Exploring Creative Thinking of Undergraduate Students through the Lens of Selected Demographic Variables

Muhammad Nadeem Anwar¹, Asma Khizar², Musarat Azhar³

¹Assistant Professor, Department of Education, University of Sargodha, Sargodha
²Lecture, Department of Education, University of Gujrat, Gujrat
³Lecturer, Department of English, University of Sargodha, Sargodha

A B S T R A C T

Creativity is on top most agenda of the world today given its implication to literally every field of life. Demographic characteristics have been frequently and predictably related to creative thinking. The purpose of this study was to explore the perceptions of undergraduate university students about their creative thinking abilities and to assess the effect of some selected demographical variables on their perceived creative thinking abilities. A survey was administered to 200 undergraduate students who have been sampled purposively. The statistical analysis revealed that parental education contributes the highest, whereas the academic area of study has the lowest contribution to creative thinking. The gender and residential area also have a significant effect on perceived creative thinking abilities. Therefore it can be concluded that demographic variables of gender, parents’ education, residential location and academic area of study are good predictors of creative thinking.

KEYWORDS: Demographic Variables, Creative thinking, Undergraduate Students

1. INTRODUCTION

Creativity is involved in almost every dimension of life ranging from wearing clothes to making breakfast and driving care to an office building. Since the time of Galton (1883), psychologists have shown an interest in creativity as an academic area of study. Research in the field of creativity, in fact, over the last 4 decades has generated more than 9,000 published works (Hook & Tegano, 2002; Runco, Nemiro, & Walberg,
This is because the construct creativity is interesting and applicable in most of the fields. With the inculcation of research and technology, individual needs and educational perspectives are changing. At the start of 19th century word ‘create’ was not very common but now it’s very important. Now in every field, creative thinking is being focused and professional are striving to develop it (Kutnick, Layne, Jules, & Layne, 2006).

Torrance (1962) explained creativity as the process of creating ideas or forming and testing hypotheses and communicating the findings. Creativity is a highly ambiguous concept that tends to be given different meanings depending on the discipline or practice to which it is related (Runco, 2007). Galton (1883) explained the creativity in terms of universally adopted factors such as appropriateness and novelty (i.e. Originality and newness). Van Hook and Tegano (2002) further elaborated that creativity is accepting new ideas, encouraging and exploring the unknown. Creativity engages students in divergent thinking. Although it is a subjective form of thinking it combines creative and critical thinking to make student as an independent individual who plays an active role in society (Edwards, 2001).

Creative thinking is just connecting things in imaginations, it is the process of coming up with new ideas or new approaches. According to Plucker, Beghetto, and Dow (2004), creative thinking is an interplay of aptitude, process, and environment which results in producing and designing a novel but useful product.

Creative thinking is very diverse and it involves the creation of new things. It revolves around the originality, flexibility, fluency, associative thinking, imagery, metaphorical thinking, attribute listing and forced relationship. Sternberg (1999) explicated that creative thinking is an association of divergent and logical thinking rooted in intuition. Divergent thinking generates many ideas to solve the problem in any situation. Some of these seem to be useful for finding solutions. A process of logical thinking is used to examine an appropriate solution. A logical thinking involved a systematic and rational process to verify and make a valid conclusion. The focus of divergent thinking is on flexibility, fluency, and novelty in mathematical problem solving and problem posing (Haylock, 1997; Hook & Tegano, 2002; Kutnick et al., 2006).
Three stages of development of creative thinking in problem-solving were highlighted by Gotoh (2004). According to him, the first stage is “the empirical or informal activity”, the second stage is “the algorithmic or formal activity”, while the third stage is “the constructive or creative activity”. It is worth noted that, at 1st stage, problems are resolved with the help of practical or technical application of procedures and rules. At 2nd stage calculation, manipulation, operation, and problem solving techniques are used explicitly. Whereas, in the third stage, unusual problems are resolved through the non-algorithmic decision making i.e. finding and developing any rule.

A lot of researches have been done in which creative thinking has been addressed with reference to gender, intelligence, age, and academic achievement (Anwar, Aness, Khizar, Naseer, & Muhammad, 2012; Johnson, 2008; Layne, Jules, Kutnick, & Layne, 2008; Mizuno et al., 2008; Naderi, Abdullah, Aizan, Sharir, & Kumar, 2009; Naderi, Abdullah, Aizan, Sharir, & Kumar, 2010; Parker et al., 2004; Runco, 2007; Thompson & Zamboanga, 2004).

Demographic variables have significant importance in researchers. Examples of demographic characteristics include age, race, gender, ethnicity, religion, income, education, homeownership, sexual orientation, marital status, family size, health and disability status, and psychiatric diagnosis. According to Beins and McCarthy (2017) Information regarding age, ethnicity, socio-economic status, educational level, gender, and language spoken by the participant should be provided along with additional information. The absence of demographic information cause risk of “absolutism” and phenomenon under study is taken same for all regardless of gender, age, race, and SES. Demographic information paves the way towards “universalism” (Beins & McCarthy, 2017).

Although demographic variables are important, a few types of research have been found regarding the level of academic achievements, age and gender in relation to creative thinking construct (Ai, 1999; Anwar et al., 2012; Kutnick et al., 2006; Layne et al., 2008; Mossing, 2013). No study has been found to focus the other significant demographic variables other than gender and age. Therefore, in order to move towards
the “universalism”, it is pertinent to undertake a study to analyse the creative thinking in relation to some selected demographic variables.

The objective of the study was to find out the effect of demographics (gender, parent education, the area of residence and selection of program) on creative thinking of undergraduate students.

2. RESEARCH METHODOLOGY

Population and Sample:
All the undergraduate students of BS programs of the University of Sargodha were the population of the study. Twenty five students were selected from each stratum with respect to the type of demographic variable i.e. Gender, parent education, the area of residence and area of study. Total sample size comprised of 400 undergraduate students.

Research Instrument:
A self-developed tool was used in this research after reviewing the related literature especially the tests developed so far on creativity (Johnson, 2008; Khatena & Torrance, 1976; Sternberg, 1999; Torrance, 1962; Torrance, Ball, & Safer, 1966). This instrument comprised 30-item, self-reported checklist designed to know the students’ perception of their own behavior. This instrument was finalized after pilot testing and it demonstrated adequate reliability i.e. 0.81.

The Student Demographic Information Sheet (TSDIS) was prepared to ask students about the information such as name, sex, age, parental education, area of residence and selected program of study. Data collected were analyzed, in addition to the descriptive statistics, the coefficient of correlation, t-test, one-way ANOVA, and regression analysis was computed. The Student Demographic Information Sheet (TSDIS) was prepared to ask students about the information such as name, gender, age, parental education, area of residence and selected program of study. Data were analyzed using the descriptive statistics, t-test, and regression analysis.
3. RESULTS

Table 1: Demographic Comparison of Creative Thinking

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category of variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Mean Difference</th>
<th>SEM</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>50</td>
<td>3.91</td>
<td>1.09</td>
<td>0.31</td>
<td>0.15</td>
<td>2.05*</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>50</td>
<td>4.22</td>
<td>1.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Education</td>
<td>Literate</td>
<td>50</td>
<td>4.60</td>
<td>1.76</td>
<td>1.39</td>
<td>0.51</td>
<td>2.95*</td>
</tr>
<tr>
<td></td>
<td>Not literate</td>
<td>50</td>
<td>3.21</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of Residence</td>
<td>Urban</td>
<td>50</td>
<td>3.42</td>
<td>1.49</td>
<td>0.23</td>
<td>0.11</td>
<td>2.91*</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>50</td>
<td>3.19</td>
<td>1.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of study</td>
<td>Management Science</td>
<td>50</td>
<td>1.90</td>
<td>1.19</td>
<td>0.13</td>
<td>0.05</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>Social Sciences</td>
<td>50</td>
<td>2.03</td>
<td>1.30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.05 level of confidence

Table 1 shows the categorical description of each demographic variable. The results showed the significant difference between girls and boys in creative thinking ($t = 2.05$, $p > 0.05$), parental education ($t = 2.95$, $p > 0.05$), urban and rural students ($t = 2.91$, $p > 0.05$) and academic area of study ($t = 0.75$, $p < 0.05$).

Table 2: Regression Analysis of Demographic Variables and Creative Thinking

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Sum of Square</th>
<th>Mean Square</th>
<th>F-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3</td>
<td>60324.026</td>
<td>6768.32</td>
<td>125.75</td>
<td>0.000</td>
</tr>
<tr>
<td>Residual</td>
<td>96</td>
<td>31698.408</td>
<td>51.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.706</td>
<td>0.561</td>
<td>0.635</td>
<td>7.23</td>
</tr>
</tbody>
</table>

The result is showing in table 2 that all the four demographic variables jointly gave a coefficient of multiple regression ($R = 0.706$) and correlation square ($R^2 = 0.561$) and an adjusted correlation square (Adj $R^2 = 0.635$), which indicates that the four demographic variables jointly contribute a total of 56.1% variance of the creative thinking.
Table 3: Effect of Demographic Variables and Creative Thinking

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>t-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0.234</td>
<td>6.561</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Parental Education</td>
<td>0.532</td>
<td>11.106</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Area of Residence</td>
<td>0.247</td>
<td>6.592</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Area of study</td>
<td>0.012</td>
<td>0.123</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

The result shows in table 3 that parental education contributes the highest with $\beta = 0.532$ with $t = 11.106$ at 0.05 level of confidence, whereas the area of study in undergraduate classes has the lowest contribution with a $\beta = 0.012$. The magnitude of the gender and residential area are $\beta = 0.234$; $t = 6.561$; $p<0.05$ and $\beta = 0.247$; $t = 6.592$; $p<0.05$ respectively. Therefore, it is concluded that the demographic variables significantly predicted the creative thinking.

4. Discussion

The aim of this research was to primarily determine the relationship of creative thinking through the lens of some selected demographic variables. The statistical analysis showed that parental education contributes the highest with the $\beta$ weight of 0.532 selection of a program of study has the lowest contribution with a $\beta$ weight of 0.012, with $t = 0.123$ at 0.05 level of significance. This clearly indicated that demographic variables (gender, parent education, the area of residence and selection of program) are good predictors of creative thinking among undergraduate university students.

Findings of the current study are aligned with previous researchers. (Batey, Furnham, & Safiullina, 2010; Leu & Chiu, 2015; Naderi et al., 2009) concluded that age and gender and creativity are the predictors of academic achievement. Ai (1999) explored the relationship among self-regulation and creativity of college students and compatibility of self-regulation, creativity, and achievement with demographic factors. Purpose of this research was to explore either demographic trait are reliable predictors of creativity and self-regulation. It was concluded that non-consistent variables such as educational level, gender, and age were being significant predictors of creativity. A study conducted by Batey et al. (2010) examined variance in creativity due to demographics, personality, and intelligence. Results showed that age, gender, general knowledge, fluid intelligence, and
big 5 personality traits effected creativity. Creativity is a complex construct and it is addressed with the help of intelligence. The teacher should acknowledge creative aspects among students to polish their potentials at all levels. The results indicate that all the demographic variables predict significantly to the creative thinking among undergraduate university students. However, before generalizing the results of current study sample size, environmental factor and other related variables should be kept in mind.

REFERENCES

Mossing, S. (2013). The Importance of Creative Thinking and the Arts in Education.


