EFFECTS OF GROUP DIVERSITY ON CREATIVITY IN PERFORMANCE OF GROUP TASKS

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Abstract

The present study is based on the experiment carried out by Sarah Harvey (2013) and aims to investigate the effect of group diversity on divergent and convergent creativity. The divergent creative processes lead to an increased quantity, diversity and originality of ideas, which can be measured using specific indicators. It follows a between-group design, consisting of one experimental and one control group. Both are divided into 13 smaller subgroups with three participants each. Participants, 87 in total, were given a creative group task to generate ideas to improve their university. While in the experimental group members of subgroups are asked to generate ideas within one of three specific categories (regarded as different functional perspective), which are counter-balanced across groups, in the control group each subgroup generates ideas belonging to a single category.

Cuvinte cheie: creativitate, diversitatea perspectivelor, creativitatea divergentă

Keywords: creativity, diversity of perspectives, divergent creativity.

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1. INTRODUCTION

There are a large number of studies trying to identify characteristics of specific group behaviors which improve creativity (Paulus, Levine, Brown, Minai, & Doboli, 2010). One of the most significant characteristics encountered in the literature refers to the members’ diversity within a group. It has been suggested that a pronounced diversity related to the background, knowledge and perspectives on the group task is responsible for an increased level of creativity (Bantel & Jackson, 1989). Our study aims to investigate the influence of a particular type of group diversity - diversity of perspectives - on the members’ level of creativity. The procedure we used is based on the study conducted by Sarah Harvey (2013). Additionally, we also investigated the relationship between group members’ level of creativity in a given situation and their personality traits.

Creativity has met a large number of definitions over the past decades. For instance, Plucker (1999) sees it as the interaction between aptitudes, processes and environment, through which an individual or a group generates, at the same time, a product which is new and useful in a social context. Torrance (2003), on the other hand, regards creativity “as the process of sensing problems or gaps in information, forming ideas of hypotheses, testing, and modifying these hypotheses, and communicating the results. This process may lead to any one of many kinds of products—verbal and nonverbal, concrete and abstract.” Finally, Sternberg (2006) states that it implies a type of thinking that aims to generate ideas and valuable new products.

In our study the concept of creativity is based on Guilford’s framework (as cited in Coskun, 1967). Initially regarded in the literature as divergent thinking, divergent creativity presumes taking into account various alternatives and possibilities which ultimately lead to new and original results and solutions through cognitive recombination (Coksun, 2005; Amabile & Pillemer, 2011).

It has been argued that within a group the creative processes are influenced by the diversity of individual characteristics of the members (Brophy, 1998; Cox & Blake, 1991; Jehn, Northcraft, & Neal, 1999). In the literature it is generally considered that this type of diversity follows two levels: a surface level diversity and a deep level diversity. The first one is defined using demographic differences
among group members, reflected through physical traits which are easy to identify, such as: age, gender, race and ethnicity (Roberge & Van Dick, 2010). For our study we chose to focus on the deep level diversity. This is defined through the psychological differences between members, including personality traits, values and attitudes (Harrison, Price, Gavin, & Florey, 2002). Therefore, the creativity and the task results are influenced by the different perspectives from which a task is approached (Tekleab & Quigley, 2014). These different perspectives generate both on individual and group level, processes that are associated with divergent thinking.

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

The aim of the present study is to investigate the relationship between functional perspectives and ideas generated within a creative group task. Our main objective is to identify the effects of approaching a creative group task from different perspectives in divergent creativity.

2.2. HYPOTHESES

Our main hypotheses are:

- The diversity of perspectives on a creative group task influences the number of ideas generated.
- The diversity of perspectives on a creative group task influences the number of categories for the ideas generated.
- The diversity of perspectives influences the number of original ideas.
- The diversity of perspectives influences the average number of words per idea.
- There is a positive relationship between core-self evaluations personality traits and creativity.
- There is a positive relationship between positive affect and creativity.
3. METHOD

3.1. PARTICIPANTS

Eighty-seven first-year undergraduate students from three departments at Transilvania University of Brasov (Psychology, Educational Sciences and General Medicine) were recruited for this study. Among them 83% were females and 17% were males. The average age for this sample was 21.06 (σ = 4.92). They were randomly assigned to either an experimental group (EG) or a control group (CG). Their attendance was volunteer-based by signing a written agreement before the experimental procedure. Participants were assured that personal information would be kept confidential and they were rewarded with extra points.

3.2. INSTRUMENTS

In the present study we used three instruments as follows:

Creative group task with different perspectives. The theme of the task consisted of students generating ideas for improving their University. We selected this topic because it is expected that all students are familiar with it. In solving this task participants were asked to approach it from three different perspectives: student facilities, student expenditure and resources of the University.

Core Self-Evaluation Scale (CSE). This instrument was used in evaluations of self, abilities and control on four dimensions: self-esteem, generalized self-efficiency, neuroticism and locus of control. It consists of 12 items grouped in four scales, one for each trait mentioned above. The items are presented on a five step Likert scale which indicates the level of agreement and disagreement for each item (Judge, Erez, Bono, & Thoresen, 2003). We obtained a high coefficient of internal consistency (α = .87).

The Positive and Negative Affect Schedule (PANAS). The schedule aims to evaluate the positive and negative affect of participants. It consists of 20 items, each representing a particular affect which can be evaluated on a five-step Likert scale. For this study we obtained an Alfa Cronbach coefficient of .80 (Watson, Clark, & Tellegen, 1988).
3.3. PROCEDURE

A between-group design was used, with one experimental group and one control group, both randomly created. Within each of the two groups participants were divided into 13 smaller subgroups with three members each. The creative group task was the same for both groups and it was chosen so that all participants were able to contribute to the problem solving, e.g., ways to improve their university.

The independent variable was represented by the diversity of perspectives in the experimental group only. It was operationalized by introducing different points of view to the participants for solving their creative group task. These points of view were presented through three different perspectives: students’ facilities, students’ expenditure and material resources.

The dependent variable is represented by the level of creativity of ideas generated by each group. We focused on making a comparison between EG and CG regarding the presence or absence of diversity in perspectives. The indicators used to measure the divergent creativity are: fluidity (the total number of ideas), flexibility (the total numbers of categories resulted from the generated ideas) and originality (the number of unique ideas, which were not present across other groups).

The indicators of creativity were also collected for each participant in order to determine the degree to which personality traits assessed through CSE are related to the creative processes. Using PANAS we aimed to determine the positive and negative affect for each participant, as a result of participating in the task. We also sought to identify a relation between affects and creativity.

The experimental procedure follows a three step process:

a. Participants are randomly distributed between the experimental and control group by drawing tickets. Within these two groups they were divided into 13 smaller subgroups of three members each. Each participant was given a unique code which we used later in identifying and analyzing the generated ideas.

b. All the participants were asked to perform a creative group task and generate ideas to improve the University.
b1. In the EG, each subgroup was given tickets asking participants to approach the task from all three different perspectives (facilities, expenditure and resources).

b2. In the CG, on the other hand, each subgroup was given another set of tickets and was requested to solve the creative task following the exact perspective stated on the ticket. More precisely, each subgroup had to follow a single perspective of the three mentioned above (facilities, expenditure and resources). The perspectives were counter-balanced across groups.

c. The instruction consisted of presenting a brief description of the allocated perspective and a relevant example to help participants understand more easily the creative task. Furthermore, the participants were required to write down their personal identification code on the answer sheet, next to each idea they generated. In case the idea was generated by more than one member, all the contributors were instructed to write down their codes next to that idea.

The allocated time for completing the task was 10 minutes. When the time ran out, the answer sheets were collected and the CSE and PANAS were then allowed to be completed without a time limit.

4. RESULTS

The results will be presented in the same order the hypotheses were stated:

a. To investigate the influence of diversity perspectives on the total number of ideas (EG: $Mdn = 3$; CG: $Mdn = 3$) generated in a creative group task, the Mann-Whitney test was used. The data we obtained does not support this hypothesis, $U = 97.5, p > .05, r = .06$.

b. To analyze the effects of diversity perspectives on the numbers of categories that resulted from the generated ideas, the same procedure was used. Despite some apparent differences between groups (EG: $Mdn = 2.24$; CG: $Mdn = 2$), the results were statistically inconclusive, $U = 73, p > .05, r = .26$.

c. There were no significant differences between the two groups regarding the number of original ideas (EG: $Mdn = 1$; CG: $Mdn = 1$), $U = 99.5, p > .05, r = .04$.

d. For the next hypothesis we were interested in investigating the influence of perspective diversity on the average number of words per idea (EG: $Mdn = 7.67$;
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CG: \( Mdn = 7.22 \) in a creative group task. The data produced by the Man-Whitney analysis does not support this hypothesis either, \( U = 64.5, p > .05, r = .32 \).

e. For the following hypothesis we investigated the existence of a positive association between personality traits and creativity. There was not recorded a significant correlation between CSE and the total number of ideas, \( r(82) = .12, p = .27 \). Similarly, we did not identify a significant correlation between CSE and the numbers of categories that resulted from the generated ideas, \( r(82) = .01, p = .89 \). The number of original ideas was not positively correlated with CSE, Pearson’s \( r(82) = .05, p = .63 \). The correlation between CSE and the average number of words per idea was also not significant, \( r(82) = -.15, p = .17 \). The results are summarized in Table 3.

f. For the final hypothesis conclusive results were not obtained to prove an association between positive affect and indicators of creativity. The results are summarized in Table 3.

Table 1 Pearson coefficients for CSE, PANAS and creativity

<table>
<thead>
<tr>
<th></th>
<th>Number of ideas</th>
<th>Number of categories</th>
<th>Number of original ideas</th>
<th>Number of words per idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>( r = .12 )</td>
<td>( p = .27 )</td>
<td>( r = .05 )</td>
<td>( r = -.15 )</td>
</tr>
<tr>
<td>PANAS</td>
<td>( r = .17 )</td>
<td>( p = .10 )</td>
<td>( r = .03 )</td>
<td>( r = -.12 )</td>
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\(^a\)Only the positive affect scale was included in the analysis.

5. DISCUSSION AND CONCLUSION

Considering the results mentioned above, we conclude that the diversity of perspectives, regarded as a dimension of deep level diversity, does not influence the members’ level of creativity as expected in the study conducted by Harvey (2013). A plausible explanation for these results can be based on the similarity-attraction theory elaborated by Byrne (as cited in Roebken, 1971), which states that groups might function better when the diversity is absent.

This model claims that people who present similar socio-demographic characteristics and also similar personality traits and behavioral patterns are more likely to socialize within a group. In our case, this similarity could require the
participants to approach the assigned task from the same perspective (McPherson, 2001) thereby producing a higher level of creativity for the group’s products.

Another explanation can be reflected by the concept of inclusion. This concept represents the degree to which an individual perceives himself or herself as being a respected member in a group. This respect is associated with a social interaction that helps the member fulfill his or her need to belong and to be valued as an individual by other members of the group (Shore et al., 2011). The group in which the diversity is less profound may stand more chances to fulfill an individual’s needs because it can provide a more protective environment based on similarities between members.

Concurrently, the inconclusive results can also be attributed to the following causes: (a) participants might have had different knowledge about the creative group task’s topic, (b) both experimental and control groups were tested in the same room, at the same time and, therefore, the results may be contaminated, (c) there is also the possibility that some participants may have not respected the perspective assigned. Finally, (d) participants could lack the motivation for the task.

One of the main limits for this study is reflected by the type of indicators used to measure the deep level diversity. Although we used diversity of perspectives as an indicator to measure the deep level diversity, the concept is far more complex and requires the combined use of several other indicators such as personality traits, values, attitudes, experience, and education, in order to provide an accurate measurement.
REFERENCES


**REZUMAT**

*Studiul de față se bazează pe experimentul realizat de Sarah Harvey (2013) și urmărește să investigheze efectul diversității de grup asupra creativității convergente și divergente. Procesele creative divergente conduc la cantitate crescută, diversitate și originalitate a ideilor, măsurabile cu ajutorul unor indicatori specifi. Este utilizat un design inter-subiect, format dintr-un grup experimental și un grup de control. Ambele grupuri sunt divizate în 13 subgrupuri care conțin câte 3 participanți fiecare. Participanții, în număr de 87, au avut de realizat o sarcină creativă de grup care a conștă în generarea de idei pentru îmbunătățirea universității. În timp ce fiecare membru al grupului experimental este solicitat să genereze idei din câte o perspectivă diferită, în condiția de control fiecare subgrup generează idei aparținând unei singure categorii, contrabalansate între ele.*