Examining creativity in Turkey: Do Western findings apply?

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Different cultures have unique perspective on creativity, yet it is usually the American/Western perspective represented in the psychological literature. Here the authors test previous, Western research findings in creativity on Turkish participants. Study One looks at gender and age differences in creativity. Study Two explores the relationship between creativity and motivation, and Study Three examines the factor structure of creativity. In general, the authors were able to validate past research on Western populations. Creativity tended to increase with age, and intrinsic motivation is significantly correlated with creativity. Some gender differences were found (unlike in Western findings), and there were some differences in the factor structure of creativity.

Different cultures have different perspectives on what it means to be creative, yet it is nearly always the American or Western perspective that is represented in the psychological literature. In this article, we explore some research findings in creativity that were primarily conducted on participants from a Western culture, and we see if these findings still hold true when studying Turkish participants. Four research ideas will be examined in this article. In Study One, we study gender differences in creativity and the effect of age on creativity. In Study Two, we study the relationship between creativity and motivation, and in Study Three, we examine the factor structure of creativity.

\textbf{Study One}

Men and women traditionally have not differed in creativity, either as measured by creativity tests or by creative performance (Baer, 1999, forthcoming; Baer & Kaufman, forthcoming; Barron & Harrington, 1981). There have been some studies of non-Western populations, including Japanese college students (Saeki \textit{et al.}, 2001) Chinese and German middle school children (Shi \textit{et al.}, 1999) and Chinese school children (Wang \textit{et al.}, 1998). In all cases, no significant gender differences were
found. Would the lack of significant gender differences also be found in a Turkish student population?

Several studies have investigated the pattern of creativity development, with sometimes contradictory findings. Gardner (1980) and Rosenblatt and Winner (1989) argue for a decline in creativity as student advance through elementary and middle school, with higher levels of creativity occurring in high school. Yet Baer (1996a) studied kindergarteners and third, fourth and fifth graders on a collage-making task and found that creativity increased with age. Smith and Carlsson (1983), using their own Percept-Genetic test on a Swedish sample, found that creativity decreased at around seven years, and then increased at approximately ten or eleven years. Smith and Carlsson (1985) looked at older children and found a further decrease in creativity at approximately age twelve, with an increase by teenage years. Kogan and Pankove (1974) studied divergent thinking (DT) in fifth and tenth grade students and found a general increase, as well as a specifically large increase in verbal DT scores as opposed to figural DT scores. Hargreaves (1982) reported similar findings. We anticipate moderate increases in creativity with increased grade level.

Method

Participants. There were 350 participants, all students in grades 5 through 8 in a private elementary school in Antalya, Turkey. The gender breakdown was 190 male and 160 female participants.

Materials. Participants were administered two measures of creativity: the Alternate Uses Test – Form B (Christensen et al., 1960), in which participants think of different and unusual ways that usual objects can be used, and the Consequences Test – Form A (Christensen et al., 1958), in which participants are asked to list possible consequences that may occur after a particular event. The tests were translated into Turkish from English by the senior author. Two specialists in English Language Teaching (ELT) checked the translated versions for comprehensibility. Cronbach-alpha coefficients for reliability were found as 0.77 for the Consequences test, and 0.78 for the Alternate Uses Test.

Results/discussion

A 4×2 between-subjects multivariate analysis of variance, utilizing Roy-Bargmann stepdown analysis was performed on the two dependent variables Consequence test performance and Alternate Uses test performance. The independent variables were the sex (male or female) and grade level (5, 6, 7 and 8) of the student participants. SPSS MANOVA was used for the analysis. Using the Wilks’ criterion, the combined DVs were significantly affected by both sex of participant \((F(2,308)=10.979, p<0.01)\) and participant grade level \((F(6, 618)=7.75, p<0.01)\). As expected, the interaction term was not significant \((F(6,618)=1.47, p=n.s.)\). The results reveal a
rather modest relationship between sex and test scores (partial $\eta^2=0.08$), and between grade and test scores (partial $\eta^2=0.07$).

To investigate the impact of each main effect on the individual test scores (Consequences and Alternate Uses), a Roy-Bargmann stepdown analysis was performed. Homogeneity of regression was achieved for all components of the stepdown analysis. Results of the analysis are summarized in Table 1. As the results indicate, a unique contribution to predicting performance on the consequences test was made by sex of student (stepdown $F(3,308)=21.00, p<0.01$) and by grade (stepdown $F(3,308)=9.49, p<0.01$). An examination of the unique contribution to predicting performance on the Alternate Uses tests revealed a significant effect of grade (stepdown $F(3,308)=6.47, p<0.01$), but not for sex (stepdown $F(3,309)=0.89, p=n.s.$). Means and standard deviations for performance on each test are presented by grade level and by sex in Table 2.

The lack of statistically significant gender differences on the Alternate Uses Test is consistent with past research, but why might females have scored higher on the Consequences Test? The answer may lie in the Turkish educational system. Recent research on teacher attitudes toward educational curriculum suggest that regardless of the discipline, recognition and recall skills are the preferred focus in the classroom, whereas creativity-related skills such as idea generation, problem solving and critical thinking are perceived as a ‘luxury’ and therefore neglected (Isiksalan, 2002; Dikici & Taspınar, 2002; Sokmen & Bayram, 2002). San (1979) claims that female students in Turkey are more impacted by extrinsic motivational factors such as evaluation; this difference may result in female students trying harder in more ‘left brain’ tasks and undervaluing ‘right brain’ tasks. Turkish female students have higher levels of academic achievement than male students (Oral, forthcoming); if they focus more on ‘left brain’ tasks, this discrepancy may result in their higher scores on the Consequences Test.

The statistically significant unique effect of grade was further explored for both tests through post hoc analyses using Tukey’s Least Significant Differences. Means for each test by grade level are presented in Table 2. For Alternate Uses, the following mean differences were statistically significant at the $p<0.01$ level: grades 5 and 7; 6 and 7; and 6 and 8. The mean difference for grades 5 and 8 also approached

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>Univariate $F$</th>
<th>df</th>
<th>Stepdown $F$</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Alternate Uses</td>
<td>0.90</td>
<td>3,309</td>
<td>0.90</td>
<td>3,309</td>
</tr>
<tr>
<td></td>
<td>Consequences</td>
<td>15.07</td>
<td>3,309</td>
<td>21.00*</td>
<td>3,308</td>
</tr>
<tr>
<td>Grade</td>
<td>Alternate Uses</td>
<td>6.47</td>
<td>3,309</td>
<td>6.47*</td>
<td>3,309</td>
</tr>
<tr>
<td></td>
<td>Consequences</td>
<td>14.36</td>
<td>3,309</td>
<td>9.49*</td>
<td>3,308</td>
</tr>
<tr>
<td>Sex × Grade</td>
<td>Alternate Uses</td>
<td>2.55</td>
<td>3,309</td>
<td>2.55</td>
<td>3,309</td>
</tr>
<tr>
<td></td>
<td>Consequences</td>
<td>0.30</td>
<td>3,309</td>
<td>0.41</td>
<td>3,308</td>
</tr>
</tbody>
</table>

Note: *$p<0.01$. 

Table 1. Stepdown tests of sex, grade and their interaction
statistical significance. In all statistically significant cases, older students performed better. For Consequences, the following mean differences were statistically significant at the \( p < 0.01 \) level: grades 5 and 6; 5 and 8; 6 and 7; 6 and 8; and 7 and 8. For all statistically significant cases except for 5 and 6, older students performed better. Students in grade 6 performed worse than students in grade 5. While there may a reason for students performing worse in grade 6 on the Consequences test, the lack of other, similar findings – and, indeed, findings that mostly indicate a significant increase in creativity with grade progression – lead us to agree with past research (Baer, 1996a; Kogan & Pankove, 1974) indicating that creativity tends to increase with age and grade.

### Study Two

Another popular research question in several recent studies has been the relationship between creativity and intrinsic motivation. A common claim is that intrinsic motivation (performing an activity out of enjoyment for that activity) is more conducive to producing creative work than extrinsic motivation (performing an activity for an external reason, such as a reward). Several studies have shown a connection between intrinsic motivation and higher levels of creativity (e.g., Amabile, 1985; Amabile \textit{et al.}, 1986; Ruscio \textit{et al.}, 1998). A second movement, however, argues that the case against extrinsic motivation is overstated (Eisenberger & Cameron, 1996), and that extrinsic rewards can improve performance if the criterion task requires divergent thinking (Eisenberger & Selbst, 1994), the
instructions emphasize the need for creativity (Eisenberger et al., 1998), or students are experienced with creative acts (Eisenberger et al., 1999). Amabile et al. (1994), in conducting preliminary research on the Work Preference Inventory (Amabile, 1995), found that intrinsic motivation was significantly correlated with several different measures of creativity (such as a creative personality scale and creativity ratings), while extrinsic motivation was either not significantly correlated or negatively correlated. Another study found that Hong Kong students who scored higher on a measure of intrinsic motivation were more likely to be creative (Moneta & Siu, 2002); would these findings also hold true for Turkish students? Another question is the impact of gender and motivation on creativity. Baer (1997, 1998) found a significant gender-motivation effect in two different studies. Females tended to show less creativity in extrinsic motivation situations, while males tended to not show any differences. Would this same pattern be found in Turkish students?

Method

Participants. There were 575 participants, all Turkish undergraduate students in Antayla. There were 327 males, 248 females and one participant who declined to identify their gender.

Materials. To measure motivation, participants were administered the Work Preference Inventory, College Student Version (WPI; Amabile, 1995). The WPI is a series of 30 statements that participants can mark as ‘Never true’, ‘Sometimes true’, ‘Often true’ and ‘Always true’. These statements are designed to measure a participant’s preferred motivational style. Sample statements include: ‘I am strongly motivated by the grades I can earn’ and ‘It is important for me to be able to do what I most enjoy.’ The WPI has a reliability of 0.82 for Intrinsic motivation and 0.76 for Extrinsic motivation (Amabile et al., 1994). To measure creativity, participants were administered items from the International Personality Item Pool (2001; see Goldberg, 1999). These items are derived to correlate highly with established personality tests. The items selected for use in our ‘Creative Personality Scale’ (CPS) were taken from the items designed to measure the ‘Creativity’ facet of the Hogan Personality Inventory (HPI; Hogan & Hogan, 1995) and items designed to measure ‘Imagination’ from Cattell’s Personality Factors Questionnaire (16PF; Russell & Karol, 1994). In addition, participants were asked to rate their own creativity on a 1–5 Likert scale, from 1 (‘Not at all’) to 5 (‘Extremely’). All materials were translated into Turkish from English by the senior author.

Results/discussion

Means, standard deviations and bivariate correlations for all Study Two variables are presented in Table 3. In order to examine the Study Two relationships, two hierarchical multiple regression analysis were conducted. Hierarchical multiple regression allows us to test both the main effects of motivation and gender, and their
interaction terms. Following guidelines outlined by Cohen and Cohen (1983), main effects are centered and entered in Step 1. For the current study included extrinsic motivation, intrinsic motivation and gender were entered at this stage. For Step 2, we compute two variables – the product of gender and extrinsic motivation and the product of gender and intrinsic motivation – and each is entered to test for interaction effects. The identical model was tested for its prediction of creativity self-ratings and CPS scores. For the creativity self-ratings (Table 4), results reveal that the variables entered in Step 1 explain 6% of the variance, however only intrinsic motivation ($\beta=0.25$) proved significant ($p<0.01$). Results from Step 2 reveal a significant interaction between extrinsic motivation and gender accounting for an additional 2% of the variance in creativity self-ratings. Of the two interaction terms entered, only the interaction between extrinsic motivation and gender ($\beta=-0.33$) proved significant ($p<0.01$).

Similar results were found in the prediction of CPS scores, with only minor differences (Table 5). In Step 1, the variables entered explained 13% of the variance in CPS scores. Both intrinsic motivation ($\beta=0.31$) and extrinsic motivation ($\beta=0.16$) were significant. Step 2 accounted for an additional 1% of the variance in CPS scores, again revealing that the interaction between gender and extrinsic motivation ($\beta=-0.26$) was the only significant interaction term ($p<0.05$). These results correspond to past work that links higher levels of intrinsic motivation with

### Table 3. Means, standard deviations and bivariate correlations for all Study Two variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intrinsic</td>
<td>49.71</td>
<td>5.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Extrinsic</td>
<td>36.30</td>
<td>5.71</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Creative Personality Scale</td>
<td>64.36</td>
<td>5.89</td>
<td>0.32</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>4. Self-ratings of Creativity</td>
<td>3.56</td>
<td>0.77</td>
<td>0.25</td>
<td>0.03</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Note: Listwise N=575.

### Table 4. Study Two regression results for self-ratings of creativity

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (centered)</td>
<td>0.06</td>
</tr>
<tr>
<td>Intrinsic (centered)</td>
<td>0.04</td>
</tr>
<tr>
<td>Extrinsic (centered)</td>
<td>0.00</td>
</tr>
</tbody>
</table>

| Gender × Intrinsic | 0.02 | 0.01 | 0.24 |
| Gender × Extrinsic | −0.03 | 0.01 | −0.33* |

Notes: $R^2=0.06$ for Step 1; $\Delta R^2=0.02$ for Step 2. N=575. *$p<0.05$. 

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higher levels of creativity. In each model, intrinsic motivation was a significant predictor of creativity, accounting for the majority of the variance explained by the model. In contrast, extrinsic motivation was only significant for the CPS scores; however, the lower beta weight in Step 1 (see Table 5) indicates that this variable was clearly less important than intrinsic motivation.

Consistent with past research, there was a significant interaction between gender and extrinsic motivation. In each model, the interaction term was significant and explained additional variance in creativity. Specifically, higher levels of extrinsic motivation were associated with men receiving higher CPS scores than women. Similarly, self-reports revealed higher reported levels of creativity for men than for women when extrinsic motivation was also higher. Although the additional variance explained was small, these types of findings are highly representative of interaction effects in multiple regression. The consensus among psychometricians is that small findings are common and these results still bear interpretation and analysis (Jaccard et al., 1990; Rosenthal, 1990; Rosenthal & Rubin, 1979). In view of the past research that is consistent with our finding, we believe the current findings add to the literature supporting an interaction between extrinsic motivation and gender.

Study Three

A final question often questioned in the creativity research literature is the structure of creativity. Is creativity one thing (generality), or many things (domain specificity)? There is much evidence for both the domain specificity and generality arguments. It has been suggested that the differences between research supporting domain specificity and the research supporting generality may be due to a method effect (Plucker, 1998). Performance assessment studies tend to find evidence of specificity (e.g., Baer, 1991, 1996b; Runco, 1989), while ‘creativity checklists and other traditional assessments’ (Plucker, 1998, p. 180) tend to find evidence of generality (e.g., Hocevar, 1976, 1979; Plucker, 1999). A study by Runco (1987) exemplified
this effect by using both self-report and performance-based assessments of creativity. The self-report scales, which focused on the quantity of creative activities in which subjects engaged in various domains, evidenced generality of creativity across domains, but the performance assessments, which focused on the quality of creative performances in different domains, pointed to domain specificity of creativity.

Kaufman and Baer (2004) used self-report scales, yet found evidence for creativity being a multi-factor construct instead of a general construct. They did a preliminary study on the factor structure of creative abilities in different domains. They asked 241 undergraduates to rate their own creativity in the following domains: science, managing interpersonal relationships, writing, art, interpersonal communication, solving one’s own personal problems, mathematics, crafts (e.g., woodworking, sewing, repairing things, building things, cooking) and bodily/physical movement (e.g., dance, sports). They used factor analysis to find a three-factor solution: an empathy/communication factor (interpersonal relationships, writing, communication and solving personal problems), a ‘hands on’ arts factor (art, crafts and bodily/physical) and a math/science factor (mathematics and science). Would these same findings hold true for Turkish participants? Niu and Sternberg (2002) studied Eastern and Western implicit theories of creativity. They found that although Asian conceptions were very similar to Western conceptions of creativity, there were differences nonetheless.

Method

Participants. Identical to Study Two.

Materials. Participants were asked to rate their creativity in the same domains as in the Kaufman and Baer (2004) study. All materials were translated into Turkish from English by the senior author.

Results/discussion

In order to assess the underlying factor structure of self-report ratings of creativity across different domains, a maximum likelihood factor analysis was conducted, utilizing a quartimax rotation with Kaiser normalization. Table 6 contains the rotated factor solution, eigenvalues for each factor and communalities for each variable. Variables are ordered by size and loadings less than 0.45 are not shown to facilitate interpretation. Using factor loadings of 0.45 or greater as the cut-off for inclusion (Tabachnick & Fidell, 2001) three factors emerged, as predicted: self-ratings of art, crafts and writing loaded on Factor 1; self-ratings of interpersonal communications, communication and solving personal problems loaded on factor 2; and self-ratings of math and science loaded on Factor 3. Self-ratings of bodily/kinesthetic did not load on any factor. Overall, the factor structure explained a modest 38% of the variance. In the rotated solution, factor 1 accounted for 15%, factor 2 accounted for an additional 15% and factor 3 accounted for an additional 8%.
These results are highly consistent with the ones predicted and with Kaufman and Baer (2004) in both the identification of a three-factor solution and the resultant composition of said factors. In the present study, Factor 1 represents the ‘hands on’ arts factor identified by Kaufman and Baer, Factor 2 represents the empathy/communication factor and Factor 3 represents the math/science factor. There were two inconsistent results including the loading of writing on the ‘hands on’ arts factor rather than the empathy/communication factor, and the aforementioned bodily/kinesthetic self-ratings that failed to load on any factor. The overall results, however, suggest substantial consistency across the two samples.

It is important to note that these are all self-report findings, and therefore the structure of creativity they suggest is only reflective of people’s beliefs about creativity. People’s beliefs about creativity may well be different from the underlying structure of creativity (see Sternberg, 1985). Indeed, people’s conceptions and self-perceptions related to the structure of creativity may not closely match the actual cognitive mechanisms that contribute to creativity in different domains or the ways these mechanisms interact to influence and shape creativity in those diverse domains.

**General discussion**

It is dangerous to assume that all cultures are alike, and that a research finding from one culture will automatically apply to another culture. Most collections of creativity research and essays (e.g., Runco & Pritzker, 1999; Sternberg, 1999) primarily focus on North American or European perspectives and findings. However, our three studies have, in general, validated past research on Western populations. Like earlier work, we found that creativity tends to increase with age, and that intrinsic motivation is significantly correlated with creativity. We did find some gender differences, but these may be a result of different priorities in the Turkish educational system. There were some differences in the factor structure of creativity, but these differences were minimal (the placement of writing, and the failure of

<p>| Table 6. Factor structure for Study Three based on maximum likelihood with quartimax rotation |
|----------------------------------|----------------|----------------|----------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>0.79</td>
<td>0.64</td>
<td>0.64</td>
</tr>
<tr>
<td>Crafts</td>
<td>0.50</td>
<td>0.29</td>
<td>0.29</td>
</tr>
<tr>
<td>Writing</td>
<td>0.48</td>
<td>0.28</td>
<td>0.28</td>
</tr>
<tr>
<td>Interpersonal relationships</td>
<td>0.75</td>
<td>0.61</td>
<td>0.61</td>
</tr>
<tr>
<td>Communications</td>
<td>0.71</td>
<td>0.52</td>
<td>0.52</td>
</tr>
<tr>
<td>Solving personal problems</td>
<td>0.45</td>
<td>0.23</td>
<td>0.23</td>
</tr>
<tr>
<td>Mathematics</td>
<td>0.55</td>
<td>0.31</td>
<td>0.31</td>
</tr>
<tr>
<td>Science</td>
<td>0.46</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>Bodily/kinesthetic</td>
<td></td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>Percentage of variance</td>
<td>15.21</td>
<td>15.05</td>
<td>7.10</td>
</tr>
</tbody>
</table>

Note: Factor loadings < 0.45 are suppressed for ease of interpretation.
bodily/kinesthetic to load on any of the factors). These differences may have been 
due to the nature of the specific domains used in the questionnaire.

We are interested to note that many of the Western research findings on creativity 
hold true for another culture. These findings may imply that people may have a great 
deal in common in terms of their creative abilities. Indeed, other studies examining 
creativity across ethnicities have found few differences in creative abilities between 
Caucasians and African Americans (e.g., Glover, 1976a, 1976b; Kaufman, 2003, 
2006; Kaufman et al., 2004) and Caucasians and Latinos (Argulewicz et al., 1982; 
Argulewicz & Kush, 1984). Perhaps people’s creative abilities and preferences are 
fairly consistent across cultures – which would allow easier cross-cultural 
collaborations and better resource and information sharing.

Acknowledgement

The authors would like to thank John Baer for his comments and suggestions.

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