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## Creative thinking and socio- Demographic variables of secondary school students

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### Abstract

In the present paper an effort has been made to investigate the impact of socio demographic factors such as school type, gender and social category on creative thinking of secondary school students. A sample of 300 students studying in secondary schools of Jammu city was randomly selected. Verbal test of Creative thinking by Dr. Kulwinder Singh (1981)<sup>[5]</sup> was used. Mean and three way ANOVA were calculated to analyse the data. The findings revealed that no significant differences found among students studying in Private and Government schools on fluency, flexibility, originality and overall creative thinking. Male and female secondary school students studying in Private and Government schools on fluency, flexibility, originality and overall creative thinking not differ significantly. No significant differences among secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories on fluency, flexibility, originality and overall creative thinking and there were no interaction among school type, gender and social category on fluency, flexibility, originality and overall creative thinking.

**Keywords:** Creativity, creative thinking, school type, gender, social category

### Introduction

Education is the basic necessity of every individual and is deeply rooted with society. It enhances the quality of life. This quality could be increased through various variables such as; intelligence, creativity, self-concept and others. Creativity is considered to be the highly valued quality. It is this ability which seems to have an impact on all activities.

It is the creativity that helps an individual in every walk of life and brings improvement in the quality of life. Creative thinking involves the production of novel and original ideas or solutions to problems and is different from other types of thinking. Creative thinking is understood just as a new way of thinking or thinking differently.

Creativity has proved to be one of the most troublesome concepts in the literature of measurement with no universally accepted definitions and method for its quantitative evaluation. The phenomenon of creativity is very complex and multidimensional. The nature of creativity is very well described by Rhodes. He is best known as the architect of the framework of the 4 P's of creativity i.e. person, process, press and product. The word person covers information about personality, intellect, temperament, physique, traits, habits, attitudes, self-concept, value systems, defense mechanisms, and behavior. The word process applies to motivation, perception, learning, thinking, and communication. One of the most prolific writers on creativity has defined creativity as the process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies and so on. Press means the relationship between human beings and their environment. The word "Press" is derived from the Latin, refers to the Psychological Climate. The study of creativity by means of products seems quite natural. Creative Products are probably the least studied in the field of Creativity. They are generally looked at as the artefacts of the creative process, however more work is being performed on analysing what makes a product creative. Creativity is ability to create or invent something new and original ability to solve problem. The creatively is an ability to recognize how the best process of developing new, rare or unique ideas. Socio-demographic variables is characterized by a combination of sociological (related to sociology) and demographic (relating to population) characteristics. Socio-demographic factors refer to a set of variables such as a given population's age, gender, type of school,

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social categories, ethnicity or SES (socioeconomic status). Gender, social category and type of school are the features that impact creative thinking. At last many researchers found on creative potential of students in relations to gender, income, caste categories etc. comparative studies also found on creative potential of scheduled castes students and non-scheduled castes students. But no study is found on exploring the effect of creative thinking and socio-demographic variables. This provided the investigator a motivation to investigate the effect of creative thinking and socio-demographic variables under the selected topic „creative thinking of secondary school students in relation to their socio-demographic variables”.

Singh (1978)<sup>[6]</sup> recorded that girls possess higher levels of word fluency, spontaneous flexibility, expressive fluency, and originality than boys but mainly in semantic content and in figural elaboration the two groups were found same. Sharma, Singh and Jarial (1981)<sup>[5]</sup> studied sex roles in verbal creative thinking abilities. The findings of the study revealed that (i) Male students scored significantly higher than the female students in the fluency aspect of creativity. (ii) Female students scored significantly higher than the male students in the originality aspect of creativity. (iii) No significant differences were found in the fluency and the total creativity scores of male and female students. Passi (1982) in his book “Creativity and Education” has tried to locate all the related studies in the areas of correlates of creative thinking in Indian context. He came across 160 studies. Only four studies were found related with creativity in rural/urban differences, school system, divergent thinking in school and psychological study of creativity of Indian adolescents. Remaining 156 studies were related with other variables as age, birth –orders, sex, location, socio-economic status, academic subject, intelligence, scholastic achievement, values and personality. Ahmad (1983)<sup>[1]</sup> in his study concluded that verbal abilities develop more in a highly enriched but formal environment while non-verbal ability was equally affected by an enriched formal as well as informal environment.

On the basis of the above studies certain finding indicated that girls possess higher levels of word fluency, spontaneous flexibility, expressive fluency, and originality than boys and in other studies it has been found that male students scored significantly higher than the female students in the fluency aspect of creativity. Female students scored significantly higher than the male students in the originality aspect of creativity. And no significant differences were found in the fluency and the total creativity scores of male and female students. Therefore it can be seen that there are few studies which contradict while other favours the present research problem. So an attempt has been made by the researcher to go forward in the field of creative thinking with other related socio-demographic variables like gender, school type and social categories of secondary students. Keeping in view the above mentioned studies the following objectives have been set up for the present study.

#### Objectives of the study

1. To compare secondary school students studying in private and government schools on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.

2. To compare male and female secondary school students on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
3. To study the differences among secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
4. To study the interactional effects of school type, gender and social category on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.

#### Hypotheses

1. Students studying in Private and Government schools do not differ significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
2. Male and female secondary school students studying in Private and Government schools do not differ significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
3. Secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories do not differ significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
4. School type and gender do not interact significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
5. Gender and Social category do not interact significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
6. School type and social category do not interact significantly on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
7. The interactional effects of school type, gender and social category on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking is not significant.

#### Method

Descriptive survey method was employed.

#### Population and sample

Secondary students of Jammu city constituted the population of the study. The sample consisted of 300 students randomly selected from government and private schools of Jammu city.

#### Tools used

“Verbal Test of Creative Thinking” developed by Dr. Kulwinder Singh (1981)<sup>[5]</sup> was used.

#### Results

In order to find out the effect of school type (private and government schools), gender (male and female) and social category (schedule caste, non-schedule caste and schedule tribe) on creative thinking of secondary school students along with their double and triple interactive effects, ‘analysis of variance’ (2x2x3 factorial design) was applied separately on the different component of Creative thinking i.e. (i) fluency, (ii) flexibility, (iii) Originality and (iv) overall creative thinking. The analysis and interpretation of the data was carried out in the following table no.1 and table no. 2 respectively:

Table no. 1. Mean values of Fluency, Flexibility, Originality and Overall creative thinking scores of secondary school students in relation to their School type (A) [Private-A1 and

Government school-A2], Gender (B) [Male-B1 and Female-B2] and Social Category (C) [Schedule caste-C1, Non-Schedule caste-C2 and Schedule tribe- C3]

Table 1

Mean values.					
Sr. No.	Variables	Fluency	flexibility	Originality	Overall creative thinking
1.	School Type (A)				
	Government School (A1)	49.73	49.39	48.39	148.05
	Private School(A2)	50.27	50.61	51.06	151.94
2.	Gender (B)				
	Male (B1)	49.49	49.02	50.38	148.89
	Female (B2)	50.51	50.98	49.60	151.09
3.	Social Category (C)				
	Schedule Caste (C1)	48.48	49.20	49.26	145.96
	Non-Schedule Caste (C2)	50.52	50.50	51.17	152.19
	Schedule Tribe (C3)	50.21	48.65	43.00	141.85

Table 2: Analysis of variance showing the effect of School Type, Gender and Social Category on fluency flexibility, originality and overall creative thinking of Secondary School Students

(A) Fluency						
Sr. No.	Source of Variation	Sum of Squares	Df	Mean Square (Variance)	F-Values	Level of significance.
1.	School Type (A)	.797	1	.797	.008	N.S.
2.	Gender (B)	22.536	1	22.536	.221	N.S.
3.	Social Category (C)	151.530	2	75.765	.741	N.S.
4.	(AxB)	.576	1	.576	.006	N.S.
5.	(BxC)	5.881	2	2.941	.029	N.S.
6.	(AxC)	186.491	2	93.245	.912	N.S.
7.	(AxBxC)	27.423	2	13.712	.134	N.S.
8.	Within Conditions	29429.862	288	102.187		
	<b>Total</b>	29844.915	299			
(B) Flexibility						
Sr. No.	Source of Variation	Sum of Squares	Df	Mean Square (Variance)	F-Values	Level of significance
1.	School Type (A)	128.288	1	128.288	1.283	N.S.
2.	Gender (B)	54.035	2	27.017	.270	N.S.
3.	Social Category (C)	17.726	1	17.726	.177	N.S.
4.	(AxB)	3.370	1	3.370	.034	N.S.
5.	(BxC)	30.830	2	15.415	.154	N.S.
6.	(AxC)	472.244	2	236.122	2.362	N.S.
7.	(AxBxC)	51.924	2	25.962	.260	N.S.
8.	Within Conditions	28793.249	288	99.977		
	<b>Total</b>	29815.775	299			
(C) Originality						
Sr. No.	Source of Variation	Sum of Squares	Df	Mean Square (Variance)	F-Values	Level Of Significance
1.	School Type (A)	103.233	1	103.233	1.094	N.S.
2.	Gender (B)	168.927	1	168.927	1.790	N.S.
3.	Social Category (C)	1374.410	2	687.205	7.283	N.S.
4.	(AxB)	17.343	1	17.343	.184	N.S.
5.	(BxC)	454.439	2	227.220	2.408	N.S.
6.	(AxC)	318.993	2	159.497	1.690	N.S.
7.	(AxBxC)	34.050	2	17.025	.180	N.S.
8.	Within Conditions	27173.524	288	94.353		
	<b>Total</b>	29942.700	299			
(D) Overall Creative Thinking						
Sr. No.	Source of Variation	Sum of Squares	Df	Mean Square (Variance)	F-Values	Level of significance
1.	School Type (A)	181.654	1	181.654	.352	N.S.
2.	Gender (B)	9.465	1	9.465	.018	N.S.
3.	Social Category (C)	2320.382	2	1160.191	2.250	N.S.
4.	(AxB)	2.465	1	2.465	.005	N.S.
5.	(BxC)	790.032	2	395.016	.766	N.S.
6.	(AxC)	306.732	2	153.366	.297	N.S.
7.	(AxBxC)	183.980	2	91.990	.178	N.S.
8.	Within Conditions	148507.849	288	515.652		
	<b>Total</b>	153838.989	299			

NS=Not Significant at 0.05 level

**School type (A)**

Table no. 2 reveals that the calculated value of 'F' for the main effect of school type on fluency, flexibility, originality and overall creative thinking of secondary school students, irrespective of their gender and social category, came out to be .008, 1.283, 1.094 and .352 respectively, is much lower than the table value even at 0.05 level of significance. Hence, the hypothesis no. 1 that, "Students studying in private and government schools do not differ significantly on fluency, flexibility, originality and overall creative thinking" was retained. It is also revealed from table no. 1 that students studying in private school had slightly higher means of creative thinking scores than government schools students and the mean differences between them was not found to be statistically significant.

**Gender (B)**

The obtained value of 'F' for the main effect of gender on fluency, flexibility, originality and overall creative thinking of secondary school students, irrespective of their school type and social category, came out to be .221, .270, 1.790 and .018 which is also not significant at 0.05 level. Hence, the hypothesis no. 2 that, "Male and female secondary school students do not differ significantly on fluency, flexibility, originality and overall creative thinking of secondary school students" was retained. From table no.1, it is evident that male student had higher mean values on originality component of creative thinking than female students. In case of other components of creative thinking i.e. fluency, flexibility and total creative thinking female students had slightly higher mean values than male students.

**(iii) Social Category (C)**

The computed value of 'F' for the main effect of social category on fluency, flexibility, originality and overall creative thinking of secondary school students, irrespective of their school type and gender, came out to be .741, .177, 7.283 and 2.250 which is not significant at 0.05 level of significance. Hence, the hypothesis no. 3 that, "Secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories do not differ significantly on fluency component of creative thinking" was retained.

**School Type and Gender (AxB)**

School type and gender do not interact significantly on fluency, flexibility, originality and overall creative thinking of secondary school students as the calculated value of F-ratio found out to be .006, .034, .184 and .005 respectively, which is lower than the table value even at 0.05 level of significance. Hence, the hypothesis no. 4 that, "School type and gender do not interact significantly on fluency, flexibility, originality and overall creative thinking of secondary school students component" was retained. It may be interpreted that there were approximately the same differences in the means of fluency, flexibility, originality and total creative thinking scores of students studying in private and government schools regardless of their gender i.e. male and female.

**Gender and Social Category (BxC)**

The values of F-ratio came out to be .029, .154, 2.408, and .766 respectively for the interaction effect of gender and social category on all the components of creative thinking of

secondary school students is also not significant even at 0.05 level of significance.

Hence, the hypothesis no. 4 that, "School type and social category do not interact significantly on fluency, flexibility, originality and overall creative thinking" was retained. It may be inferred that there were approximately the same differences in the means of fluency, flexibility, originality and overall creative thinking scores of male and female students regardless of the social category to which they belong i.e. schedule caste, non-schedule caste and schedule tribe.

**School Type and Social Category (AxC)**

The interactional effect of social category and school type on creative thinking of secondary school students, was found to be .912, 2.362, 1.690, and .297 which is lower than the table value at 0.05 level of significance. Hence, the hypothesis no. 6 that, "School type and social category do not interact significantly on creative thinking of students" was retained.

**School type, Gender and Social Category (AxBxC)**

The computed value of F-ratio for the triple interactional effect of school type, gender and social category on creative thinking of secondary school students, came out to be .134, .260, .0180 and .178 which is also not significant at 0.05 level of significance. Hence, the hypothesis no. 7 that, "The triple interactional effect of school type, gender and social category on fluency, flexibility, originality and overall creative thinking of students are not significant" was retained.

The fact is that the triple interaction among school type, gender and social category is not significant means that the interaction between school type and Gender on fluency, flexibility, originality and overall creative thinking for the separate levels of social category are of the same form; that the gender and social category interactions on fluency, flexibility, originality and overall creative thinking for the separate levels of school type are of the same form; that the school type and social category interactions on fluency, flexibility, originality and overall creative thinking for the separate levels of gender were of the same form.

**Findings and discussions**

1. There were no significant differences among students studying in Private and Government schools on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking. The results of this study were contradicting with the findings of which indicated significant differences among schools on verbal fluency, flexibility and originality. The results were also contradicting with the findings of which stated that the Private and Government School children differ significantly in their creative abilities.
2. There were no significant differences among male and female secondary school students studying in Private and Government schools on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking. The results of this study were contradicting with the findings of Sharma, Singh and Jarial (1981)<sup>[5]</sup>, which indicated that male students scored significantly higher than the female students in the fluency, flexibility, and originality aspect of creativity. And findings of found female students were significantly higher than male

students in all components of creative thinking and contradicting with the findings of And the results were in common agreement with the findings of Singh (1978) [6].

3. There were no significant differences among secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
4. There was no interaction between school type and gender on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
5. There was no interaction between gender and social category on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
6. There was no interaction between school type and social category on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.
7. There were no interaction among school type, gender and social category on (i) fluency, (ii) flexibility, (iii) originality and (iv) overall creative thinking.

### **Conclusions and implications**

No significant differences among male and female students studying in Private and Government schools on fluency, flexibility, originality and overall creative thinking and no significant differences were found among secondary school students belonging to scheduled caste, non-scheduled caste and scheduled tribe categories on fluency, flexibility, originality and overall creative thinking. There were no interaction between school type, gender and social category. Some of the ideas of creative students are often “silly” or “wild.” The teachers and parents must recognize this truth and should not get annoyed on manifestation of such behavior. Instead, they should help children relate such ideas to socially and logically desired ways of thinking. A suitable and positive environment must be provided to the students so that they can generate the creative stimulation, cognitive encouragement and thinking divergently.

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