

# METACOGONITIVE AND MOTIVATIONAL CULTURAL INTELLIGENCE: SUPERPOWERS FOR CREATIVITY IN A CULTURALLY DIVERSE ENVIRONMENT

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Received: 21 March 2015  
Accepted: 31 August 2015

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**ABSTRACT:** *We propose that employees who are highly motivated for cultural interactions (motivational cultural intelligence) and can modify their thinking about cultural differences (metacognitive cultural intelligence) are more likely to be creative in culturally diverse environments. Based on the social categorization theory, we propose that metacognitive and motivational cultural intelligence will be positively related to individual creativity. Moreover, we predict that metacognitive and motivational cultural intelligence can decrease the negative aspects of the social categorization process and, in turn, be positively related to creativity. A quantitative analysis of 787 employees in 20 SME multicultural companies in the Adriatic region shows that metacognitive and motivational cultural intelligence are in fact positively related to individual creativity. We discuss the implications for practice and future research.*

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**Keywords:** Creativity, metacognitive cultural intelligence, motivational cultural intelligence, cultural diversity

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**JEL Classification:** M14, 030

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**DOI:** 10.15458/85451.18

## INTRODUCTION

Creativity, defined as the production of ideas that are both novel and useful (Amabile, 1996), is the first step towards innovation (Amabile, Conti, Coon, Lazenby, & Herron, 1996) and a cornerstone of organizational change (Gilson, Mathieu, Shalley, & Ruddy, 2005; Zhou & Hoever, 2014). Therefore, it is not surprising that scholars and practitioners have shown a strong interest in identifying factors that could enhance employees' creativity (Shalley & Gilson, 2004; Zhou & Shalley, 2011). In the past, scholars have mostly examined the antecedents or specific subsets of antecedents, such as personal and contextual factors that facilitate or inhibit creativity (Shalley & Gilson, 2004; Shalley, Zhou, & Oldham, 2004; Zhou & Hoever, 2014). However, little research has been conducted to explore the influence of a culturally diverse environment on creativity.

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A culturally diverse environment is an everyday fact in the workplace (Homan et al., 2008) as organizations are increasingly operating internationally (MacNab & Worthley, 2011). Moreover, the workforce is becoming more diverse due to globalization (Shin, Kim, Lee, & Bian, 2012). However, the empirical evidence of linking diversity and creativity has yielded mixed results about whether a culturally diverse environment enhances creativity (Anderson, Potočnik, & Zhou, 2014). Based on the value in perspective, diversity literature proposes that a diverse work environment extends the ranges of different problem-solving styles, knowledge, perspectives, and skills (Pelled, Eisenhardt, & Xin, 1999; Williams & O'Reilly, 1998), which in turn stimulate individuals and lead them to create new ideas (Cox & Blake, 1991). Therefore, cultural diversity may be a valuable source for employees' creativity (Amabile, 1996). On the other hand, the similarity attraction argument (Pfeffer, 1983) suggests that cultural diversity may indirectly decrease employees' creativity due to a social categorization process. Evidence indicates that the social categorization process (Tajfel & Turner, 1986), in which individuals start to categorize colleagues as in-group/out-group members based on cultural differences, hinders the use of the available information (Van Knippenberg, De Dreu, & Homan, 2004). Moreover, the possibility of emotional and relational conflicts in a culturally diverse group is much higher (Northcraft & Neale, 1999; Mannix & Neale, 2005). Cultural diversity may therefore relate negatively to individual creativity. Considering all of the above, broader concepts of the factors and conditions that allow people from different cultures to collaborate creatively are needed (De Dreu, & Nijstad, 2004; Leung, Maddux, Galinsky, & Chiu, 2008).

Our objective is to explain and resolve the inconsistent relationship between a culturally diverse environment and creativity. In order to do so, we propose that metacognitive and motivational cultural intelligence can provide a more in-depth insight on how to minimize the negative influences of social categorization processes due to the cultural diversity in order to stimulate individual creativity. Metacognitive and motivational cultural intelligence are an individual's capability that helps him or her to function effectively in a culturally diverse environment and with people from culturally diverse environments (Ang & Van Dyne, 2008). Furthermore, metacognitive and motivational cultural intelligence increase the individual's understanding of similarities and differences (Earley & Ang, 2003) between culturally diverse colleagues from the East and the West.

On the other hand, motivational cultural intelligence increases the likelihood of interactions between culturally diverse individuals. Therefore, it is not surprising that a recent research indicated that metacognitive and motivational cultural intelligence are one of the most relevant predictors of effective performance outcome in a culturally diverse environment (Chua & Morris, 2009; Imai & Gelfand, 2010), and positively influence communication effectiveness in cross-cultural interactions (Bücker, Furrer, Poutsma, & Buyens, 2014). At this point, we would like to stress that metacognitive and motivational cultural intelligence can be part of cultural intelligence item or it can be research as single item, while as Ang et al. (2007) explains, different dimensions of cultural intelligence (metacognitive, cognitive, motivational, and behavioral) are different individual capabilities and, as such, may have different effects on the individual creative performance outcome. Thus, in this article we will research metacognitive and motivational cultural intelligence as individual

predictors of employees' creativity. Metacognitive and motivational dimensions of cultural intelligence can thus help to decrease social categorization processes in a culturally diverse environment. All things considered, we predict that metacognitive and motivational cultural intelligence are positively related to individual creativity in a culturally diverse environment.

We begin this paper by summarizing the existing literatures of creativity in a culturally diverse environment and then provide a theoretical background on how metacognitive and motivational cultural intelligence can help employees decrease social categorization processes in a culturally diverse environment, and in turn stimulate their creativity. To test our hypothesis, we carried out a field study in eight different countries as part of the PACINNO project (PACINNO, 2015). Firstly, we aim to contribute to the creativity research by extending the previous cross-cultural creativity research, while simultaneously considering individual capabilities (such as cultural intelligence) and contextual factors (such as a culturally diverse environment). Thus, we provide a significant contribution to the relationship between creativity and cultural diversity by answering repeated calls for greater research on creativity and cultural differences (Anderson, De Dreu, & Nijstad, 2004; Anderson et al., 2014; Shalley et al., 2004; Zhou & Su, 2010). Secondly, we further develop the cultural intelligence theory and answer a recent call by Van Dyne and colleagues (2012) by exploring whether individual creativity is actually an outcome of individual metacognitive and motivational cultural intelligence. In addition, we provide a more in-depth examination of cultural intelligence in regards to how different dimensions of cultural intelligence can stimulate individual creativity in a culturally diverse environment by decreasing social categorization processes. We conclude with a discussion of the practical implications, the limitations of our study, and suggestions for future research.

## 1 LITERATURE REVIEW AND RESEARCH QUESTIONS

### 1.1 Creativity in a culturally diverse environment

In line with Perry-Smith and Shalley (2003), we argue that a creative process is often a result of social interaction in which individuals are interacting, collaborating, and sharing ideas and solutions with others (Chua, Morris, & Mor, 2012; Perry-Smith, 2006; Unsworth, Wall, & Carter, 2005), while social exchange with different individuals may invoke new information and knowledge, which in turn stimulates individual creativity (Madjar, 2005). Therefore, the key to employees' creativity is with whom and how they interact. Recent research in creativity literature suggests that there are two relevant groups that may impact creativity: the first group includes leaders, teammates and coworkers at work (for a review see: Anderson, et al., 2014; Zhou & Hoever, 2014), whereas the second involves non-work-related people (Madjar, Oldham, & Pratt, 2002). At this point, we would like to emphasize that our study will be limited to the exploration of the influence of culturally diverse teammates on individual creativity only. More precisely, teammates and/or coworkers

may trigger individual creativity while they provide diverse input and knowledge, which enhances individual creative performance (Madjar, 2005; Perry-Smith, 2006).

Thus, diversity literature suggests that diverse coworkers can be a valuable source of employee creativity (Amabile, 1996), whereas the value-in-diversity argument suggests that individual exposure to the diverse knowledge, skills, and perspectives (Pelled, Eisenhardt, & Xin, 1999; Williams & O'Reilly, 1998) available from diverse colleagues enhances the generation of individual ideas (Perry-Smith & Shalley, 2003). There are many diversity-based individual or team attributes that can stimulate creativity, but the benefit of culturally diverse colleagues is usually unrecognized (O'Reilly, Williams, & Barsade, 1998). Therefore, our emphasis in this article is to provide the insight on how social interaction and exchange with culturally diverse colleagues can promote creativity. We define cultural diversity as the differences in visible characteristics, such as ethnicity, race and national culture (Chua, 2013; Cox, 1994). As Chua (2013, p. 1545) explains, a culturally diverse work environment "provides for the confluence of disparate ideas from different cultures; the appropriate combination of ideas and perspectives from different cultures potentiates creative solutions."

Although researchers (Chua, 2013; Chua, et al., 2012; Cox, Lobel, & McLeod, 1991; Giambatista & Bhappu, 2010; McLeod, Lobel, & Cox Jr, 1996; Stahl, Maznevski, Voigt, & Jonsen, 2010) have started to investigate the role of culturally diverse environments in the creativity process, we note that empirical studies have yielded mixed and often confusing results. Some studies have demonstrated that cultural diversity is positively related to creativity (Chatman, Polzer, Barsade, & Neale, 1998; Stahl et al., 2010), whereas others have found non-significant associations or negative influences of cultural diversity on creativity (Giambatista & Bhappu, 2010; Shin et al., 2012). In light of these conflicting findings in recent reviews of creativity literature, scholars have repeatedly called for further studies of the conditions under which cultural differences will stimulate creativity (Anderson et al., 2004; Anderson et al., 2014; Shalley et al., 2004; Zhou & Shalley, 2003). Our focus is to answer these calls by exploring how cultural diversity as a salient contingency can enhance individual creativity.

Drawing on social categorization theory (Tajfel & Turner, 1986), we argue that a culturally diverse environment can have a negative impact on individual creativity, but when properly managed, it can stimulate individual creativity. We go even further by proposing that metacognitive and motivational cultural intelligence can decrease the social categorization process and, in turn, enhance individual creativity. The social categorization process usually emerges when cultural diversity increases at the work environment (Richard, Barnett, Dwyer, & Chadwick, 2004) and employees start to compare themselves, based on similarities to and differences from their colleagues, to reduce uncertainty (Tajfel & Turner, 1986; Van Knippenberg et al., 2004). More precisely, working with culturally diverse teammates actually motivates employees to generate new subgroups in the work environment based on cultural dissimilarities among in-group members and dissimilar out-group members (Van Knippenberg & Schipper, 2007).

A recent research has indicated that the social categorization process in culturally diverse environments is negatively related to work performance (Pelled et al., 1999), group processes (Guillaume, Dawson, Woods, Sacramento, & West, 2013), and interactions among culturally diverse colleagues, such as sharing and elaborating creative ideas (Van Knippenberg et al., 2004), because employees are more likely to favor and interact with similar than dissimilar colleagues (Williams & O'Reilly, 1998). To summarize, the categorizing process of in- and out-groups may decrease individual creativity in a culturally diverse environment. However, we expect that metacognitive and motivational cultural intelligence can reduce these potentially negative consequences of the social categorization process and, in turn, trigger individual creativity among culturally diverse coworkers. Thus, we first define individual high cultural intelligence as a whole construct, and explain how metacognitive and motivational cultural intelligence dimensions can reduce the social categorization process among culturally diverse teammates in order to stimulate individual creativity.

## **1.2 Role of metacognitive and motivational cultural intelligence on creativity in a culturally diverse environment**

Cultural intelligence is “operationalized as a specific form of intelligence” (Erez et al., 2013, p. 335) that indicates whether individuals can manage situations that are characterized by culturally diverse settings and involve individuals from a culturally diverse environment effectively (Earley & Ang, 2003). It includes four related but different dimensions: cognitive, metacognitive, motivational, and behavioral (Earley & Ang, 2003). Ang et al. (2007) explained that different dimensions of cultural intelligence represent different individual capabilities that together form overall cultural intelligence. Although theory and research on which dimension of cultural intelligence is the most critical for intercultural interactions is still developing, recent empirical evidence indicates that metacognitive and motivational cultural intelligence are the most valuable dimensions of creativity (Chua et al., 2012; Crotty & Brett, 2012; Earley & Ang, 2003). In this study, we are therefore going to limit ourselves only on metacognitive and motivational cultural intelligence dimensions.

The metacognitive dimension of cultural intelligence reflects individual mental consciousness and awareness during intercultural interactions. Ang et al. (2007) explained that metacognitive cultural intelligence relates to the way individuals plan their behavior before interacting with culturally diverse colleges, the way they monitor their assumptions during actual multicultural interactions and, then, the way they make mental adjustments if expectations differ from their experiences with multicultural interactions. Metacognitive skills can trigger employees' creative thinking (Feldhusen & Goh, 1995), so we predict that metacognitive culturally intelligent individuals are more likely to be creative, even in a culturally diverse environment. A study of 246 individual members of 37 multicultural teams indicated that creativity was actually higher when the team members were more metacognitive culturally intelligent (Crotty & Brett, 2012). In their study, Crotty and Brett (2012) also found that individuals with high metacognitive cultural intelligence are more likely to start to create a fusion culture in the work environment and blend diverse cultural

values into one culture. In line with this result, Adair et al. (2013) obtained similar results by demonstrating that metacognitive cultural intelligence indeed has a positive effect on shared values in culturally heterogeneous teams. If culturally diverse teammates have common values, they see themselves more as in-group members, which will, on one hand, increase the social interaction (e.g., sharing information and engaging in communication) and, on the other, decrease social categorization processes.

According to Rockstuhl and Ng (2008, p. 210), metacognitive cultural intelligence is based on individual conscious awareness of cultural differences during interactions, thus individuals with high metacognitive cultural intelligence “are less likely to make superficial and inaccurate judgments based on salient ethnic differences,” which increases the social interaction between culturally diverse colleagues. As already mentioned, social interactions and communication with culturally diverse teammates are relevant to creativity as they can enhance individual creativity due to the receipt of new information (Amabile, 1996; Woodman, Sawyer, & Griffin, 1993). That is why we predicted that individuals with high culturally metacognitive intelligence would be more creative in a culturally diverse environment.

**H1: Metacognitive cultural intelligence is positively related to individual creativity.**

Motivational cultural intelligence as a third dimension reflects individual capability to direct energy and effort towards learning and functioning in cross-cultural situations (Earley & Ang, 2003). As Ang et al. (2007) explained, it is based on individuals' intrinsic motivation (Deci & Ryan, 1985) and self-confidence in their cross-cultural effectiveness in a diverse cultural setting (Bandura, 2002). Motivational cultural intelligence thus stimulates individuals to enjoy and have more confidence when interacting with culturally diverse coworkers, and to tend to persist when cross-cultural interactions are challenging (Bandura, 1997; Ng, Van Dyne, & Ang, 2009). Furthermore, individuals with high motivational intelligence may look for opportunities to interact with out-group members as they value the benefits of cross-cultural interactions, tend to be more engaged in intercultural interactions, and are thus more likely to overcome obstacles, setbacks, or failures due to cultural misunderstandings (Ang, Van Dyne, & Koh, 2006; Kim & Van Dyne, 2012; Rockstuhl & Ng, 2008; Van Dyne et al., 2012). According to Ng et al. (2012), the investment theory of intelligence (Cattell, 1971) would suggest that motivational cultural intelligence is a building block to stimulate metacognitive cultural intelligence.

Therefore, high motivational cultural intelligence can reduce the likelihood of emerging social categorization processes within a culturally diverse group (Rockstuhl & Ng, 2008), and in turn trigger creativity in a culturally diverse environment. We thus propose that motivational cultural intelligence can promote a non-routine creative task performance, which line with Earley and Ang (2003) is theorizing that employees with high motivational cultural intelligence should have a more superior task performance in a culturally diverse environment than individuals with low motivational cultural intelligence. Empirical studies have indicated that individuals' motivational cultural intelligence is related to the higher job performance (Chen, Lin, & Sawangpattanakul, 2011; Chen, Kirkman, Kim,

Farh, & Tangirala, 2010; Chen, Liu, & Portnoy, 2012), knowledge sharing (Chen & Lin, 2013) and beneficial agreements negotiations (Imai & Gelfand, 2010) in a culturally diverse environment. To sum up, we propose that individuals with high motivational cultural intelligence will interact more efficiently with out-group members, and the social categorization process will thus decrease, which will in turn trigger their creative performance.

**H2: Motivational cultural intelligence is positively related to individual creativity.**

## 2 METHODS

### 2.1 Sample and procedures

Empirical data was collected in October and November 2014 as part of the PACINNO project (PACINNO, 2015) from the Adriatic countries (i.e. Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Montenegro, Serbia, and Slovenia) in order to get a culturally diverse sample. Our sample consisted of 787 employees nested within 73 groups from 20 diverse, innovative SMEs. A translation and back-translation procedure was used to translate the questionnaire from English to the languages of the analyzed countries and then back to English. We used a company-provided list of all employees in 20 different companies and invited employees to complete a survey either online or in hard copy during or outside their working hours. We provided confidentiality to employees that participated in the survey by identifying them with code names instead of their real names. Data was collected from the employees on the individual level and on the basis of the group/team work unit the employees are a part of.

Our sample consisted of employees from 20 different companies of diverse industries (e.g. pharmacy, IT, automobile, biotechnology, food and beverage) yet they all are trans-national companies that deal with multicultural collaborations daily. For example one of the companies is a biotechnology manufacturer that employs about 70 people. Their motto is to “be the world leader in innovative biotechnology manufacturer, and supplying our customer with the best possible biotechnological solutions, and providing advanced laboratory measurements”. The participants represented at least eight different nationalities from different countries (Bosnia and Herzegovina = 13.9%, Croatia = 16.5%, Albania = 12.6%, Italy = 14.4%, Serbia = 8.5%, Greece = 9.4%, Slovenia = 12.7%, Montenegro = 12.1%). In our sample, 61.4% of the participants were male and their average age was 35.86 (SD = 9 years). Of the 787 participants, 34.6% (SD = 0.8) were undergraduates or had a bachelor’s degree, and 92.8% of the respondents were fully employed in their organizations (SD = 0.26). The employees have been working at their current place of employment for an average of 6.5 years (SD = 6.64) and have been working with their current supervisor for an average of 4.2 years (SD = 4.05). In the sample, 52.1% (SD = 0.52) of the employees performed managerial duties.

### 2.1.1 Measures

Unless otherwise noted, seven-point Likert-type scales ranging from 1 (“strongly disagree”) to 7 (“strongly agree”) were used in the study and were all self-reported by the employees.

**Metacognitive cultural intelligence** was measured according by Ang and Van Dyne (2008) four-items metacognitive cultural intelligence scale. We aggregated all four metacognitive cultural intelligence items into a single score and the overall metacognitive cultural intelligence reliability score was  $\alpha = .92$ . The questionnaire included items such as “I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds” and “I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.”

**Motivational cultural intelligence** was assessed with a four-item scale by Ang and Van Dyne (2008), we then aggregated all four motivational CQ items into a single score and the overall motivational cultural intelligence reliability score was  $\alpha = .91$ . The questionnaire included items such as “I enjoy interacting with people from different cultures” and “I am sure I can deal with the stresses of adjusting to a culture that is new to me.”

**Creativity** was measured according to a thirteen-item questionnaire developed by Zhou and George (2001)  $\alpha = .95$ . The employees were asked to assess their behavior and actions within the firm with regard to their ability to come up with new ideas. Questionnaire included items such as “I am a good source of creative ideas” and “I come up with creative solutions to problems.” Although employees innovative or creative behavior in one organizational context may in other be perceived as undesirable or disruptive in another (Agars, Kaufman, & Locke, 2008), self-measurement were used because they enable subjective assessments about domain-specific individual creativity behavior in which organizational context the creative process is taking place.

**Control variables.** We included several control measures to remove the influences of other variables related to the relationship between cultural intelligence and creativity in a culturally diverse environment. Firstly, we used an eight-item scale by Ang and Van Dyne (2008) to control **cognitive cultural intelligence** with four-items. The overall cognitive cultural intelligence was aggregated into a single score and the reliability score was  $\alpha = .87$ . The questionnaire included items such as “I know the rules (e.g., vocabulary, grammar) of other languages” and “I know the cultural values and religious beliefs of other cultures.” Secondly, we controlled for **behavioral cultural intelligence** that was also measured according Ang and Van Dyne (2008) fore-items behavioral cultural intelligence scale. Behavioral cultural intelligence was also aggregated from four items and the overall behavioral cultural intelligence reliability score was  $\alpha = .89$ . The questionnaire included items such as “I change my nonverbal behavior when a cross-cultural situation requires it” and “I alter my facial expressions when a cross-cultural situation requires it.”

Thirdly, we controlled for **knowledge hiding** with the eight-item scale developed by Connelly et al. (2012)  $\alpha = .95$  – since knowledge hiding can emerge due to a culturally

diverse environment and can decrease individual creativity (Černe, Nerstad, Dysvik, & Škerlavaj, 2014). Knowledge hiding was aggregated from eight items and questionnaire included items such as "Pretended I did not know what s/he was talking about." and "Said that I did not know, even though I did." Furthermore, we also controlled the *age, gender, education level, work experience at current place of employment, and origin of the company* to see whether the fact that we gathered data on twenty companies from eight different countries had any impact on the results. All control variables were self-reported.

## 2.2 Results

Table 1 presents means, standard deviations, and correlations for the key study variables. We first observed the factor structure of the focal variables at the individual level. The expected three-factor solution (metacognitive and motivational cultural intelligence, and creativity) fit reasonably with the data ( $\chi^2[210] = 13720.611$ , CFI = 0.932, TLI = 0.924, SRMR = 0.044, RMSEA = 0.079). The factor loadings ranged from 0.81 to 0.92 for metacognitive cultural intelligence items, from 0.74 to 0.92 for motivational cultural intelligence, and from 0.68 to 0.83 for creativity items. This three-factor solution (metacognitive and motivational cultural intelligence, and creativity), albeit uncharacterized by extremely high fit indices, was superior to more parsimonious two-factor solutions (motivational cultural intelligence and creativity -  $\chi^2[118] = 950.277$ , CFI = 0.917, TLI = 0.905, SRMR = 0.044, RMSEA = 0.095). We should also note that we did not allow residuals to correlate and did not use modification indices.

Table 1: *Descriptive Statistics and Correlations among variables used in research*

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11
1 Education <sup>c</sup>	2.06	0.85	1										
2 Gender <sup>d</sup>	1.64	0.49	.04	1									
3 Age <sup>e</sup>	35.8	9.69	-.05	.03	1								
4 Work experience <sup>e</sup>	6.57	6.64	-.09*	-.00	.62**	1							
5 Company origin <sup>f</sup>	4.27	2.34	-.22**	-.03	.09**	.14*	1						
6 Knowledge hiding	2.31	1.72	-.23**	-.09*	-.03	.02	.44**	1					
7 Cognitive cultural intelligence	4.33	1.33	.21**	.05	.04	.04	-.19*	-.27**	1				
8 Behavioral cultural intelligence	4.34	1.41	.10**	.00	.03	.02	-.20**	-.27**	.61**	1			
9 Metacognitive cultural intelligence	4.78	1.49	.26**	-.03	.03	.00	-.32**	-.53**	.66**	.66**	1		
10 Motivational cultural intelligence	4.71	1.48	.23**	-.00	-.04	-.04	-.32**	-.46**	.64**	.68**	.78**	1	
11 Creativity	4.67	1.33	.22**	.08*	.03	.02	-.25**	-.40**	.39**	.42**	.53**	.49**	1

a n=787. b Coefficient alphas are on the diagonal in parentheses. c For education 1 = "High school diploma", 2 = "Associate's degree", 3 = "Master's degree", 4 = "Doctorate degree". d For gender, 1 = "female", 2 = "male. e For age and work experience were measured in years. f Company origin, 1 = "Bosnia and Herzegovina," 2 = "Croatia", 3 = Albania, 4 = "Italy," 5 = "Serbia", 6 = "Greece", 7 = "Slovenia," 8 = Montenegro". \* p<.05, \*\* p<.01, \*\*\* p<.001.

### *2.2.1 Multilevel analysis results*

The dataset consisted of two hierarchically nested levels: 787 employees (level-1) nested within 73 groups (level-2), with each group having their own supervisor. Thus, we tested the multi-item within-group agreement ( $rwg(j)$ ) and interclass correlations (ICCs) of individual-level measures of metacognitive cultural intelligence, motivational cultural intelligence, and creativity. For creativity, the average  $rwg(j)$  was 0.86, ranging from 0.22 to 0.97, whereas  $ICC(1)$  was 0.60 and  $ICC(2)$  was 0.94 ( $F = 17.45, p = 0.000$ ). For metacognitive cultural intelligence, the average  $rwg(8)$  was 0.78, ranging from 0.35 to 0.95 with  $ICC(1)$  at 0.62 and  $ICC(2)$  at 0.95 ( $F = 18.86, p = 0.000$ ). For motivational cultural intelligence, the average  $rwg(8)$  was 0.75, ranging from 0.40 to 0.97 with  $ICC(1)$  at 0.61 and  $ICC(2)$  at 0.94 ( $F = 17.77, p = .000$ ). As such, these statistics justify the level found in prior research dealing with aggregating individual response to the group level (Campion, Medsker, & Higgs, 1993; Gong, et al., 2013; Kirkman, Chen, Farh, Chen, & Lowe, 2009) and are in line with the principles of construct validation by Chen et al. (2004). We used hierarchical linear modeling (HLM) to test the following aspects of our multilevel model: (1) the existence of a multilevel structure, (2) the individual cultural intelligence effect on individual creativity, and (3) the individual metacognitive and motivational cultural intelligence effect on individual creativity in a culturally diverse environment. We developed a set of multilevel models based on our theoretical predictions by using Hox's (2010) procedure for incremental improvement. Thus, all variables were grand-mean centered in the models.

The results of all three models are presented in Table 2. We started our analysis with the intercept-only model by putting individual employee creativity as the dependent variable (Model 1). At this point, we would like to emphasize that HLM reduced the missing variables on level-1 (individual level) and level-2 (group level). Accordingly, in each model there is a different sample size of employees and groups (see Table 2). In model 2, we inserted the controlled variables such as education, gender, age, work experience, company origin, and knowledge hiding as level-1 predictors of creativity. In Table 1, we can see that cognitive and behavioral cultural intelligence are highly and positively correlated with metacognitive and motivational cultural intelligence, thus we put them as controlled variables in our Model 3.

Table 2: *Multilevel analysis results for creativity as the dependent variable*

	Model 1	Model 2	Model 3
<i>Level 1</i>			
Intercept	4.45** (0.11)	5.18** (0.39)	2.63** (0.41)
Education		0.07 (0.07)	0.07 (0.06)
Gender		0.12 (0.11)	0.22** (0.10)
Age		0.00 (0.00)	0.00 (0.00)
Work experience		0.00 (0.00)	0.00 (0.00)
Company origin		-0.15** (0.04)	-0.06* (0.02)
Knowledge hiding		-0.17** (0.04)	-0.09* (0.04)
Cognitive cultural intelligence			0.00 (0.04)
Behavioral cultural intelligence			0.07 (0.04)
<i>Level 2</i>			
Metacognitive cultural intelligence			0.22** (0.06)
Motivational cultural intelligence			0.10* (0.05)
Pseudo R2		0.41	0.55
$\chi^2$ (df)	429.65 (72) ***	204.20 (71) ***	108.39 (70) **
Deviance	2543.68	2334.38	2171.30
n (level 1)	73	72	71
n (level 2)	787	732	706

<sup>a</sup>Entries are estimations of fixed effects with robust standard errors. \*\* p<0.01, \* p<0.05.

The results show (supporting Hypothesis 1) that metacognitive cultural intelligence is positively and significantly related to individual creativity (Model 3:  $\gamma = 0.22$ ,  $SE = 0.06$ ,  $p < 0.001$ ). The results also reveal that motivational cultural intelligence (Model 3:  $\gamma = 0.10$ ,  $SE = 0.05$ ,  $p < 0.05$ ) is also positively and significantly related to individual creativity, supporting Hypothesis 2. Among the control variables, only the companies' origin (Model 2:  $\gamma = -0.08$ ,  $SE = 0.03$ ,  $p < 0.05$ ) and knowledge hiding (Model 3:  $\gamma = -0.11$ ,  $SE = 0.04$ ,  $p < 0.05$ ) were negatively and significantly related to individual creativity. The results supported our argument that metacognitive and motivational cultural intelligence can decrease the social categorization process and lead to increased individual creativity. The results furthermore imply that metacognitive cultural intelligence is more positively related to individual creativity than motivational cultural intelligence.

### 3 Discussion, contributions and practical implications

The results of the multilevel analysis provided support for our argument based on social categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) that motivational and metacognitive dimensions of cultural intelligence can decrease the social categorization process and are in turn positively related to individual creativity. Moreover, this finding suggests that metacognitive cultural intelligence is more positively related

to individual creativity than motivational cultural intelligence. These results complement and extend the research in value in diversity perceptive, and more particularly creativity in a culturally diverse environment, as well as hold clear implications for the managers.

### 3.1 Theoretical contributions

Our findings highlighted three key theoretical contributions to the creativity, diversity, and cultural intelligence literature. Firstly, we enhanced the field's understanding of whether and when cultural differences can enhance individual creativity. Based on social categorization theory, we argued that cultural diversity stimulates social categorization processes on out-group and in-group members that may have a negative impact on individual creativity. We went even further by suggesting that individuals with high metacognitive and motivational cultural intelligence can minimize these social categorization processes and, in turn, be more creative when collaborating with individuals from different cultural backgrounds. In line with the value-in-diversity perspective (O'Reilly, et al., 1998), our studies indicated that cultural diversity can stimulate individual creativity only when an individual possesses individual characteristics, such as a high level of motivational or metacognitive cultural intelligence. Thus, we answered repeated calls for more in-depth research on the relationship between creativity and cultural diversity (Anderson et al., 2004; Anderson et al., 2014; Shalley et al., 2004; Zhou & Su, 2010) by providing empirical evidence that cultural diversity indeed stimulates creativity. However, we stress that for more detailed research on creativity and cultural differences, scholars need to pay attention not only to the situational factors (e.g., culturally diverse environment), but also to the individual differences (e.g., cultural intelligence) that can help employees capitalize the potential benefits of cultural diversity for their own creativity.

A second contribution of our study to creativity literature is the advancement of research on individual motivation as an important driver of creativity (Elsbach & Hargadon, 2006) by adding a focus on motivational cultural intelligence. Although scholars have long implied that individual motivation, especially intrinsic (Amabile, 1985; Amabile, Hill, Hennessey, & Tighe, 1994) and prosocial motivation (Grant & Berry, 2011), can enhance creativity there is no research known to us that links creativity with motivational cultural intelligence. Our results complement the previous research by highlighting the importance of the motivation mechanism that triggers individual creativity. At the same time, we take a step forward by capturing that motivational cultural intelligence as one of the motivational processes is also relevant for individual creativity. Thus, we answer Shalley et al.'s (2004) call for new theoretical perspectives and empirical investigations in order to provide a more in-depth understanding of the motivational processes for creativity. The present study theoretically and empirically demonstrates that motivational cultural intelligence is positively related to individual creativity in a culturally diverse environment.

Moreover, we contribute to the cultural intelligence literature not only by theoretically explaining how the dimensions of cultural intelligence can reduce the social categorization process in order to positively influence a culturally diverse environment, but also by

empirically demonstrating that metacognitive and motivational cultural intelligence positively impact on individual creativity. Thus, by providing evidence that metacognitive and motivational cultural intelligence have the same impact on individual creativity, we answer the call from Van Dyne et al. (2012) for a more in-depth research on cultural intelligence. Furthermore, we improve previous empirical studies indicating that the dimensions of cultural intelligence can have a positive impact on job performance (Chen et al., 2011; Chen et al., 2010), specifically on individual non-routine creativity performance (Sahin & Gurbuz, 2014). Furthermore, our research is in line with Chua and colleagues (2012) as it shows that individuals with high metacognitive cultural intelligence are not only more effective in intercultural creative collaborations, but also directly related to their individual creativity. In addition, by identifying that individuals can, with a little help from their own metacognitive and motivational cultural intelligence, manage the negative aspects of cultural diversity, especially the negative effects of social categorization processes, this research is an important theoretical and practical step forward as we show empirically that the dimensions of cultural intelligence are an important driver for individual creativity in a culturally diverse environment.

### 3.2 Limitations and future directions

We note that our research is subject to several limitations that need to be taken into consideration when interpreting the results. We collected data from diverse industries with the intention of avoiding potential common method biases. However, we relied heavily on self-reported data, especially for individual perceptions of metacognitive and motivational cultural intelligence, even though we realized that individuals without a high level of cultural intelligence capability may lack the awareness of this (Kruger & Dunning, 1999). Therefore, we suggest that for future research, scholars should include the assessments of the employees' dimensions of cultural intelligence from different sources (e.g., teammates or leaders). We thus cannot rule out the possibility of method bias in our research. We hope to see future research address these bias issues, use multiple raters for individual cultural intelligence, and employ more appropriate objective measures in evaluating the metacognitive and motivational cultural intelligence-creativity relationship.

Another potential concern is that we focused only on the actual cultural diversity based on the companies' cultural origin. In diversity literature, scholars usually use the perceived diversity in their research (e.g., Harrison, Price, Gavin, & Florey, 2002; Jehn et al., 1999; Shin et al., 2012), although it may provide more valuable information about individual behavior than the actual diversity (Harrison & Klein, 2007). However, it is possible that individuals fail to assess accurately the perceived cultural diversity; thus, their assessment could be biased (Harrison & Klein, 2007). This is why we only used the actual cultural diversity; however, we do hope that future studies will address this issue by simultaneously researching the actual and the perceived cultural diversity.

Furthermore, we only theorized on the negative impact of social categorization processes on individual creativity; however, we did not test whether social categorization processes

(e.g., on out-group and in-group members) have a direct influence on individual creativity. To offer a better explanation of the mechanism of social categorization processes and its relationship to creativity, future research should also include possible mediators, such as prototype clarity (Fielding & Hogg, 1997), self-prototypically (Hogg & Hains, 1998), prototype valence (Chattopadhyay, George, & Lawrence, 2004), shared objectives (Anderson & West, 1998), and measures for information elaboration (see Kearney, Gebert, & Voelpel, 2009; Van Ginkel & van Knippenberg, 2008). Additionally, by focusing only on the cultural intelligence dimensions, we also neglected other individual capabilities and skills that could decrease the negative aspects of the social categorization process, and in turn enhance the social exchange and creativity among culturally diverse teammates. For example, highly prosocially motivated employees may help minorities because they are keen to help and have a strong desire to benefit from other people (Grant, 2007; Grant, 2008), which could be beneficial in decreasing social categorization processes based on cultural diversity and might, in turn, trigger individual creativity. Thus, future studies should also analyze other individual abilities that could help decrease social categorization processes.

### 3.3 Practical implications

Our findings offer important practical implications for managers and their employees because they indicate that in today's globalized work environment, managers should be highly motivated to understand how to develop the employees' cultural intelligence potential in order to stimulate their creativity (Elenkov & Manev, 2009; Livermore, 2009). Our research indicates that employees with high metacognitive and motivational cultural intelligence tend to be more creative than their colleagues with low metacognitive and motivational cultural intelligence when collaborating with teammates from different cultural backgrounds. Livermore (2011) implies that although high individual cultural intelligence does not emerge automatically, individuals can improve and develop their cultural intelligence (Erez et al., 2013). Therefore, we propose that managers who are interested in stimulating creativity in a culturally diverse environment should create conditions that would support the employees' improvement of their metacognitive and motivational cultural intelligence. For example, a recent research (Erez et al., 2013; Rosenblatt, Worthley, & MacNab, 2013) indicated that the MBA students developed and increased their cultural intelligence by being exposed to a cross-cultural interaction or having an optimal cross-cultural contact. Moreover, Li et al. (2013) have shown not only that overseas work experience is positively related to the level of individual cultural intelligence, but also that the length of the overseas experience is important. More precisely, they found that the longer employees remain in foreign countries, the more individual cultural intelligence they may develop. Thus, managers should provide real working experiences that would maximize the intercultural interactions of their employees and during which they would gain information about points of cultural differences as well as develop their metacognitive and motivational cultural intelligence in order to be more creative.

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