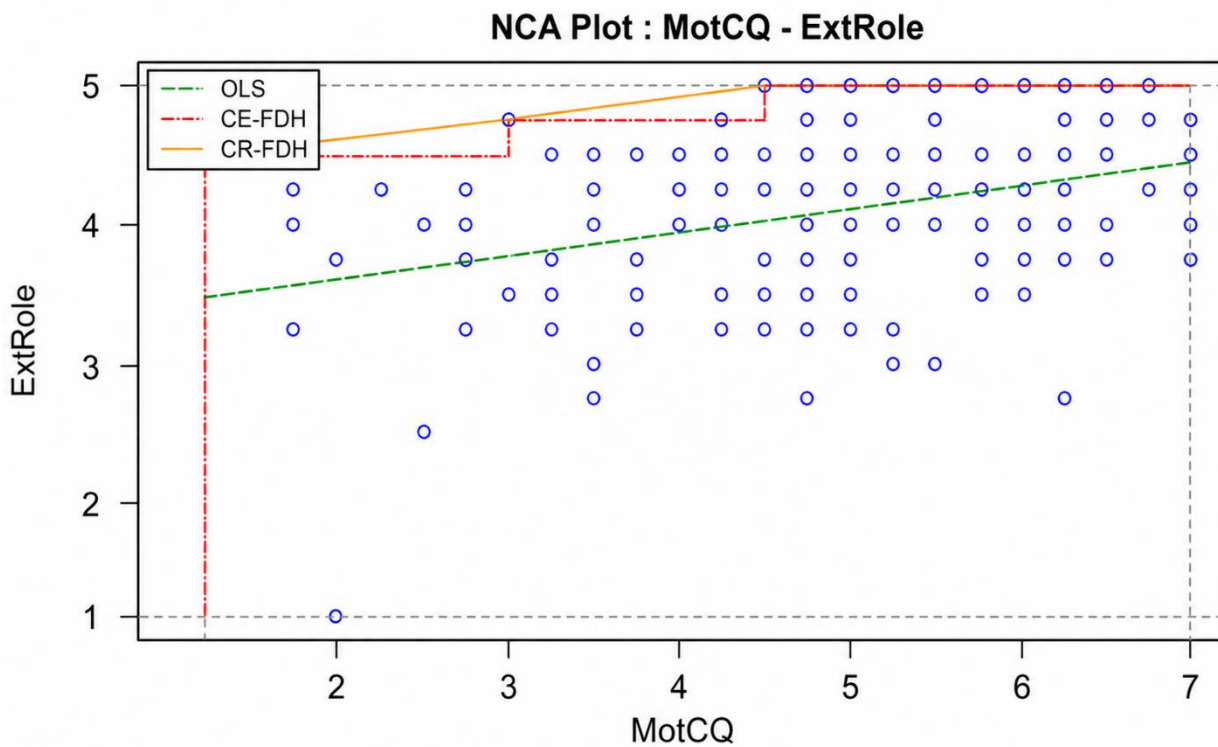
The NCA parameters for key model variables include ceiling zone, scope, and effect size (d) are reported in Table 3. A scatter plot example for Motivational CQ and the extra-role performance is shown in Figure 3. The scatter plot demonstrates the area with observations separated from the empty area without observations, the ceiling zone (empty area in the upper left corner of the plot). The separation between the two sections of the plot is denoted with a ceiling line. The total area where observations can be detected is called a scope. The scope for the Motivational CQ and the extra-role performance plot has a value of 23. The ceiling zone portion is 1.25, hence the effect size is 0.05 ($\approx 1.25/23$). Based on the previously listed effect size guidelines by Dul (2016) this is a small effect size. Other variables can be interpreted similarly. However, two variables in our study, OEA and UOE, have significant medium effect sizes of $d = .12$ and $d = .13$, respectively. This implies that both OEA and UOE are the largest constraints or bottlenecks to achieving extra-role performance. To identify the minimum required levels of each variable for extra-role performance, we present the results of the multivariate bottleneck analysis next.

TABLE 3
RESULTS OF NECESSARY CONDITION ANALYSIS

Variable	Ceiling Zone	Scope	Effect Size (d)
Motivational CQ	1.25	23.00	0.05
CQ Metacognition	0.50	16.00	0.03
CQ Knowledge	0.38	16.00	0.02
CQ Skills	0.55	16.00	0.03
SEA	1.25	20.00	0.06
OEA	2.75	24.00	0.12
ROE	1.13	23.00	0.05
UOE	2.94	22.00	0.13

Note. NCA Parameters were derived using CE-FDH Ceiling Line Technique.

FIGURE 3
NCA SCATTERPLOT FOR MOTIVATIONAL CQ (MOTCQ) AND EXTRA ROLE PERFORMANCE (EXTROLE)



The bottleneck analysis presented in Table 4 shows the required minimum ceiling values, or levels of each independent variable needed to achieve a desired level of the dependent variable (Y). For ease of interpretation, as suggested by Dul (2016), we categorized the outcome column (Y) into three levels of output; low, medium, and high based on 5-point Likert scale used to measure the extra-role performance. Low category includes scale values < 1.7 (with bottleneck percentage < .33%), medium scale values from 1.8 to 3.3 (with bottleneck percentages between 34% - 67%), and high scale values > 3.3 (with bottleneck percentages > 67%). Using this classification approach, bottleneck analysis (Table 4) indicates that in order to obtain the lowest level of extra-role performance ($Y < 33\%$), none of the variables are necessary and do

not pose a constraint or a bottleneck risk. However, to obtain a high level of extra-role performance ($Y = 70\%$), the OEA, UOE, and ROE variables become necessary and their minimum levels of 16.70 for OEA, 18.20 for UOE, and 13 for ROE must be met for the 70% of extra-role performance to be achieved. If any of these necessary independent variables fall below the required minimum ceiling value, the desired level of output will not be achieved. Additionally, the bottleneck analysis shows that the ceiling values will change if we change the desired level of output. For example, if we aim to reach 100 % of extra-role performance ($Y = 100\%$), each independent variable becomes necessary (or a constraint) and will need to meet the appointed minimum level (MotCQ = 56.50, CQK = 12.50, CQS = 35, CQM = 25, SEA = 35, OEA = 58.30, UOE = 63.60, ROE = 17.4).

TABLE 4
RESULTS OF THE BOTTLENECK ANALYSIS

Y (Extra Role Perf. %)	MotCQ	CQK	CQS	CQM	SEA	OEA	UOE	ROE
0	NN	NN	NN	NN	NN	NN	NN	NN
10	NN	NN	NN	NN	NN	NN	NN	NN
20	NN	NN	NN	NN	NN	NN	NN	NN
30	NN	NN	NN	NN	NN	NN	NN	NN
40	NN	NN	NN	NN	NN	NN	NN	NN
50	NN	NN	NN	NN	NN	NN	NN	NN
60	NN	NN	NN	NN	NN	NN	18.20	NN
70	NN	NN	NN	NN	NN	16.70	18.20	13.00
80	NN	NN	NN	NN	15.00	16.70	22.70	13.00
90	30.40	12.50	20.00	25.00	35.00	58.30	50.00	17.40
100	56.50	12.50	35.00	25.00	35.00	58.30	63.60	17.40

Note: NN = Not Necessary

In addition to having multiple versions of the survey with rotated questions to help minimize potential common method variance, a separate common method variance analysis was also conducted. Common method variance (CMV) may be seen as a variance within the data analysis that is attributable to the measurement method rather than to the constructs the measures represent (Podsakoff, et al., 2003). This problem may occur when a single self-report survey design is used to gather data, and while there is disagreement among scholars regarding the likelihood and nature of CMV in self-report data, Richardson et al. (2009) suggest that researchers cannot know *a priori* whether or not the absence of CMV controls and analysis will accurately represent their data. To evaluate CMV we used Harman's Single Factor Model method as a *post hoc* analysis. The Harman method was identified by Craighead et al. (2011) as "by far the most commonly used remedy to control for CMV across all fields" (p. 580). The results indicated that the amount of variance explained by a single factor was 22.1% for this study's survey data, which is well below the threshold of 50% recommended by Craighead et al. (2011), suggesting that the results are unlikely to be affected by CMV.

DISCUSSION

For the first two research questions in this study (**RQ1**: To what degree will the motivational cultural intelligence (MotCQ) construct directly impact each of the cultural intelligence factors? and **RQ2**: To what degree will the MotCQ construct directly impact each of the emotional intelligence factors?) the results summarized in Figure 2 suggest that MotCQ has a significant positive impact on each sub-dimension within both cultural intelligence and emotional intelligence. While these findings may not be surprising for the CQ subfactors and the MotCQ relationship, the strength of the EQ subfactors and the motivational CQ

relationship may not, on the surface, be as easily explained. However, as mentioned earlier, the EQ and motivational CQ relationships may be due to the individual's strength and depth of the need for a high motivational CQ, which enables them to understand and be sensitive to the individual differences displayed by others with whom they work. The drive to understand people from other cultures which is measured by the Ang and Van Dyne (2008) motivational CQ construct may, therefore, be able to easily be adjusted, and ultimately result in its regular use when assessing a potential employee's or a student's likelihood to have, or develop, strong cultural and/or emotional intelligence skills. This insight, suggested by these data, if confirmed in future research, may well be a very significant result of this study.

With regards to research questions 3 and 4 (**RQ3**: To what degree will the motivational cultural intelligence construct directly and/or indirectly impact job performance as measured by extra-role behavior? and **RQ4**: To what degree will each of the EQ and CQ factors impact job performance as measured by extra-role behavior?), these results suggest MotCQ does not have a direct impact on extra-role performance but does have an indirect impact through meta-cognitive (CQ-Meta) and use of emotions (UOE) factor mediators, and that CQ-Meta and UOE are also the only subfactors that have a direct impact on extra-role performance. These findings further strengthen the importance of a construct such as motivational CQ for employers and educators, as both emotional and cultural intelligences make a difference in extra-role job performance, and the influence of motivational CQ on extra-role job performance is also established. Future research needs to confirm these results and extend the dependent variable to other job-related outcomes, such as in-role job performance and job satisfaction.

As indicated above, path analysis was completed with and without control variables, with both analyses indicating an acceptable fit. Of the control variables, greater age was associated with lower levels of metacognitive CQ and cognitive CQ. Higher education was associated with higher levels of cognitive CQ and use of emotion (UOE). Being female was associated with lower cognitive CQ and regulation of emotion (ROE). Higher interaction size (number of people a subject interacted with during the workday) was associated with higher UOE and extra-role performance. Also, being in a supervisory role was associated with higher extra-role performance. It should also be noted that the average number of work years was not used as a control due to the lack of correlations with any model variables. The mean number of work years for this sample is 4.1 years. These results confirm the importance of higher education for jobs with expected high levels of extra-role performance, especially when there is daily interaction with many people in the workplace. In addition, it would be interesting to know whether the finding that older employees have less awareness of, or become less aware of, cultural differences (metacognition) and have a lower level of cultural knowledge (cognitive CQ) can be confirmed in Russia and other countries as well. Such a finding may suggest the need for continuing education for employees focusing on these areas beyond the initial training phase.

In addition, two controls with direct impacts on extra-role performance - supervisory work role and interaction size - are also potentially meaningful as they suggest the following questions: 1. Given its orientation of collectivism (Gilbert & Cartwright, 2008) and strong role of belonging in the Russian workplace (Gibbs & Ashill, 2013), why do nonsupervisory personnel not have the same extra-role performance pattern as do supervisory personnel? 2. With Russian samples (as well as other cultural samples) is it necessary to interact with more people during the workday in order to have higher levels of extra-role performance? Of note here is the possible connection to the work of Lee et al. (2004), who concluded that social connectedness, possibly due to their degree of social involvement with others in the workplace, may support these findings. In general, these two questions are interesting and potentially important for future research, as the answers may, at the very least, lead to strategies for training and/or personnel management.

With regard to research question 5 (**RQ 5**: Are any significant model antecedents identified as necessary conditions for extra-role behavior?), an important contribution of this study is the potentially important insights suggested by the necessary condition analysis. This analysis provided additional insight as to which variables are necessary, and to what degree, in order to achieve a desired level of the outcome. As seen in Table 4, the three variables with the largest effect sizes in our NCA model are the emotional intelligence variables of other's emotional appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE).

Among all CQ and EQ variables, UOE imposes the greatest constraint on extra-role performance and can most quickly become a potential bottleneck, with UOE impacting extra-role performance at the 60% level. This was closely followed by OEA and ROE, impacting performance resulting in UOE, OEA, and ROE being necessary for performance at the 70% level, and as indicated above, all CQ and EQ model variables, at some level, are necessary to reach 100% performance.

Overall, these results suggest that while motivational cultural intelligence does not have a statistically significant direct impact on a person's extra-role job performance (see Table 2), the impact of motivational CQ is highly significant across all three CQ factors and all four EQ factors (see Figure 2). These results also suggest that EQ's UOE (Use of Emotions) has not only a significant indirect impact on extra-role performance (see Table 2), but as can be seen in Table 3, UOE along with OEA (Others' Emotional Appraisal), are both found to be statistically significant "necessary conditions" for high levels (70%+) of extra-role performance to occur (see Table 4).

However, as Ang and Van Dyne (2008) observed, motivational CQ "reflects the capacity to direct attention and energy toward learning about, and functioning in, situations characterized by cultural difference...[and] is a critical component of CQ because it is a source of drive in novel cultural settings" (p. 6). It can be argued that given this "drive", an effective employee would also have an orientation to perceive and actively attempt to address the needs of coworker, customer, or supplier. As observed by Hoxha and Ramadani (2024), employment motivation and engagement are crucial for achieving optimal workplace productivity because when employees are driven and interested in their own and others' duties, they are more likely to give more of themselves. They observed that essential contributions of extra-role performance increase the organization's ability to adjust to change and be better able to innovate, which can contribute to long-term stability.

Thus, these results suggest that in Russia, a country that as noted above does not appear to have had significant research with regards to combinations of these variables, these findings may be seen to generally support previous research in other countries, and suggest that organizational managers and human resource professionals should evaluate CQ, EQ, and Motivational Cultural Intelligence constructs when evaluating potential employees.

LIMITATIONS AND FUTURE RESEARCH

While this study contributes to addressing the limited research on these model variables in Russia, it uses only a Russian sample, and therefore no direct comparison can be made with other countries. While this sample consisted of subjects with work experience, the average number of work years in this study was only 4.1 years, which may be seen as a limiting factor. While most subjects were working while seeking an advanced degree, they may not best represent the general working population. Although Varela and Landis (2010) and this study's Russian subject pilot studies confirmed the construct validity and instrument reliability, the scale reliability was marginal in this exploratory study comprising all subjects. As such, this needs to be addressed in future research by adding additional measurement items and removing those with poor factor loadings/weak relationships with the latent construct (Nunnally, 1978; MacKenzie, Podsakoff & Podsakoff, 2011).

It is important for all these results to be confirmed in future research using samples with multiple cultures, such a confirmation of findings and comparisons with other countries may suggest for educators, researchers, and practitioners the further importance of selecting employees with high CQ and/or developing CQ abilities within the schools and workforce, as such training can potentially impact student/employee EQ skills as well as CQ skills and ultimately extra-role job performance.

These results, using a Russian sample, also tend to suggest the greater importance of emotional intelligence, with three of the four EQ factors required at "medium" competence levels to reach higher levels (> 80%) of extra-role performance, versus only one of three core CQ factors. This also raises a question for future researchers: whether this emphasis would be confirmed when using samples in other national environments with significant within-country cultural differences.

Overall, within the limitations of this study, these results suggest the importance of Russian human resource managers' emphasis on motivation, cultural intelligence and emotional intelligence when not only hiring personnel, but also when designing training and development programs based upon the need to focus on necessary skill sets identified through necessary condition analysis (NCA) used in this study. Finally, the results of this study may be seen as suggesting to future researchers the potential benefits of this analytical tool.

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