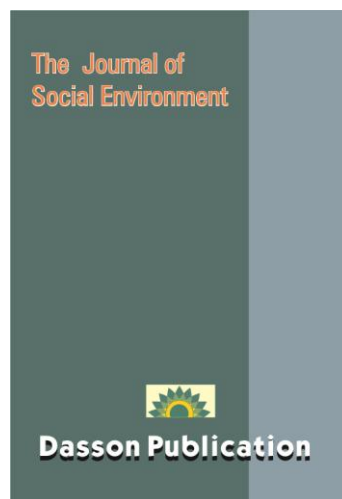


The Journal of Social Environment



Dason Publication

www.dasonpublication.com

Intelligence quotient as predictor of creativity among some higher secondary school students

Dr. S.Chandrasekaran

Abstract

This study investigated how Intelligence Quotient predicts general level of creativity and different components of creativity; Personality, Fluency, Originality, Flexibility and Creativity motivation among some higher secondary school students in Chennai and Tiruvallur district of Tamil Nadu state, India. A total of six hundred students were randomly selected from 15 schools in each district, 20 students in each schools total 30 schools the state to participate in the study. Two instruments were used to collect data they are: Student's Intelligence Test (SIT), and Students Creative Assessment Scale (SCAS). Data was analyzed using multiple regression analysis. Intelligence Quotient (I.Q) accounted for 9% of variance in creativity ($R^2=0.90$) this percentage is statistically significant. Also, I.Q should be considered in selecting students for tasks that involve creativity.

Key words: 1.Intelligence Quotient, 2.Personality, 3.Creativity, 4.Fluency, 5.Originality, 6.Flexibility, 7.Motivation.

Introduction

Creativity is a basic tool for progressive any society community. It is so important that any society that wants to make headway in any area of development must not lose sight of it. The conditions of modern day living; characterized by complexity and interdependence, technological and communication advances and rising expectations call for increased levels of creativity (Mar,1981) Getzels in Dingleline (2003) stated that creative thinking is the highest of mental functions and creative production, the peak of human achievement. At the very root of human progress is creativity.

The country is best with tremendous problems. According to Nwazuoke (1989), millions of people live in miserable conditions in life. The situation today is much more terrible when compared with the experience of Nwazuoke in 1989. The society needs creative talents to promptly attend to the resurging problems which emanate from miserable conditions of our time. The creative talents have the responsibility of transforming the economy so that the populace would benefit from the products of their creative genius.

As the society becomes more complex, there is a general increase in the awareness of people that yesterday methods do not effectively solve contemporary problems of the society (Akinboye, 1985). This is probably because innovations are needed in nearly all the facts of the society. It would appear therefore that creativity, imitativeness and originality are typical attributes needed to solve the variegated problems of the society. Similarly, the brain is believed to have a significant role in the creative ability of individuals. According to craft (2000), each of the two hemispheres of the brain appears to have its own area of specialization, and process information in its own way; and, of course; in the brain, the hemispheres communicate with each other through the corpus callosum; the mass nerve fiber which bridges the hemisphere. For the great majority of the population, it is left hemisphere that controls logical, linear thinking. This is the side that can compute mathematics, remember names, learn to read, memorize. By contrast, the other hemisphere is the part of the brain where metaphors are understood, where emotions are felt and where dreams, imageries and fantasy occur.

The left hemisphere of the brain is dominant for the following tasks: analytical, mathematical, verbal, linear, and literal. The left hemisphere may; then, be particularly good at convergent thinking. By contrast, the right brain appears to be dominant for the following activities; metaphoric,

imaginative, non-verbal, holistic (non-linear), spatial, musical, artistic, emotional, sexual, spiritual, and dreams. The right hemisphere may be particularly good at supporting 'divergent' thinking and creativity more widely. In general, the hemispheres work together in harmony; although often the right hemisphere is underutilized. And really it is this point of the hemisphere that important for teachers is how to find ways of fostering-creativity that feeds the right brain as well as the left, for all children.

In a study conducted by fuchs, Karen and others (1993) on the creativity and intelligence in preschools in which 496 children seeking admission to a special program for gifted preschools took part; it was found that creativity (as measured by the thinking creativity in action and movement scale) was significantly related to intelligence (as measured by standard I.Q tests) when IQs were less than 120 but was not related at higher IQ levels. Buller dieck (1985). Traced the history of defining giftedness and asserted that, despite the controversy, general intelligence, as measured on a standardized intelligence test, still provides the best single, reliable predictor of academic aptitude, task commitment, and creativity.

This study was therefore designed to investigate the influence of intelligent quotient on both general level of creativity and the different components of creativity; personality, fluency, originality, flexibility, and creative motivation among higher secondary school students. Specifically, the study sought to investigate the following hypotheses; intelligence quotient will not significantly predict the general level of creativity among students.

Intelligence quotient will not significantly predict each of the components of creativity namely personality, fluency, originality, flexibility and creative motivation among the students.

Research Design

This study adopted ex-post facto research design, the researcher does not control the independent variables either because they have already occurred or they are not manipulable.

Sampling Procedure and Sample

The target population for this study is all the Higher Secondary School +1 (HSS+1) students in Chennai and Tiruvallur district of Tamil Nadu state in India. Fifteen higher secondary schools were randomly selected from each district of Chennai and Tiruvallur. Twenty (20) students HSS+1 students were randomly selected from schools. A total of six hundred students were eventually selected to participate in the study.

Instrumentation

The following instruments were constructed by investigator and used to collect necessary data for this study. They are

- 1) Student's Intelligence Test (SIT)
- 2) Student's Creative Assessment Scale (SCAS)

Student's Intelligence Test (SIT): Student's Intelligence Test (SIT) was constructed and Validated by researcher (2010). It was designed and organized as a test of general intelligence. SIT is a multiple test prepared and adapted by investigator for this study. For example, certain words and items were used the investigator the content validity of the test (2010). The test is being used in this study to assess the intelligence quotient of the sample. The 1960 revision of the Stanford Binet (BS) intelligence test was used by investigator as the criterion in building his test and in establishing its validity. The validity and utility of the SIT thus appeared to be well established. Statistical comparisons of the Students (SIT) with other standardized test show the following correlation coefficients;

Students (SIT) with Stanford – Binet = 0.95

Students (SIT) with Wechsler (WISC) = 0.95

Students (SIT) with other achievement and IQ Test = 0.82

A high reliability coefficient of 0.96 (test retest interval within a period of two months) was obtained. SIT is an individual intelligence test like Wechsler intelligence test.

SIT is preferred to other IQ tests for this study because

1. It provide uniform conditions for norm
2. Its scoring is more objective
3. Its preferred for literate groups e.g. Higher Secondary students
4. It is not cumbersome to administer
5. Its language is very precise, clear and simple

Student’s Creative Assessment Scale (SCAS)

The SCAS was developed and validated by investigator in 2010. It is a battery of tests tapping certain creative pattern of behavior. The test has two brood divisions A-D and E-K. Section A-D has some items inform of statement to which the subject is expected to indicate on a ten-point scale the extent to which he/she agrees with each statement. While sections E-K are questions demanding answers from the subject to show his/her creative behavior through his/her responses. The section A-D comprises for sub-scales namely:

- A- Ideative Personality
- B -Ideative fluency
- C – Ideative originality
- D – Ideative flexibility
- E – Ideative motivation

Investigator (2010) used a sample of two hundred (200) subjects for each of the sub-scales as the psychometric properties of test construction. Thus, a subject with high scores in each of the subsections A, B, C, D and E indicate high creative ability.

Table1. Regression Summary table showing the effect of I.Q on creativity

	Sum of squares	Df	Mean sore	F	Significance
Regression	3582.225	1	3582.225	39.905	0.000*
Residual	41103.991	458	89.745		
Total	44686.216	458			

NB* = significant at) 0.05 level

Multiple R=0.284

Multiple R² =0.081

Adjusted R²=0.079

Standard Error of the Estimate = 9.479

Table2. Regression summary table showing relative effective factor (I.Q) on each of the creativity components

Creativity components	R	Multiple R square	Adjusted R square	Standard error of the estimate	F	Sig	Remark
Personality	0.289	0.089	0.089	2.9742	21.931	0.00	*
Fluency	0.272	0.074	0.074	2.3163	18.491	0.00	*
Originality	0.285	0.083	0.081	2.7496	20.430	0.00	*
Flexibility	0.227	0.053	0.051	2.4378	12.583	0.00	*
Creative motivation	0.284	0.082	0.090	2.5068	20.219	0.00	*

*Significant at 0.05 level of confidence

Furthermore, a score of seventy (70) On any scale indicates a minimum acceptable creativity in an individual. Investigator (2010) reported a construct validity of co-efficient alpha α of 0.76 for ideative personality; α of 0.93 fluency; α of 0.73 for ideative originality; α of 0.65 for ideative flexibility; α of 0.78 for ideative motivation, Test – retest reliabilities for each section after a period of four weeks fielded as follows:

- Personality scale A= r = 0.99
- Fluency scale A= r = 0.78
- Originality scale B= r = 0.77
- Flexibility scale C = r = 0.71
- Motivation scale D = r = 0.86

Moreover, face validity was ensured for each scale through item selection process. While the convergent construct validity within the scales were as follows:

- Ideative personality r = 0.91
- Ideative flexibility with originality r = 0.74
- Originality with fluency r = 0.88
- Originality with creativity motivation r = 0.74

Data Analysis

The data collected from the field were analyzed using inferential statistics of multiple regressions.

Hypothesis 1

It states that the Intelligence Quotient (IQ) will not significantly predict creativity of subjects.

In Table1, I.Q significantly predicts creativity among the subjects. The total variance accounted for the cognitive factor (I.Q) is 9% (i.e. multiple $R^2=0.090$). This implies that Intelligence Quotient is important when considering the factors that influence creativity of Higher Secondary School Students in Tiruvallur and Chennai district of Tamil Nadu, India.

Hypothesis2

It states that the Intelligence Quotient (IQ) will not significantly predict each of the components of creativity of the subjects. In Table 2, the multiple R^2 columns shows the total variance accounted for by each of the creativity components in the total performance of students in creativity. The highest contributory component to creativity is personality (Multiple R^2 is 0.089) and originality (Multiple R^2 is 0.084). This is closely followed by creative motivation (Multiple R^2 is 0.082). The followed by fluency (0.077) and lastly by flexibility (0.053). The contribution of each of the components is highest and the lowest contributors is 0.03(or3%) meaning that if a teacher is in a hurry to measure creativity; any test on any of these components can be taken as the performance of general creativity in the subjects

studied. Each of the components is good enough to measure creativity. I.Q significantly predicts each components of creativity.

Discussion

The cognitive (IQ) factor predicted creativity performance in this study. Though in many literatures the contrary is reported widely but the fact is that the value is very low i.e. 9% (Multiple $R^2=0.090$). The findings of researchers like Metcalfe (1978), Mckinney and Fornan (1977), Cacha (1976), Ward (1975), Goldberg (1974) and Williamson (1972) show very low correlation between intelligence and creativity scores in various tests. Therefore, the result of this study is not out of place. In fact Finch's, et al (1993), on the relationship between creativity and intelligence among preschoolers, found a significant relationship between the two. Bullerdick (1985) also asserted that despite the controversy, general intelligence, as measured on a standardized intelligence test, still provides the best single, reliable predictor of academic aptitude, task commitment and creativity. Nwazuoke (1996), Moore and Sawyers (1987), Runco and Albert (1986) and Treffinger and Renzulli (1986) equally emphasized above average in intelligence for creative individual but not necessary being gifted.

Conclusion

Creativity as used in this study has five components namely: - Personality, Fluency, originality, flexibility and creativity motivation. The relative effect of all variables considered in the study on each of the creativity components (Table2) indicated that the contribution of each of them is almost the same. Intelligence Quotient (I.Q) is a good predictor of creativity. It is advisable that employers of labor, government and teachers should look people on task, the teacher or the counselor should administer I.Q test in order to know whether the low performance can be explained by the student level of intelligence. Each of the creativity components is good enough to measure creativity among the students measuring that, if a teacher is in a hurry to measure creativity, any of these components can be taken as the performance on general creativity.

References

1. Cacha FB (1976). *Figural Creativity, Personality, IQ and Peer Denominations of pre-adolescent, the gifted child quarterly: 20*
2. Goldberg L (1974). *Personality Integration as determinant in the relationship intelligence. Dissertation Abs. Int. 35, 1494-A.*
3. Nwazuoke IA (1989). *Correlates of Creativity in High Achieving Nigeria Children. Unpublished Ph.D. thesis, Department of Guidance and Counseling, University of Ilorin, Nigeria.*
4. Gabhane, V.V., Sonune, B.A., Paslawar, A. N., Mali, D.V. and Harle, S. M (2016). *Response of green gram- safflower cropping sequence to phosphorus management in relation to yield, nutrient uptake and phosphorus use efficiency in Vertisols. Legume Research-An International Journal, 39 (1):61-69*
5. Gudadhe, N.N. (2008) *Effect of integrated nutrient management system in cotton-chickpea cropping sequence under irrigated conditions Ph.D. thesis submitted to M.P.K.V., Rahuri.*
6. Isherword, K.F (1998). *Fertilizer use and environment. In Proc. Symp. Plant Nutrition Management for Sustainable Agricultural Growth [N. Ahmed and A. Hamid (eds.)], NFDC, Islamabad pp. 57-76.*
7. Kogbe, J.O.S and Adediran, J. A (2003). *Influence of nitrogen phosphorus and potassium application in the yield of maize in the savanna zone of Nigeria. African J. Biotech. 12 (2):345-349.*

8. *Kuldeep, Singh. R. S., Manohar, A., Rakesh, Choudhary. Yadav. K and Sangwan, A (2015). Response of different sources and levels of phosphorus on yield, nutrient uptake and net returns on mungbean under rainfed condition .Agric. Sci. Digest, 35 (4): 263-268.*
9. *Preeti, Choudhary. Gautam, Ghosh. Neha and Shobha, Kumari (2015). Effect on yield and benefit cost ratio of green gram at different phosphorus levels and frequency of boron levels. Int.Journal.Curr.Microbiol.App.Sci, 12 (6):1095-1103.*
10. *Runco M, Albert RS (1986). The threshold theory Regarding Creativity and Intelligence. Creativity child and Adult Quarterly; 11, 212-218.*
11. *Ward W, (1975). Convergent and Divergent Measurement of Creativity in children Educational and Psychological Measurement; (35)*
12. *Parker, J.P. (1979), the predictive Validity of creativity and intelligence tests administered at age five. Unpublished Dissertation Abstract International, 39A, 345*