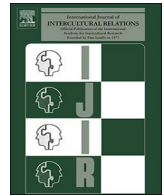


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## Brief report

Revisiting the interactive effect of multicultural experience and openness to experience on divergent thinking<sup>☆</sup>Boris Forthmann<sup>a,\*</sup>, Sandra Regehr<sup>a</sup>, Julia Seidel<sup>a</sup>, Heinz Holling<sup>a</sup>, Pınar Çelik<sup>b</sup>, Martin Storme<sup>b</sup>, Todd Lubart<sup>b</sup><sup>a</sup> Institut für Psychologie, Westfälische Wilhelms-Universität, Münster, Germany<sup>b</sup> Laboratoire Adaptations Travail-Individu, Université Paris Descartes, France

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## ABSTRACT

The moderating role of openness to experience for the relationship between multicultural experiences and divergent-thinking performance was examined. A linear-mixed modeling approach to account for variability due to subjects and alternate-uses objects was used. In a final sample of  $N = 199$  participants a three-way interaction of instruction type (standard vs. be-creative instructions), openness to experience, and multicultural experiences was found for creative quality, but not for fluency and flexibility. Thus, evidence provided by the current study for a link of multicultural experiences and divergent thinking was not as strong as in previous studies.

## Introduction

The interconnection among different regions and cultures of the world has increased (Doku and Oppong Asante, 2011) and also the degree of multiculturalism has grown in several nations (Chen, Benet-Martínez, & Bond, 2008). Consequences from multicultural experience (MEX) are hypothesized to affect the well-being of individuals, groups, organization and society as a whole (Crisp & Turner, 2011; Gocłowska & Crisp, 2014). In this regard, a possible creative performance advantage as a cognitive consequence of MEX and related motivational variables has drawn attention (Leung, Maddux, Galinsky, & Chiu, 2008). However, a possible creative performance advantage and the psychological conditions for it need further clarification (Ivcevic, 2009). Consequently, a clear understanding of this proposed benefit from multicultural societies may contribute to social well-being, harmony, and to develop educational programs to foster cultural competencies and creativity at the same time (Dziedziewicz, Gajda, & Karwowski, 2014).

Originality and usefulness are the two components of the standard definition of creativity (Runco & Jaeger, 2012). Originality has been characterized in terms of different facets or labels such as uniqueness, remoteness, or cleverness (Wilson, Guilford, & Christensen, 1953) and a combination of these facets has been used synonymous with creativity in a scoring of divergent-thinking tasks by Silvia, Martin, and Nusbaum (2009). Divergent thinking (DT) tasks which are considered to be an indicator of creative potential (Runco & Acar, 2012) are most often used in studies on creative thinking. They pose a problem for which a test-taker has to generate many different or creative ideas (Carroll, 1993; Guilford, 1967). Moreover, the instruction of divergent-thinking tasks may vary. Some researchers prefer the so-called standard as-many-as-possible instruction (see Runco & Acar, 2010), whereas others strongly argue to use a be-creative instruction (Harrington, 1975; Nusbaum et al., 2014). In fact, the standard instruction may

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be considered to result in measurement of verbal fluency which is a related construct (Silvia et al., 2013). The be-creative instruction, in contrast, is assumed to induce cognitive processes, such as switches of strategies or inhibition of common candidate ideas that help to produce creative ideas (Nusbaum et al., 2014).

Openness to experience is characterized by a need for experience in relation to Fantasy, Aesthetics, Feelings, Actions, Ideas, and Values and the open person is equipped with intellectual curiosity and a reflective mind-set (McCrae & Costa, 1997). Openness to experience has been frequently shown to be positively related to DT (McCrae, 1987; Silvia et al., 2008). Similar to this effect, Ip, Chen, and Chiu (2006) demonstrated that more open persons generated exemplars which are less prevalent in a culture.

The notion that exposure to culturally diverse environments and behaviors is a coin with two sides has been acknowledged by several researchers (Chao, Kung, & Yao, 2015; Chua, 2013). Whereas cultural shock (Leung & Chiu, 2008) and exaggeration of incompatibilities and differences between cultures (Chao et al., 2015) are anticipated negative consequences, there is considerable evidence and theorizing in relation to a creative performance benefit as a consequence of exposure to diversified environments (Leung et al., 2008). In this field of research, MEX can be defined as all direct and indirect experiences resulting from interactions with elements and/or members of foreign cultures (Leung et al., 2008). MEX have been further conceptualized as subset of diversifying experiences (Ritter et al., 2012) which denote experiences which are highly unusual and actively experienced.

Surely, the interplay of DT, MEX, and openness to experiences is a complex one. Firstly, an effect of MEX on DT can be motivated by the observation that different cultures have different exemplars of categories more readily available (Ip et al., 2006). For example, a lychee is more likely to be named by a Chinese person, whereas a blackberry is more likely for a German person. Consequently, a person who knows both cultures would have more readily access to fruits that are prevalent in both cultures. Thus, experience with other cultures might enlarge a persons' idea base which facilitates creative thinking processes such as idea combination and idea expansion (Ward, Smith, & Vaid, 1997). Furthermore, an analogous information-processing account has been used to explain creativity gains in culturally more diverse teams (Stahl, Maznevski, Voigt, & Jonson, 2010). In line with this argumentation a main effect of MEX on DT could be assumed.

However, Leung and Chiu (2008) further assume an interaction effect of MEX and openness to experience: participants high in openness are more receptive to new ideas from foreign cultures, whereas low-openness persons could be even shocked by those ideas. Thus, persons with more extensive MEX would only benefit in terms of creative performance if they are more open to those experiences as well. Accordingly, they found a significant positive interaction, indicating that MEX is only favorable in DT when people are open to experience as well. However, in later articles they report main effects of MEX on creative thinking tasks (Cheng, Leung, & Wu, 2011; Leung & Chiu, 2010) and, thus, it remains unclear if there is a direct link of MEX to creative thinking or if third variables such as openness to experiences are crucial in this relationship.

Consequently, we sought to do a conceptual reexamination of Leung and Chiu's (2008) findings, but other methodology was used in order to replicate and complement their findings. We now address important changes in methodology in this work as compared to the study of Leung and Chiu (2008). Firstly, they only used an instruction of DT tasks in which participants are asked to generate as many ideas as possible. As outlined above, this type of instruction may have led to the measurement of verbal fluency only and the link to creative thinking would thus be weak. Moreover, they did not score their task for any measure that reflects the creative quality of the participants' responses. However, quality scores such as originality are conceptually much stronger related to creativity (Runco, 2011). In addition, the importance of creative quality is highlighted by the equivocal pattern of results in the literature. While some researchers did not find effects for creative quality scores such as originality (Fee & Gray, 2012), others found effects (Maddux & Galinsky, 2009). Moreover, Lee, Theriault, and Linderholm (2012) found effects for studying abroad on a combined measure of originality and fluency which did not allow to attribute the effect solely to originality. Thus, further research in which originality/creative quality should be considered as a dependent variable is needed.

## The current research

In relation to the literature on the link of MEX and DT, our experimental setup has several advantages. The most important differences to previous studies are: (a) addition of the be-creative instruction, (b) addition of a measure of creative quality, and (c) better reliability due to more DT tasks. The first two points are most essential for relating the findings conceptually to creative thinking and the last point is important in terms of measurement error. Most importantly, the lack of studies in which DT tasks are scored for uncommonness, unconventionality or, in general, creative quality was addressed, while at the same time the interaction effect as reported by Leung and Chiu (2008) of MEX and openness to experience on fluency and flexibility was conceptually replicated. Consequently, the inconclusive findings regarding the interaction or main effect of MEX and openness to experience on unconventional (creative) thinking were sought to be clarified by the current research.

In line with previous findings (Nusbaum et al., 2014; Runco & Okuda, 1991), we expected higher creative quality scores and lower fluency scores for the be-creative instruction as compared to an instruction with production focus ("as many as possible"). However, no such effect of a be-creative instruction on flexibility has been reported (e.g., Runco & Okuda, 1991) and, thus, a difference here was not expected.

## Method

More details with respect to the applied methods can be found in the online supplemental material.

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