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Unpacking Plurilingual Creativity: How Motivation Mediates the Link Between Pluriculturalism and Divergent Thinking

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ABSTRACT

This study aimed to test how individuals' motivational characteristics may mediate the relations of plurilingualism/pluriculturalism with divergent thinking. Two hundred sixty-one individuals were recruited using a simple random sampling method. Data collection included assessments of plurilingual experience (measured by the abridged version of Multilingual and Multicultural Experience Questionnaire), multicultural experience and desire (measured by Multicultural Experience Questionnaire), intercultural competence (measured by Integrative Intercultural Competence Survey), motivational characteristics (measured by The Scale for Rating Behavioral Characteristics of Superior Students), and divergent thinking (measured by Unusual Uses test). Regression analyses using mediation models demonstrated that motivational characteristics mediate the association between intercultural competence and divergent thinking components. Motivational characteristics also mediate between multicultural experience/desire and divergent thinking components. By introducing motivational characteristics as a mediating factor, these findings can further explain the underlying mechanism of plurilingual creativity.

KEYWORDS:

intercultural competence, multicultural experience, multicultural interest, divergent thinking, motivation, mediation, plurilingual creativity

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The contemporary world presents a vivid palette of linguistic and cultural streams intersecting and penetrating each other. This may place individuals in a situation where they find themselves in the core of an intricately interwoven clew of languages, traditions, and social conducts. All these factors may have reciprocal influences on individuals. The influence of multiple languages individuals learn may interact with different sociocultural contexts in which these languages are acquired, and together they can have an impact on their creative capacities. This consideration gave rise to the so-called Plurilingual Creativity paradigm (Kharkhurin, 2021, 2024), which this study attempts to develop empirically. In the following, we introduce the major constituents of the plurilingual creativity construct.

First, *plurilingualism* perceives languages as composing a single dynamic language *repertoire*, which emphasizes "the holistic, interconnected nature of the language resources of the individual, and also the fact that languages themselves are socially-constructed composite" (Piccardo et al., 2021, p. 1). Languages are viewed as complex adaptive systems evolving through situated practices (Larsen-Freeman & Anderson, 2011; Larsen-Freeman & Todeva, 2021). This perspective shifts the focus from the languages (traditionally adopted in the bi-/multilingualism approach) to the agency of the individual in the interaction of languages (Coste et al., 1997/2009; Council of Europe, 2018; Lüdi, 2021; Marshall, 2021). Plurilingual individuals are not only proficient users of all their languages. They are also those who actively use more than one language to varying degrees of success, even if they have not achieved a high level of proficiency in all of them. These people employ their languages to various degrees and can change their proficiency depending on the goals and circumstances of language use. For example, according to the Common European Framework of Reference for Languages (Council of Europe, 2018), plurilinguals may speak one language while understanding another, switch between languages when appropriate or necessary, and mediate communication between individuals with no common language.

Second, in addition to using multiple languages, plurilingual individuals have an opportunity to gain knowledge of different cultural systems. Acculturation studies suggested that language acquisition is often accompanied by adopting the cultural values of the country where this language is acquired (e.g., Birman et al., 2002). This means that multilingual practice involves the interaction of both language- and culture-related factors. Hence, plurilingualism should be considered inseparable from *pluriculturalism*. Both plurilingual and pluricultural practices facilitate an individual's communication skills. 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).

Third, plurilinguals' cross-cultural experience contributes to their *intercultural competence*. There are different models of intercultural competence (e.g., Byram, 1997; Deardorff, 2009; Griffith et al., 2016). Intercultural competencies can be classified based on traits, attitudes, worldviews, or a combination of these dimensions (Leung et al., 2014). They are determined by cognitive, behavio-

ral, and affective abilities, which help plurilingual individuals communicate effectively with people of other cultures (Gudykunst et al., 1994; Pusch, 1994).

Thus, the concepts of plurilingualism and pluriculturalism adopted in the plurilingual creativity paradigm emphasize the agency of plurilingual speakers whose language repertoire represents their collection of languages. In addition to language repertoire, plurilingual individuals avail of their pluricultural assets, which are perceived in terms of their multicultural experience and intercultural competence.

Fourth, the interaction of plurilingual and pluricultural factors is assumed to develop plurilingual individuals' creative capacities. The construct of plurilingual creativity perceives creativity as a syndrome or complex (Runco, 2014). As such, it adopts a 7P approach to creativity (Kharkhurin & Charkhabi, 2021; Rhodes, 1961; Runco, 2003; Simonton, 1990), which considers this phenomenon from the perspective of a creative person, a creative process, a creative perception, a product of creative activity, place (environment) in which creative activity occurs, persuasion of others in plausibility of own creative outcome, and potential to engage in creative activity.

In the present study, we looked at the latter approach: creative potential (Corazza & Glăveanu, 2020). Runco's (2003) concern with creative education drove him to propose a study of this concept. Creative potential refers to cognitive processes that encourage an individual's creative thinking (cf. creative cognition approach; Ward & Kolomyts, 2019). In the current literature, creative potential is closely associated with divergent thinking (e.g., Runco, 2013; Runco & Acar, 2012), which is perceived as an essential aspect of creative thinking (e.g., Guilford, 1950; Lubart, 2000; Runco & Acar, 2012). According to Guilford (1967), divergent thinking has four main characteristics: fluency (being able to generate as many ideas or solutions to a problem as possible in a given time), flexibility (the capacity to consider a variety of approaches to a problem simultaneously), originality (being able to produce ideas that are different from what the majority has generated), and elaboration (being able to think through the details and realize the idea).

As can be noticed from the previous discussion, the plurilingual creativity paradigm emphasizes the central role of an individual in the relation between linguistic and creative practices. Empirical evidence demonstrated the interactive effects of plurilingual and pluricultural factors on divergent thinking (Kharkhurin et al., 2023a) through the mediating role of tolerance and intolerance of ambiguity (Kharkhurin et al., 2023b) and the extent to which these relations can be moderated by personality traits (Kharkhurin et al., 2023c). These findings emphasized the important role of personality-related factors in plurilingual creativity. Moreover, indirect empirical evidence demonstrated the relation between personality traits and respective players in our research project: second language learning (overview Chen et al., 2021), multilingualism (e.g., Dewaele & Botes, 2020; Dewaele & Stavans, 2014; Dewaele & van Oudenhoven, 2009; Gross & Dewaele, 2018), multiculturalism (e.g., Dewaele & Stavans, 2014; Dewaele & van Oudenhoven, 2009; Kayiţ & Akcaođlu, 2021), and creativity (e.g., Baas et al., 2013; Fürst et al., 2016; Prabhu et al., 2008; Puryear et al., 2019).

Therefore, we continued the investigation of the effects of personality in the plurilingualism/pluriculturalism—divergent thinking link. Specifically, we looked at personal motivational charac-

teristics. The studies on creative personality revealed an important role of motivation in the link between personality and creativity. For example, Sung and Choi (2009) examined the interaction of the Big Five personality factors and the motivational orientations on creativity. They found that the positive relationship between openness to experience and creativity was stronger when the person revealed solid extrinsic motivation. They also found that agreeableness positively predicted creative performance only when a person's extrinsic motivation was low. Similarly, Kaspi-Baruch (2017) demonstrated that the associations between the Big Five dimensions and divergent thinking were moderated by learning motivational goal orientation (which directs individuals toward learning or enhancing their qualifications; Button et al., 1996). Individuals high in extroversion and emotional stability and low in conscientiousness were most creative when oriented toward learning.

To our knowledge, no empirical evidence is currently linking plurilingualism/pluriculturalism with motivation. However, there is indirect evidence hinting at this link. Motivation has been recognized as playing an important role in successful language learning (e.g., Engjn, 2009; Masgoret & Gardner, 2003; Wang, 2008). Studies indicate a connection between motivation and acculturation, where extrinsic motivation aids in maintaining heritage culture while integrating into the host culture (e.g., Vishkin et al., 2021). Studies also demonstrate cultural variations in motivational mechanisms (e.g., Markus, 2016).

Hence, we reasoned as follows. There is empirical evidence that plurilingualism and pluriculturalism influence creativity. Linguistic, cultural, and creative practices emphasize the central role of personality in general and motivation in particular. Motivation appears to influence the contribution of personality-related factors to creativity. Therefore, we anticipated that motivation can also play a role in the link between plurilingualism/pluriculturalism and creativity, specifically divergent thinking.

Renzulli et al. (1971) developed an assessment instrument of behavioral characteristics in learning, motivation, creativity, and leadership. The intention was to provide a more objective way to identify gifted students. We used their Motivational Characteristics Scale in the present study and advanced the following hypotheses. First, motivational characteristics mediate the contribution of language repertoire to divergent thinking components. Second, motivational characteristics mediate the contribution of intercultural competence to divergent thinking components. Third, motivational characteristics mediate the contribution of multicultural experience to divergent thinking components.

METHODS

Participants

Two hundred and sixty one individuals (47 men and 214 women) aged 17 to 66 ($M = 27.64$, $SD = 11.98$) participated in the study. They were recruited through social media and participated in the study voluntarily. They all spoke several languages; their proficiency in Russian (the language of instruc-

tion) was $M = 4.51$, $SD = 1.22$ out of 5 (see more information on the language assessment below). Most participants were from Russia (171) and Kazakhstan (60), while others were from Belarus, Belgium, Canada, Germany, Israel, Latvia, Moldova, Mongolia, the Netherlands, Tajikistan, the UAE, Ukraine, and the USA. No personal data was collected except for their age and gender.

Procedure

The data was collected in a uniform online environment via the 1ka.si platform, ensuring that all participants received identical instructions and test conditions. The platform's controlled environment reduced external distractions and standardized the testing experience. First, participants were asked to sign an informed consent form approved by the HSE University's Ethical Committee. Then, the participants proceeded with the assessment battery consisting of a demographics questionnaire, language questionnaire, multicultural experience questionnaire, intercultural competence scale, motivational characteristics scale, and divergent thinking test.

Assessments

Plurilingual experience assessment

An abridged Russian version of the Multicultural and Multilingual Experience Questionnaire (Kharkhurin, 2017) was utilized to assess participants' linguistic and cultural backgrounds. The survey required participants to provide the following information: a place of birth, current residence, the number of languages they speak, and the age of language acquisition. The participants were asked to rate their proficiency in each language with a Likert-type 5-point scale based on four primary language abilities: listening, reading, writing, and speaking.

The total number of languages rated by participants was calculated to construct the *number of languages score*. In addition, the mean of the participants' self-rating scores for each linguistic ability (listening, reading, writing, and speaking) for each indicated language was used to calculate the language proficiency score. Further, the *overall language proficiency* score was calculated by summing up respondents' proficiency scores in all languages.

To better reflect the construct of plurilingualism, we used the *plurilingual index* (Kharkhurin et al., 2023a) that combines the number of languages score and the overall language proficiency score. We conducted a series of regression analyses to examine the extent to which our language-related variables significantly predicted different components of divergent thinking (see the description of the divergent thinking assessment below). The results indicated that the number of spoken languages and overall language proficiency were significant predictors of originality. Based on the results of regression, we constructed a composite score using the regression equation $Y = 2.884 + .271 \times X1 - .073 \times X2$, where Y represents the plurilingual index and X1 and X2 represent the number of languages and overall language proficiency, respectively. A higher index indicates greater plurilingual competence.

Multicultural experience assessment

The Multicultural Experience Questionnaire (Narvaez et al., 2010) measured participants' multicultural experiences and desires. The questionnaire exploits the term "culture" not only in a classic way (as the experience acquired during communication with different ethnic groups) but also concerning the place of birth, gender, sexual orientation, religious and political affiliation. The original version of the Multicultural Experience Questionnaire consisted of 53 items that defined four subscales (Endicott et al., 2003). The present study exploited an abridged version, which consisted of 15 5-point Likert scales to record responses on *multicultural experience* (assessing participants' multicultural experience) and *multicultural desire* (assessing participants' desire to obtain multicultural experience and further develop communication with people of another culture). A Cronbach's Alpha of .85 was found for the scale. The scale was translated into Russian using the back-translation method (Brislin, 1970).

Intercultural competence assessment

The Integrative Intercultural Competence Survey (Khukhlaev et al., 2021) was used to measure intercultural competence. The survey aims to measure participants' ability to communicate effectively with individuals of other cultures. It consists of 18 Likert-type 5-point items that were grouped into four components: "Intercultural Stability (individual personality traits that enable a person to cope with challenging intercultural communication situations), Intercultural Interest (willingness to be engaged into the discussion with the representatives of another culture), Lack of Ethnocentrism (respect and acceptance of cultural diversity) and Management of Intercultural Interaction (possessiveness of communication skills vital for intercultural communication)" (Khukhlaev et al., 2021, p. 88).

Khukhlaev and his colleagues (2021) reported a high internal consistency and invariance of all four subscales on both scalar and configural levels ($\Delta CFI = .006 < .01$). The subscales had a high correlation with the Extended Cultural Intelligence Scale ($\alpha = .75, .79, .81, .77$, respectively; all $ps < .001$). The total score also correlated significantly with a sociocultural adaptation of international students ($\alpha = .92, p < .001$), self-efficacy among teachers working with international students ($\alpha = .79, p < .001$), and teachers' emotional burnout caused by intercultural communication ($\alpha = .73, p < .001$).

Motivational characteristics assessment

The Scale for Rating Behavioral Characteristics of Superior Students (Renzulli et al., 1971) was adapted in Russian by Tunik (2013). The original version assessed these characteristics of gifted children only. In contrast, the adapted version extrapolated it to ordinary people as well. The adapted version consists of four components: learning, motivation, creativity, and leadership. In the present study, we used only the *motivational characteristics* component, which consists of nine 4-point Likert-type items inquiring about an individual's motivational characteristics. The final score was calculated as the sum of the responses to all questions, resulting in a maximum of 36 points.

The assessment tool evaluated personal characteristics such as immersion into a task (e.g., "I deeply and completely immerse myself in topics that interest me"), persistence, and even stub-

bornness in accomplishing the task (e.g., "I am persistent in finding a way to solve a problem, sometimes it is difficult to shift my attention to another topic"), intrinsic motivation (e.g., "I have little need for external motivation and stimulation to complete the work that originally inspired me"), self-criticism (e.g., "I strive for the best result, self-critical; I am rarely satisfied with his pace and results"), independence (e.g., "I prefer to work independently and autonomously; only initial instructions are required from teachers, then I like to do everything myself"), as well as ethical conduct and discrimination between means and ends (e.g., "I am always interested in truth and lies, good and evil; often evaluate and judges events, people and objects").

Renzulli et al. (1971) reported a high coefficient of stability for the Motivational Characteristics scale ($\alpha = .91$, $p < .01$). They also showed that this scale highly correlated with the standardized tests of intelligence ($r = .36$, $p < .05$) and achievement ($r = .42$, for language achievement; $r = .60$, for mathematics achievement; $r = .50$, for total achievement; all $ps < .01$). Hence, the scale demonstrated strong reliability and significant correlations with cognitive and academic performance measures.

Divergent thinking assessment

Averina and Shcheblanova (1996) adapted a modified version of Guilford's Unusual Uses test for Russian-speaking participants. In a time limit of 6 minutes, participants were asked to come up with as many unusual uses for a wooden ruler as possible. We used a single-object test to save testing time. A similar procedure was used in several studies assessing divergent thinking (e.g., Kudrowitz & Dippo, 2013; Ray, 1966).

Although many studies in the field employ a 2-3-minute time limit, we opted for a 6-minute interval based on Beaty and Silvia's (2012) findings that demonstrated that while fluency increases most rapidly during the early moments of the task, original and more flexible ideas tend to emerge later, as participants move beyond their initial, conventional responses. Extending the time window to six minutes thus enables a more complete representation of divergent thinking, improving the reliability of the measures.

The 1ka.si platform featured a built-in timer that automatically recorded response durations, ensuring that participants adhered to the designated time limits. This measure eliminated the possibility of exceeding the allotted time. Hence, it maintained the reliability of the divergent thinking test and the overall validity of the study's results.

The study assessed three components of divergent thinking: fluency (the total number of ideas generated for unusual uses of the wooden ruler), flexibility (the number of distinct categories into which the participant's ideas fell), and originality (the frequency of a participant's responses compared to the overall distribution of responses from all participants). Averina and Shcheblanova (1996) recruited 100 individuals of all ages to assess the reliability of this test. The individuals took the test twice—the second test took place two months after the first one. The test has high reliability because the test-retest correlations for all three divergent thinking components were strong ($r = .79$, for fluency; $r = .61$, for flexibility; and $r = .73$, for originality; all $ps < .01$). The authors administered this test to the same sample two years later to ensure that the results were consistent. The

findings showed that all three divergent thinking components had smaller but still significant correlation coefficients ($r = .43$ for fluency, $r = .48$ for flexibility, and $r = .53$ for originality; all $ps < .01$).

The scores were calculated using a three-step categorization approach from the German version of the Unusual Uses test (Perleth et al., 1993). Specifically, we reviewed all ideas generated during the experiment to exclude nonsensical, inappropriate, or irrelevant ones, as stated in Averina and Scheblanova (1996). This review was conducted by a team of two independent judges, which minimized bias and enhanced the reliability of the assessment process. Additionally, we applied frequency scoring within the studied sample rather than across external datasets, aligning with the original study's methodology. The fluency score was calculated based on the number of relevant ideas generated by each respondent. The flexibility score was calculated using the number of categories of relevant ideas generated by the respondent. Finally, the originality score was calculated by the number of times it appeared in the list: the lower the frequency, the higher the originality score (more than 10%—score 1; 6–10%—score 2; 3–6%—score 3; 1–3%—score 4; less than 1%—score 5). It is important to note that applied frequency scoring was done within the sample studied. The overall originality score was calculated as the average score for all relevant ideas produced by the participant.

RESULTS

Descriptive statistics

Table 1 displays the descriptive statistics of the study's variables.

Table 1. The descriptive statistics for the research variables in the current study ($N = 261$)

Variable	mean	*SD*	median	min	max
Plurilingual index	2.86	.14	2.84	2.49	3.41
Number of languages	2.96	.98	3.00	2.00	6.00
Overall proficiency	11.28	3.87	11.00	4.00	24.50
Intercultural stability	4.47	.57	4.50	1.00	5.00
Intercultural interest	4.25	.75	4.33	2.00	5.00
Lack of ethnocentrism	4.12	.66	4.20	1.00	5.00
Management of intercultural interaction	4.08	.55	4.17	2.00	5.00
Motivational characteristics	24.83	4.13	25.00	9.00	36.00
Multicultural experience	24.95	5.57	25.00	10.00	40.00
Multicultural desire	22.59	3.49	23.00	9.00	30.00
Fluency	6.61	4.23	6.00	1.00	20.00
Flexibility	5.67	3.40	5.00	1.00	17.00
Originality	2.82	.87	2.84	1.00	5.00

Before the analysis, we examined the predictors' Variance Inflation Factor (VIF) values in our mediation models. All variables had VIF values below the accepted threshold of 5, indicating that multicollinearity is not a concern in our analysis.

Mediation analyses

A regression model was constructed to investigate the mediation pathways (see Figure 1). Model 4 from the Macro Process framework (Hayes, 2012) was selected to examine the influence of motivational characteristics on the relationship between plurilingualism, intercultural competence, multiculturalism, and divergent thinking. A total of 5,000 bootstrap samples were utilized to compute the mediation model.

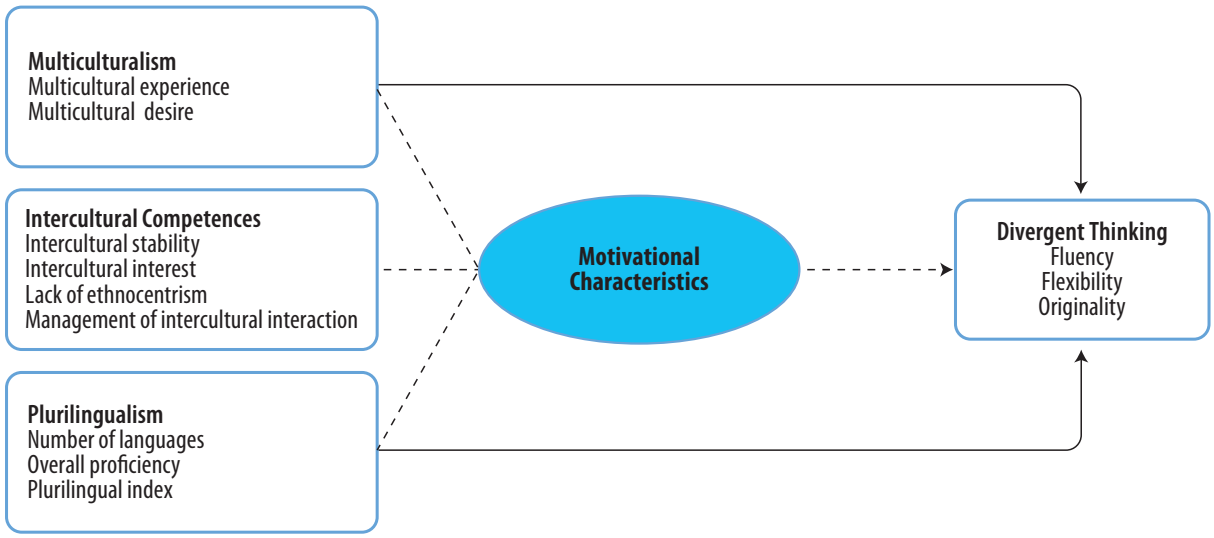

Figure 1. A conceptual model of the relationships between the research variables in the current study

Plurilingualism

Figure 1 depicts the plurilingual index as the predictor variable, with motivational characteristics posited as the mediator and three divergent thinking components serving as the outcome variables. The mediation analysis[1] revealed that motivational characteristics did not mediate the relationship between the plurilingual index and divergent thinking components. Given that the plurilingual index did not yield significant results, we opted to test the mediation pathways separately for the number of languages spoken and overall language proficiency. Like the plurilingual index, the mediation analyses for the number of languages[2] and overall proficiency[3] did not produce any significant results, thereby failing to support the first hypothesis.

1 The results of the mediation analysis are presented in Table A of the supplementary materials.
2 The results of the mediation analysis are presented in Table B of the supplementary materials.
3 The results of the mediation analysis are presented in Table C of the supplementary materials.

Intercultural competence

A similar mediation model was developed using the Process program to explore how motivational characteristics might mediate the relationship between the four components of intercultural competence and the components of divergent thinking. The mediation analysis[4] revealed that motivational characteristics significantly mediated the relationship between intercultural stability and both fluency ($\beta = .034$, 95% CI [.005, .082]) and flexibility ($\beta = .032$, 95% CI [.006, .077]).

Additionally, motivational characteristics mediated the association between intercultural interest and all three components of divergent thinking: fluency ($\beta = .042$, 95% CI [.014, .094]), flexibility ($\beta = .041$, 95% CI [.014, .089]), and originality ($\beta = .026$, 95% CI [.002, .073]). Similarly, motivational characteristics mediated the relationship between management of intercultural interaction and both fluency ($\beta = .044$, 95% CI [.014, .096]) and flexibility ($\beta = .043$, 95% CI [.014, .093]). However, no mediation was observed between the lack of ethnocentrism and any of the divergent thinking components. Therefore, the second hypothesis was partially supported.

Multilingualism

To test the final hypothesis, a similar mediation model was constructed with multicultural experience and multicultural desire as the predictor variables, motivational characteristics as the potential mediator, and divergent thinking components as the outcome variables. The mediation analysis[5] revealed that motivational characteristics mediated the relationships between multicultural experience and both fluency ($\beta = .056$, 95% CI [.018, .109]) and flexibility ($\beta = .051$, 95% CI [.013, .099]). Likewise, motivational characteristics mediated the associations between multicultural desire and both fluency ($\beta = .056$, 95% CI [.022, .105]) and flexibility ($\beta = .053$, 95% CI [.019, .102]). Thus, the third hypothesis was partially supported.

DISCUSSION

The present study continued an empirical endeavor identifying various factors that might impact plurilingual creativity. We aimed to explore the role of motivational characteristics in mediating the relationship between plurilingualism/pluriculturalism and creativity. Specifically, we investigated whether motivation serves as a psychological mechanism linking plurilingual and pluricultural experiences with creative potential.

To address this research question, we formulated three hypotheses. First, we hypothesized that motivational characteristics mediate the relationship between language repertoire and divergent thinking components. Second, we tested whether motivational characteristics mediate the relationship between intercultural competence and divergent thinking. Third, we examined

4 The results of the mediation analysis are presented in Table D of the supplementary materials.
5 The results of the mediation analysis are presented in Table E of the supplementary materials.

whether motivational characteristics mediate the relationship between multicultural experience and divergent thinking.

The findings partially confirmed our hypotheses. The results showed that motivational characteristics mediated the relationship between intercultural competence as well as multicultural experience and divergent thinking, supporting our second and third hypotheses, respectively. Specifically, they mediated the contribution of intercultural stability to fluency and flexibility, the management of intercultural interaction to fluency and flexibility, and intercultural interest to all three divergent thinking components. In addition, motivational characteristics mediated the contribution of the multicultural experience and the multicultural desire to fluency and flexibility. However, our first hypothesis was not supported, as motivational characteristics did not mediate the relationship between language repertoire and divergent thinking.

Motivation mediates the link between pluriculturalism and divergent thinking

Let us carefully interpret these findings and place them in the larger context of the plurilingual creativity paradigm. Kharkhurin and his colleagues (2023a) demonstrated that both pluricultural factors (intercultural competence and multiculturalism) contribute to divergent thinking. Now, we can elaborate on this contribution. The present study showed that pluricultural factors develop motivational characteristics, boosting divergent thinking. This finding supports many studies demonstrating the link between motivation and prolific creative behavior (overview in Hennessey, 2019).

The link between pluriculturalism and motivation appears to be less evident. Vishkin et al. (2021) demonstrated the link between motivation and acculturation, and suggested that extrinsic motivation is linked to preserving one's heritage culture and adopting one's host culture. Markus (2016) revealed cultural differences in motivational mechanisms. There are studies investigating multicultural classrooms concerning motivation toward learning (e.g., Phalet et al., 2004) and motivation to learn languages (e.g., Bernaus et al., 2004). However, there is virtually no study relating motivation to pluriculturalism.

Our study starts filling this gap. We observed that certain motivational characteristics appear to be associated with pluricultural experiences. Recall that intercultural competence refers to one's ability to communicate effectively with people of another culture, and multiculturalism addresses factual or desired experiences with representatives of another culture. The constituents of both constructs were found to be significantly related. Hence, we can say that acquiring different cultural values and norms and developing effective intercultural communication skills may support the emergence of personality traits that motivate people to realize their creative potential. These personality traits may include openness, curiosity, and tolerance of ambiguity, which were demonstrated to relate to both pluriculturalism and divergent thinking (e.g., Ivancovsky et al., 2023; Kharkhurin et al., 2023b, 2023c; Waehler, 2013).

Inconsistent findings for originality

It is noteworthy that our study's results for originality were weak and inconsistent, often yielding statistically insignificant indirect effects. This variation may point to different motivational mechanisms that underlie originality compared to fluency or flexibility in divergent thinking. As mentioned earlier in the article, fluency refers to the total number of generated responses, while flexibility reflects the variety of categories those responses encompass. In other words, fluency and flexibility relate to the quantity of ideas or approaches produced. In contrast, originality focuses on the quality of ideas; specifically, their novelty and statistical infrequency within a given sample.

Motivation may enhance cognitive functions and personality traits that improve the quantity of ideational output but not its rarity. For example, Fishbach and Woolley (2022) provided an overview of studies in organizational, cognitive, and social psychology that highlight the role of intrinsic motivation in fostering persistence. Similarly, Botvinick and Braver (2015) presented evidence of the interaction between motivation and cognitive control. Both cognitive control and persistence can promote sustained effort, cognitive engagement, and prolonged exploration of diverse possibilities, which may influence the quantity of ideas generated (e.g., Weiss & Wilhelm, 2022; Wu & Koutstaal, 2022). At the same time, personality traits such as openness to experience, risk-taking, and nonconformity, which are associated with originality (e.g., Anderson & Cropley, 2007; Koutstaal et al., 2025; Shi et al., 2016; van Hook & Tegano, 2002), are less amenable to change through motivational interventions alone.

Motivation does not mediate the link between plurilingualism and divergent thinking

What our study does not reveal is the specific motivational aspects that may benefit from plurilingualism. Previous research has demonstrated that the plurilingual index contributes significantly to originality (Kharkhurin et al., 2023a). This finding suggests that plurilingualism itself fosters creative abilities independent of other mediators. Hence, our insignificant findings indicate that mediation by motivation may not explain the link between plurilingualism and creativity. If motivation were the key mediating factor, we would expect consistent mediation effects across all components of plurilingualism, which was not the case. This suggests that while plurilingual individuals may develop creative abilities, motivation does not necessarily serve as the mechanism driving this connection. This unexpected finding opens avenues for future research, which will require a reevaluation of this study's major concepts and an exploration of alternative mediators.

Future research

Reconceptualizing the motivation construct

Current theories considering the role of motivation in creativity (e.g., Kasof et al., 2007; Moneta & Siu, 2002; Prabhu et al., 2008) emphasized that creativity generally prospers under conditions that support intrinsic motivation (stimulated by personal interest and inner potential) and suffocates under conditions accentuating extrinsic motivation (such as rewards and incentives). The relationship between motivation and creativity appears to be complex. For example, Auger and Woodman

(2016) used semi-structured interviews to explore how creative people experience creativity and motivation in various contexts. The obtained results suggested four types of intrinsic motivation for creativity. These types are determined by the relationship to the setting (independent vs. dependent) and the focus of the creative behavior (egocentric vs. other-centered).

Further, in contrast to the common belief of the detrimental role of extrinsic motivation for creativity, Gerhart and Fang (2015) argued for a potentially positive influence of extrinsic rewards, such as pay for performance, on creativity in workplace settings. Our motivational characteristics appear to be closer to intrinsic motivation. However, they also include other aspects such as independence and self-criticism, persuasion, stubbornness, and ethics. Unfortunately, each motivational characteristic was represented by only one scale item. This limited the statistical power to differentiate subtypes of motivation in our analyses. However, it would be interesting to tap into each of these aspects separately to pinpoint individual motivational characteristics underlying creative behavior, which could be developed through the acquisition and use of multiple languages in multiple cultural settings.

Expanding the creativity construct

Concurrently, as mentioned in the introduction, there is an urgent need to empirically expand the construct of creativity. We anticipate that motivational characteristics boosted by pluriculturalism may impact not only the development of creative potential as measured in the present study but also the development of various creative personality traits.

In addition, we could anticipate that these characteristics may facilitate individuals' creative perception. The latter refers to people's ability to identify creative elements in themselves, others, and the environment (Kharkhurin & Charkhabi, 2021). This ability may encourage individuals to engage in creative behavior. One of these creative elements appeared to be a preference for complexity (Kharkhurin & Charkhabi, 2021; Kharkhurin & Yagolkovskiy, 2019). Plurilinguals' experience with multiple complex linguistic and sociocultural systems may encourage them to demonstrate an inclination toward complexity, making their creative perception more acute.

Alternative mediation candidates

Further, it is entirely possible that personality traits beyond motivation, such as openness to experience, risk propensity, and tolerance for ambiguity, mediate the relationship between plurilingualism and creativity. Openness to experience is often linked to creative potential (Feist, 2019) and is commonly found in plurilingual individuals (Dewaele & Botes, 2020). A propensity for risk-taking, often developed through the trial-and-error nature of language learning (Hayakawa et al., 2019), encourages individuals to embrace creative risks (Crepaldi et al., 2024). Kharkhurin and his colleagues (2023b) discovered that intolerance of ambiguity—the tendency to view ambiguous situations as threats rather than sources of inspiration—mediated the connections between language repertoire and divergent thinking.

Cognitive mediators may also be strong candidates. Code-switching, which involves alternating between two or more languages within a conversation, sentence, or discourse, allows speakers

to navigate and integrate diverse linguistic and cultural frameworks. It enhances cognitive flexibility, enabling plurilingual individuals to switch perspectives and generate diverse ideas more effectively (Kharkhurin & Wei, 2015). Selective attention, the ability to focus on relevant information while filtering out distractions, is enhanced by multilingual practice. This practice improves executive functioning, contributing to more efficient divergent thinking (Kharkhurin, 2011). Furthermore, language-mediated concept activation was demonstrated to promote broader associative thinking in bilingual memory (Kharkhurin, 2017). This process integrates concepts from distant semantic categories, thereby enhancing cognitive flexibility.

Sociolinguistic mediators such as language-mediated social interaction and metalinguistic awareness could influence creativity by shaping conceptual thinking. For example, metalinguistic awareness, the ability to analyze and manipulate language structure, enhances executive control (Bialystok & Barac, 2012), which, per previous discussion, could foster divergent thinking.

Implications for education

Finally, the significant role of motivation in mediating intercultural and creative practices has broader implications for education and cultural engagement. If acquiring multiple languages and cultural values enhances motivation and creative potential, it is beneficial to incorporate methods that foster plurilingual, pluricultural, and creative competencies within a unified educational framework. This is discussed in the context of plurilingual creative education (see Kharkhurin, 2021, for discussion), which highlights the importance of motivation and its connection to curiosity and learning satisfaction (Oudeyer et al., 2016). For example, the Plurilingual Intercultural Creative Keys (https://pick.hse.ru/en/; PICK; Kharkhurin et al., 2024) teacher training program, which embeds the development of linguistic, intercultural, and creative competencies into school curricula, offers a cluster of lectures and workshops titled "Where is their button?" focusing on enhancing intrinsic motivation and sustaining student curiosity in education.

Beyond formal education, cultural institutions and workplaces can apply strategies that encourage multilingual communication in professional settings, promote cultural exchanges, and design immersive learning experiences, which can foster intrinsic motivation, thereby enhancing creative outcomes. Furthermore, this research has the potential to inspire families and educational institutions to infuse students' learning journeys with enriching social and cultural experiences right from an early age.

LIMITATIONS

This study has several limitations that warrant attention. First, using a cross-sectional design meant that data were collected at a single time, limiting our ability to establish causal relationships or draw inferences between the research variables. Second, we relied on self-reported scales for data collection. While we provided clear instructions and encouraged honest responses, some partici-

pants may have been influenced by social desirability bias. Third, our study did not consider contextual factors such as educational background and socioeconomic status, which could affect an individual's exposure to different cultures or languages. Fourth, our sample consisted exclusively of Russian-speaking individuals selected through a simple random sampling method, limiting generalizability to other language groups. Therefore, further replication studies are needed to validate our findings. The fifth limitation concerns the structure of the divergent thinking task, which was based on a single object—a wooden ruler. While this approach aligns with prior research and ensures methodological consistency, using multiple objects could have increased the generalizability and robustness of the findings.

CONCLUSION

This study marks the completion of the first wave of empirical investigation into plurilingual creativity. We examined how language repertoire, multilingual experience, and intercultural competence contribute to divergent thinking and identified the psychological factors that mediate or moderate these relationships. Our findings indicated that both plurilingual and pluricultural experiences interactively enhance divergent thinking (Kharkhurin et al., 2023a), and motivation (present study), and tolerance and intolerance of ambiguity (Kharkhurin et al., 2023b) mediated this relationship, while personality traits such as neuroticism and extraversion (Kharkhurin et al., 2023c) moderated it.

Building on this foundation, the next wave of research will broaden the scope of creativity beyond divergent thinking. It will include such factors as creative personality, creative perception, and motivation for creativity. It will also expand the cultural and linguistic diversity of the participant pool by incorporating, for example, Chinese native speakers, offering a more comprehensive and cross-cultural perspective on plurilingual creativity.

References

Anderson, C.C., & Cropley, A.J. (2007). Some correlates of originality. *Australian Journal of Psychology*, *18*(3), 218–227. https://doi.org/10.1080/00049536608255542

Auger, P. & Woodman, R.W. (2016). Creativity and Intrinsic Motivation: Exploring a Complex Relationship. *The Journal of Applied Behavioral Science*, *52*(3), 342–366. https://doi.org/10.1177/0021886316656973

Averina, E.S. & Shcheblanova, E.I. (1996). *Verbal'nyy test tvorcheskogo myshleniya 'Neobychnoye ispol'zovaniye': posobiye dlya shkol'nykh psikhologov*. Sobor.

Baas, M., Roskes, M., Sligte, D., Nijstad, B.A., & De Dreu, C.K.W. (2013). Personality and creativity: The Dual Pathway to Creativity model and a research agenda. *Social and Personality Psychology Compass*, *7*(10), 732–748.

Beaty, R.E. & Silvia, P.J. (2012). Why do ideas get more creative across time? An executive interpretation of the serial order effect in divergent thinking tasks. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(4), 309–319. https://doi.org/10.1037/a0029171

Bernaus, M., Masgoret, A.-M., Gardner, R.C., & Reyes, E. (2004). Motivation and Attitudes Towards Learning Languages in Multicultural Classrooms. *International Journal of Multilingualism*, *1*(2), 75–89. https://doi.org/10.1080/14790710408668180

Bialystok, E. & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, *122*(1), 67–73. https://doi.org/https://doi.org/10.1016/j.cognition.2011.08.003

Birman, D., Trickett, E.J., & Vinokurov, A. (2002). Acculturation and adaptation of Soviet Jewish refugee adolescents: Predictors of adjustment across life domains. *American Journal of Community Psychology*, *30*(5), 585–607. https://doi.org/10.1023/A:1016323213871

Botvinick, M. & Braver, T. (2015). Motivation and Cognitive Control: From Behavior to Neural Mechanism. *Annual Review of Psychology*, *66*, 83–113. https://doi.org/https://doi.org/10.1146/annurev-psych-010814-015044

Brislin, R.W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Button, S.B., Mathieu, J.E., & Zajac, D.M. (1996). Goal Orientation in Organizational Research: A Conceptual and Empirical Foundation. *Organizational Behavior and Human Decision Processes*, *67*(1), 26–48. https://doi.org/10.1006/obhd.1996.0063

Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Multilingual Matters.

Chen, X., He, J., Swanson, E., Cai, Z., & Fan, X. (2021). Big Five Personality Traits and Second Language Learning: a Meta-analysis of 40 Years' Research. *Educational Psychology Review*. https://doi.org/10.1007/s10648-021-09641-6

Corazza, G.E. & Glăveanu, V.P. (2020). Potential in Creativity: Individual, Social, Material Perspectives, and a Dynamic Integrative Framework. *Creativity Research Journal*, *32*(1), 81–91. https://doi.org/10.1080/10400419.2020.1712161

Coste, D., Moore, D., & Zarate, G. (1997/2009). *Plurilingual and pluricultural competence*. Council of Europe, Language Policy Division.

Council of Europe. (1996/2001). *Common European framework of reference for languages: Learning, teaching, assessment*. Cambridge University Press.

Council of Europe. (2018). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment*.

Crepaldi, M., Fusi, G., Cancer, A., Iannello, P., & Rusconi, M. L. (2024). The bidirectional relationship between risk and creativity: A systematic review. *TPM-Testing, Psychometrics, Methodology in Applied Psychology*, *31*(1), 41–57.

Deardorff, D.K. (2009). *The Sage Handbook of Intercultural Competence*. SAGE Publications.

Dewaele, J.-M. & Botes, E. (2020). Does multilingualism shape personality? An exploratory investigation. *International Journal of Bilingualism*, *24*(4), 811–823. https://doi.org/10.1177/1367006919888581

Dewaele, J.-M. & Stavans, A. (2014). The effect of immigration, acculturation and multicompetence on personality profiles of Israeli multilinguals. *International Journal of Bilingualism*, *18*(3), 203–221. https://doi.org/10.1177/1367006912439941

Dewaele, J.-M. & van Oudenhoven, J.P. (2009). The effect of multilingualism/multiculturalism on personality: no gain without pain for Third Culture Kids? *International Journal of Multilingualism*, *6*(4), 443–459. https://doi.org/10.1080/14790710903039906

Endicott, L., Bock, T., & Narvaez, D. (2003). Moral reasoning, intercultural development, and multicultural experiences: Relations and cognitive underpinnings. International Journal of Intercultural Relations, *27*, 403–419. https://doi.org/10.1016/S0147-1767(03)00030-0

Engjn, A.O. (2009). Second language learning success and motivation. *Social Behavior and Personality*, *37*(8), 1035–1042.

Feist, G.J. (2019). Creativity and the Big Two model of personality: plasticity and stability. *Current Opinion in Behavioral Sciences*, *27*, 31–35. https://doi.org/10.1016/j.cobeha.2018.07.005

Fishbach, A. & Woolley, K. (2022). The Structure of Intrinsic Motivation. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*, 339–363. https://doi.org/10.1146/annurev-orgpsych-012420-091122

Fürst, G., Ghisletta, P., & Lubart, T. (2016). Toward an Integrative Model of Creativity and Personality: Theoretical Suggestions and Preliminary Empirical Testing. *The Journal of Creative Behavior*, *50*(2), 87–108. https://doi.org/10.1002/jocb.71

Gerhart, B. & Fang, M. (2015). Pay, Intrinsic Motivation, Extrinsic Motivation, Performance, and Creativity in the Workplace: Revisiting Long-Held Beliefs. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 489–521. https://doi.org/10.1146/annurev-orgpsych-032414-111418

Griffith, R.L., Wolfeld, L., Armon, B.K., Rios, J., & Liu, O.L. (2016). Assessing Intercultural Competence in Higher Education: Existing Research and Future Directions. *ETS Research Report Series*, *2*, 1–44. https://doi.org/10.1002/ets2.12112

Gross, B. & Dewaele, J.-M. (2018). The relation between multilingualism and basic human values among primary school children in South Tyrol. *International Journal of Multilingualism*, *15*(1), 35–53. https://doi.org/10.1080/14790718.2017.1318885

Gudykunst, W., Matsumoto, Y., Ting-Toomey, S., Nishida, T., & Karimi, H. (1994). *Measuring self construals across cultures: A derived etic analysis*. International Communication Association Convention in Sydney, Australia, July,

Guilford, J.P. (1950). Creativity. *American Psychologist*, *5*, 444–454.

Guilford, J.P. (1967). *The nature of human intelligence*. McGraw-Hill.

Hayakawa, S., Lau, B.K.Y., Holtzmann, S., Costa, A., & Keysar, B. (2019). On the reliability of the foreign language effect on risk-taking. *Quarterly Journal of Experimental Psychology*, *72*(1), 29–40. https://doi.org/10.1177/1747021817742242

Hayes, A.F. (2012). *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling*. https://is.muni.cz/el/1423/podzim2014/PSY704/50497615/hayes_2012_navod_process.pdf

Hennessey, B.A. (2019). Motivation and Creativity. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (2ed., pp. 374–395). Cambridge University Press. https://doi.org/10.1017/9781316979839.020

Ivancovsky, T., Baror, S., & Bar, M. (2023). A shared novelty-seeking basis for creativity and curiosity. *Behavioral and Brain Sciences*, *47*, e89, Article e89. https://doi.org/10.1017/S0140525X23002807

Kasof, J., Chen, C., Himsel, A., & Greenberger, E. (2007). Values and Creativity. *Creativity Research Journal*, *19*(2–3), 105–122. https://doi.org/10.1080/10400410701397164

Kaspi-Baruch, O. (2017). Big Five Personality and Creativity: The Moderating Effect of Motivational Goal Orientation. *Journal of Creative Behavior*, *53*(3), 325–338.

Kayiţ, A. & Akcaođlu, M. (2021). Big Five and Dark Triad personality traits as predictors of multicultural attitude and efficacy [journal article]. *Current Issues in Personality Psychology*, *9*(3), 215–228. https://doi.org/10.5114/cipp.2021.104687

Kharkhurin, A.V. (2011). The role of selective attention in bilingual creativity. *Creativity Research Journal*, *23*(3), 239–254. https://doi.org/10.1080/10400419.2011.595979

Kharkhurin, A.V. (2017). Language mediated concept activation in bilingual memory facilitates cognitive flexibility. *Frontiers in Psychology*, *8*, 1–16. https://doi.org/10.3389/fpsyg.2017.01067

Kharkhurin, A.V. (2021). Plurilingual Creativity: A new framework for research in multilingual and creative practices. In E. Piccardo, A. Germain-Rutherford, & G. Lawrence (Eds.), *Routledge Handbook of Plurilingual Language Education* (pp. 225–244). Routledge.

Kharkhurin, A.V. (2024). A paradigmatic shift in the relationship between bilingualism and creativity: Plurilingual creativity approach. *Bilingualism: Language & Cognition*, 1–22. https://doi.org/10.1017/S1366728924000919

Kharkhurin, A.V. & Charkhabi, M. (2021). Preference for complexity and asymmetry contributes to an ability to overcome structured imagination: Implications for Creative Perception Paradigm. *Symmetry*, *13*(2). https://doi.org/10.3390/sym13020343

Kharkhurin, A.V., Kashirskaya, E.V., & Pasechnik, A. (2024). Plurilingual Intercultural Creative Keys: An author educational program developing soft skills. *RUDN Journal of Psychology and Pedagogics*, *21*(3), 705–738. https://doi.org/10.22363/2313-1683-2024-21-3-705-738

Kharkhurin, A.V., Koncha, V., & Charkhabi, M. (2023a). Effects of multilingual and multicultural practices on divergent thinking. Implications for plurilingual creativity paradigm. *Bilingualism: Language and Cognition*, *26*(3), 592–609. https://doi.org/10.1017/S1366728922000864

Kharkhurin, A.V., Koncha, V., & Charkhabi, M. (2023b). Effects of plurilingualism and pluriculturalism on creativity: Testing the mediating role of tolerance and intolerance of ambiguity. *International Journal of Multilingualism*, *22*(2), 475–498. https://doi.org/10.1080/14790718.2023.2242373

Kharkhurin, A.V., Koncha, V., & Charkhabi, M. (2023c). Effects of plurilingualism and pluriculturalism on divergent thinking: Testing the moderating role of personality traits. *International Journal of Bilingual Education and Bilingualism*, *27*(6), 772–792. https://doi.org/10.1080/13670050.2023.2232521

Kharkhurin, A.V. & Wei, L. (2015). The role of code-switching in bilingual creativity. *International Journal of Bilingual Education and Bilingualism*, *18*(2), 153–169. https://doi.org/10.1080/13670050.2014.884211

Kharkhurin, A.V. & Yagolkovskiy, S.R. (2019). Preference for complexity and asymmetry contributes to elaboration in divergent thinking. *Creativity Research Journal*, *31*(3), 342–348. https://doi.org/10.1080/10400419.2019.1641687

Khukhlaev, O.E., Gritsenko, V.V., Pavlova, O.S., Tkachenko, N.V., Usubian, S.A., & Shorokhova, V.A. (2021). Development and adaptation of the integrative intercultural competence survey. *Psychology. Journal of Higher School of Economics*, *18*, 71–91. https://doi.org/10.17323/1813-8918-2021-1-71-91

Koutstaal, W., Brown, L., Lu, K., & Posson, K. (2025). Beyond Openness: A Variety of Creative Experiences Increases Flexibility and Originality of Visuospatial Divergent Thinking. *Creativity Research Journal*, *37*(3), 321–341. https://doi.org/10.1080/10400419.2023.2300575

Kudrowitz, B. & Dippo, C. (2013). When Does a Paper Clip Become a Sundial? Exploring the Progression of Originality in the Alternative Uses Test. *Journal of Integrated Design and Process Science*, *17*, 3–18. https://doi.org/10.3233/jid-2013-0018

Larsen-Freeman, D. & Anderson, M. (2011). *Techniques & Principles in Language Teaching*. Oxford University Press.

Larsen-Freeman, D. & Todeva, E. (2021). A Sociocognitive Theory for Plurilingualism. In *Complex Dynamic Systems Theory*. https://doi.org/10.1002/9781405198431.wbeal0667

Leung, K., Ang, S., & Tan, M. L. (2014). Intercultural Competence. *Annual Review of Organizational Psychology and Organizational Behavior*, *1*(1), 489–519. https://doi.org/10.1146/annurev-orgpsych-031413-091229

Lubart, T.I. (2000). Models of the creative process: past, present and future. *Creativity Research Journal*, *13*(3–4), 295–308.

Lüdi, G. (2021). Promoting plurilingualism and plurilingual education: A European perspective. In E. Piccardo, A. Germain-Rutherford, & G. Lawrence (Eds.), *Routledge Handbook of Plurilingual Language Education* (pp. 27–43). Routledge.

Markus, H.R. (2016). What moves people to action? Culture and motivation. *Current Opinion in Psychology*, *8*, 161–166. https://doi.org/10.1016/j.copsyc.2015.10.028

Marshall, S. (2021). Plurilingualism and the Tangled Web of Lingualisms. In E. Piccardo, A. Germain-Rutherford, & G. Lawrence (Eds.), *Routledge Handbook of Plurilingual Language Education* (pp. 44–62). Routledge.

Masgoret, A.M. & Gardner, R.C. (2003). Attitudes, Motivation, and Second Language Learning: A Meta-Analysis of Studies Conducted by Gardner and Associates. *Language Learning*, *53*(S1), 167–210. https://doi.org/10.1111/1467-9922.00227

Moneta, G.B. & Siu, C.M.Y. (2002). Trait intrinsic and extrinsic motivations, academic performance, and creativity in Hong Kong college students. *Journal of College Student Development*, *43*(5), 664–683.

Narvaez, D., Endicott, L., & Hill, P. (2010). *The Multicultural Experiences Questionnaire*. University of Notre Dame Press.

Oudeyer, P.Y., Gottlieb, J., & Lopes, M. (2016). Chapter 11—Intrinsic motivation, curiosity, and learning: Theory and applications in educational technologies. In B. Studer & S. Knecht (Eds.), *Progress in Brain Research* (Vol. 229, pp. 257–284). Elsevier. https://doi.org/10.1016/bs.pbr.2016.05.005

Perleth, C., Sierwald, W., & Heller, K. (1993). Selected results of the Munich longitudinal study of giftedness: The multidimensional/typological giftedness model. *Roeper Review*, *15*, 149–155. https://doi.org/10.1080/02783199309553491

Phalet, K., Andriessen, I., & Lens, W. (2004). How Future Goals Enhance Motivation and Learning in Multicultural Classrooms. *Educational Psychology Review*, *16*(1), 59–89. https://doi.org/10.1023/B:EDPR.0000012345.71645.d4

Piccardo, E., Germain-Rutherford, A., & Lawrence, G. (2021). An introduction to plurilingualism and this handbook. In E. Piccardo, A. Germain-Rutherford, & G. Lawrence (Eds.), *Routledge Handbook of Plurilingual Language Education* (pp. 1–15). Routledge.

Prabhu, V., Sutton, C., & Sauser, W. (2008). Creativity and Certain Personality Traits: Understanding the Mediating Effect of Intrinsic Motivation. *Creativity Research Journal*, *20*(1), 53–66. https://doi.org/10.1080/10400410701841955

Puryear, J.S., Kettler, T., & Rinn, A.N. (2019). Relating Personality and Creativity: Considering What and How We Measure. *Journal of Creative Behavior*, *53*(2), 232–245.

Pusch, M. (1994). The chameleon capacity. In R.D. Lambert (Ed.), *Educational exchange and global competence* (pp. 205–210). Council on International Educational Exchange.

Ray, W.S. (1966). Absence of Transfer in Unusual Uses Tests. *Psychological Reports*, *18*(1), 237–238. https://doi.org/10.2466/pr0.1966.18.1.237

Renzulli, J.S., Hartman, R.K., & Callahan, C.M. (1971). Teacher Identification of Superior Students. *Exceptional Children*, *38*(3), 211–214. https://doi.org/10.1177/001440297103800303

Rhodes, M. (1961). An Analysis of Creativity. *The Phi Delta Kappan*, *42*(7), 305–310.

Runco, M.A. (2003). Education for Creative Potential. Scandinavian Journal of Educational Research, 47(3), 318-324. https://doi.org/10.1080/00313830308598

Runco, M.A. (Ed.). (2013). *Divergent Thinking and Creative Potential*. Hampton Press.

Runco, M.A. (2014). *Creativity: Theories and themes: Research, development, and practice* (2 ed.). Elsevier Academic Press.

Runco, M.A. & Acar, S. (2012). Divergent Thinking as an Indicator of Creative Potential. *Creativity Research Journal*, *24*(1), 66–75. https://doi.org/10.1080/10400419.2012.652929

Shi, B., Dai, D.Y., & Lu, Y. (2016). Openness to Experience as a Moderator of the Relationship between Intelligence and Creative Thinking: A Study of Chinese Children in Urban and Rural Areas [Original Research]. *Frontiers in Psychology*, *7*, 1–10. https://doi.org/10.3389/fpsyg.2016.00641

Simonton, D.K. (1990). History, chemistry, psychology, and genius: An intellectual autobiography of historiometry. In M.A. Runco & R.S. Albert (Eds.), *Theories of creativity* (pp. 92–115). Sage Publications, Inc.

Sung, S.Y. & Choi, J.N. (2009). Do Big Five Personality Factors Affect Individual Creativity? the Moderating Role of Extrinsic Motivation. *Social Behavior and Personality: An International Journal*, *37*(7), 941–956. https://doi.org/10.2224/sbp.2009.37.7.941

Tunik, E.E. (2013). *The Best Creativity Tests. Diagnostics of Creative Thinking*. Piter.

van Hook, C.W. & Tegano, D.W. (2002). The Relationship Between Creativity and Conformity Among Preschool Children. *The Journal of Creative Behavior*, *36*(1), 1–16. https://doi.org/10.1002/j.2162-6057.2002.tb01053.x

Vishkin, A., Horenczyk, G., & Ben-Nun Bloom, P. (2021). A motivational framework of acculturation. *Brain and Behavior*, *11*(8), e2267. https://doi.org/10.1002/brb3.2267

Waehler, C.A. (2013). Curiosity and biculturalism as key therapeutic change activities. *Psychotherapy*, *50*(3), 351–355. https://doi.org/10.1037/a0033029

Wang, F.X. (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*(3), 633–646.

Ward, T.B. & Kolomyts, Y. (2019). Creative Cognition. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (2 ed., pp. 175–199). Cambridge University Press. https://doi.org/10.1017/9781316979839.011

Weiss, S. & Wilhelm, O. (2022). Is Flexibility More than Fluency and Originality? *Journal of Intelligence*, *10*(4), 96.

Wu, Y. & Koutstaal, W. (2022). Creative flexibility and creative persistence: Evaluating the effects of instructed vs autonomous choices to shift vs. dwell on divergent and convergent thinking. *Consciousness and Cognition*, *105*, 103417. https://doi.org/10.1016/j.concog.2022.103417

SUPPLEMENT

Table A. Results of the indirect relation between the plurilingual index and divergent thinking through mediator ($N = 261$)

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of plurilingual index on fluency	2.071	1.904	1.088	.278	-1.680	5.823
Indirect effect of plurilingual index on fluency via motivational characteristics	-.024	.015	-	ns	-.055	.003
Total effect of plurilingual index on fluency	.209	.067	3.110	.002	.077	.342
	$R^2 = .207$; $F(2, 228) = 5.101$, $p = .007$					
Direct effect of language repertoire on flexibility	1.456	1.528	.953	.342	-1.554	4.467
Indirect effect of language repertoire on flexibility via motivational characteristics	-.023	.014	-	ns	-.053	.002
Total effect of language repertoire on flexibility	.196	.054	2.993	.003	.055	.268
	$R^2 = .198$; $F(2, 228) = 4.661$, $p = .010$					
Direct effect of language repertoire on originality	1.083	.364	2.973	.003	.365	1.801
Indirect effect of language repertoire on originality via motivational characteristics	-.015	.011	-	ns	-.039	.006
Total effect of language repertoire on originality	.126	.013	1.942	.053	-.000	.051
	$R^2 = .218$; $F(2, 228) = 5.704$, $p = .004$					

$^*p < .05$, $^{**}p < .01$, $^{**}p < .001$

Table B. Results of the indirect relation between the number of languages and divergent thinking through mediator (*N* = 261)

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of number of languages on fluency	.406	.264	1.537	.126	-.114	.925
Indirect effect of number of languages on fluency via motivational characteristics	.003	.012	-	ns	-.022	.026
Total effect of number of languages on fluency	.194	.063	3.168	.002	.076	.326
	$R^2 = .217$; $F(2, 253) = 6.264$, $p = .002$					
Direct effect of number of languages on flexibility	.338	.212	1.591	.113	-.080	.756
Indirect effect of number of languages on flexibility via motivational characteristics	.002	.011	-	ns	-.020	.026
Total effect of number of languages on flexibility	.186	.051	3.027	.003	.054	.255
	$R^2 = .211$; $F(2, 253) = 5.912$, $p = .003$					
Direct effect of number of languages on originality	.008	.055	.137	.891	-.101	.116
Indirect effect of number of languages on originality via motivational characteristics	.002	.008	-	ns	-.015	.019
Total effect of number of languages on originality	.117	.013	1.869	.063	-.001	.051
	$R^2 = .117$; $F(2, 253) = 1.759$, $p = .174$					

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

Table C. Results of the indirect relation between the overall proficiency and divergent thinking through mediator (*N* = 261)

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of overall proficiency on fluency	.034	.071	.483	.629	-.105	.173
Indirect effect of overall proficiency on fluency via motivational characteristics	.016	.013	-	ns	-.007	.044
Total effect of overall proficiency on fluency	.192	.067	2.945	.004	.066	.331
	$R^2 = .197$; $F(2, 228) = 4.607$, $p = .011$					
Direct effect of overall proficiency on flexibility	.034	.057	.598	.550	-.078	.145
Indirect effect of overall proficiency on flexibility via motivational characteristics	.016	.013	-	ns	-.007	.043
Total effect of overall proficiency on flexibility	.185	.054	2.836	.005	.047	.259
	$R^2 = .192$; $F(2, 228) = 4.376$, $p = .014$					
Direct effect of overall proficiency on originality	-.016	.014	-1.178	.240	-.043	.011
Indirect effect of overall proficiency on originality via motivational characteristics	.009	.009	-	ns	-.009	.029
Total effect of overall proficiency on originality	.110	.013	1.672	.096	-.004	.048
	$R^2 = .129$; $F(2, 228) = 1.937$, $p = .147$					

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

Table D. Results of the indirect relation between intercultural competence and divergent thinking through mediator (*N* = 261)

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of intercultural stability on fluency	-.007	.068	-.102	.919	-.140	.127
Indirect effect of intercultural stability on fluency via motivational characteristics *	.034	.019	-	Sig	.005	.082
Total effect of intercultural stability on fluency ***	.174	.064	2.732	.006	.049	.299
	$R^2 = .039$; $F(2, 253) = 5.099$, $p = .007$					
Direct effect of intercultural stability on flexibility	-.018	.068	-.261	.794	-.152	.116
Indirect effect of intercultural stability on flexibility via motivational characteristics *	.032	.018	-	Sig	.006	.077
Total effect of intercultural stability on flexibility	- .002	.068	-.025	.980	-.135	.132
	$R^2 = .035$; $F(2, 253) = 4.635$, $p = .011$					
Direct effect of intercultural stability on originality	.121	.069	1.766	.079	-.014	.256
Indirect effect of intercultural stability on originality via motivational characteristics	.017	.015	-	ns	-.002	.061
Total effect of intercultural stability on originality	.129	.068	1.910	.056	-.003	.262
	$R^2 = .026$; $F(2, 253) = 3.336$, $p = .037$					
Direct effect of intercultural interest on fluency	-.043	.063	.692	.489	-.167	.080
Indirect effect of intercultural interest on fluency via motivational characteristics **	.042	.019	-	Sig	.014	.094
Total effect of intercultural interest on fluency	.001	.062	.023	.098	-.012	.123
	$R^2 = .040$; $F(2, 253) = 5.285$, $p = .006$					
Direct effect of intercultural interest on flexibility	-.055	.063	-0.872	.384	-.178	.069
Indirect effect of intercultural interest on flexibility via motivational characteristics **	.041	.019	-	Sig	.014	.089
Total effect of intercultural interest on flexibility	-.011	.062	-.180	.857	-.013	.111
	$R^2 = .038$; $F(2, 253) = 4.993$, $p = .008$					
Direct effect of intercultural interest on originality	-.047	.064	-.745	.457	-.172	.078
Indirect effect of intercultural interest on originality via motivational characteristics *	.026	.018	-	Sig	.002	.073
Total effect of intercultural interest on originality	-.019	.062	-.313	.754	-.141	.102
	$R^2 = .016$; $F(1, 253) = 2.037$, $p = .133$					
Direct effect of lack of ethnocentrism on fluency	.013	.065	-.193	.847	-.139	.115
Indirect effect of lack of ethnocentrism on fluency via motivational characteristics	.009	.015	-	ns	-.019	.043
Total effect of lack of ethnocentrism on fluency	-.012	.065	.190	.849	-.141	.116
	$R^2 = .038$; $F(1, 253) = 5.055$, $p = .007$					

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of lack of ethnocentrism on flexibility	-.038	.065	-.581	.562	-.165	.089
Indirect effect of lack of ethnocentrism on flexibility via motivational characteristics	.009	.015	-	ns	-.019	.043
Total effect of lack of ethnocentrism on flexibility	-.038	.065	-.574	.566	-.166	.091
	$R^2 = .036$; $F(1, 253) = 2.063$, $p = .009$					
Direct effect of lack of ethnocentrism on originality	.008	.066	.115	.909	-.121	.136
Indirect effect of lack of ethnocentrism on originality via motivational characteristics	.006	.011	-	ns	-.009	.036
Total effect of lack of ethnocentrism on originality	.008	.065	.115	.909	-.012	.136
	$R^2 = .014$; $F(1, 253) = 1.762$, $p = .174$					
Direct effect of management of intercultural interaction on fluency	.105	.064	1.648	.101	-.020	.229
Indirect effect of management of intercultural interaction on fluency via motivational characteristics **	.044	.019	-	Sig	.014	.096
Total effect of management of intercultural interaction on fluency **	.151	.062	2.441	.015	.030	.272
	$R^2 = .049$; $F(1, 253) = 6.447$, $p = .002$					
Direct effect of management of intercultural interaction on flexibility	.085	.064	1.339	.182	-.040	.211
Indirect effect of management of intercultural interaction on flexibility via motivational characteristics*	.043	.019	-	Sig	.014	.093
Total effect of management of intercultural interaction on flexibility *	.131	.062	2.108	.035	.009	.252
	$R^2 = .042$; $F(1, 253) = 5.529$, $p = .005$					
Direct effect of management of intercultural interaction on originality	.104	.064	1.612	.108	-.023	.231
Indirect effect of management of intercultural interaction on originality via motivational characteristics	.023	.019	-	Ns	-.006	.068
Total effect of management of intercultural interaction on originality *	.129	.062	2.071	.038	.007	.250
	$R^2 = .024$; $F(1, 253) = 3.073$, $p = .048$					

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

Table E. Results of the indirect relation between multiculturalism and divergent thinking through mediator ($N = 261$)

Effect	*β*	*SE*	*t*	*p*	*LLCI*	*ULCI*
Direct effect of multicultural experience on fluency	.121	.067	1.799	.073	-.012	.254
Indirect effect of multicultural experience on fluency via motivational characteristics *	.056	.023	-	Sig	.018	.109
Total effect of multicultural experience on fluency ***	.174	.064	2.732	.006	.049	.299
	$R^2 = .054$; $F(2, 243) = 6.894$, $p = .001$					
Direct effect of multicultural experience on flexibility *	.141	.067	2.089	.038	.008	.273
Indirect effect of multicultural experience on flexibility via motivational characteristics *	.051	.022	-	Sig	.013	.099
Total effect of multicultural experience on flexibility ***	.189	.064	2.971	.003	.064	.313
	$R^2 = .055$; $F(2, 243) = 7.061$, $p = .001$					
Direct effect of multicultural experience on originality	.101	.067	1.502	.134	-.031	.233
Indirect effect of multicultural experience on originality via motivational characteristics	.028	.026	-	Ns	-.018	.083
Total effect of multicultural experience on originality *	.127	.063	2.018	.044	-.004	.251
	$R^2 = .023$; $F(2, 243) = 2.811$, $p = .062$					
Direct effect of multicultural desire on fluency	.052	.066	.795	.428	-.078	.182
Indirect effect of multicultural desire on fluency via motivational characteristics **	.056	.021	-	Sig	.022	.105
Total effect of multicultural desire on fluency	.108	.064	1.704	.088	-.016	.233
	$R^2 = .044$; $F(2, 243) = 5.535$, $p = .005$					
Direct effect of multicultural desire on flexibility	.056	.066	.846	.399	-.074	.186
Indirect effect of multicultural desire on flexibility via motivational characteristics *	.053	.020	-	Sig	.019	.102
Total effect of multicultural desire on flexibility	.109	.063	1.717	.086	-.015	.233
	$R^2 = .041$; $F(2, 243) = 5.164$, $p = .006$					
Direct effect of multicultural desire on originality	.058	.066	.883	.378	-.071	.187
Indirect effect of multicultural desire on originality via motivational characteristics	.029	.021	-	Ns	-.009	.076
Total effect of multicultural desire on originality	.087	.062	1.390	.164	-.036	.209
	$R^2 = .017$; $F(1, 243) = 2.063$, $p = .129$					

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