



The effects of multilingual and multicultural practices on divergent thinking. Implications for plurilingual creativity paradigm

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Abstract

This study opens a project that empirically investigates the Plurilingual Creativity paradigm. This paradigm expands the Multilingual Creative Cognition by making shifts in the conceptualization of the phenomena of multilingualism and creativity, respectively. We examined how multilingual and multicultural factors can contribute to divergent thinking. Online data collection included assessments of language repertoire, multicultural experience, intercultural competence, and divergent thinking. A series of regression analyses obtained evidence for the direct contribution of language repertoire, intercultural competence components and multicultural experience to divergent thinking. In addition, language repertoire was found to moderate the link between management of intercultural interaction and fluency, multicultural experience and both flexibility and originality in divergent thinking. These findings emphasize the importance of considering the contribution of plurilingual/pluricultural factors of language repertoire, multicultural experience, and intercultural competence to creativity. Thereby, these findings provide empirical support for the conceptual shift toward plurilingual creativity.

Creativity is a versatile construct perceived as a syndrome or complex (Runco, 2014). This phenomenon is studied from the perspective of a creative person, a creative process, a creative perception, a product of creative activity, environment or place in which creative activity occurs, persuasion of others in plausibility of creative outcome, and potential to engage in creative activity (Kharkhurin & Charkhabi, 2021; Rhodes, 1961; Runco, 2003; Simonton, 1990). An individual's creativity was found to be prompted by a large variety of factors such as education, expertise, motivation, attitudes, personality traits, personal experience, and socioeconomic and sociocultural conditions.

About a decade ago, Kharkhurin (2008) identified one more trigger for one's creative potential – namely, multilingual practice. Reviving scarce empirical evidence on the relationship between these phenomena (overview in Kharkhurin, 2012; Ricciardelli, 1992b), he proposed a Multilingual Creative Cognition framework (Kharkhurin, 2015) to study the link between multilingualism and creativity. Over the last five years this relationship received substantial attention in the academic community (e.g., Fürst & Grin, 2018; Piccardo, 2017; Storme et al., 2017). Recent empirical findings provided support for a positive effect of bi-/multilingualism on creative cognition (see Kharkhurin, 2018; van Dijk, Kroesbergen, Blom, & Leseman, 2018, for an overview).

However, this approach appears to take a rather narrow perspective on both multilingualism and creativity. This framework was developed within the traditional views of bilingualism and creative cognition respectively, and focused primarily on the cognitive mechanisms underlying creative capacity, and on the way the functioning of these mechanisms could benefit from an individual's linguistic competencies. At the same time, scholarly reflection on the learning and use of multiple languages and their implications has introduced a broader perspective with work in bi-/multilingualism (e.g., Cenoz, 2013; Herdina & Jessner, 2002; Hornberger, 2002) and especially plurilingualism (e.g., Coste, Moore, & Zarate, 1997/2009; Lüdi & Py, 2009; Piccardo, 2018). Similarly, reflection on creativity has expanded towards a broader and more articulated conceptualization, with several models being developed that all stress the complex and multidimensional nature of creativity (e.g., Csikszentmihalyi, 2014; Glăveanu, 2013; Kharkhurin, 2014; Lubart & Guignard, 2004).

Both shifts paved the way to a reconsideration of the relationship between linguistic and cultural diversity on one side and creativity on the other. Hence, Kharkhurin (2021) proposed a new framework for research in multilingual and creative practices, Plurilingual Creativity. The present study opens a project aiming at exploring the plurilingual creativity approach empirically.

The construct of plurilingual creativity, as becomes evident from its name, rests on two pillars, plurilingualism and creativity. In the following sections, we elaborate on them.

Theoretical construct

Plurilingualism

Plurilingualism refers to an individual's practice with more than one language. However, there is an important difference between plurilingualism and related paradigms such as bilingualism and multilingualism. In the classic bi-/multilingual paradigm, languages are perceived as co-existing knowledge systems, which are utilized separately. This approach could be ascribed to a so-called 'monolingual' perspective (Gogolin, 1994, 2002), in which the second language (L2) users were considered from the perspective of the first language (L1) users. Second, third etc. language aptitudes were seen as supplements to L1 competence. As a result, studies in bi-/multilingualism have focused primarily on the psycholinguistic aspects of the contact of the language systems concerned. Also, these language systems were, in general, viewed as static and complete instead of dynamic and evolving.

Over the last three decades, there has been a steady move away from the classic separatist bi-/multilingual view, with a growing focus on interdependence of languages in bilinguals (Cummins & Gulustan, 1974) and the adoption of linguistic diversity as a resource rather than as a problem (Sánchez-Ruiz, 2011). Recently, the field of applied linguistics moved towards a more holistic understanding (e.g., Cenoz, 2013; Conteh & Meier, 2014; Cook & Wei, 2016). On the crest of this wave, the concept of plurilingualism has been introduced to help differentiate an additive view of languages, especially at the societal level (to be referred to as multilingualism) from a holistic one which considers languages as composing a single dynamic language *REPertoire* (to be referred to as plurilingualism). In the plurilingualism paradigm, languages are viewed as complex adaptive systems evolving through situated practices (Larsen-Freeman & Anderson, 2011; Larsen-Freeman & Todeva, 2021).

Plurilingual people are not only those who are proficient users in all their languages. They are also those who actively use, to varying degrees of success, more than one language, even if they have not achieved a high level of proficiency in all of them. For example, according to the Common European Framework of Reference for Languages (Council of Europe, 2018), plurilinguals have an ability to speak in one language while understanding another, switch between languages when appropriate, and serve as a mediator between individuals who do not speak a common language. An ability to speak multiple languages as well as the understanding of different sociocultural and emotional contexts in which these languages are acquired improves an individual's practical communicative skills and relationship with languages. These skills contribute to plurilinguals' capacity to deal with delicate culturally related situations (Council of Europe, 2018; Piccardo, 2021).

Thus, by introducing the plurilingualism paradigm we shift the focus from the languages to the agency of the individual in the interaction of languages (Coste et al., 1997/2009; Council of Europe, 2018; Lüdi, 2021; Marshall, 2021). We consider factors in an individual's development that go beyond linguistic capacities *per se*. Indeed, studies in sociolinguistics and language teaching consider the phenomenon of acquisition and use of multiple languages in relation to personality traits (e.g., Zafar &

Meenakshi, 2012), emotional states (e.g., Council of Europe, 2018), sociocultural context (e.g., Pazyura, 2016), economic situation (e.g., Young-Scholten, 2013) and education (e.g., Lier, 2004, 2007). These factors in turn are proposed to influence, among others, an individual's creative capacity.

Creativity

As mentioned above, in psychometric tradition, creativity is viewed from a perspective of creative cognition. The conceptual framework of creative cognition rests on two major assumptions. First, creative capacity is perceived as an ability to initiate multiple cycles of divergent and convergent thinking (Guilford, 1967). The fundamental difference between convergent and divergent thinking is that the former is a conscious attention-demanding process, whereas the latter occurs in the unconscious mind, where attention is defocused, and thought is associative. Convergent thinking seeks one correct answer to the question, or one solution to a problem which is considered to require a single answer or solution. On the other hand, divergent thinking concentrates on searching for information and generation of many novel alternative solutions to a problem that could be tackled in many ways. According to Guilford, there are four main characteristics of divergent thinking: fluency (the ability to rapidly generate many ideas or solutions to a problem), flexibility (the capacity to simultaneously consider many different ways to solve a problem), elaboration (the ability to think through the details of an idea and carry it out), and originality (the tendency to produce unique ideas). The solutions generated during divergent thinking are subsequently evaluated through convergent thinking, which narrows all possible alternatives down to a single, optimal solution. When both types of thinking are combined, it creates an active, attention-demanding process that facilitates the production of ideas that satisfy the defining characteristics of a creative product: novelty (i.e., original or unexpected) and utility (i.e., useful or meeting task constraints) (see Mayer, 1999, for an overview). Second, "ideas and tangible products that are novel and useful are assumed to emerge from the application of ordinary, fundamental cognitive processes to existing knowledge structures" (Ward, 2007, p 28). One's creative capacity can be understood in terms of the use of specific processes, and the richness and flexibility of stored cognitive structures to which these processes are applied (Ward, Smith, & Vaid, 1997). Creative capacity therefore, is assumed as an essential property of normative human cognition (Ward, Smith, & Finke, 1999), and increase in general cognitive functioning may facilitate an individual's creative abilities.

This perspective dominated research in creativity for many years. A large majority of scholars even believed that divergent thinking is a defining component of the creative process (e.g., Lubart, 2000). At the same time, creativity should be perceived as a complex construct. Several models recently developed in the field of creativity stress its multidimensional nature. For example, Kharkhurin (2014) challenged the traditional two-criterion construct of creativity (novelty and utility) as being biased by a Western frame of thought. He proposed an alternative four-criterion construct, which in addition to novelty and utility considers two other characteristics typical for Eastern perception of creativity: aesthetics and authenticity. Glăveanu (2013) suggested "using terms that explicitly endorse a systemic, contextual, and dynamic approach" (p. 69). His 5As framework perceives creativity from a perspective of actor, action, artifact, audience, and

affordances. In a similar vein, Lubart and Guignard (2004) asserted that creativity depends on cognitive, conative, affective, and environmental factors. Drawing on this multivariate approach, they claimed that “creativity is partly a generalized ability, partly a set of domain-specific abilities, and partly a set of task-specific abilities” (p. 43). Csikszentmihalyi (2014) proposed the systems model of creativity, which has three defining aspects: domain (the cultural matrix of information exchange), person (people who contribute to the domain by means of introducing novel elements and modifications of the existing ones), and field (groups of individuals who make decisions regarding the need to accept the novel elements and changes in the domain). These models use different approaches to creativity and somewhat differ in its constituents. However, they all emphasize the multivariate nature of the construct.

Plurilingual Creativity

Taking all the reviewed research together, we see that the plurilingualism approach suggests that the experience with multiple languages goes beyond the mere interaction between language systems and includes several factors not directly related to psycholinguistic aspects *per se*. Seeing creativity as complex also suggests that the creativity construct should not be limited to its underlying cognitive functions and should include other factors. Therefore, Plurilingual Creativity broadens the scope of the investigation of the relationship between multilingual and creative practices to include such factors as personality traits, emotional states, sociocultural context, economic situation, and education.

The relationship between plurilingualism and creativity has been explicitly stressed by a few scholars. For example, Psaltou-Joyce and Kantaridou (2009) asserted that plurilingual individuals tend to have better communicative sensitivity, metalinguistic awareness, and creativity. Furlong (2009) presented an argument that creativity can be boosted in plurilinguals' mind due to their heightened perception of the world. She concluded that, “given high level plurilinguals' increased perceptual awareness, they are likely to gain new insights, create new analogies and experience creative moments in any domain where perception is at work” (p. 365). Similarly, Piccardo (2017) employed Dynamic System Theory and the theory of affordances to make a theoretical argument for possible synergies between plurilingualism and creativity. She also perceived both phenomena as complex systems and advocated for “the potential for individuals to embrace a holistic, complex view of languages and cultures and to experience empowerment in the process of perceiving and exploring linguistic and cultural diversity, hybridity and interconnections, thus discovering and liberating their full creative repertoire” (p. 1).

Empirical evidence

However, the empirical evidence for the relationship between these two phenomena comes only from the studies in the Multilingual Creative Cognition presented above. Most of these studies compared bilinguals and monolinguals and found greater performance of the former. Specifically, these studies demonstrated bilinguals' advantages on divergent thinking traits such as fluency (e.g., Carringer, 1974; Hommel, Colzato, Fischer, & Christoffels, 2011; Jacobs & Pierce, 1966; Karapetsas & Andreou, 1999; Ricciardelli, 1992a), flexibility (e.g., Adi-Japha, Berberich-Artzi, & Libnawi, 2010; Carringer, 1974; Konaka,

1997), elaboration (e.g., Kharkhurin, 2008; Srivastava & Khatoon, 1980; Torrance, Gowan, Wu, & Aliotti, 1970), originality (e.g., Cummins & Gulutsan, 1974; Kharkhurin, 2009; Konaka, 1997; Okoh, 1980), insight problems (Cushen & Wiley, 2011), and structured imagination tasks (Kharkhurin, 2009). A few studies compared bilinguals with different levels of language proficiency and different age of language acquisition. These studies revealed greater divergent thinking performance of participants with high proficiency in both languages as compared to their linguistically unbalanced counterparts (e.g., Kharkhurin, 2008, 2009, 2011; Lee & Kim, 2011). Similarly, bilingual individuals who acquired L2 earlier obtained greater divergent thinking scores compared to their counterparts who acquired L2 later (e.g., Cushen & Wiley, 2011; Kharkhurin, 2008; Kostandyan & Ledovaya, 2013).

We aim to expand this empirical evidence and investigate different plurilingual factors contributing to creative thinking.

Present study

In the present study, we expand Multilingual Creative Cognition framework by several critical considerations.

Language repertoire

First, traditional multilingual factors such as language proficiency and age of language acquisition were replaced by the notion of a language repertoire. The latter emphasizes the agency of a plurilingual speaker who has a collection of languages at his/her disposal. This person employs these languages to various degrees and can change their proficiency depending on the goals and circumstances of language use. The very notion of linguistic repertoire distinguishes the plurilingualism's holistic and dynamic view of an individual in the interaction of languages from the additive view of languages as accepted in the bi-/multilingualism approach.

Various scholars made attempts to treat language experience and processing as a multifaceted construct that is shaped by a number of factors such as age of acquisition, history of language acquisition, and context and frequency of language use (e.g., Gullifer et al., 2021; Gullifer & Titone, 2021; Titone & Tiv, 2022). For example, Gullifer and Titone (2020) introduced the concept of language entropy to reflect “individual differences in the social diversity of language use, including the interactional context of language usage” (p. 284). It is computed as a sum of the proportion a language is used in a particular context multiplied by the logarithmic function of this proportion, for all languages spoken by a language user.

Several studies of multilinguals' personality traits used a total number of spoken languages as an assessment of participants' experience with multiple languages (e.g., Dewaele & Stavans, 2012; Dewaele & van Oudenhoven, 2009). Dewaele and Wei (2013) complemented this score with the mean proficiency score calculated for all languages spoken by participants. Kharkhurin and Wei (2014) hinted at the possible effect of individuals' habitual code-switching on their divergent thinking. Since the present study focuses on the ramifications of the language use for the cognitive functions underlying divergent thinking (see discussion above), we included habitual code-switching rate into our list of language related predictors. Thus, the construct of language repertoire includes three related factors: the total number of languages used by an individual, overall proficiency in these languages, and overall code-switching rate.

Multicultural experience

Second, more serious consideration was given to various factors related to plurilinguals' experience with different cultural settings. A plausible contributor to plurilingual individuals' creative thinking reflects the context of language acquisition and use. The studies in multilingual creative cognition generally disregarded the fact that most participants in the target samples experience and participate in more than one culture. These individuals are primarily immigrants, migrant workers, members of the minority groups, or foreign students exposed to different educational systems. They acquire each of their languages in the respective cultural environments where different cultural cues are available (Pavlenko, 2000). Therefore, in addition to acquiring several languages, they could also adopt a range of multicultural values and beliefs. Acculturation studies support this view by demonstrating that language acquisition is often accompanied by the adoption of the cultural values of the country in which this language is acquired (e.g., Birman, Trickett, & Vinokurov, 2002).

On the other side, creativity research demonstrated that the specific social and cultural aspects of the environment can have a considerable influence on levels of creative potential, pace of creative development, and on how creativity is evaluated (e.g., Kharkhurin & Yagolkovskiy, 2021; Lubart et al., 2022; McCarthy, 2019; Shao, Zhang, Zhou, Gu, & Yuan, 2019; Tang et al., 2015). There is even a radical opinion that "no account of creativity can be satisfactory unless it is culture-inclusive" (Glăveanu, 2010, p. 151). Sociocultural values and norms determine and shape the concept of creativity, which in turn may influence the way creative potential is understood and developed.

Thus, if plurilingual individuals acquire their languages in different countries, they are most likely to have been exposed to different sociocultural environments. Individuals' experience with multiple sociocultural settings may encourage their creative behavior.

This argument finds support in cross-cultural research demonstrating that the effect of multilingualism on creative performance is often confounded with the effect of multiculturalism (see Kharkhurin, 2012, for a discussion). For example, Kharkhurin (2008) found that the length of residence in the new cultural environment related to Russian–English bilingual college students' fluency, flexibility, and elaboration above and beyond the effect of bilingualism. Similar findings were obtained by Maddux and Galinsky (2009) who found that the amount of time MBA students from 40 different nations had lived abroad significantly predicted creative solutions of the Duncker's (1945) candle-mounting problem (assessing the impact of functional fixedness on an individual's problem solving capabilities) when the effect of bilingualism was controlled.

Intercultural competence

Third, Kharkhurin (2021) claimed that plurilinguals' multicultural experience (together with emotional experience, which we leave beyond the scope of this article) contributes to their intercultural competence, which in turn facilitates creative thinking. There are many different often contradicting models of intercultural competence (e.g., Byram, 1997; Dearthoff, 2009; see also Griffith, Wolfeld, Armon, Rios, & Liu, 2016, for an overview). These contradictions reflect varying disciplinary origins and domain specificity of these models. For example, intercultural competence models grounded in personality traditions focus on

intercultural traits (e.g., van der Zee & van Oudenhoven, 2000), whereas those drawing on the intelligence literature focus on intercultural capabilities (e.g., Earley & Ang, 2003). Some other models focus on attitudes and worldviews (e.g., Bennett, 1993). Moreover, many of these models are concerned with work competence (e.g., Sternberg, 2005) and focus on the skills required for successful performance in a particular domain. The most promising approaches take multidisciplinary perspectives and thus embrace a wide variety of constructs (e.g., Bird, Mendenhall, Stevens, & Oddou, 2010; Javidan & Teagarden, 2011; K. Leung, Ang, & Tan, 2014). For example, K. Leung and his colleagues took an integrative approach that conceptualizes intercultural competence as a combination of intercultural traits, intercultural attitudes and worldviews, and intercultural capabilities. They emphasized the dynamic orientation of intercultural competence and proposed to consider how its effectiveness in predicting psychological, behavioral, and performance outcomes unfolds over time.

Based on this approach, Khukhlaev and his colleagues (2021) developed an integrative intercultural competence survey assessing an individual's ability to function effectively in the multicultural contexts. The scale consists of four dimensions: intercultural stability defined as an ability to engage in the intercultural communication; intercultural interest defined as expressing an interest in communicating with people from another culture and in their culture; lack of ethnocentrism defined as showing respect towards the representatives of another culture and accepting the features of cultural diversity; and management of intercultural interaction defined as a range of skills for comfortable intercultural communication process.

We believe that the implications of these attributes go far beyond the communication abilities *per se*. As such, they could affect an individual's creative capacities. There is no direct evidence of the contribution of intercultural competence to creative competence. However, we can infer it indirectly.

There is an opinion that the competence of intercultural stability allows an individual to communicate with the representatives of another culture in a stress-free manner (Khukhlaev et al., 2020). A number of studies demonstrated that the intercultural competence is associated with emotion regulation (e.g., Matsumoto et al., 2001), emotional stability (e.g., Bartel-Radic & Giannelloni, 2017; van der Zee & van Oudenhoven, 2000), emotional resilience, optimism, non-stress tendency, and stress management (Bird et al., 2010). This means that the trait of intercultural stability could be related to resistance to stress. At the same time, the studies in creativity suggest that high level of stress resistance is associated with creativity since exposure to stress encourages persistence, which in turn leads to originality in thinking (Baas, De Dreu, & Nijstad, 2008; Ohly & Fritz, 2010; Vartanian, Saint, Herz, & Suedfeld, 2020). Further, intercultural interest appears to be facilitated by intercultural sensitivity (Khukhlaev et al., 2020). The latter in turn is associated with openness to communication with the representatives of another culture; that is, openness to new experience (van der Zee & van Oudenhoven, 2000). The research suggests that the openness is highly associated with creativity (e.g., Tan, Lau, Kung, & Kailsan, 2019). In a similar manner, lack of ethnocentrism is argued to help overcome anxiety caused by misunderstandings in communication between people with different cultural backgrounds (Khukhlaev et al., 2020). Moreover, this trait is highly associated with openness discussed above. Hence, the desire and the positive attitude towards the communication with people

from another culture decreases the level of anxiety and increases openness to the new experience (Stephan & Stephan, 1992). This, in turn, enhances creativity (Tan et al., 2019). Finally, well developed communication skills are at the core of management of intercultural interaction (Barrett, 2018; Khukhlaev et al., 2020). These skills require flexibility in selecting appropriate approaches to people of another cultural background. Moreover, an ability to generate a multitude of approaches could be of a particular use since different cultures would require different approaches. As we discussed above, flexibility and fluency appear to be important constituents of divergent thinking (Guilford, 1967).

Creativity

Finally, although per earlier discussion the plurilingual creativity framework acknowledges the multidimensionality of the creativity construct, in the present study we decided to use the construct from multilingual creative cognition – namely, divergent thinking. There is a good reason to focus on this traditional assessment of creativity. Recall that the plurilingual creativity aims at drastically modifying all major constituents of the multilingual creative cognition. Traditional language related factors such as language proficiency and age of acquisition were complemented by language repertoire. The constructs of multicultural experience and intercultural competence were introduced. Hence, it seems to be prudent to take one step at a time and to explore the ramifications of these modifications for creativity as it was perceived in the old framework; that is, divergent thinking.

Hypotheses

Thus, we identified three plurilingual factors: language repertoire, multicultural experience, and intercultural competence. These factors are proposed to have an impact on divergent thinking. We advanced two blocks of hypotheses. One block is concerned with predictions of divergent thinking performance by each of three plurilingual factors. These predictions are constructed based on the literature reviewed above and suggesting that language and culture related factors have an impact on an individual's creative thinking. The first hypothesis posits that language repertoire predicts divergent thinking. The second hypothesis states that intercultural competence predicts divergent thinking. The third hypothesis proposes that multicultural experience predicts divergent thinking.

The other block of hypotheses deals with the interaction of language and culture related constituents of plurilingualism. The interactive effects of these factors can be inferred from the above mentioned cross-cultural research demonstrating that the effect of multilingualism on creative performance is often confounded with the effect of multiculturalism (see Kharkhurin, 2012, for a discussion). It is not language repertoire *per se*, but the interaction of both language and culture related factors that accompany plurilingual practice. Hence, plurilingualism is considered inseparable from pluriculturalism.

The interaction of linguistic and cultural competences was cultivated in Europe for at least the last two decades. For example, the Common European Framework of Reference for Languages stated that “plurilingual and pluricultural competence refers to the ability to use languages for the purposes of communication and to take part in intercultural interaction, where a person, viewed as a social agent, has proficiency, of varying degrees, in

several languages and experience of several cultures” (Council of Europe, 1996/2001, p. 168). As you can see, in the context of multilingual practice, they are considered as one competence, or at least as parts of one large interactive system.

Hence, the fourth hypothesis examines an interactive effect of language repertoire and intercultural competence on divergent thinking. The fifth hypothesis posits that there is an interactive effect of language repertoire and multicultural experience on divergent thinking.

Methods

Participants

Two hundred and sixty-one individuals (47 male and 214 female) aged between 17 and 66 ($M = 27.64$, $SD = 11.98$) participated in the study. They were recruited through social media adverts asking them to participate in a survey on language and creative practices. Most participants were residents of Russia (171) and Kazakhstan (60). All participants reported high proficiency in Russian ($M = 4.51$ out of 5, $SD = 1.22$, see description of the language assessment below). The survey was conducted in Russian.

All participants spoke at least one foreign language. 37.5% spoke one foreign language, 39.8% spoke two, 13.8% three; and 6.89% four. The average age of the first foreign language acquisition was 8.00 ($SD = 3.68$), the second 16.00 ($SD = 8.66$), the third 20.00 ($SD = 9.83$), the fourth 24.00 ($SD = 11.37$). They were exposed to the first foreign language on average for 20.00 years ($SD = 11.37$), to the second 13.00 ($SD = 10.68$), to the third 12.00 ($SD = 9.09$), and to the fourth 8.00 ($SD = 6.11$). They reported an average proficiency: in the first foreign language 3.71 ($SD = 1.04$), in the second 3.00 ($SD = 1.11$), in the third 2.88 ($SD = 1.24$) and in the fourth 2.98 ($SD = 1.17$). No personal data except about their age and gender was collected.

Procedure

The study was administered online on Ika.si platform (<https://www.ika.si/>). Participants received a 20-minute assessment battery preceded by the written informed consent form (approved by the HSE Ethics Committee). The form specified among other issues that the participants have the right to withdraw at any stage of the study and that they receive no reward for participating in the study. The battery consisted of demographics questionnaire, language assessment questionnaire, multilingual experience questionnaire, intercultural competence scale, and a test of divergent thinking.

Assessments

Language assessment

Participants' linguistic background was assessed by abridged Russian version of the Multicultural and Multilingual Experience Questionnaire (Kharkhurin, 2017). They received a questionnaire that, among other issues, obtained data on participants' place of origin and residence, languages they speak, and age of acquisition of these languages. The questionnaire also included Likert-type 5-point scales on which participants rated their abilities in reading, writing, speaking, and listening in their respective languages. In addition, participants received a Likert-type 7-point scale in which they indicated the rate of code-switching while communicating with people who speak the same languages.

Thus, we selected three indicators of language repertoire. The *number of languages* score was calculated as a count of all languages rated by participants. The language proficiency score for each language was calculated as a mean of self-rating scores for each of participants' linguistic abilities (reading, writing, speaking, and listening). The *overall language proficiency* score was calculated as a sum of language proficiency scores for each language. The *CODE-SWITCHING* score was obtained directly from the code-switching scale.

The *LANGUAGE REPERTOIRE* score was calculated using the following procedure. First, we used a series of regression analyses to see the extent our language related variables had a significant value in predicting divergent thinking components (see description of the divergent thinking assessment below). The analyses revealed that the number of languages and overall language proficiency, but not code-switching, statistically predicted originality. Second, according to these results, we built a composite score using the regression equation $Y = 2.884 + .271 \times X1 - .073 \times X2$, where $X1$ and $X2$ represent the number of languages and overall language proficiency, respectively.

Multicultural experience

Participants' multicultural experience was assessed by the Multicultural Experience Questionnaire (Narvaez, Endicott, & Hill, 2010). We had two reasons to select this assessment tool. First, its scope of assessment goes beyond the experience in communication with the representatives of different countries. The term 'culture' in this questionnaire refers to the experience with different ethnic groups, immigrants, men, women, homosexuals, and the representatives of different religious and political backgrounds. Second, recall our earlier discussion that plurilingualism is attitudinal. Mere exposure to the representatives of other countries is not sufficient. Plurilingual individuals need to actively learn from this experience and acquire new skills. The Multicultural Experience Questionnaire accounts for this claim and measures both multicultural experience and multilingual attitudes.

This questionnaire was developed from a longer version (Endicott, Bock, & Narvaez, 2003), which consisted of 53 questions grouped as 4 subscales. Narvaez and Hill (2010) conducted two studies with it to find out which items should be deleted or adjusted. They came up with 16-item and 15-item scales and obtained high alpha values for both (.75 and .85, respectively). We used 15-item scale because its alpha value was greater. This version consists of 15 Likert-type 5-point scales, which form two subscales. The *MULTICULTURAL EXPERIENCE* subscale represents the amount of multicultural experience a person has had. It assesses the experience with the representatives of another culture. The *MULTICULTURAL DESIRE* subscale represents the person's effort or desire to increase their multicultural experiences. This subscale assesses an individual's prospective to have experience with the representatives of another culture. The example of the item assessing multicultural experience is "At the moment I am in correspondence with people from other countries," and the item assessing multicultural desire is "I want to be friends with people whose cultural/ethnic background is different from mine."

The Russian version of the questionnaire was produced from the original English version using back-translation (Brislin, 1970).

Intercultural competence

Participants' intercultural competence was assessed by the Integrative Intercultural Competence Survey (Khukhlaev et al.,

2021). This survey was selected, because it is based on the integrative approach (K. Leung et al., 2014), which per earlier discussion in contrast to many other models of intercultural competence takes multidisciplinary perspectives and thus embraces a wide variety of constructs related to intercultural traits, intercultural attitudes and worldviews, and intercultural capabilities. Moreover, this is virtually the only assessment tool of the intercultural competence available in Russian (the other one is the Expanded Cultural Intelligence Scale of Van Dyne et al., 2012 adapted to Russian by Soldatova, Chigarkova, & Rasskazova, 2018).

The survey consists of 18 Likert-type 5-point scales measuring an individual's ability to function effectively in an intercultural communication context. The scale was developed in a study integrating 52 constructs from 14 methods, which intend to measure intercultural competence. The analysis of a sample of Russian speaking participants ($N = 1024$) distinguished four subscales: "Intercultural Stability (individual personality characteristics that allow a person to be resistant to stressful situations of intercultural communication), Intercultural Interest (desire to communicate with people from other cultures, interest in culture and cultural differences), Lack of Ethnocentrism (respect and acceptance of cultural diversity) and Management of Intercultural Interaction (wide range of communication skills, important for intercultural communication)" (Khukhlaev et al., 2021, p. 88). The example of the item assessing intercultural stability is "After interacting with people of a different culture, I feel completely overwhelmed;" the intercultural interest is "I like to communicate with people of other cultures;" lack of ethnocentrism is "I will not communicate with a person of a different culture if he acts on the basis of his cultural norms;" and management of intercultural interaction is "I am confident that I can work effectively with people from different cultures."

The subscales had good internal consistency and invariance at the configural and scalar level ($\Delta CFI = .006 < .01$), although some age related limitations were observed (ΔCFI for metric invariance = .02 which is more than .001). The subscales also demonstrated good external validity. They correlated with the Extended Cultural Intelligence Scale ($\alpha = .75, .79, .81, .77$, respectively; all $ps < .001$), with indicators of adaptation of foreign students ($\alpha = .92, p < .001$), emotional burnout ($\alpha = .73, p < .001$), and self-efficacy among teachers working in a multicultural environment ($\alpha = .79, p < .001$).

Divergent thinking

Participants' divergent thinking was assessed by a modified version of Guilford's Unusual Uses Test. The test was adopted for Russian-speaking participants by Averina and Shcheblanova (1996). Participants were given 6 minutes to produce as many as possible different unusual uses of a wooden ruler. Their responses were evaluated along three divergent thinking traits: fluency (the number of uses of the wooden ruler), flexibility (the number of categories which the participant's ideas fall into), and originality (the frequency of occurrence of a participant's response in relation to the overall pull of responses produced by all participants).

The test demonstrated good reliability (Averina & Shcheblanova, 1996). In this study, 100 participants from different age groups were given this test twice with an interval of two months. The results showed high test-retest correlation for fluency ($r = .79, p < .005$), flexibility ($r = .61, p < .005$), and originality ($r = .73, p < .005$). Moreover, the same participants received

this test two years later. Although, in comparison with the previous testing results the correlation coefficients were lower, they were significant for fluency ($r = .43, p < .005$), flexibility ($r = .48, p < .005$), and originality ($r = .53, p < .005$).

The test used a three-stepwise categorization procedure adopted from the German version of the Unusual Uses test (Perleth, Sierwald, & Heller, 1993). The fluency score was calculated as a number of relevant ideas produced by a respondent (signs, abbreviations and contractions were counted as irrelevant responses). The flexibility score was calculated in accordance with the number of categories (specified by Averina & Shcheblanova, 1996) of relevant ideas produced by the respondent. The originality score was calculated by comparing the respondent's ideas with the list of ideas generated by participants in Averina and Scheblanova's study. The score was given based on its frequency of occurrence in that list: low frequency means high originality score (more than 10% – score 1; 6–10% – score 2; 3–6% – score 3; 1–3% score – 4; less than 1% – score 5). The final originality score was calculated as a mean of originality scores for all responses.

Results

The descriptive statistics of the scales (means and standard deviations) and the Pearson correlations between the variables are reported in Table 1.

Correlational analyses

As we can see in Table 1, the number of languages was significantly associated with overall proficiency ($r = .863, p < .001$) and code-switching ($r = .261, p < .001$). Overall proficiency was positively associated with code-switching ($r = .339, p < .001$).

The number of languages was significantly associated with intercultural stability ($r = .138, p < .05$), intercultural interest ($r = .145, p < .05$) and multicultural experience ($r = .365, p < .001$). Overall proficiency was positively associated with intercultural interest ($r = .167, p < .05$), multicultural experience ($r = .448, p < .001$) and multicultural desire ($r = .144, p < .05$). Code-switching was positively associated with intercultural interest ($r = .176, p < .01$), multicultural experience ($r = .225, p < .001$), and multicultural desire ($r = .138, p < .05$).

In addition, we found that intercultural stability was positively associated with originality ($r = .127, p < .05$). Management of intercultural interaction was related to all three components of divergent thinking: fluency ($r = .148, p < .05$), flexibility ($r = .128, p < .05$) and originality ($r = .127, p < .05$). Multicultural experience was positively associated with all three components of divergent thinking including fluency ($r = .174, p < .01$), flexibility ($r = .188, p < .01$) and originality ($r = .129, p < .05$), but multicultural desire did not have a relation with these components.

Language related variables predict divergent thinking

Further, we tested the first hypothesis on how language repertoire that may include number of languages, overall proficiency and code-switching rate may predict divergent thinking. Table 2 shows the results of linear regression analyses. According to this table, none of these three variables representing language repertoire predicted fluency and flexibility. At the same time,

Table 1. Correlation matrix between the research variables in the current study (n = 261)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Number of languages	2.96	.98	—										
2. Overall Proficiency	11.28	3.87	.863***	—									
3. Code-switching	3.58	1.63	.261***	.339***	—								
4. Intercultural stability	4.47	.56	.138*	.106	.070	—							
5. Intercultural interest	4.24	.74	.145*	.167*	.135*	.273***	—						
6. Lack of ethnocentrism	4.11	.66	.110	.096	.096	.515***	.441***	—					
7. Management of intercultural interaction	4.08	.55	.042	.038	.176**	.193**	.507***	.282**	—				
8. Multicultural experience	24.95	5.57	.365***	.448***	.225***	.271***	.306***	.195**	.293***	—			
9. Multicultural desire	22.60	3.48	.092	.144*	.138*	.182**	.442***	.291***	.447***	.373***	—		
10. Fluency	6.60	4.22	.097	.048	-.016	.009	-.001	-.003	.148*	.174**	.108	—	
11. Flexibility	5.67	3.39	.100	.055	-.013	.013	-.014	-.027	.128*	.188**	.109	.965***	—
12. Originality	2.81	.86	.010	-.068	-.069	.127*	-.021	.012	.127*	.129*	.088	.308***	.309***

Table 2. Results of linear regression analysis between language repertoire constituents and components of divergent thinking (n = 261)

Predictor	Outcome	Unstandardized	SE	Standardized	t	p	95% Confidence Interval	
							Lower	Upper
(Intercept)	Fluency	5.923	1.004		5.896	.000	3.943	7.902
Number of languages		.469	.580	.109	.807	.420	-.675	1.613
Overall proficiency		.000	.150	.000	.002	.998	-.295	.296
Code-switching		-.114	.186	-.044	-.610	.543	-.481	.254
(Intercept)	Flexibility	5.152	.810		6.363	.000	3.556	6.748
Number of languages		.294	.468	.085	.628	.531	-.629	1.216
Overall proficiency		.019	.121	.021	.154	.878	-.220	.257
Code-switching		-.088	.150	-.042	-.583	.560	-.384	.209
(Intercept)	Originality	2.906	.188		15.487	.000	2.536	3.275
Number of languages		.236*	.108	.292	2.176	.031	.022	.450
Overall proficiency		-.056*	.028	-.274	-1.992	.048	-.111	-.001
Code-switching		-.025	.035	-.052	-.718	.473	-.094	.044
Language repertoire ^{a)}		1.000***	.364	.166	2.747	.006	.283	1.717

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, ^{a)} the language repertoire composite score is made based on number of languages and overall proficiency.

both the number of languages ($\beta = .29, p < .05$) and overall proficiency ($\beta = -.27, p < .05$) significantly predicted originality. Consequently, the language repertoire score that was constructed based on the number of languages and overall proficiency scores (see description in the Methods section) predicted originality as well ($\beta = .166, p < .01$). The composite score did not predict fluency and flexibility. Therefore, the hypothesis that language repertoire predicts divergent thinking was partially confirmed.

Culture related variables predict divergent thinking

Next, we tested the hypotheses about the prediction of divergent thinking by culture related variables. Table 3 presents the results of multiple regression analyses between predictors from Integrative Intercultural Competence Survey (intercultural competence, intercultural stability, intercultural interest, lack of ethnocentrism, and management of intercultural interaction) and Multicultural Experience Questionnaire (multicultural experience and multicultural desire) and divergent thinking components (fluency, flexibility, and originality) as dependent variables.

As the table shows, among intercultural competence components, management of intercultural interaction significantly predicted fluency ($\beta = .165, p < .05$) and marginally predicted flexibility ($\beta = .140, p = .069$) and originality ($\beta = .145, p = .061$); intercultural interest significantly predicted originality ($\beta = -.167, p < .05$); and intercultural stability marginally predicted originality ($\beta = -.126, p = .083$). In addition, multicultural experience significantly predicted fluency ($\beta = .168, p < .01$) and flexibility ($\beta = .188, p < .001$). The results provided evidence for the second and third hypotheses. Therefore, the hypothesis that intercultural competence predicts divergent thinking and the hypothesis that multicultural experience predicts divergent thinking were partially confirmed.

The interaction between language and culture related variables

Finally, we tested the hypotheses about the interaction between language and culture related variables. To test the moderation hypotheses, a regression model according to Figure 1 was constructed. Model 1 of the Macro Process program (Hayes, 2012) was selected to investigate the effects of potential moderator in the association between various antecedents and outcomes. Following Probst, Barbaranelli, and Petitta (2013), the standardized scores (z scores) were used to test the hypotheses.

We found that the composite language repertoire score did not interact statistically with the culture related variables in predicting any of the divergent thinking components. However, we made one more step and tested this path for the constituents of the language repertoire – namely, the overall language proficiency and the number of languages. The former also showed no significant interaction with culture related variables, whereas the latter revealed some effects.

The results of moderation paths for the number of languages are displayed in Table 4. As the table shows, the interaction between management of intercultural interaction and number of languages significantly predicted fluency ($\beta = -.11, p < .05$). Following the recommendation of Dawson (2014), the moderator was divided into low and high slopes based on the outcome of the Process program in which low and high values for quantitative moderators are mean and minus/plus one SD from the mean. The results showed that this interaction occurs in the low slope of the moderator ($\beta = .28, p = .001$), and the high slope of the moderator did not influence this association ($\beta = .05, p = .463$). The results of a moderation test for the low slope are presented in Figure 2.

In addition, the interaction between management of intercultural interaction and number of languages marginally predicted flexibility ($\beta = -.09, p = .08$). The result was further investigated for low and high slopes of the moderator. As Figure 3 illustrates,

Table 3. Results of multiple regression analysis of culture related factors in predicting divergent thinking components (n = 261)

Predictor	Outcome	Unstandardized	SE	Standardized	t	p	95% Confidence Interval	
							Lower	Upper
(Intercept)	Fluency	2.747	2.874		.956	.340	-2.914	8.408
Intercultural stability		-.347	.590	-.042	-.589	.556	-1.509	.814
Intercultural interest		-.752	.463	-.134	-1.625	.105	-1.664	.159
Lack of ethnocentrism		-.241	.521	-.036	-.462	.645	-1.267	.786
Management of intercultural interaction		1.247*	.580	.165	2.151	.032	.105	2.389
Multicultural experience		.129**	.054	.168	2.405	.017	.023	.235
Multicultural desire		.062	.091	.051	.680	.497	-0.118	.242
(Intercept)	Flexibility	2.902	2.300		1.261	.208	-1.630	7.433
Intercultural Stability		-.165	.472	-.025	-.349	.727	-1.095	.765
Intercultural interest		-.602	.371	-.134	-1.624	.106	-1.332	.128
Lack of ethnocentrism		-.388	.417	-.072	-.929	.354	-1.210	.434
Management of intercultural interaction		.848	.464	.140	1.828	.069	-.066	1.762
Multicultural experience		.116***	.043	.188	2.694	.008	.031	.201
Multicultural desire		.062	.073	.063	.843	.400	-.082	.206
(Intercept)	Originality	1.459	.579		2.518	.012	.317	2.601
Intercultural stability		.207	.119	.126	1.739	.083	-.027	.441
Intercultural interest		-.188*	.093	-.167	-2.011	.045	-.372	-.004
Lack of ethnocentrism		-.085	.105	-.063	-.812	.418	-.292	.122
Management of intercultural interaction		.220	.117	.145	1.881	.061	-.010	.450
Multicultural experience		.015	.011	.096	1.375	.171	-.006	.036
Multicultural desire		.014	.018	.059	.779	.437	-.022	.051

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

this interaction occurs only for a low slope of the moderator ($\beta = .24$, $p < .001$) and a high slope did not influence the link between the management of intercultural interaction and flexibility ($\beta = .04$, $p = .52$). Hence, we found partial evidence for the fourth hypothesis that there is an interactive effect of language repertoire and intercultural competence on divergent thinking.

Finally, the overall interaction between the multicultural experience and the number of languages did not predict flexibility or originality but considering the p-value of the two tested paths, we further tested the conditional effects using low and high slopes of the moderator. The results suggested that only a high slope of the moderator can moderate the link between multicultural experience and both flexibility ($\beta = .20$, $p < .05$) and originality ($\beta = .24$, $p < .001$). Figures 4 and 5 illustrate these findings. A low slope did not moderate this link for flexibility ($\beta = .17$, $p = .069$) and originality ($\beta = .04$, $p = .601$). Hence, we found partial evidence for the fifth hypothesis that there is an interactive effect of language repertoire and multicultural experience on divergent thinking.

Discussion

This study initiated a research project aiming to empirically test the Plurilingual Creativity framework. We investigated a

contribution of language repertoire and various multicultural factors to divergent thinking. We found that language repertoire, intercultural competence, and multicultural experience had a predicting value for various divergent thinking components. These findings evidently provided support for prudence of expanding the framework of research in multilingual creativity to plurilingual perspective. Indeed, we demonstrated that the factors related to an individual's experience with multiple cultures complement the effect of experience with multiple languages.

Altogether, this study identified four plurilingual/pluricultural factors influencing divergent thinking: language repertoire, multicultural experience, management of intercultural interaction, and intercultural interest. Let us consider each of these factors individually.

Language repertoire

We found that language repertoire contributed to originality component of divergent thinking. Studies in Multilingual Creative Cognition demonstrated that psycholinguistic factors such as bilinguals' proficiency in both of their languages and the age of acquisition of these languages influenced their divergent thinking (e.g., Cushen & Wiley, 2011; Kharkhurin, 2008, 2009; Kostandyan

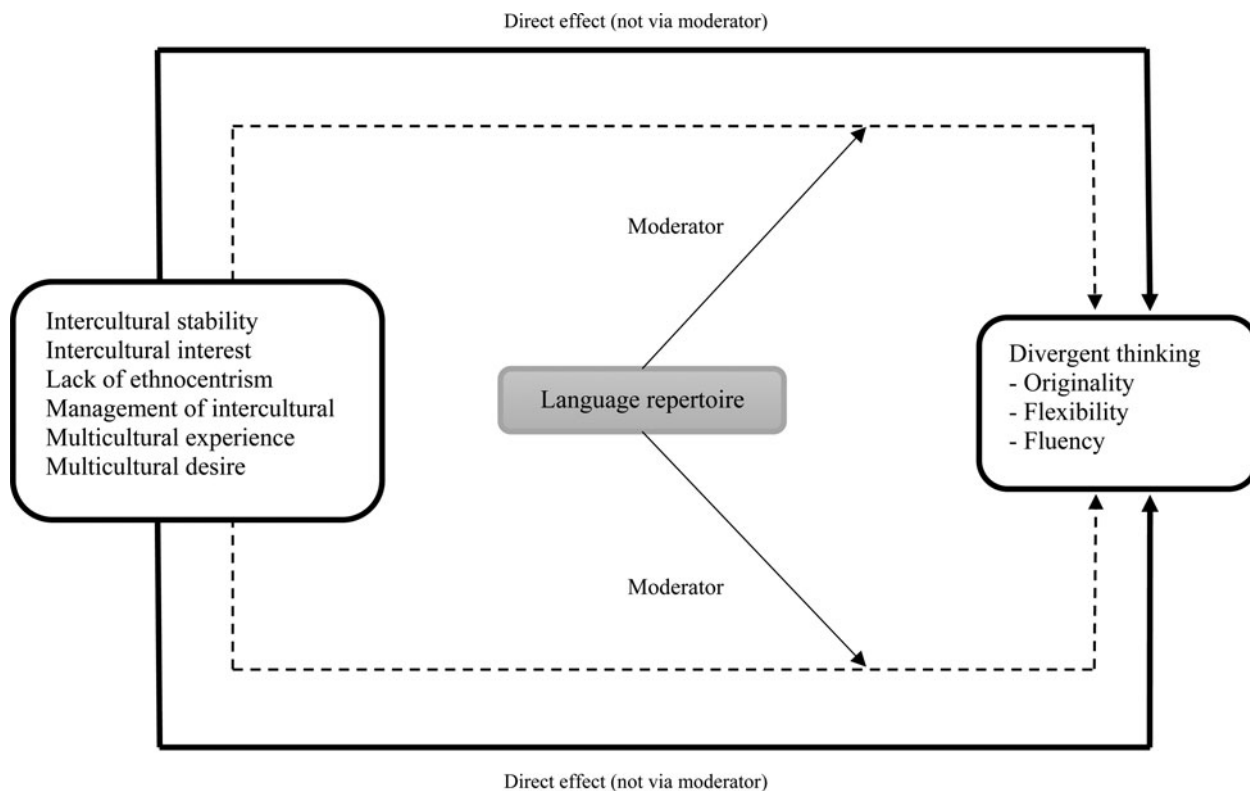


Fig. 1. A conceptual model of the association between research variables

& Ledovaya, 2013; Lee & Kim, 2011). Our findings show that it is not only language development factors, but also the number of languages spoken by plurilinguals might have an impact on their creative thinking.

A growing body of multilingualism literature demonstrates variations in personality traits, cognitive functioning and creative thinking between individuals who speak a different number of languages. For example, Dewaele and Wei (2013) found that individuals speaking more than two languages revealed greater tolerance for ambiguity in comparison with those speaking only one or two languages. A study of individuals speaking more than two foreign languages demonstrated a positive relationship between the number of spoken languages and personality traits such as open-mindedness and emotional stability (Korzilius, Hooft, Planken, & Hendrix, 2011). Similar findings were obtained by Dewaele and Botes (2019) who revealed a positive correlation between the number of spoken languages and open-mindedness, social initiative and flexibility.

Together with these findings, our findings provide support for the prudence of the language repertoire perspective. As mentioned in the introduction, in the plurilingualism framework, languages are considered as constructing a single dynamic language repertoire. The whole idea of replacing the term multilingualism with plurilingualism came from this consideration. The prefix ‘multi’ was used to stress a linear additive paradigm with addition of elements like numbers in a multiplication, or people in a multitude. The prefix ‘pluri’ was introduced to open to a complex, fluid paradigm, which would value and build on plurality, and consider embedded difference in a more holistic way. Using a mathematical notation,

multilingualism=L1+L2+L3+...+Ln, whereas plurilingualism ∈ [L1, L2, L3, ..., Ln].

Multicultural experience

Multicultural experience was found to predict fluency and flexibility in divergent thinking. These findings correspond to the research demonstrating the relationship between multicultural experience and various measures of creativity (e.g., Chiu & Hong, 2005; Chiu & Leung, 2007; Shao et al., 2019). For example, A. K.-y. Leung, Maddux, Galinsky, and Chiu (2008) measured multicultural experience using Multicultural Experience Survey (A. K.-y. Leung & Chiu, 2010) assessing participants’ foreign language competence, time they spent living abroad, ethnicity of their friends, and their culinary and musical preferences. Their multicultural experience was positively related to creativity-supporting cognitive processes such as retrieval of unusual information and recruitment of ideas from other cultures that expand creative pull of ideas. This experience was also related to creative functioning such as insight learning, remote association, and production of ideas.

The explanation of the relationship between multicultural experience and creativity stems from the cross-cultural research in creativity demonstrating that variations in the manners of socialization, degrees of self-perception and self-expression, education and social conduct may modulate the differences in creative performance of the representatives of different cultures (e.g., Kharkhurin & Samadpour Motalleebi, 2008; Niu & Sternberg, 2001; Zha, Walczyk, Griffith-Ross, Tobacyk, & Walczyk, 2006). If individuals’ creative behavior may be

Table 4. Results of moderating role of number of languages on cultural factors – divergent thinking link using standardized coefficients (n = 261)

Effect	β	SE	t	p	LLCI	ULCI
Constant	.0048	.0615	.0778	.9381	-.1163	.1258
Direct effect of number of languages on fluency	.0802	.0617	1.3004	.1946	-.0413	.2018
Direct effect of management of intercultural interaction on fluency	.1691***	.0628	2.6914	.0076	.0454	.2928
Management of intercultural interaction × number of languages on fluency	-.1134*	.0561	-2.0196	.0445	-.2240	-.0028
$R^2 = .045; F(3, 255) = 4.019, p = .0081$						
Effect	β	SE	t	p	LLCI	ULCI
Constant	.0041	.0618	.0662	.9472	-.1175	.1257
Direct effect of number of languages on flexibility	.0860	.0620	1.3870	.1667	-.0361	.2081
Direct effect of management of intercultural interaction on flexibility	.1451*	.0631	2.2991	.0223	.0208	.2694
Management of intercultural interaction × number of languages on flexibility	-.0967	.0564	-1.7142	.0877	-.2078	.0144
$R^2 = .036; F(3, 255) = 3.196, p = .0241$						
Effect	β	SE	t	p	LLCI	ULCI
Constant	.0189	.0671	.2817	.7784	-.1133	.1511
Direct effect of number of languages on flexibility	.0157	.0708	.2220	.8245	-.1237	.1551
Direct effect of multicultural experience on flexibility	.1832***	.0690	2.6530	.0085	.0472	.3191
Multicultural experience × number of languages on flexibility	.0133	.0624	.2126	.8318	-.1097	.1362
$R^2 = .036; F(3, 242) = 3.009, p = .0309$						
Effect	β	SE	t	p	LLCI	ULCI
Constant	-.0171	.0661	-.2581	.7966	-.1473	.1132
Direct effect of number of languages on originality	-.0847	.0697	-1.2146	.2257	-.2220	.0526
Direct effect of multicultural experience on originality	.1452*	.0680	2.1346	.0338	.0112	.2792
Multicultural experience × number of languages on originality	.0995	.0615	1.6181	.1069	-.0216	.2207
$R^2 = .029; F(3, 242) = 2.457, p = .0636$						
Effect	β	SE	t	p	LLCI	ULCI
Constant	-.0020	.0635	-.0313	.9751	-.1271	.1231
Direct effect of number of languages on originality	.0128	.0637	.2005	.8413	-.1127	.1382
Direct effect of intercultural interest on originality	-.0215	.0639	-.3365	.7368	-.1474	.1044
Intercultural interest × number of languages on originality	-.0116	.0624	.1858	.8527	-.1114	.1346
$R^2 = .000; F(3, 252) = 0.064, p = .9788$						

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

influenced by their experience with different cultures, the variations in plurilinguals' cultural settings may have an impact on different aspects of their creative thinking. Indeed, plurilingual individuals acquired their languages in different countries, in which most likely they were exposed to different sociocultural environments.

One more time, this idea supports the plurilingual perspective that when we study people using multiple languages, we should consider their experience with multicultural settings. The theme of the interaction of multilingual and multicultural experiences is well addressed in plurilingualism literature. For example, the Common European Framework of Reference for Languages states that, "Plurilingualism has itself to be seen in the context of pluriculturalism. Language is not only a major aspect of culture, but also a means of access to cultural manifestations" (Council of Europe, 1996/2001, p. 6). It continues: "as an individual person's

experience of language in its cultural contexts expands, from the language of the home to that of society at large and then to the languages of other peoples <...>, he or she does not keep these languages and cultures in strictly separated mental compartments, but rather builds up a communicative competence to which all knowledge and experience of language contributes and in which languages interrelate and interact" (Council of Europe, 1996/2001, p. 4).

Thus, plurilinguals' multicultural experience may encourage their creative behavior. The 'may' is important because this experience is not a passive process. The individuals need to notice and be interested in the affordances offered. Rietveld and Kiverstein (2014) talked about "selective engagement – in concrete situations – with the rich landscape of affordances" (p. 326). Mere exposure to other cultures is not sufficient. These individuals need to actively learn from this experience

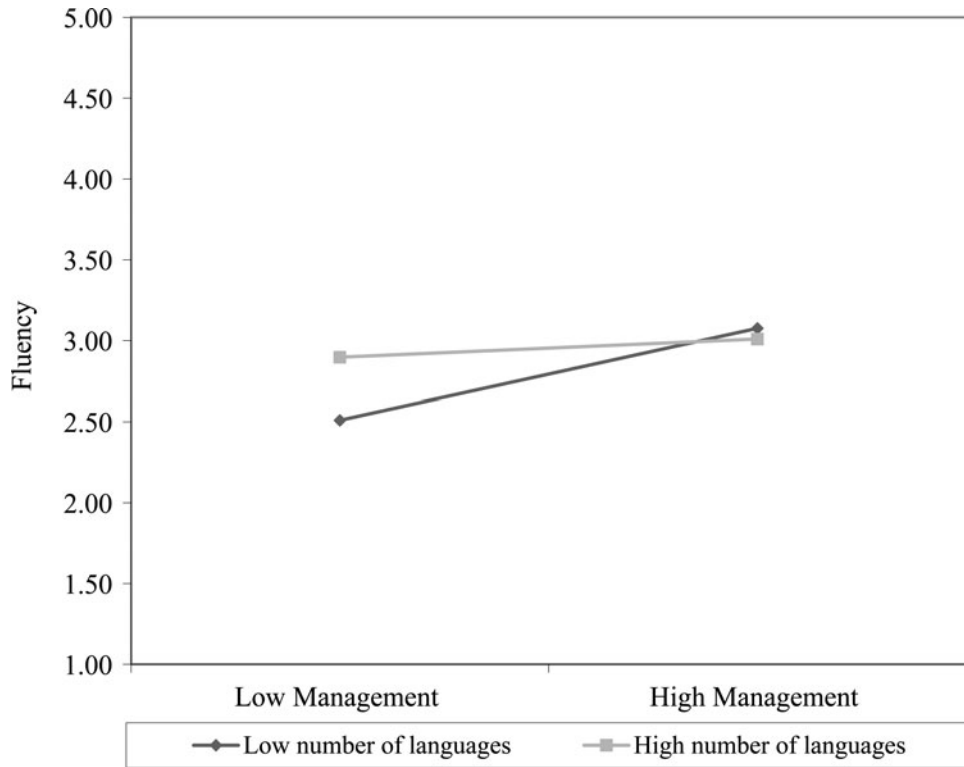


Fig. 2. Interaction effects of management of intercultural interaction × number of languages in predicting fluency

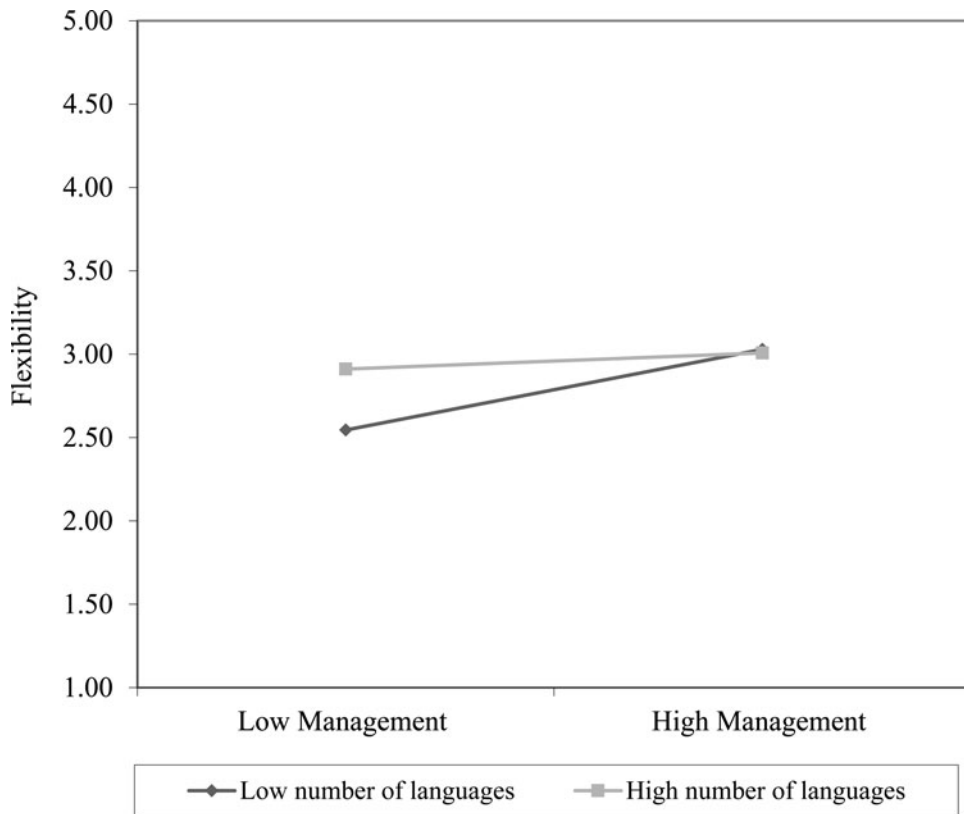


Fig. 3. Interaction effects of management of intercultural interaction × number of languages in predicting flexibility

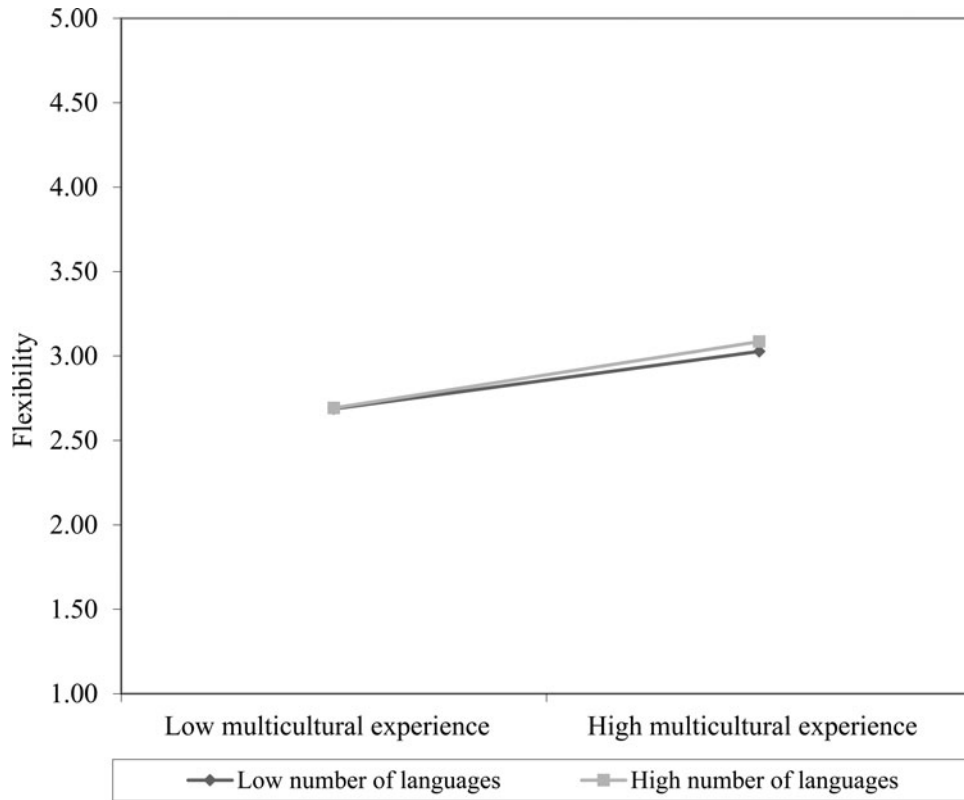


Fig. 4. Interaction effects of multicultural experience × number of languages in predicting flexibility

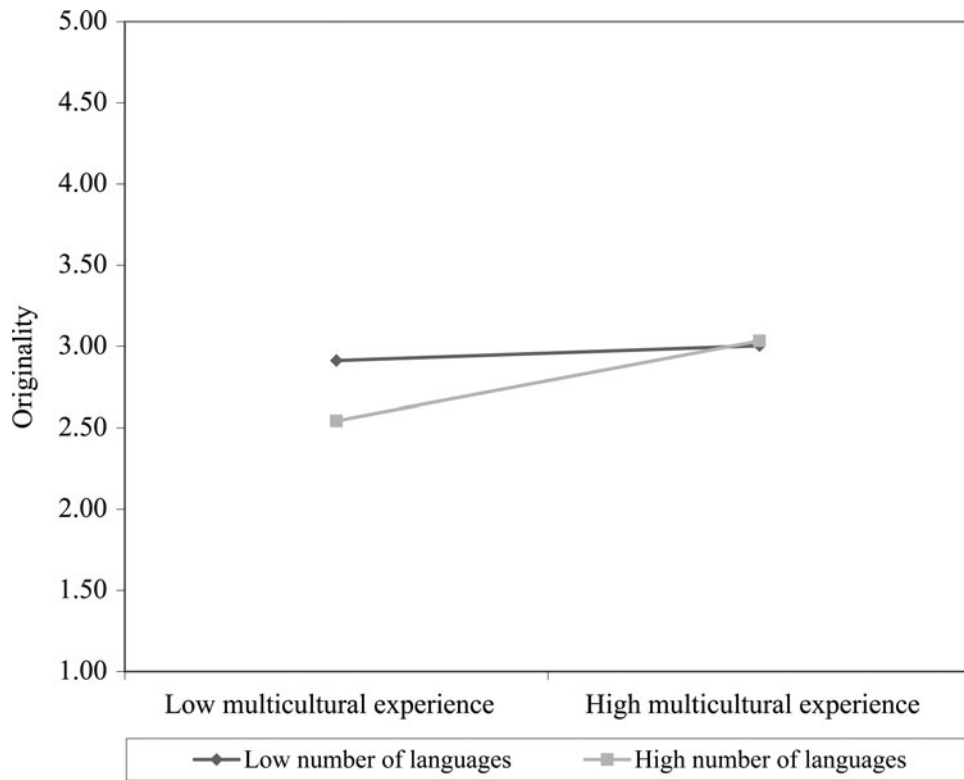


Fig. 5. Interaction effects of multicultural experience × number of languages in predicting originality

and acquire new skills. Research indicates a level of engagement is necessary – reinforcing that plurilingualism is also attitudinal – not the mere presence of multiple languages and cultures (Maddux, Adam, & Galinsky, 2010). Our findings support this idea by demonstrating that different divergent thinking traits seem to benefit not only from multicultural experience (which appear to be a passive process), but also from intercultural competence (which represents communication skills acquired in the process of encounter with multicultural settings).

Intercultural competence

Intercultural competence was also found to predict divergent thinking. The first aspect of intercultural competence in our study, management of intercultural interaction had impact on fluency in divergent thinking. This aspect represents various communication skills, which facilitate intercultural communication. According to the assessment tool measuring the intercultural competence in this study (Khukhlaev et al., 2021), these skills converge on the ability to come up with different culture sensitive strategies and implement them in culture specific settings. These strategies ensure the plurilingual individuals' adaptation to the cultural framework of their interlocutors. The plurilinguals can employ these strategies to negotiate with their interlocutors. A habitual practice of plurilinguals to generate new strategies for cultural adaptation can facilitate their ability to rapidly produce many ideas; that is, fluency in divergent thinking. This is exactly what we found in our study.

Further, plurilinguals' ability to employ different culture specific strategies may also facilitate their capacity to consider different approaches to a problem; that is, flexibility in divergent thinking. Our finding of marginally significant effect of the management of intercultural interaction on flexibility supports this idea.

The second aspect of intercultural competence, intercultural interest had a significant contribution to originality component of divergent thinking. This aspect reflects individuals' interest in other cultures and cultural differences and in communicating with people from other cultures. This component addresses plurilinguals' welcoming attitude toward other cultures, their desire to actively explore cultural values different from their own. It is not surprising that the intercultural interest correlated stronger with the Multicultural Experience Questionnaire measure of multicultural desire (the person's interest in acquiring communication experience with the representatives of another culture) than with the multicultural experience (the person's actual communication experience with the representatives of another culture) (see Table 1). Plurilingual individuals are interested in encountering people different from their own upbringing and learning from them about norms and traditions different from their own.

Our study, however, revealed negative contribution of the intercultural interest to originality. The more interest our participants revealed toward other cultures, the lower their originality in thinking. In the introduction, we discussed divergent thinking as a measure of the cognitive processes underlying creative thinking. We also claimed that this approach to creativity is limited and there are other approaches, which perceive creativity from a perspective of a person, a product, a place, perception, persuasion, and potential. Each of these approaches uses its own strategy of creativity assessment, which does not necessarily reveal convergent validity (e.g., Clapham, 2004; Hocevar, 1981; Weiss, Wilhelm, & Kyllonen, 2021). Hence, although we found that the intercultural interest had a negative impact on divergent thinking, it should not

discourage us from exploring the impact of this trait on other aspects of creativity. We return to this idea in the conclusion.

Language – culture interaction

The results of the study revealed that the size of language repertoire interacts with different culture related factors in predicting divergent thinking. Specifically, we found that the number of languages spoken by participants moderated the effect of the intercultural competence component (namely, management of intercultural interaction) on both fluency and flexibility. It is particularly interesting that the significant association between management of intercultural interaction and divergent thinking traits was found only among participants who spoke fewer languages.

In the previous section, we speculated that plurilingual individuals' ability to generate new strategies for cultural adaptation can facilitate their fluency and flexibility. Apparently, the advantage appears viable only for those who speak a fewer number of languages. Recall from the previous discussion that individuals who speak more languages demonstrated greater tolerance for ambiguity, open-mindedness, emotional stability, social initiative, and flexibility (Dewaele & Botes, 2019; Dewaele & Wei, 2013; Korzilius et al., 2011). Our finding suggests that those with a fewer number of languages can compensate for these disadvantages by developing their intercultural competence.

We also found that the number of languages moderated the effect of multicultural experience on originality. In the same vein as our finding about the intercultural competence, the significant association between multicultural experience and originality was found only among participants who spoke a larger number of languages. Recall that multicultural experience was found to predict fluency and flexibility, but not originality. Apparently, plurilingual individuals need to acquire a critical number of languages before multicultural experience can boost their originality.

Both speculations are subject to future research.

Conclusion

The most important conclusion from the findings of this study provides support for plausibility of the plurilingual creativity perspective. It is not language repertoire *per se*, but the interaction of both language and culture related factors that influences plurilinguals' divergent thinking. Hence, it is important to consider the cultural dimensions in the studies of plurilingual creativity as well as in the framework of plurilingualism at large. Earlier we talked about plurality of languages (plurilingualism) in the sense that languages form a single dynamic repertoire. Based on our findings, we can talk about plurality of cultures (pluriculturalism) as well: "in a person's cultural competence, the various cultures (national, regional, social) to which that person has gained access do not simply coexist side by side; they are compared, contrasted and actively interact to produce an enriched, integrated pluricultural competence, of which plurilingual competence is one component, again interacting with other components" (Council of Europe, 1996/2001, p. 6). Here the plurilingual competence is presented as a constituent of pluricultural competence.

In any case, it is evident that these two components of an individual's experience are inseparable. Reflecting on this notion, Galante (2020) developed a scale of plurilingual and pluricultural competence. The assessment consists of 22 Likert-type 4-point scales measuring plurilinguals' flexible language use and cross-

cultural awareness. Informed by sociolinguistics theories in educational linguistics, including plurilingualism and translanguaging, the plurilingual and pluricultural competence scale had its content validated by researchers, language teachers and learners. Different rounds of factor analyses demonstrated that all 22 scales converge on one factor and therefore measure a single construct. This suggests that language and culture are interrelated. The findings of the present study support this idea. It seems to be prudent to use this scale in the future studies in plurilingual creativity relating the plurilingual/pluricultural competence to various creativity traits.

At the very end, let us present a few directions for further research. Once again, we found interactive effects of plurilingual and pluricultural competences on creative thinking. A logical question would be what factors could mediate these effects? Kharkhurin (2021) identified several personality traits such as tolerance of ambiguity, openness, and cognitive flexibility, which can mediate the effect of plurilingualism/pluriculturalism on creativity.

Studies in creative personality hint at tolerance of ambiguity as a personality trait related to an individual's creative behavior (e.g., Zenasni, Besançon, & Lubart, 2008). Earlier we mentioned that speaking different number of languages was linked to tolerance of ambiguity (Dewaele & Wei, 2013). Second language acquisition experts also proposed this trait as a key to successful L2 learning (e.g., Oxford & Ehrman, 1992; Rubin, 1975).

One can also think about a study investigating the links between plurilingualism and creative personality and the mediation of this relationship by the Big Five personality traits (extraversion, agreeableness, openness to experience, conscientiousness, neuroticism).

Further, recent studies confirmed the presence of a relationship between advanced knowledge and frequent use of more languages and open-mindedness (Dewaele & Stavans, 2012; Dewaele & van Oudenhoven, 2009). Referring to various sociocultural constructs, the operational definition of this trait is the following: "open and unprejudiced attitude towards outgroup members and towards different cultural norms and values" (Dewaele & van Oudenhoven, p. 449). In other words, cultural openness can be considered in the context of openness to new experience and new ideas, which has long been viewed as a key component of creativity (e.g., Feist, 1998; Silvia, Nusbaum, Berg, Martin, & O'Connor, 2009).

Furthermore, cognitive flexibility is also viewed as a critical component of creativity (Guilford, 1968). This trait enables a person to look at things from many different angles, quickly switching between perspectives, thinking outside the box. Many studies demonstrated that bilinguals surpass their monolingual counterparts on this trait (e.g., Carringer, 1974; Kharkhurin, 2008; Konaka, 1997). Moreover, recent studies revealed that multilingual children and adults perform better at non-linguistic tasks that require cognitive flexibility (e.g., Adi-Japha et al., 2010; Carlson & Meltzoff, 2008; Costa, Hernandez, & Sebastián-Gallés, 2008).

One more important factor that is related to an individual's creativity could be motivation. Recent research demonstrated that both successful language learning (e.g., Engjn, 2009; Masgoret & Gardner, 2003; Wang, 2008) and prolific creative behavior (e.g., Amabile, 1996; Hennessey, 2010) were related to motivation. Current theories on the role of motivation in creativity (see Collins & Amabile, 1999, for an overview) emphasized that creativity thrives in environments that promote intrinsic motivation (stimulated by personal interest and inner potential)

and suffocates in environments that emphasize extrinsic motivation (such as rewards and incentives). As a result, individuals with high intrinsic motivation may successfully engage in plurilingual practice and demonstrate high creative performance.

Finally, we propose that creative perception can mediate the plurilingualism–creativity relationship. Kharkhurin and Charkhabi (2021) defined creative perception as an individual's ability to identify creative elements in oneself, others, and the environment. They claimed that this ability may encourage an individual to engage in creative thinking and subsequently in creative behavior. The operational definition of the creative perception of the environment refers to individuals' preference for complexity in their surrounding (Kharkhurin & Yagolkovskiy, 2019). The very nature of plurilingualism paradigm adopted in the present project emphasizes complexity of plurilingual/pluricultural experience. Hence, we could expect that creative perception may mediate the relationship between plurilingualism and creativity.

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References

- Adi-Japha E, Berberich-Artzi J and Libnawi A (2010) Cognitive flexibility in drawings of bilingual children. *Child Development*, **81**, 1356–1366. doi:10.1111/j.1467-8624.2010.01477.x
- Amabile TM (1996) *Creativity in context: Update to "The Social Psychology of Creativity"*. Boulder, CO: Westview Press.
- Averina ES and Shcheblanova EI (1996) *Verbal'nyy test tvorcheskogo myshleniya 'Neobychnoye ispol'zovaniye': posobiye dlya shkol'nykh psikhologov*. Moscow: Sobor.
- Baas M, De Dreu CK and Nijstad BA (2008) A meta-analysis of 25 years of mood-creativity research: hedonic tone, activation, or regulatory focus? *Psychol Bull*, **134**, 779–806. doi:10.1037/a0012815
- Barrett M (2018) How Schools Can Promote the Intercultural Competence of Young People. *European Psychologist*, **23**, 93–104. doi:10.1027/1016-9040/a000308
- Bartel-Radic A and Giannelloni J-L (2017) A renewed perspective on the measurement of cross-cultural competence: An approach through personality traits and cross-cultural knowledge. *European Management Journal*, **35**, 632–644. doi:<https://doi.org/10.1016/j.emj.2017.02.003>
- Bennett M (1993) Towards Ethnorelativism: A Developmental Model of Intercultural Sensitivity. In Paige RM (ed), *Education for the Intercultural Experience*. Yarmouth, ME: Intercultural Press Inc, pp. 21–71.
- Bird A, Mendenhall M, Stevens MJ and Oddou G (2010) Defining the content domain of intercultural competence for global leaders. *Journal of Managerial Psychology*, **25**, 810–828. doi:10.1108/02683941011089107
- Birman D, Trickett EJ and Vinokurov A (2002) Acculturation and adaptation of Soviet Jewish refugee adolescents: Predictors of adjustment across life domains. *American Journal of Community Psychology*, **30**, 585–607.
- Brislin RW (1970) Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, **1**, 185–216. doi:10.1177/135910457000100301
- Byram M (1997) *Teaching and assessing intercultural communicative competence*. Bristol, UK: Multilingual Matters.
- Carlson SM and Meltzoff AN (2008) Bilingual experience and executive functioning in young children. *Developmental Science*, **11**, 282–298. doi:10.1111/j.1467-7687.2008.00675.x
- Carringer DC (1974) Creative thinking abilities of Mexican youth: The relationship of bilingualism. *Journal of Cross-Cultural Psychology*, **5**, 492–504.
- Cenoz J (2013) Defining Multilingualism. *Annual Review of Applied Linguistics*, **33**, 3–18. doi:10.1017/S026719051300007X

- Chiu C.-y and Hong Y.-y** (2005) Cultural Competence: Dynamic Processes. In *Handbook of competence and motivation*. New York, NY, US: Guilford Publications, pp. 489–505.
- Chiu C.-y and Leung A. K.-y** (2007) Do Multicultural Experiences Make People More Creative? If So, How? *Research Collection School of Social Sciences*.
- Clapham MM** (2004) The Convergent Validity of the Torrance Tests of Creative Thinking and Creativity Interest Inventories. *Educational and Psychological Measurement*, **64**, 828–841. doi:10.1177/0013164404263883
- Collins MA and Amabile TM** (1999) Motivation and creativity. In Sternberg RJ (ed), *Handbook of creativity*. New York, NY: Cambridge University Press, pp. 297–312.
- Conteh J and Meier G** (eds), (2014) *The multilingual turn in languages education: Opportunities and challenges* (Vol. 40). Bristol, UK: Multilingual Matters.
- Cook V and Wei L** (eds), (2016) *Cambridge Handbook of Linguistic Multicompetence*. Cambridge, UK: Cambridge University Press.
- Costa A, Hernandez M and Sebastián-Gallés N** (2008) Bilingualism aids conflict resolution: Evidence from the ANT task. *Cognition*, **106**, 59–86.
- Coste D, Moore D and Zarate G** (1997/2009) *Plurilingual and pluricultural competence*. Strasbourg, FR: Council of Europe, Language Policy Division.
- Council of Europe**. (1996/2001) *Common European framework of reference for languages: Learning, teaching, assessment*. Cambridge, MA: Cambridge University Press.
- Council of Europe**. (2018) *Common European Framework of Reference for Languages: Learning, Teaching, Assessment*. Retrieved from Strasbourg, FR:
- Csikszentmihalyi M** (2014) The Systems Model of Creativity and Its Applications. In Simonton DK (ed), *The Wiley Handbook of Genius*. John Wiley & Sons, Ltd, pp. 533–545.
- Cummins J and Gulutsan M** (1974) Some effects of bilingualism on cognitive functioning. In Carey ST (ed), *Bilingualism, biculturalism and education. Proceeding from the Conference at College Universitaire Saint-Jean*. Edmonton: University of Alberta, pp. 129–136.
- Cushen PJ and Wiley J** (2011) Aha! Voila! Eureka! Bilingualism and insightful problem solving. *Learning and Individual Differences*, **21**, 458–462.
- Dawson J** (2014) Moderation in Management Research: What, Why, When, and How. *Journal of Business and Psychology*, **29**. doi:10.1007/s10869-013-9308-7
- Deardorff DK** (2009) *The Sage Handbook of Intercultural Competence*. Thousand Oaks, CA: SAGE Publications.
- Dewaele J.-M and Botes E** (2019) Does multilingualism shape personality? An exploratory investigation. *International Journal of Bilingualism*, **24**, 136700691988858. doi:10.1177/1367006919888581
- Dewaele J.-M and Stavans A** (2012) The effect of immigration, acculturation and multicompetence on personality profiles of Israeli multilinguals. *International Journal of Bilingualism*. doi:10.1177/1367006912439941
- Dewaele J.-M and van Oudenhoven JP** (2009) The effect of multilingualism/multiculturalism on personality: no gain without pain for Third Culture Kids? *International Journal of Multilingualism*, **6**, 443–459. doi:10.1080/14790710903039906
- Dewaele J.-M and Wei L** (2013) Is multilingualism linked to a higher tolerance of ambiguity? *Bilingualism: Language and Cognition*, **16**, 231–240. doi:10.1017/S1366728912000570
- Duncker K** (1945) The structure and dynamics of problem-solving processes. *Psychological Monographs*, **58**, 1–112.
- Earley PC and Ang S** (2003) *Cultural intelligence: Individual interactions across cultures*. Stanford University Press.
- Endicott L, Bock T and Narvaez D** (2003) Moral reasoning, intercultural development, and multicultural experiences: Relations and cognitive underpinnings. *International Journal of Intercultural Relations*, **27**, 403–419. doi:10.1016/S0147-1767(03)00030-0
- Engjn AO** (2009) Second language learning success and motivation. *Social Behavior and Personality*, **37**, 1035–1042.
- Feist GJ** (1998) A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychology Review*, **2**, 290–309.
- Furlong A** (2009) The relation of plurilingualism/culturalism to creativity: a matter of perception. *International Journal of Multilingualism*, **6**, 343–368. doi:10.1080/14790710903124997
- Fürst G and Grin F** (2018) Multilingualism and creativity: a multivariate approach. *Journal of Multilingual and Multicultural Development*, **39**, 341–355. doi:10.1080/01434632.2017.1389948
- Galante A** (2020) Plurilingual and pluricultural competence (PPC) scale: the inseparability of language and culture. *International Journal of Multilingualism*, 1–22. doi:10.1080/14790718.2020.1753747
- Glăveanu VP** (2010) Principles for a Cultural Psychology of Creativity. *Culture & Psychology*, **16**, 147–163. doi:10.1177/1354067×10361394
- Glăveanu VP** (2013) Rewriting the Language of Creativity: The Five A's Framework. *Review of General Psychology*, **17**, 69–81. doi:10.1037/a0029528
- Gogolin I** (1994) *Der monolinguale Habitus der multilingualen Schule*. Münster: Waxmann.
- Gogolin I** (2002) Linguistic and Cultural Diversity in Europe: A Challenge for Educational Research and Practice. *European Educational Research Journal*, **1**, 1–16. doi:10.2304/eeerj.2002.1.1.3
- Griffith RL, Wolfeld L, Armon BK, Rios J and Liu OL** (2016) Assessing Intercultural Competence in Higher Education: Existing Research and Future Directions. *ETS Research Report Series*, **2016**, 1–44. doi:10.1002/ets2.12112
- Guilford JP** (1967) *The nature of human intelligence*. New York: McGraw-Hill.
- Guilford JP** (1968) *Intelligence, creativity, and their educational implications*. San Diego, CA: R. R. Knapp.
- Gullifer JW, Kousaie S, Gilbert AC, Grant A, Giroud N, Coulter K, . . . Titone D** (2021) Bilingual language experience as a multidimensional spectrum: Associations with objective and subjective language proficiency. *Applied Psycholinguistics*, **42**, 245–278. doi:10.1017/S0142716420000521
- Gullifer JW and Titone D** (2020) Characterizing the social diversity of bilingualism using language entropy. *Bilingualism: Language and Cognition*, **23**, 283–294. doi:10.1017/S1366728919000026
- Gullifer JW and Titone D** (2021) Engaging proactive control: Influences of diverse language experiences using insights from machine learning. *J Exp Psychol Gen*, **150**, 414–430. doi:10.1037/xge0000933
- Hayes AF** (2012) *PROCESS : A Versatile Computational Tool for Observed Variable Mediation , Moderation , and Conditional Process Modeling 1*.
- Hennessey BA** (2010) The creativity-motivation connection. In Kaufman JC and Sternberg RJ (eds), *The Cambridge handbook of creativity*. New York, NY: Cambridge University Press, pp. 342–365.
- Herdina P and Jessner U** (2002) *A Dynamic Model of Multilingualism: Perspectives of Change in Psycholinguistics*. Clevedon, UK: Multilingual Matters.
- Hocevar D** (1981) Measurement of creativity: Review and critique. *Journal of Personality Assessment*, **45**, 450–464.
- Hommel B, Colzato LS, Fischer R and Christoffels I** (2011) Bilingualism and creativity: Benefits in convergent thinking come with losses in divergent thinking. *Frontiers in Psychology*, **2**. doi:10.3389/fpsyg.2011.00273
- Hornberger NH** (2002) Multilingual language policies and the continua of biliteracy: An ecological approach. *Language policy*, **1**, 27–51.
- Jacobs JF and Pierce ML** (1966) Bilingualism and creativity. *Elementary English*, **40**, 499–503.
- Javidan M and Teagarden MB** (2011) Conceptualizing and measuring global mindset. *Advances in Global Leadership*, **6**, 13–39. doi:10.1108/S1535-1203(2011)0000006005
- Karapetsas A and Andreou G** (1999) Cognitive development of fluent and nonfluent bilingual speakers assessed with tachistoscopic techniques. *Psychological Reports*, **84**, 697–700.
- Kharkhurin AV** (2008) The effect of linguistic proficiency, age of second language acquisition, and length of exposure to a new cultural environment on bilinguals' divergent thinking. *Bilingualism: Language and Cognition*, **11**, 225–243.
- Kharkhurin AV** (2009) The role of bilingualism in creative performance on divergent thinking and Invented Alien Creatures tests. *Journal of Creative Behavior*, **43**, 59–71.
- Kharkhurin AV** (2011) The role of selective attention in bilingual creativity. *Creativity Research Journal*, **23**, 239–254.
- Kharkhurin AV** (2012) *Multilingualism and Creativity*. Bristol, UK: Multilingual Matters.

- Kharkhurin AV** (2014) Creativity.4in1: Four-criterion construct of creativity. *Creativity Research Journal*, **26**, 338–352. doi:10.1080/10400419.2014.929424
- Kharkhurin AV** (2015) Multilingual creative cognition: Theory and practice. In Jones R (ed), *Routledge Handbook of Language and Creativity*. London, UK: Routledge, pp. 452–466.
- Kharkhurin AV** (2017) Language mediated concept activation in bilingual memory facilitates cognitive flexibility. *Frontiers in Psychology*, **8**, 1–16. doi:10.3389/fpsyg.2017.01067
- Kharkhurin AV** (2018) Bilingualism and creativity. In Altarriba J and Heredia RR (eds), *An introduction to bilingualism: Principles and processes*. New York, NY: Psychology Press, 2nd ed., pp. 159–189.
- Kharkhurin AV** (2021) Plurilingual Creativity: A new framework for research in multilingual and creative practices. In Piccardo E, Germain-Rutherford A and Lawrence G (eds), *Routledge Handbook of Plurilingual Language Education*. Routledge, pp. 225–244
- Kharkhurin AV and Charkhabi M** (2021) Preference for complexity and asymmetry contributes to an ability to overcome structured imagination: Implications for Creative Perception Paradigm. *Symmetry*, **13**. doi:10.3390/sym13020343
- Kharkhurin AV and Samadpour Motalleebi SN** (2008) The impact of culture on the creative potential of American, Russian, and Iranian college students. *Creativity Research Journal*, **20**, 404–411.
- Kharkhurin AV and Wei L** (2014) The role of code-switching in bilingual creativity. *International Journal of Bilingual Education and Bilingualism*, **18**, 153–169. doi:10.1080/13670050.2014.884211
- Kharkhurin AV and Yagolkovskiy SR** (2019) Preference for complexity and asymmetry contributes to elaboration in divergent thinking. *Creativity Research Journal*, **31**, 342–348. doi:10.1080/10400419.2019.1641687
- Kharkhurin AV and Yagolkovskiy SR** (2021) Cultural Variations in Evaluation of Creative Work: A Comparison of Russian and Emirati Samples. *Frontiers in Psychology*, **12**. doi:10.3389/fpsyg.2021.764213
- Khukhlaev OE, Gritsenko VV, Pavlova OS, Tkachenko NV, Usubian SA and Shorokhova VA** (2020) Comprehensive Model of Intercultural Competence: Theoretical Substantiation. *RUDN Journal of Psychology and Pedagogics*, **17**, 13–28. doi:10.22363/2313-1683-2020-17-1-13-28
- Khukhlaev OE, Gritsenko VV, Pavlova OS, Tkachenko NV, Usubian SA and Shorokhova VA** (2021) Development and adaptation of the integrative intercultural competence survey. *Psychology. Journal of Higher School of Economics*, **18**, 71–91.
- Konaka K** (1997) *The relationship between degree of bilingualism and gender to divergent thinking ability among native Japanese-speaking children in the New York area*. (58 dissertation), New York University, Univ Microfilms International database. (1)
- Korzilius H, Hooft A. P. J. V. v, Planken B and Hendrix C** (2011) Birds of different feathers? The relationship between multicultural personality dimensions and foreign language mastery in business professionals working in a Dutch agricultural multinational. *International Journal of Intercultural Relations*, **35**, 540–553.
- Kostandyan M. E and Ledovaya YA** (2013) How the age of language acquisition relates to creativity. *Procedia - Social and Behavioral Sciences*, **86**, 140–145. doi:10.1016/j.sbspro.2013.08.539
- Larsen-Freeman D and Anderson M** (2011) *Techniques & Principles in Language Teaching* New York: Oxford University Press.
- Larsen-Freeman D and Todeva E** (2021) A Sociocognitive Theory for Plurilingualism. In *Complex Dynamic Systems Theory*.
- Lee H and Kim KH** (2011) Can speaking more languages enhance your creativity? Relationship between bilingualism and creative potential among Korean American students with multicultural link. *Personality and Individual Differences*, **50**, 1186–1190.
- Leung A. K.-y and Chiu C.-y** (2010) Multicultural Experience, Idea Receptiveness, and Creativity. *Journal of Cross-Cultural Psychology*, **41**, 723–741. doi:10.1177/0022022110361707
- Leung A. K.-y, Maddux WW, Galinsky AD and Chiu C.-y** (2008) Multicultural experience enhances creativity: The when and how. *American Psychologist*, **63**, 169–181.
- Leung K, Ang S and Tan ML** (2014) Intercultural Competence. *Annual Review of Organizational Psychology and Organizational Behavior*, **1**, 489–519. doi:10.1146/annurev-orgpsych-031413-091229
- Lier V** (2004) *The ecology and semiotics of language learning: A sociocultural perspective*. Boston / Dordrecht: Kluwer Academic.
- Lier V** (2007) Action-Based Teaching, Autonomy and Identity. *Innovation in Language Learning and Teaching*, **1**, 46–65. doi:10.2167/illt42.0
- Lubart TI** (2000) Models of the creative process: past, present and future. *Creativity Research Journal*, **13**, 295–308.
- Lubart TI and Guignard J.-H** (2004) The Generality-Specificity of Creativity: A Multivariate Approach. In *Creativity: From potential to realization*. Washington, DC, US: American Psychological Association, pp. 43–56.
- Lubart TI, Kharkhurin AV, Corazza GE, Besançon M, Yagolkovskiy SR and Sak U** (2022) Creative Potential in Science: Conceptual and Measurement Issues. *Frontiers in Psychology*, **13**. doi:10.3389/fpsyg.2022.750224
- Lüdi G** (2021) Promoting plurilingualism and plurilingual education: A European perspective. In Piccardo E, Germain-Rutherford A and Lawrence G (eds), *Routledge Handbook of Plurilingual Language Education*. Routledge, pp. 27–43
- Lüdi G and Py B** (2009) To be or not to be ... a plurilingual speaker. *International Journal of Multilingualism*, **6**, 154–167. doi:10.1080/14790710902846715
- Maddux WW, Adam H and Galinsky AD** (2010) When in Rome ... Learn Why the Romans Do What They Do: How Multicultural Learning Experiences Facilitate Creativity. *Personality and Social Psychology Bulletin*, **36**, 731–741. doi:10.1177/0146167210367786
- Maddux WW and Galinsky AD** (2009) Cultural borders and mental barriers: The relationship between living abroad and creativity. *Journal of Personality and Social Psychology*, **96**, 1047–1061.
- Marshall S** (2021) Plurilingualism and the Tangled Web of Lingualisms. In Piccardo E, Germain-Rutherford A and Lawrence G (eds), *Routledge Handbook of Plurilingual Language Education*. New York: Routledge, pp. 44–62
- Masgoret AM and Gardner RC** (2003) Attitudes, Motivation, and Second Language Learning: A Meta-Analysis of Studies Conducted by Gardner and Associates. *Language Learning*, **53**, 167–190. doi:10.1111/1467-9922.00227
- Matsumoto D, LeRoux J, Ratzlaff C, Tatani H, Uchida H, Kim C and Araki S** (2001) Development and validation of a measure of intercultural adjustment potential in Japanese sojourners: the Intercultural Adjustment Potential Scale (ICAPS). *International Journal of Intercultural Relations*, **25**, 483–510. doi:[https://doi.org/10.1016/S0147-1767\(01\)00019-0](https://doi.org/10.1016/S0147-1767(01)00019-0)
- Mayer RE** (1999) Problem solving. In Runco MA and Pritzker SR (eds), *Encyclopedia of creativity*. San Diego, CA: Academic Press, Vol. 2, pp. 37–447.
- McCarthy M** (2019) Cross-cultural differences in creativity: A process-based view through a prism of cognition, motivation and attribution. *Thinking Skills and Creativity*, **32**, 82–91. doi:<https://doi.org/10.1016/j.tsc.2019.04.002>
- Narvaez D, Endicott L and Hill P** (2010) *The Multicultural Experiences Questionnaire*. South Bend, IN: University of Notre Dame Press.
- Narvaez D and Hill P** (2010) The Relation of Multicultural Experiences to Moral Judgment and Mindsets. *Journal of Diversity in Higher Education*, **3**, 43–55. doi:10.1037/a0018780
- Niu W and Sternberg RJ** (2001) Cultural influences on artistic creativity and its evaluation. *International Journal of Psychology*, **36**, 225–241.
- Ohly S and Fritz C** (2010) Work characteristics, challenge appraisal, creativity, and proactive behavior: A multi-level study. *Journal of Organizational Behavior*, **31**, 543–565. doi:<https://doi.org/10.1002/job.633>
- Okoh N** (1980) Bilingualism and divergent thinking among Nigerian and Welsh school children. *Journal of Social Psychology*, **110**, 163–170.
- Oxford RL and Ehrman M** (1992) Second language research on individual differences. *Annual Review of Applied Linguistics*, **13**, 188–205. doi:10.1017/S0267190500002464
- Pavlenko A** (2000) New approaches to concepts in bilingual memory. *Bilingualism: Language and Cognition*, **3**, 1–4.
- Pazyura N** (2016) Influence of Sociocultural Context on Language Learning in Foreign Countries. *Comparative Professional Pedagogy*, **6**, 14–19. doi:10.1515/rpp-2016-0012
- Perleth C, Sierwald W and Heller K** (1993) Selected results of the Munich longitudinal study of giftedness: The multidimensional/typological giftedness model. *Roeper Review*, **15**, 149–155. doi:10.1080/0278319930953491

- Piccardo E** (2017) Plurilingualism as a Catalyst for Creativity in Superdiverse Societies: A Systemic Analysis. *Frontiers in Psychology*, **8**. doi:10.3389/fpsyg.2017.02169
- Piccardo E** (2018) Plurilingualism: Vision, Conceptualization, and Practices. In Trifonas PP and Aravossitas T (eds), *Handbook of Research and Practice in Heritage Language Education*. Cham: Springer International Publishing, pp. 1–19.
- Piccardo E** (2021) The Mediated Nature of Plurilingualism. In Piccardo E, Germain-Rutherford A and Lawrence G (eds), *Routledge Handbook of Plurilingual Language Education*. Routledge, pp. 63–79
- Probst T, Barbaranelli C and Petitta L** (2013) The relationship between job insecurity and accident under-reporting: A test in two countries. *Work and Stress*, **27**, 383–402. doi:10.1080/02678373.2013.850756
- Psaltou-Joycey A and Kantaridou Z** (2009) Plurilingualism, language learning strategy use and learning style preferences. *International Journal of Multilingualism*, **6**, 460–474. doi:10.1080/14790710903254620
- Rhodes M** (1961) An Analysis of Creativity. *The Phi Delta Kappan*, **42**, 305–310.
- Ricciardelli LA** (1992a) Bilingualism and cognitive development in relation to threshold theory. *Journal of Psycholinguistic Research*, **21**, 301–316.
- Ricciardelli LA** (1992b) Creativity and bilingualism. *Journal of Creative Behavior*, **26**, 242–254.
- Rietveld E and Kiverstein J** (2014) A Rich Landscape of Affordances. *Ecological Psychology*, **26**, 325–352. doi:10.1080/10407413.2014.958035
- Rubin J** (1975) What the “good language learner” can teach us. *TESOL Quarterly*, **9**, 41–51. doi:10.2307/3586011
- Runco MA** (2003) Education for Creative Potential. *Scandinavian Journal of Educational Research*, **47**, 318–324. doi:10.1080/00313830308598
- Runco MA** (2014) *Creativity: Theories and themes: Research, development, and practice* (2 ed.). Boston, MA: Elsevier Academic Press.
- Sánchez-Ruiz MJ** (2011) Stress and Creativity. In Editors-in-Chief: Mark AR and Steven RP (eds), *Encyclopedia of Creativity (Second Edition)*. San Diego: Academic Press, pp. 384–389.
- Shao Y, Zhang C, Zhou J, Gu T and Yuan Y** (2019) How Does Culture Shape Creativity? A Mini-Review. *Frontiers in Psychology*, **10**. doi:10.3389/fpsyg.2019.01219
- Silvia PJ, Nusbaum EC, Berg C, Martin C and O'Connor A** (2009) Openness to experience, plasticity, and creativity: Exploring lower-order, high-order, and interactive effects. *Journal of Research in Personality*, **43**, 1087–1090.
- Simonton DK** (1990) History, chemistry, psychology, and genius: An intellectual autobiography of historiometry. In Runco MA and Albert RS (eds), *Theories of creativity*. Thousand Oaks, CA: Sage Publications, Inc, pp. 92–115.
- Soldatova GU, Chigarkova SV and Rasskazova EI** (2018) Approbation of Expanded Cultural Intelligence Scale in Russian. *Psychology Journal of the Higher School of Economics*, **15**, 510–526. doi:10.17323/1813-8918-2018-3-510-526
- Srivastava AL and Khatoun R** (1980) Effect of difference between mother tongue and another tongue as medium of instruction on achievement, mental ability and creativity of the VIII standard children. In Annamalai E (ed), *Bilingualism and achievement in schools*. Mysore, India: Central Institute of Indian Languages, pp. 31–41.
- Stephan CW and Stephan WG** (1992) Reducing intercultural anxiety through intercultural contact. *International Journal of Intercultural Relations*, **16**, 89–106. doi:10.1016/0147-1767(92)90007-H
- Sternberg RJ** (2005) Intelligence, Competence, and Expertise. In *Handbook of competence and motivation*. New York, NY, US: Guilford Publications, pp. 15–30.
- Storme M, Çelik P, Camargo A, Forthmann B, Holling H and Lubart T** (2017) The Effect of Forced Language Switching during Divergent Thinking: A Study on Bilinguals’ Originality of Ideas. *Frontiers in Psychology*, **8**. doi:10.3389/fpsyg.2017.02086
- Tan C.-S, Lau X.-S, Kung Y.-T and Kailsan RAL** (2019) Openness to Experience Enhances Creativity: The Mediating Role of Intrinsic Motivation and the Creative Process Engagement. *The Journal of Creative Behavior*, **53**, 109–119. doi:https://doi.org/10.1002/jocb.170
- Tang M, Werner C, Cao G, Tumasjan A, Shen J, Shi J and Spörrle M** (2015) Creative Expression and Its Evaluation on Work-Related Verbal Tasks: A Comparison of Chinese and German Samples. *The Journal of Creative Behavior*, n/a-n/a. doi:10.1002/jocb.134
- Titone DA and Tiv M** (2022) Rethinking multilingual experience through a Systems Framework of Bilingualism. *Bilingualism: Language and Cognition*, 1–16. doi:10.1017/S1366728921001127
- Torrance EP, Gowan JC, Wu J.-J and Aliotti NC** (1970) Creative functioning of monolingual and bilingual children in Singapore. *Journal of Educational Psychology*, **61**, 72–75.
- van der Zee KI and van Oudenhoven JP** (2000) The multicultural personality questionnaire: a multidimensional instrument of multicultural effectiveness. *European Journal of Personality*, **14**, 291–309. doi:https://doi.org/10.1002/1099-0984(200007/08)14:4<291::AID-PER377>3.0.CO;2-6
- van Dijk M, Kroesbergen EH, Blom E and Leseman PPM** (2018) Bilingualism and Creativity: Towards a Situated Cognition Approach. *The Journal of Creative Behavior*, **53**, 178–188. doi:10.1002/jocb.238
- Van Dyne L, Ang S, Ng KY, Rockstuhl T, Tan ML and Koh C** (2012) Sub-Dimensions of the Four Factor Model of Cultural Intelligence: Expanding the Conceptualization and Measurement of Cultural Intelligence. *Social and Personality Psychology Compass*, **6**, 295–313. doi:https://doi.org/10.1111/j.1751-9004.2012.00429.x
- Vartanian O, Saint SA, Herz N and Suedfeld P** (2020) The Creative Brain Under Stress: Considerations for Performance in Extreme Environments. *Frontiers in Psychology*, **11**. doi:10.3389/fpsyg.2020.585969
- Wang F** (2008) Motivation and English achievement: An exploratory and confirmatory factor analysis of a new measure for Chinese students of English learning. *North American Journal of Psychology*, **10**, 633–646.
- Ward TB** (2007) Creative cognition as a window on creativity. *Methods*, **42**, 28–37.
- Ward TB, Smith SM and Finke RA** (1999) Creative cognition. In Sternberg RJ (ed), *Handbook of creativity*. New York: Cambridge University Press, pp. 189–212.
- Ward TB, Smith SM and Vaid J** (1997) *Creative thought: An investigation of conceptual structures and processes*. Washington, D.C.: American Psychological Association.
- Weiss S, Wilhelm O and Kyllonen P** (2021) An improved taxonomy of creativity measures based on salient task attributes. *Psychology of Aesthetics, Creativity, and the Arts*, No Pagination Specified-No Pagination Specified. doi:10.1037/aca0000434
- Young-Scholten M** (2013) Low-educated immigrants and the social relevance of second language acquisition research. *Second Language Research*, **29**, 441–454.
- Zafar S and Meenakshi K** (2012) Individual Learner Differences and Second Language Acquisition: A Review. *Journal of Language Teaching and Research*, **3**. doi:10.4304/jltr.3.4.639-646
- Zenasni F, Besançon M and Lubart TI** (2008) Creativity and tolerance of ambiguity: An empirical study. *Journal of Creative Behavior*, **42**, 61–73.
- Zha P, Walczyk JJ, Griffith-Ross DA, Tobacyk JJ and Walczyk DF** (2006) The Impact of Culture and Individualism-Collectivism on the Creative Potential and Achievement of American and Chinese Adults. *Creativity Research Journal*, **18**, 355–366.