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THE RELATIONSHIP BETWEEN INTERCULTURAL INTERACTIONS AT UNIVERSITY AND THE CREATIVITY OF RUSSIAN STUDENTS: THE ROLE OF INTERCULTURAL COMPETENCE[3]

This research studies the relationship between home country intercultural experience, intercultural competence and creativity among Russian students. We assume that students from culturally heterogeneous groups or/and students having a course dedicated to intercultural issues are more creative, as cultural diversity and cultural learning are associated with a higher level of intercultural competence, and intercultural competence may be positively related to creativity. The sample of the first study included 72 students and the sample of the second study included 272 students of HSE University. Creativity was measured by the indicators of creative thinking (fluency, flexibility, and originality) via "Many instances game" from the creativity test battery of Runco; intercultural competence was measured using "Assessment of intercultural competence" of Fantini & Tirmizi. Home country intercultural experience was operationalized via the presence of students from other countries in the study groups and via the inclusion of a Cross-Cultural Psychology course in the students' curriculum. The results of the first study show that cultural learning in the home country institution leads to higher levels of creativity, while the cultural heterogeneity of the groups is associated with an increase in creativity only when cultural learning was applied. The results of the second study show such components of intercultural competence as attitudes and the adaptability of behavior play an important role in the creativity of Russian students: attitudes are positively and the adaptability of behavior is negatively related to creativity.

JEL Classification: Z

Keywords: creativity, intercultural learning, intercultural contacts, cultural heterogeneity, intercultural competence

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Introduction

Creativity can be understood as the creation of a product that is useful and novel in terms of the existing social context (Batey, 2012). Products can be created not only in creative or technological industries, but also in the social domain as social innovation. Such innovations help people to adapt to the new conditions of a changing environment. On the individual level creativity may serve as a path toward flourishing and achieving psychological well-being (Conner, DeYoung, Silvia, 2018). In a more general sense, creativity is usually associated with success, the ability to follow current trends, to cope with novelty and uncertainty, and to keep up with progress (KEA, 2009). In this regard understanding creativity and its predictors is important for human progress (Hennessey, Amabile, 2010). The level of creativity is increasingly important not only for individuals, but also for the successful functioning of society as a whole.

Therefore, some managerial practitioners think that creativity and innovation are competencies that must be developed by educational programs aimed at adults (Rusmussen, 2012). Some international educational organizations have expanded this notion and state that stimulating the creativity of their students is an additional task for all educational organizations (KEA, 2009). Nevertheless, there is no consensus about the influence of an educational environment on creativity. Some scientists and practitioners claim that the educational environment with all its strict rules, formal requirements and limitations hinders creativity (Robinson, 2001). While others believe that school or college, as an important socializing institute, plays a large role in shaping creativity (Amabile,1996; Csikszentmihalyi, 1999). The second belief is mainly about an extended understanding of the educational environment, referring to the ideas of Csikszentmihalyi that interaction with the environment, considered in the unity of its cultural and social components, stimulates creativity. However, studies show that the educational environment – understood in the very narrow sense of the curriculum itself – has only a slight influence on students' creativity (Marquis et al., 2017), so there should be some additional factors in a university environment which can stimulate creativity.

In our opinion, a multicultural setting in an educational environment can contribute to creative stimulation. In general, intercultural contacts covering various direct and indirect interactions with representatives or elements of other cultures (Dunne, 2017), can provide intercultural learning (either formal, through learning courses, or informal, through intercultural communication), and activate certain cognitive mechanisms associated with increased creativity (Leung et al., 2008). However, Rich 's comment on the article about intercultural experience and creativity (2009) shows that the research has a limited focus. Previous studies have established interrelations between intercultural experience and creativity in cases of "Big M" (profound form

forms of multicultural experience) – significant intercultural experience, mainly among migrants and sojourners; we can also include expatriates and students abroad. While intercultural contacts and cultural learning are possible even in the case of "Little M" (mild forms of multicultural experience), the relationship between creativity and this type of multicultural experience have not been studied sufficiently (Rich, 2009; Maddux et al., 2009). In this research we emphasize the role of "Little M" which can take place in the home country. We address the intercultural context of the home country university as a possible resource for increased creativity. We investigate how intercultural experience at university affects creativity.

Study 1: Creativity and intercultural interactions

At the cultural level, any intercultural contact leads to an increase in creativity, due to the facilitation of idea exchange and the enrichment of different creative domains (Montuori, 2010). This is because creativity is not only the creation of something new from scratch, but also a new combination of already existing ideas. Therefore, access to new culturally specific information and the ability to combine ideas from different cultures might stimulate creativity (Matugas, 2014).

Studies at the group level and on the individual level show the same pattern. Creativity is higher within small culturally heterogeneous groups of students and businessmen (McLeod, 1996; Paulus et al., 2017). Deep cultural differences contribute to the growth of creativity (Stahl, 2009), when people are in a context which minimizes the conflicts that arise from such differences and promotes the free expression of ideas (Bounken, 2016). It is assumed that creativity in mixed groups increases because of tolerance and the greater ease of expressing different opinions (Leung & Chiu, 2010). Psychologists also found that creativity is higher among people belonging to groups of the population with particular experiences or characteristics: children from mixed families (Chang et al., 2014), expats (Fee & Gray, 2012), and students studying abroad or having intercultural experience in the past (Russel et al., 2011), the first and second generation of emigrants (Simonton, 1997), and bilinguals (McLeod et al., 1996; Simonton, 2003).

How does intercultural experience influence creativity? Everything starts with contacts with other cultures. Studies show that not only the length of residence abroad, but even references to past cross-cultural experience, and priming (Maddux & Galinsky, 2009) elicit creativity. The cultural and ethnic diversity of an individual's communication network (Chua, 2015), and involvement in friendly or romantic relationships with representatives of other cultures (Lu et al., 2017) are related to higher creativity. However, that happens only when intercultural interactions are deep enough to provide informal intercultural learning. Intercultural learning, especially when it

is organized not in the form of remembering the facts but analyzing them, also stimulates creativity (Maddux & Galinsky, 2010).

One of the important characteristics of the modern educational environment is cultural heterogeneity. Nowadays, globalization and intercultural contacts play a huge role in social changes (KEA, 2009). That is reflected in a way universities organize their work and the possibilities of intercultural contacts they provide for their students. For instance, many higher education institutions in the USA create and apply special educational interventions to foster intercultural learning, sensitivity and understanding. Diversity courses, involvement in intergroup dialogs and study abroad programs are among them (King et al, 2013). In Russia intercultural education is also getting more and more attention and is actively developing (Valeeva & Valeeva, 2017).

This study investigates whether the cultural heterogeneity of study groups (which provides the possibility of direct intercultural interactions with representatives of other cultures) and/or cultural learning (courses organized by the university and requiring some analysis of materials) can lead to higher levels of creativity. Based on the assumption that cultural diversity and cultural learning stimulate creativity, and applying it in a home country educational environment, we hypothesize that:

Hypothesis1: Creativity will increase among students having intercultural experiences in their home country university: studying in culturally heterogeneous groups and/or attending a cultural learning course.

As previous studies do not distinguish between the effects of cultural diversity and cultural learning on creativity, we formulate an additional research question: “Are there any differences in creativity change caused by the cultural heterogeneity of the group and/or by cultural learning?”.

Method

Design and procedure

The study had a quasi-experimental design with pre-test, post-test measurements and manipulations in the form of studying in a culturally heterogeneous group or/and involvement into the cultural learning course (Cross-Cultural Psychology). Thus, four groups of students were involved in this study. Creativity was measured at the beginning and at the end of the academic year. Each participant did a creativity task and filled in a questionnaire about their intercultural experience inside and outside the university. Students also answered an open question about the topics of their communication with foreign students. The cultural homogeneity / heterogeneity of

the group was determined by the presence of foreign students. Involvement in cultural learning was determined by the presence or absence in students' curriculum of the Cross-Cultural Psychology course.

The questionnaire was posted in electronic form on the internet and distributed to students of the HSE University through social networks and their e-mails. Each participant was tested individually without time limits. Participants read the information about the study and signed a consent form. They also indicated their e-mail addresses and agreed to participate in the second stage of the study at the end of the study year. After that they did the creativity task. Finally, they answered questions regarding their characteristics and their educational experience. The creativity task preceded questions about students' experience as even the priming of intercultural experience may stimulate creativity and influence the study results (Maddux & Galinsky, 2009).

The data was analyzed in the SPSS program (version 22) using One-way ANOVA (in order to compare creativity levels between groups) and Repeated Measures ANOVA (in order to compare creativity levels within groups at the pre-test and post-test stages). The frequency of addressing cultural topics was used for interpreting the quantitative results of the study.

Participants

The sample obtained at the pre-test stage included 101 participants. However, 29 of them were excluded from the analyses as they either did not participate in the second stage of the study or had significant intercultural experience during the study period outside the university. The sample used for the final analysis included 72 Russian students of the Faculty of Social Sciences at the National Research University Higher School of Economics, Moscow branch. All the students participated both in pre-test and post-test staged of the study; none of them visited a foreign country during the research period. 19 students – aged from 18 to 23 (mean 20), 78.9% female – constituted the control group. They were students of culturally homogeneous groups and were not involved in any cultural learning courses during the research period. 20 students – aged from 18 to 27 (mean 21.1), 65% female – studied in culturally heterogeneous groups and were not involved in any cultural learning course during the research period. 17 students – aged from 19 to 22 (mean 19.8), 82.4% female – studied in culturally homogeneous groups and were involved in the cultural learning course during the research period. Finally, 16 students – aged from 21 to 29 (mean 22.5), 81.2% female – studied in a culturally heterogeneous group and were involved in the cultural learning course during the research period.

Instruments

The questionnaire included a task to measure creativity and a set of questions regarding the demographic and educational characteristics of the respondents (gender, age, nationality, major and year of study), and regarding their educational experience (whether there are foreign students in their study groups, if so from which country; whether they attended Cross-Cultural Psychology course).

Many instances game

For measuring creativity we use "Many Instances Game" – part of the Runco Creativity Assessment Battery (CTS, 2018). We chose "Instances" as this tool showed greater validity than "Uses" (Runco et al., 2016) which has been previously translated in Russian. "Many Instances Game" contains three tasks, formulated as a request to come up with as many examples as possible for a particular category. Three categories were used in this study: "Things that make noise", "Things that move on wheels", and "Things that are square". The methodology was translated into Russian in accordance with the procedure of forward and backward translation. Later particular formulations in Russian were adapted after the pre-test (5 cognitive interviews). For assessing the data from respondents a lexicon was created by two independent raters. The instrument showed good internal validity during both stages of the study on all three scales: fluency – total number of answers (pretest stage $\alpha = 0.82$, post-test stage $\alpha = 0.88$), flexibility – total number of categories of answers (pretest stage $\alpha = 0.76$, post-test stage $\alpha = 0.81$), and originality – the total number of "rare" answers given in less than 5% of cases (pretest stage $\alpha = 0.72$, post-test stage $\alpha = 0.79$).

Results

Creativity was measured at the beginning and at the end of the academic year (Table 1), and the differences were analysed. ANOVA analysis at the pretest-stage reveals the absence of differences in the creativity level between the four groups of respondents: students from culturally homogeneous/heterogeneous study groups with/without involvement in the cultural learning course (Table 2). This fact allows us to compare these groups after the manipulations.

Repeated measures ANOVA analysis shows that even "Little M" intercultural experience in the home country may lead to an increase in creativity, but only under specific circumstances. Creativity – fluency ($F(1, 18)= 0.51$, $p=0.49$, $\eta_p^2=0.03$), flexibility ($F(1, 18)= 0.15$, $p=0.71$, $\eta_p^2=0.01$) and originality ($F(1, 18)= 0.57$, $p=0.56$, $\eta_p^2=0.03$) – did not change significantly among students who studied in the culturally homogeneous groups and were not involved in the cultural learning course. However, among the students who studied in a culturally heterogeneous group and were not involved in the cultural learning course, originality decreased ($F(1, 19)= 4.74$, $p=0.04$,

η_p^2=0.2), while fluency (F(1, 19)= 2.09, p=0.16, η_p^2=.09) and flexibility (F(1, 19)= 0.73, p=0.41, η_p^2=.02) did not change significantly. Among the students who studied in the culturally homogeneous group and were involved in the cultural learning course, fluency (F(1, 16)= 4.85, p=0.44, η_p^2=0.23) increased, while flexibility (F(1, 16)= 0.76, p=0.4, η_p^2=0.04) and originality (F(1, 16)= 3.62, p=0.08, η_p^2=0.18) did not change significantly. All the creativity aspects – fluency (F(1, 15)= 5.64, p=0.03, η_p^2=0.27) flexibility (F(1, 15)= 4.69, p=0.04, η_p^2=0.24) and originality (F(1, 15)= 7.72, p=0.01, η_p^2=0.34) increased among the students who studied in the culturally heterogeneous groups and were involved in the cultural learning course. Based on these results we can say that our first hypothesis, that the home intercultural experience in the educational environment increased creativity, was only partly confirmed. Only the combination of the cultural heterogeneity of the student group and cultural learning increase students' creativity.

The ANOVA analysis (Tables 3) shows that at the end of the academic year there were significant differences between the four groups in creativity levels: fluency (p=0.01), and originality (p=0.02). Post-hoc Tukey tests reveal that fluency is higher among students who studied in culturally heterogeneous groups and attended cultural learning course compared to students without cultural learning course both from culturally homogeneous (p=0.01) and culturally heterogeneous (p=0.04) groups. Originality was higher among students who studied in culturally homogeneous group and were involved in the cultural learning course compared to students without cultural learning both from culturally homogeneous (p=0.08) and culturally heterogeneous (p=0.04) groups. This result is probably the most important at this level of comparison, as originality is thought to be the best describer of creativity (Runco et al., 2016).

The analysis of answers to the open question about topics of communication with foreign students (Table 4) demonstrates that the students tended to discuss issues related to the university – tasks, classes, campus, life in Moscow. Culturally related topics were rarely discussed, and they were mainly used by students who had culturally related course in their curriculum.

Discussion

Discussion of the results

The findings demonstrate the different impact of intercultural contacts and cultural learning on creativity in an educational setting. Students from culturally homogeneous group who did not attend the cultural learning course did not demonstrate any significant change in creativity level at the end of the academic year. Students from culturally heterogeneous group who did not attend the cultural learning course demonstrate a decrease in originality; other components of creativity show a negative tendency. Students from culturally homogeneous group who attended the cultural learning course demonstrate an increase in fluency; compared with two first groups they also give

more original answers. Finally, students from culturally heterogeneous group who attended the cultural learning course demonstrate an increase in originality and compared with first two first groups they are more fluent. We can suppose that, in general, cultural heterogeneity leads to an increase in creativity but only when a person knows how to cope with this diversity. In the other situation cultural heterogeneity may have a detrimental effect on creativity. The results also show an interesting connection between the "quantitative" and "qualitative" components of creativity – between fluency and originality. An increase in individual fluency makes us more original in comparison with other people; and vice versa, an increase in individual originality makes us more productive in comparison with others.

At first glance it seems that the finding about effect of cultural heterogeneity contradicts the results of other research in the field. The cultural and ethnic diversity of an individual's communication network (Chua, 2015) is related to higher creativity. Nevertheless, we cannot say that our results contradict this idea. Lu and the colleagues found that a relationship with representatives of cultures different from one's own increases creativity as it provides informal cultural learning (Lu et al., 2017). However, such relationships should be close, like friendship or love. The intensity of contacts and their nature among students in a study group could be too weak to provide cultural learning. The study of perceived barriers in social interactions among groups with foreign students (Volet, Ang, 1998) showed the special role of cultural and emotional attachment, which stimulates more intensive communication with people of their own culture than with foreigners. The study of Wright and Lander (2003) showed that students from culturally heterogeneous groups in general communicate to a lesser degree with each other than students from culturally homogeneous groups. Respondents' answers to the open question about the main topics of their communication with foreigners also are similar. The answers can indicate the scarcity of close contact and show the limited power of communication with foreigners on cultural learning. We can even assume that communication has an assimilative nature.

Such a situation may also be understood in terms of perceiving foreigners as a threat or as competitors (Ward, 2005). Cultural learning may happen only when students feel safe enough to explore cultural differences (King et al, 2013). The influence of a perceived threat accompanied with the anxiety it elicits on creativity is ambivalent (Cheng, 2017). It even can be positive, but such a possible increase in creativity is expected in a very limited specific domain – mainly when creativity may help to neutralize the threat, and that is not really the case for students from culturally heterogeneous groups, at least in our study design. Perceived threats and perceived competition are related to negative attitudes towards representatives of other cultures (Hagendoorn,

Linssen, Tumanov, 2001), negative ethnic stereotypes and prejudice (Tsukamoto, Fiske), which can hinder the effect of intercultural experience on creativity (Tadmor et al., 2013).

Limitations and future directions of the study

Though the study design gave us the possibility to eliminate possible additional influences it also had some limitations. First is the sample structure. The sample was not large, it was also gender and major imbalanced. In order to provide more generalizable findings, we need to make our sample bigger and more diverse. Another important point is that we operationalized cultural heterogeneity only via the presence of foreigners. However, the studies mentioned above show that the valence and intensity of contact matters. Thus, expanding our understanding of cultural heterogeneity in a more qualitative and quantitative way could bring more exploratory power to future studies. Finally, we studied the dynamics of creativity caused by external factors – cultural learning and the cultural heterogeneity of the study group. However, the internal factors which can explain the revealed effects were not investigated. We try to overcome these limitations on the second part of the study.

Study 2: Intercultural competence and creativity

Summing up the theoretical overview of the influencing factors and results of our first study, we can say that creativity increases when an individual can obtain and effectively use new information obtained from intercultural interactions and which may be directly or indirectly related to cultural differences. However, superficial communication with foreigners in the home country university environment does not contribute to creativity. We made two assumptions based on this conclusion. Firstly, we need to study cultural heterogeneity in more detail, distinguishing the level of diversity and the intensity of intercultural contacts inside study groups. As the results of previous studies propose that diversity (Chua, 2015) and a close relationship (Lu et al., 2017) as well as cultural learning (Maddux & Galinsky, 2010) contribute to a higher level of creativity, we assume that:

Hypothesis 2: Intercultural experiences in the home country university – (a) the diversity of study groups, (b) the intensity of friendly contacts with representatives of foreign cultures and (c) formal intercultural learning – are positively related to creativity.

Secondly, we include in our study additional intermediary products of intercultural interactions which help to use interculturality as a resource safely. We suggest that we did not find

a positive influence in our first study as there was no formation of certain important competences helping to manage intercultural experience and cope with its challenges.

Intercultural contacts in general, and the multicultural context of the educational environment in particular, are the most important sources for the development of intercultural competence (Barret, 2012; Mikhaylov, 2014). Intercultural competence is a complex structure that is realized in the ability to live, work and relax in the context of intercultural and cross-cultural differences existing in everyday life (Matsumoto, 2003); it is the "knowledge and ideas about other cultures which are realized through skills, attitudes, behaviors, ensuring effective interaction with representatives of other cultures" (Lebedeva, 2003). Therefore, the core idea that lies underneath the concept is that intercultural competence facilitates the receipt and assimilation of cultural-specific information.

Despite the fact that intercultural competence, as a concept, has been researched for almost half a century, serious debates are still held on its main components (Deardorff, 2006). Modern science uses more than 300 terms and a large number of models associated with them (Spitzberg & Changnon, 2009). Most of these models include the same core components (Krajewski, 2011), and in its most general meaning, intercultural competence is a combination of attitudes, knowledge and skills that contribute to effective communication and interaction with people of other cultures (Chiu at al., 2013), sometimes cultural awareness is also added to this list (Thomas, Inkson, 2003).

Another useful idea is that cultural intelligence (considered synonymous with intercultural competence), and, in particular, its knowledge component, is assumed to be an important element of generative creative processes (Yunlu et al., 2017). Combining these two pieces of information, we suggest that intercultural competence, developed as a result of intercultural experience, also may be positively related to creativity. Thus, the second study identifies the relationship between the components of intercultural competence and the creativity of Russian students. We use the four-factor model of intercultural competence (Fantini, Tirmizi, 2006), which includes all of the components listed above. In our opinion, such an approach is the most relevant to research within the educational environment, which includes both direct communication with people from other cultures, and various educational courses and events designed to enrich students' knowledge and self-awareness.

Analyzing intercultural competence by its components, we can assume that each of them can be involved in the activation of creative cognitive processes. The higher the level of knowledge about intercultural issues, the more accessible the new culturally based ideas. These ideas can be triggers for cultural comparison and switching the cultural frame. They may lead to a deeper

analysis, which can increase creativity, instead of using stereotypes. The second component – positive attitudes towards cultural diversity and other cultures – is directly related to openness to experience and less pronounced stereotypes (Galego & Pardos, 2014; Flynn, 2005), which contribute to the formation of a deeper knowledge of other cultures (Matusitz, 2012). The adaptation of behavior helps to reduce misunderstandings (Anawati & Craig, 2006), prejudices, and allows the taking of cultural differences into account in the process of sharing information (Chao, 2014), which may contribute to higher levels of creativity. Awareness of the cultural conditioning of one's own and other's behavior can be related to self-determination and cultural comparison and can therefore influence creativity in the context of intercultural interactions (Katrinli & Penbek, 2010).

Thus, we assume that:

Hypothesis 3: the components of intercultural competence – (a) knowledge, (b) attitudes, (c) behavior and (d) awareness – will be positively related to the creativity of students.

Various factors may influence the formation of intercultural competence and its components. The main factors are cultural learning and intercultural interaction (Barret, 2012). Previous research has shown that intercultural competence can be developed through intercultural education and training (for example, Klak & Martin, 2003, Pascarella, Edison, Nora, Hagedorn & Terenzini, 1996), through the study of one or more foreign languages (Olson & Kroeger, 2001). In addition, intercultural competence can also be enhanced through direct experience of intercultural interactions, for instance, when visiting international schools and multicultural institutions that have a non-discriminatory environment, or by intensive communication with people from other countries (Zhai & Scheer, 2004). Following these ideas we suppose that intercultural experience obtained in the home country university also will contribute to the development of intercultural competence. If we divide intercultural competence into its components, it becomes clear that each of them can be stimulated as the result of intercultural interactions and cultural learning. Thus, intercultural contacts and intercultural learning promote the dissemination and exchange of culturally specific knowledge, although, for this purpose, the communication should be close (Lu et al., 2017). Studies show that increasing the intensity of contacts between people from different cultures leads to increased cultural awareness and the ability to learn from others (Bazron, Osher, & Fleishmann, 2005). The theory of cultural learning suggests that, in order to successfully cope with the consequences of intercultural contacts, immersion in a new culture or interactions in a multicultural environment, a person needs to master the relevant knowledge and behavioral patterns (Bochner, 2003). The frequency of intercultural contact is associated with a decrease in intergroup anxiety,

which leads to lower levels of perceived threats and more positive attitudes towards people from other cultures (Ward & Masgoret, 2006; Berry, 2013). Cultural education, even as part of a separate training course, can increase ethnic tolerance (Neto, 2006). Finally, cultural awareness will increase when students are given the opportunity to compare and analyze different cultures through training courses (Constantin et al., 2015) or directly in the process of communication with representatives of these cultures.

Taking into consideration the fact that creativity and intercultural competence are stimulated by intercultural experience, and that in our model cultural competence is viewed as a possible factor in the development of creativity, we suggest:

Hypothesis 4: the components of intercultural competence – (a) knowledge, (b) attitudes, (c) behavior and (d) awareness – will mediate the relationship between intercultural experience in the university and creativity.

Method

Design and procedure

The 2nd study had a correlational design. Respondents filled in a questionnaire consisting of several parts. Based on the results of our first study we propose a causal relationship between intercultural experience at university and creativity which is mediated by intercultural competence. Intercultural experience at university was operationalized by three variables: the number of study courses related to intercultural issues, the number of countries of foreign students, the intensity of contacts with foreign students. We build path-analysis models in AMOS (version 22) and analyzed the relationship between the observed variables. The procedure was similar to the one applied in the first study.

Participants

The study sample included 272 students from the National Research Institute Higher School of Economics (Moscow), aged from 17 to 35 (mean 21), 56% were undergraduate students, 61% were women. 63% had attended some kind of training course or event devoted to different cultures or intercultural interaction before the study, 64% had experience of being abroad, 68% were involved in intercultural interaction in Russia, 58.8% of respondents were currently enrolled in culturally heterogeneous learning groups. By field of study, 36.8% were students of the Faculty of Social Sciences, 26.1% were from the Faculty of Humanities, 19.9% were from the Faculties of Economics and Management, 16.2% were from the Faculties of Mathematics, Physics and

Computer Science. Such a sample structure helps us to overcome limitations of the first study related to possible gender and major biases.

Instruments

The survey questionnaire included the same task to measure creativity as the 1st study: "Many Instances Game". It was followed by a set of questions regarding the demographic and educational characteristics of the respondents (gender, age, nationality, major and year of study), and questions regarding their educational intercultural experience: the number of study courses related to intercultural issues which students have attended, whether there are foreigners in their study groups, if so from which countries, and two questions to assess the intensity of friendly intercultural contacts with foreigners from their study groups (adapted from …). Finally, students filled in a block of questions on the components of intercultural competence. Intercultural competence was measured using the questions on intercultural skills from "The assessment of intercultural competence" (Fantini, Tirmizi, 2006).

Many instances game

The procedure of applying the instrument was the same as in the first study. The internal validity of this phase of the study was high: fluency ($\alpha = 0.88$), flexibility ($\alpha = 0.83$), originality ($\alpha = 0.82$). Descriptive statistics are presented in Table 5.

Intensity of friendly contacts

We used methodology from MIRIPS (Berry, 2014) to measure the intensity of friendly contacts with foreigners. The instrument had been previously translated into Russian and used in many studies related to migrant acculturation in Russia. However, as we were interested in information not regarding specific ethno-cultural groups but regarding representatives of foreign cultures who were present in study groups, we reformulated two questions of the instrument. The modifications in formulations were related to three facts: 1) as all our respondents were Russian we did not ask them about co-ethnic friends, 2) as Russia is multicultural state with many ethnic groups, we emphasised not ethnicity but being a representative of a foreign culture; 3) in a university environment students meet almost daily, so we substituted the word "communicate" for "meet". Firstly, we asked our respondents to indicate how many close friends they have among the following two groups: Russians in their study groups, and representatives of foreign cultures in their study groups. The scale contained such options as "none" – 1, "only one" – 2, "a few" – 3, "some" – 4, "many" – 5. Secondly, respondents assessed how often they communicated with their close friends from the two groups mentioned above. The scale was "never" – 1, "rarely" – 2, "sometimes"

– 3, “often” – 4, “daily” – 5. We calculated the intensity of contacts with foreigners as mean for the number times the frequency for this particular group. Descriptive statistics are presented in Table 5.

Assessment of intercultural competence

The initial instrument developed by Fantini and Tirmizi (2006) measured different aspects related to intercultural competence among volunteers from different countries in Ecuador. The instrument was chosen because it contains parts dedicated to getting knowledge and to interpersonal communication which are relevant to this study. We translated it into Russian, modified the formulations eliminating links to experience of living abroad and adapted them following a pre-test (4 cognitive interviews). The methodology contains 4 scales, each of which showed high internal validity: knowledge ($\alpha = 0.91$), attitudes ($\alpha = 0.92$), behavior ($\alpha = 0.88$), awareness ($\alpha = 0.89$). The respondents indicated how much they agreed with the statements on a Likert scale from 0 – “I completely disagree” to 5 – “I fully agree”. The knowledge scale included questions on meta-knowledge and general knowledge about other cultures. Meta-knowledge was understood as general knowledge of what culture is, how intercultural interaction takes place, and what the consequences of such interaction may be. An example is “I could cite a definition of culture and describe its components and complexities”. General knowledge about cultures is knowledge about the characteristics of different cultures, typical behaviors, the ability to compare different cultures with each other. Sample item: “I could discuss and contrast various behavioral patterns in my own culture with those in other cultures.” The attitude scale includes questions about the individual's readiness to interact with members of other cultures and cope with the various consequences of such interactions. An example of the item: “Taking into account my experience of intercultural interactions, I can say that I am ready to show interest in new cultural aspects (e.g., to understand the values, history, traditions, etc.).” The scale of skills includes questions about how, in communicating with people from other cultures or studying other cultures, an individual adapts his behavior to the situation of intercultural interaction. An example of the item: “Taking into account my experience of intercultural interactions, I can say that I monitor my behavior and its impact on my learning, my growth, and especially on representatives of other cultures that I encounter”. The awareness scale includes issues related to the awareness of oneself and one's states in the process and as a result of intercultural interactions. An example of the item: “Taking into account my experience of intercultural interactions, I can say that I realize the importance of myself as a "culturally conditioned" person with personal habits and preferences.” Descriptive statistics are presented in Table 5.

Results

We performed a regression analysis of the relations between intercultural experiences and creativity in two steps in order to control for the possible influences of age and gender. Age and gender had no significant effect and were deleted from models at the final step of analysis. The results (Table 6) show that all types of intercultural experience at the home university – the cultural diversity of study group, the intensity of friendly contacts with foreigners and the attendance of courses related to cultural and intercultural issues – are positively related to all aspects of creative thinking. This is in line with our 2nd hypothesis.

To assess the relationship between intercultural competence and creativity we also performed a regression analysis. We deleted from the model gender and age as they did not have any significant effect, except for fluency – age was positively related with fluency (β=0.13, p=0.02). The results (Table 7) show that all attitudes are positively related to all aspects of creative thinking, however skills are negatively related to them. The third hypothesis was approved for attitudes only.

Path analysis modeling (Fig. 1 – only significant relations are shown; the correlations between the components of intercultural competence and the correlations between aspects of creativity are not shown) was performed to test the theory-driven model. The model has acceptable characteristics: p=0.07, CMIN/df=2.66, RMSEA=0.078, PCLOSE=0.21. Intercultural experience in this model explains 10% of the variance in knowledge, 11% of the variance in attitudes, 14% of the variance in skills, 5% of the variance in awareness. Intercultural experience combined with intercultural competence explain 27% of the variance in fluency, 25% of the variance in flexibility and 23% of the variance in originality.

The results (Table 8) show that all the intercultural experiences analyzed in the model – the diversity of studying groups, the intensity of friendly contacts with foreign students and cultural learning – have a weak but significant positive relationship with creativity. Cultural learning (the number of courses about cultural and intercultural issues which students attended) is the strongest predictor among them.

Intercultural experience is also positively related to intercultural competence (Table 8); however, different types of experience can be linked to different components of intercultural competence. First, only cultural learning is related to the knowledge component. This result may be a symptom of some difficulties in intercultural communication which hinder informal cultural learning through the transfer of culture-related information. Secondly, all the types of intercultural experience are positively related to positive attitudes towards representatives of other cultures.

Thirdly, the diversity of the study group was not related to the intercultural skills of Russian students or with their intercultural awareness. Cultural learning is more strongly related to skills than the intensity of friendly contacts with foreigners. As diversity was not an influencing factor, we can suppose that in intercultural interactions Russian students do not perceive or take into consideration the cultural differences of all the groups of foreigners they meet.

Relations between intercultural competence and creativity are unclear (Table 8). First, not all of the components of intercultural competence are related to creativity. Knowledge and awareness are not influencing factors. Secondly, the other two components are different in their valence for creativity. Positive attitudes towards representatives of other cultures contribute to creativity – fluency, flexibility and originality. However, the adaptability of behavior hinders creativity – fluency, flexibility and originality.

To test the hypothesis about the mediation role of the components of intercultural competence, we used a bootstrap procedure and checked four essential steps of the Barron and Kenny approach (Kenny, 2014).

We found that positive attitudes towards representatives of other cultures partly mediate relationships between the diversity of a study group and creativity (Table 9): fluency (β=0.03, p=0.02), flexibility (β=0.03, p=0.02), originality (β=0.03, p=0.02); as well as between the intensity of friendly contacts with foreigners and creativity: fluency (β=0.03, p=0.03), flexibility (β=0.03, p=0.03), originality (β=0.03, p=0.03). The core idea is that higher intensity of contacts with foreigners and more diverse study groups lead to a more positive attitude towards representatives of other cultures, and these attitudes contribute to higher creativity.

Skills can also serve as a mediator. The high adaptability of one's behavior in intercultural interactions partially mediates the relationship between the intensity of friendly contacts with foreigners and creativity (Table 10): fluency (β=-0.04, p=0.048), flexibility (β=-0.04, p=0.047), originality (β=-0.03, p=0.048); as well as between cultural learning and creativity: fluency (β=-0.05, p=0.01), flexibility (β=-0.06, p=0.01), originality (β=-0.06, p=0.01). The core idea is that higher intensity of friendly contacts with foreign students and more intensive learning (in terms of the number of courses) leads to a greater adaptability of behavior; however, this adaptability hinders creativity. These results confirm the 4th hypothesis only partly, however, the valence of the influence of skills is negative while we expected it to be positive.

Discussion and conclusions

Hypotheses testing results

To overcome the limitations of the 1st study, we changed the operationalization of intercultural experience to include more details. In general, we obtained the expected results regarding experience. The result is the same as revealed in other studies in the field. First, we found that the intensity of friendly contacts is positively associated with creativity. However, the intensity was low in comparison with contacts with Russian students (means 2.61 versus 9.55, $t=14.94$, $p<0.01$). Secondly, although a recent study suggests that the relationship between creativity (at least team creativity) and cultural diversity should not be linear (Paulus, Zee & Kenworthy, 2017), we found a direct positive link between creativity and cultural diversity. The reason could lie in the fact that we measured individual creativity, and the diversity was not high enough in our sample (mean=1.84, as our sample included both students from culturally heterogeneous and culturally homogeneous groups). Another possible explanation is that mediation effects, which we discuss below, could influence the results of previous studies making the relationship between diversity and creativity insignificant. Thirdly, we found a positive relationship between the number of culture-related courses students attended and their creativity. Not all the parts of the curriculum are related to creativity, and formal cultural learning also may have a positive effect on creativity. However, our operationalization of intercultural experiences in the university environment had some limitations. We mainly studied cultural diversity without considering the total number of foreign students in a group – only number of cultures (countries); cultural learning also was measured only quantitatively – we did not analyze the content of these courses.

The results of this study show that neither knowledge nor awareness are related to creativity. Although in a previous study the knowledge component was an important predictor of creativity (Yunlu et al., 2017). In our opinion, such a result may be associated with the interrelations between the elements of intercultural competence themselves. In accordance with one model of cultural intelligence, its structural components constitute a circular continuum of development. Awareness develops on the basis of knowledge, and this serves as a basis for the formation of attitudes and behavioral skills. Skills, being realized in specific situations, allow for new culturally specific knowledge (Thomas, Inkson, 2003). It is possible that attitudes and skills are mediators transferring the effects of knowledge and cultural awareness to creativity. However, we have not tested such a model and considered all the components as predictors of the same level, although, correlated. Building and testing more complex models requires additional investigation.

We found that positive attitudes towards representatives of foreign cultures are positively related to creativity. That finding is in line with the results of other studies in the field. In our model positive attitudes proved to be not only an independent predictor of creativity, but also a mediator. Although positive attitudes are also linked with cultural learning, they do not mediate the relationship between cultural learning and creativity. Such a result could be related to the characteristics of the questionnaire. Items about attitudes mainly included information about the readiness to interact with representatives of foreign cultures, thus, they were initially oriented toward direct communication. Positive attitudes strengthen the relationships between cultural diversity and creativity and the intensity of friendly contacts and creativity. We can suppose that in that sense, positive attitudes are especially important in a situation involving intercultural communication and diversity. It may be beneficial to study further how cultural diversity and the total number of students from a particular culture would interact in their relations to attitudes and creativity, as different combinations may result in different distributions of power, threats and competition in study groups.

Skills, leading to the adaptation of behavior in intercultural interactions, on the contrary, were found to reduce creativity, as a direct predictor and as a mediator. Highly developed skills weaken the effects of the intensity of friendly contacts with foreigners and formal cultural learning on creativity. On the one hand, the design of the study and the questionnaire used did not provide an opportunity to assess whether our respondents really identified any differences between cultures and what they think about diversity. In a university environment adaptation of behavior in interactions with foreigners does not necessarily imply real adaptation, flexibility and customization, as a university context may stimulate a compromise to an average in communication related to the use of English and standards of western business etiquette. Research conducted on Russian samples has shown that many Russian students reject the existence of intercultural differences or perceive them negatively (Novikova, Novikov, Gridunova, Zamaldinova, 2017). Our results also show that, for example, the cultural diversity of a study group or the intensity of friendly contacts with foreigners are not related to the knowledge component of intercultural competence. It is questionable whether students, who do not really identify the differences between cultures, can adequately adapt their behaviors in intercultural interactions. Previous studies also prove that colorblindness as an attitude towards diversity (when differences are not taken into consideration) do not provide cultural learning (Terwilleger, Bryan, Bach, Adams, 2013), which is a path towards increased creativity.

On the other hand, if we accept the idea that students really adapt their behavior in intercultural interactions and that hinders creativity, such a negative influence can be explained in relation to social comparisons and self-monitoring. First, as a university is a highly competitive

social environment, students may make social comparisons. Previous studies show that the social comparison of abilities can lead to negative social adaptation resulting in behaviors not contributing to an individuals' growth or development (Miao, Yang, Li, Guo, 2018). Such a maladaptation is unlikely to contribute to creativity. Another idea is that in order to effectively change their behavior during intercultural interaction, individuals need to carefully monitor their current behavior, which implies a high level of self-monitoring; while self-monitoring negatively affects creativity (Limb, Braun, 2008). A final possible explanation lies in the cultural context. The results about the role of skills seems to contradict the ideas of Goclowska, Damian and Mor (2017), who state that high adaptive resources lead to the perception of a diversifying experience as a challenge stimulating creativity, while low adaptive resources make an individual see a diversifying experience as a threat. Future studies separating adaptive resources, the skills of adapting the behavior and real behavior customization may shed light on our unexpected finding.

To conclude, it can be assumed that the creativity of Russian students can be stimulated by a university environment which simultaneously (1) supports the formation of readiness for contact with people from other cultures, the formation of positive attitudes towards them, and (2) give Russian students a certain amount of autonomy, a sense of security in "being themselves" in intercultural interactions. In general, this echoes ideas that cultural learning is best realized in terms of transparency and mutual acceptance among participants (Pietilä, 2010).

Limitations and further directions of research

This study is one of the first attempts to assess the relationship among intercultural experience among a host population, their intercultural competence, and creativity. The challenging mixed results may be interesting to researchers of creativity and intercultural competence, and to those involved in higher education organizations.

However, the study has some limitations. First, it had a cross-sectional correlational design, not an experimental one. Another important limitation leading to the impossibility of generalizations is the sample structure that was gender and major imbalanced. As some specific majors (e.g. art-related majors) are directly related to creativity, it might be beneficial to study representatives of these majors and their "professional" creativity. We should also keep in mind that all the participants were Russian students from the Moscow region who studied at HSE University. There is a large probability that both the region and the university have very specific characteristics, limiting the generalizability of the results. The operationalization of the intercultural experiences in a university environment has some limitations too. A more specific and detailed investigation of the

types of intercultural experience could provide a deeper understanding of their influence on creativity.

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Appendices

Tables

Table 1. *Descriptive statistics for creativity measurements*

Creativity / Group	Fluency: mean (st.dev)		Flexibility: mean (st.dev)		Originality: mean (st.dev)	
Measurement	1st	2nd	1st	2nd	1st	2nd
Homogeneous without cultural learning	4.12 (1.87)	4.39 (2.2)	2.76 (1.23)	2.83 (1.28)	1.00 (0.91)	0.85 (0.6)
Heterogeneous without cultural learning	5.75 (2.54)	4.82 (1.85)	3.21 (1.22)	2.94 (1.03)	1.40 (1.01)	0.75 (0.87)
Homogeneous with cultural learning	5.00 (2.75)	6.05 (3.24)	3.03 (1.32)	3.32 (1.15)	1.09 (1.14)	1.78 (1.87)
Heterogeneous with cultural learning	5.60 (2.09)	7.11 (2.66)	2.84 (1.08)	3.49 (1.32)	1.02 (0.94)	1.54 (0.95)

Table 2. *ANOVA comparison of groups in creativity level on the pre-test stage*

		df	SS	MS	*F*	*p*
Fluency	Between Groups	3	30.82	10.27	1.88	0.14
	Within Groups	68	371.85	5.47		
	Total	71	402.67			
Flexibility	Between Groups	3	2.35	0.78	0.53	0.66
	Within Groups	68	101.17	1.49		
	Total	71	103.52			
Originality	Between Groups	3	1.98	0.66	0.66	0.58
	Within Groups	68	68.41	1.01		
	Total	71	70.39			

Table 3. *ANOVA comparison of groups in creativity level on the post-test stage*

Creativity		*df*	SS	MS	*F*	*p*
fluency	Between Groups	3	79.40	26.47	4.21	0.01
	Within Groups	68	427.04	6.28		
	Total	71	506.44			
flexibility	Between Groups	3	5.02	1.67	1.17	0.33
	Within Groups	68	97.09	1.43		
	Total	71	102.11			
originality	Between Groups	3	13.92	4.64	3.48	0.02
	Within Groups	68	90.67	1.33		
	Total	71	104.59			

Table 4. *Topics used in discussions with foreign students*

Topic	Percent of students from .. who mentioned the topic	
	groups without cultural learning	groups with cultural learning
Studying and work issues, for example, home tasks, class activities, language issues in the classroom	75 %	81.25%
Hobbies, for example, movies, books, games, tourism etc	35%	56.25%
Life in Moscow (in Russia), for example, where to go, what to visit, how life is organized in dormitories etc	35%	62.5%
Cultural characteristics and products of Russians, for example, national holidays, dishes, traditions	25%	43.75%
Cultural characteristics of foreign cultures, for example, national holidays, dishes, traditions	20%	50%
Intercultural experience, for example how they adapted, what stereotypes about their nations faced etc	10%	25%
Other topics, for example, weather, electronic devices etc	15%	25%

Table 5. *Descriptive Statistics for Variables of the Study*

Concepts	Variables	Mean (st.dev.)
Creativity	Fluency	6.72 (4.28)
	Flexibility	3.49 (1.57)
	Originality	1.89 (2.05)
Intercultural Competence	Knowledge	2.62 (0.92)
	Attitudes	3.67 (0.96)
	Skills	2.44 (1.25)
	Awareness	3.26 (1.00)
Intercultural experience	Diversity	1.84 (2.01)
	Intensity of contacts	2.61 (2.9)
	Cultural learning	0.54 (0.79)

Table 6. *Multiple Linear Regression of Intercultural Experiences and Creativity*

Predictor	Cultural diversity of study group	Intensity of contacts with foreigners	Number of cultural learning courses
Outcome	β	β	β
Fluency	0.25**	0.12*	0.27**
R^2		0.19	
F		20.84**	
Cohen's f^2		0.23	
Flexibility	0.17**	0.21**	0.19**
R^2		0.15	
F		15.16**	
Cohen's f^2		0.18	
Originality	0.19**	0.16**	0.21**
R^2		0.13	
F		13.85**	
Cohen's f^2		0.15	

*p <0.05 **p <0.01

Table 7. *Multiple Linear Regression of Intercultural Competence and Creativity*

Predictor	Knowledge	Positive attitudes towards foreigners	Skills	Awareness
Outcome	β	β	β	β
Fluency	-0.05	0.39**	-0.29**	0.07
R^2		0.9		
F		6.93**		
Cohen's f^2		0.1		
Flexibility	-0.01	0.38**	-0.32**	0.05
R^2		0.11		
F		8.19**		
Cohen's f^2		0.12		
Originality	-0.05	0.4**	-0.32**	0.09
R^2		0.11		
F		7.92**		
Cohen's f^2		0.12		

**p <0.01

Table 8. *Regression coefficient in the tested model*

Related parts of the model	Predictor	Outcome	Estimate	P
1. Intercultural experience and intercultural competence	intensity of contacts	skills	0.19	**
	intensity of contacts	positive attitudes	0.19	**
	intensity of contacts	awareness	0.14	0.02
	intensity of contacts	knowledge	0.07	0.23
	diversity	positive attitudes	0.13	0.03
	diversity	knowledge	0.09	0.12
	diversity	skills	-0.01	0.88
	diversity	awareness	-0.01	0.86
	cultural learning	awareness	0.18	**
	cultural learning	skills	0.32	***
	cultural learning	positive attitudes	0.19	**
	cultural learning	knowledge	0.29	***
2. Intercultural experience and creativity	diversity	fluency	0.22	***
	diversity	flexibility	0.13	0.02
	diversity	originality	0.16	**
	cultural learning	fluency	0.35	***
	cultural learning	originality	0.29	***
	cultural learning	flexibility	0.27	***
	intensity of contacts	fluency	0.13	0.02
	intensity of contacts	flexibility	0.23	***
	intensity of contacts	originality	0.16	**
3. Intercultural competence and creativity	knowledge	fluency	-0.11	0.13
	knowledge	flexibility	-0.05	0.46
	knowledge	originality	-0.08	0.25
	positive attitudes	fluency	0.3	***
	positive attitudes	flexibility	0.31	***
	positive attitudes	originality	0.31	***
	skills	fluency	-0.37	***
	skills	flexibility	-0.43	***
	skills	originality	-0.41	***
	awareness	fluency	0.09	0.19
	awareness	flexibility	0.08	0.25
	awareness	originality	0.11	0.15

** $p<0.01$ *** $p<0.001$

Table 9. *Mediation Effects of Positive Attitudes*

Path	Model without mediation	Model with mediation		
		Total effect	Direct effect	Indirect effect
	β	*β*	*β*	*β*
Diversity→ Positive attitudes→ Creativity:				
fluency/	0.26**/	0.26**/	0.22**/	0.03*/
flexibility/	0.17**/	0.17**/	0.13**/	0.03*/
originality	0.19**	0.19**	0.16**	0.03*
Intensity→ Positive Attitudes→ Creativity:				
fluency/	0.12*/	0.16*/	0.13*/	0.03*/
flexibility/	0.21**/	0.25**/	0.23**/	0.03*/
originality	0.16**	0.19*	0.17*	0.03*

*p<0.05 **p < 0.01

Table 10. *Mediation Effects of Skills*

Path	Model without mediation	Model with mediation		
		Total effect	Direct effect	Indirect effect
	β	*β*	*β*	*β*
Intensity→ Skills→ Creativity:				
fluency/	0.12*/	0.1/	0.13*/	-0.04*/
flexibility/	0.21**/	0.19*/	0.23**/	-0.04*/
originality	0.16**	0.13	0.17*	-0.03*
Cultural learning→ Skills→ Creativity:				
fluency/	0.27**/	0.3**/	0.35**/	-0.05*/
flexibility/	0.19**/	0.21**/	0.27**/	-0.06*/
originality	0.21**	0.23**	0.29**	-0.06*

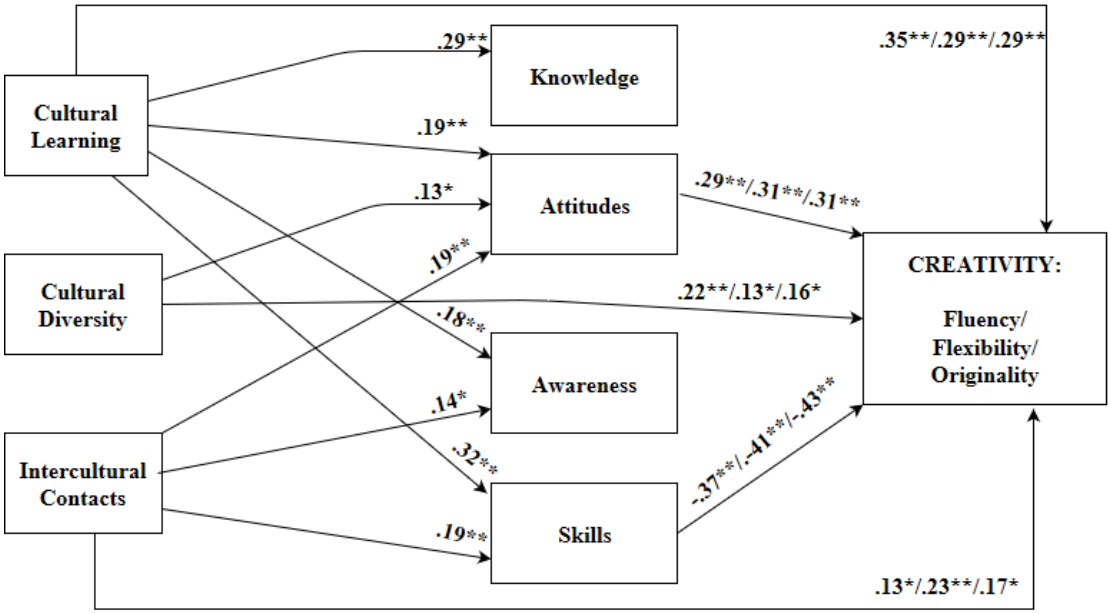

Figure 1. *Model of relations between intercultural experience, intercultural competence and creativity*

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