

SUMMARY AND CONCLUSION

Introduction

Creativity has become a central concept in educational research only very recently although creative thinking ability as the highest of mental functions and creative production the peak of human achievement have long been accepted. Considerable amount of research has been undertaken in the area of creativity during recent decades. Research interest has mainly been focused on the study of the nature of creativity and its relationship with intelligence. Attempts to understand the personality correlations of creativity have been undertaken in a number of researches (MacKinnon, 1960; Torrance, 1962; Getzels and Jackson, 1968). Both theoretical and empirical evidence indicate that creativity - personality area of research is highly significant and it is being widely recognized that the personality variables play an important role in the identification and cultivation of creative talent. In other words, personality variables can be used as criterion variables in the study of creativity.

Comparisons of high creative and low creative individuals have revealed both conflicting as well as consistent observations on a number of non-cognitive characteristics. Cattell (1954) concluded that the creatives are withdrawn, skeptical, internally preoccupied, precise and reliable.

Barron (1958) in his study of highly creative people found them "more original, less suggestible and more tolerant of structural disorderliness". Reid, King and Wickwire (1959) observed from their study of seven graders that the creative children were more sociable, more warm-hearted and less anxious. Getzels and Jackson's (1962) study of the personality

structure of the creative adolescents is also significant in that they stressed the need for study of the personality and non-cognitive characteristics. It is, however, difficult to formulate generalizations from the research on personality and other non-cognitive variables relating to creative children as most of the studies were limited in their scope with regard to the population with which they were concerned and were also confined to urban areas. Not much work seems to have been done in India in this field. And, the studies conducted are mainly among the urban and advanced regions (Raina, 1968; Mehdi, 1971; Passi, 1971). In a tribal and remote area like Mizoram, no substantial research has been undertaken in this field. Systematic explorations to understand the phenomenon of creativity and its relationship with personality and other non-cognitive characteristics are needed for planning educational programmes for creative talent in India especially in backward regions. The Education Commission (1964-66) observed that the 'talent has to be located early and allowed to grow in the best atmosphere and under the best teachers.' An understanding of the concept and correlates of creativity is, therefore, essential for the identification and fostering of the talent. This felt need for developing means and measures for understanding and nurturing of the creative potential especially in a very backward and remote region through effective educational programmes has prompted the researcher to undertake the present investigation.

Statement of the problem

The present study has been designed with a view to examine the creative thinking ability among the secondary school students in Mizoram. The relationship between creativity and personality characteristics of the secondary school students has been studied. Sex differences and locale differences in the context of personality correlates of the creative students were also analysed. Accordingly, the study was entitled, "Non-cognitive Correlates of Creativity among the Secondary School Students".

Objectives of the study

The study was designed primarily to realise the following major objectives :

1. To compare the personality characteristics of the high creative and the low creative secondary school students.
2. To find the sex differences in personality characteristics of the high creative students.
3. To examine the locale differences in personality characteristics of the high creative boys and girls.
4. To make suggestions for improving the educational practices in enhancing creative thinking abilities among the secondary school students.

Hypotheses

Statistical verification of the following hypotheses was undertaken:

1. There is no significant difference between the high creative and the low creative student with regard to personality characteristics:

Reserved - Outgoing.

2. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Less intelligent - More intelligent.*
3. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Affected by feelings - Emotionally stable.*
4. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Phlegmatic - Excitable.*
5. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Obedient - Assertive.*
6. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Sober - Happy-go-lucky.*
7. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Expedient - Conscientious.*
8. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Shy - Venturesome*
9. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Toughminded - Tenderminded.*
10. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Vigorous - Doubting.*
11. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Placid - Apprehensive.*
12. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Group-dependent - Self-sufficient.*

13. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Undisciplined - Controlled.*
14. There is no significant difference between the high creative and the low creative students with regard to personality characteristic: *Relaxed - Tense.*
15. There is no significant sex differences in the personality correlates of the high creative students.
16. There is no significant difference in the personality correlates of the high creative boys and girls coming from rural and urban areas.

Definition of Terms

1. Creativity Creativity is taken as a divergent thinking process enabling the pupils for creative outputs (novel and useful) and measured through verbal and non-verbal creativity test on four primary traits: fluency, flexibility, originality and elaboration.

2. Non-cognitive Correlates Non-cognitive correlates designate the personality characteristics influencing creativity among the high school students. The personality characteristics are defined in terms of fourteen personality traits as measured by the Cattell's (1973) 14 High School Personality Questionnaire(HSPQ).

Sample

The sample of the study consisted of 700 students (335 boys and 365 girls) selected randomly from classes IX and X studying in ten secondary schools in Mizoram.

Tools

The following tools were used to gather the data :

- (i) **Cattell's 14 High School Personality Questionnaire (HSPQ).**
- (ii) **'Creativity Test' developed by the investigator especially for the study. This is a test-battery developed on the lines of Guilford Divergent Production Test (1967) and Torrance Tests of Creative Thinking (1966) and consists of five verbal tests :**
- (i) **seeing problems test (ii) unusual uses test**
- (iii) **consequences test (iv) making things interesting and**
- (v) **similarities test. It also consists of three non-verbal tests (i) picture construction (ii) picture completion, and (iii) circles test. The coefficient of correlation for test-retest reliability on a sample of 100 after an interval of 15 days was .802 for the whole test; .819 for the verbal and .725 for the non-verbal tests, all significant at .01 level. The test was validated by comparing it with the scores on HSPQ on calculated dimensions (Cattell, 1979) which yielded a statistically significant correlation of .703 (N=100). It was also validated against teachers rating, the correlation coefficient of .532 being significant at .01 level.**

The major hypotheses of this investigation have been tested through the application of a 2x2x2 analysis of variance design. The three-way classification of ANOVA was done with respect to creativity, sex and locale. The factor of creativity was varied in two ways - the high creatives and the low creatives. This was further treated in two ways, boys and girls on sex, and rural and urban on locale.

The scores on the 'Creativity Test' were taken as criterion for classifying the students into the high and the low creative groups, the highest twenty percent constituting the 'high creative group' (N=140) and the lowest twenty percent forming the 'low creative group' (N=140).

Results

The *F* ratios for the main effect of the variable of creativity were found statistically significant for the personality factors A,B,C,E, H,I,J, and O. The prediction in hypotheses 1,2,3,5,8,9,10 and 11 stated in null form failed to find acceptance as the test of variance returned statistically significant results on the following personality factors

(i)	reserved-outgoing	(<i>F</i> =4.055 df=1/272 <i>P</i> < .01)
(ii)	less intelligent-more intelligent	(<i>F</i> =4.395 df=1/272 <i>P</i> < .05)
(iii)	affected by feeling - emotionally stable	(<i>F</i> =7.104 df=1/272 <i>P</i> < .01)
(iv)	obedient - assertive	(<i>F</i> =3.896 df=1/272 <i>P</i> < .05)
(v)	Shy - venturesome	(<i>F</i> =3.159 df=1/272 <i>P</i> < .05)
(vi)	toughminded - tenderminded	(<i>F</i> =2.901 df=1/272 <i>P</i> < .05)
(vii)	vigorous-doubting	(<i>F</i> =3.931 df=1/272 <i>P</i> < .05)
(viii)	placid-apprehensive	(<i>F</i> =4.571 df=1/272 <i>P</i> < .01)

The personality scores of the high and low creative students were further tested by applying the 't' test to know the nature and extent of relationship. The results revealed that the high creative had significantly higher mean scores than the low creative on personality factors A,B,E and J at .05 level, and on factors H and I at .01 level of significance. On factors C and O, however, the mean personality scores of the low creative group were higher than the mean scores of the high creative group and were found significant at .01 level.

On the basis of the above findings, it may be concluded that the above eight personality factors differentiated between the high creative and the low creative students. The high creative students were found to be superior to the low creative students in abstract thinking. They were also found to be assertive, affected by feelings, tenderminded, placid, doubting, venturesome and reserved. Thus, intelligence, sensitivity, independence, assertiveness and spontaneity have been observed as the significant correlates of creativity. The results corroborate with the findings of a number of other studies on creativity and personality (Taylor, 1959; Raychaudhari, 1965, Torrance, 1966; Joshi, 1974; Gakhar, 1975).

The sex differences in personality traits of the high creative students were analysed and it was found that the high creative boys differed significantly from the high creative girls on personality factors A,C,D and Q₄ at .05 level and on factor B at .01 level. The high creative boys possessed higher mean scores on factors A,C,D and B while the high creative girls scored higher than the high creative boys on factor Q₄. The results reveal that (i) the high creative boys are better oriented on affectothymia factor of personality than the high creative girls ($t=2.237$ $P < .05$); (ii) the high creative boys are superior in scholastic mental ability to high creative girls ($t=8.169$ $P < .01$); (iii) the high creative boys proved to have better ego-strength than the high creative girls ($t=4.074$ $P < .05$); (iv) the high creative boys are better oriented on phlegmatic-excitable characteristic of personality

($t=2.412$ $P < .05$); and (v) the high creative girls have higher degree of ergic-tension than the high creative boys and are tense, restless and take a poor view of the degree of unity, orderliness and leadership ($t=2.412$ $P < .05$).

Analysis of locale differences in personality factors of the creative students showed that the rural creative group had significantly higher mean scores on personality factor A, B, F, Q_2 and Q_3 . The results reveal that the rural high creatives when compared to the urban high creative group are more intelligent ($t=2.006$ $P < .05$), happy-go-lucky ($t=2.507$ $P < .05$), outgoing ($t=2.190$ $P < .05$), self-sufficient ($t=6.088$ $P < .01$) and controlled ($t=3.186$ $P < .01$). However, a comparison of personality factors of the rural and urban high creative girls showed that high creative girls from urban areas were found to be more intelligent, emotionally stable, conscientious and apprehensive than the high creative girls from rural background. The rural high creative boys were found to be outgoing, conscientious, tenderminded and self-sufficient as against their reserved, group-dependent and expedient urban counterparts.

Educational Implications

The research findings of the present investigation have great relevance with regard to the identification, fostering and guidance of the creative potential at the secondary school stage. The present study, apart from developing a test to measure the creative thinking ability among the tribal students, has identified a number of personality correlates of the creative students. Higher

scholastic ability and the assertive, adventurous and ~~spontaneous~~^{spontaneous} nature of the ^{high} creative clearly indicate that they are humming with mental and physical activities. A direct implication of this finding is an emphasis on providing responsive and favourable institutional environment so as to channel the exuberant creative energy.

The study has also revealed that the creative students are affected by feelings, and are tender-minded, apprehensive, and circumspect. These non-cognitive correlates of creative personality call for individual attention, guidance and counselling ^{necessary} for pupil development. Provision of differential promotions, special classes and schools, enriched and diversified curriculum, subgrouping within the class for individualised instruction etc., might be some of the strategies which could be incorporated in the national policy on education for the creative at the secondary stage. Further, the development of the creative potential can be ensured if the dogmatic, authoritarian, restrictive and pedantic influences are removed from the educational institutions. To take up the creative challenge in education, the system should develop individual initiative, a spirit of inquiry, and a taste for exploration instead of rote-memory, subject mastery and strict obedience among the students. Therefore, it is obligatory on the part of policy makers to enrich the educational programme in such a way as to cultivate the creative imagination among the students.

Suggestions for Further Research

Creativity research is still in its infancy in India. Studies on creative thinking abilities with special implications to education are needed to plan strategies and to qualify the present system of education for talent development. The study being the first of its kind in Mizoram has examined the personality factors of the high creative students at the secondary stage. A test to measure the creative thinking ability has also been developed. Thus, as a pioneering effort the study, no doubt, has evolved criterion for creativity testing and will help in the detection of talent in this tribal area. Beyond the problem of incorporating the findings of the present research into broader educational plans for cultivating the creative potential, the following other related issues seem promising and significant in fostering the talent which are recommended as further investigations :

- (i) Home environment as related to the development of creativity among the tribal students.
- (ii) Socio-cultural correlates of creativity with special reference to tribal pupils.
- (iii) Personality correlates of creativity among the arts, commerce and science college students.
- (iv) Effect of differential environment in the development of creative thinking abilities among pupils with different personality characteristics.
- (v) Parental perception and child rearing practices as related to the development of creativity among the tribal students.

- (vi) Development of teacher models and strategies for the development of creative thinking ability for the high school students.
- (vii) Curriculum innovation and enrichment for fostering creative potential at the secondary stage.
- (viii) Sex differences in the verbal and non-verbal creative thinking ability with implications to education.
- (ix) Creativity in relation to classroom climate and teacher behaviour.
- (x) Creativity as related to the achievement motivation, adjustment, and achievement among the secondary school students.

The creativity test developed in the study may be adapted for use on other tribal pupils in the North-East. Norms can be developed on different tribes. The test is likely to inculcate research interest in creativity and can thus be used as a scientific tool in the detection and fostering of creative talent among the tribals of the North-Eastern region.