A STUDY OF INTELLIGENCE OF HIGHER SECONDARY SCHOOL STUDENTS IN RELATION TO GENDER AND AREA OF RESIDENCE

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Introduction

To be labeled as being ‘‘intelligent’’ imparts positive feelings, encourages self esteem and a sense of worth. Yet, what is intelligent and smart? This has been the focus of theories, definitions and philosophies dating as far back as Plato (428 BC); yet most presumably, dating prior to this historical figure, might be due to the fact that humankind is himself intelligent. One way to seek understanding of intelligence is simply to define what it is. Sternberg (1986) purports two principal classifications of definition of intelligence—the operational definition and the ‘‘real’’ definition. Operational intelligence is measurable. Real intelligence is one that inquires the true nature of the thing being defined. As with the plethora of definitions of intelligence, there are numerous theories of intelligence. From examining how smart one is to how to measure one’s smartness, how to measure how one is smart, thories have come and gone and some have endured to be pondered and proven over time.

Carroll (1993), to whom the author is indebted for the above information, reported that a similar symposium was convened in 1986 by Sternberg and Detterman to update the findings of the 1921 symposium. Twenty-five experts at the 1986 symposium came up with almost as many views of intelligence. Intelligence was described as "a quality of adapative behaviour" (Anastasi), as "the end product of development in the cognitive-psychological domain", as "a societal concept that operates in several domains - academic, technical, social, and practical" (Carroll), as "error-free transmission of information through the cortex" (Eysenck), as "acquired proficiency" (Glaser), as "mental self-government" (Sternberg). Carroll (1993) reported that "the symposium did not produce any definitive definition of intelligence, nor was it expected to" (p. 36). This second symposium did, however, reflect some of the newer views of intelligence, such as metacognition (the ability to understand and control oneself), emphasising the fact that views of intelligence are changing over time.

Theory of intelligence:

Thorndike’s multifactor theory: Thorndike believed that there was nothing like General Ability. Each mental activity requires an aggregate of different set of abilities. He distinguished the following four attributes of intelligence: (a) Level—refers to the level of difficulty of a task that can be solved. (b) Range—refers to a number of tasks at any given degree of difficulty. (c) Area—means the total number of situations at each level to which the individual is able to respond. (d) Speed—is the rapidity with which we can respond to the items.

Ceci’s Biological Theory Ceci (1990):

Proposes that there are multiple cognitive potentials. These multiple intelligence’s are biologically based and place limits on mental processes. These are closely linked to the challenges and opportunities in the individual’s environment. In his view, context is essential to the demonstration of cognitive abilities. By context, he means domain of knowledge and other factors such as personalities, motivation and education. Context can be mental, social or physical.

EYsenck’s Structural Theory:

Eysenck discovered the neurological correlates of intelligence. He identified three correlates of intelligence i.e. reaction time, inspection time and average evoked potential. First two are observed behavior. Third behavior, is description of mental waves. Brighter individual progressively takes less time in responding. They show less variability in reaction time. Their inspection time is also less as compared to less intelligent. Average evoked potential is often measured by the wavelength.

Anderson’s Theory: Cognitive Development

Anderson proposes that human cognitive architectures will have adapted optimally to the problems posed in their environment. Therefore, discovering the optimal solution to the problem posed by the environment, independent of the architecture, is equivalent to discovering the mechanism used by the architecture. A ‘Rational Analysis’, as it is called, takes into account the available information in the enviornment, the goals of the agent, some basic assumptions about computational cost (in terms of a ‘general’ architecture mechanism), and produces the optimal behavioral function. This function then of course can be tested empirically and

assumptions modified if it proves inaccurate. A contrasting point of view to this is espoused by Simon, and is centered around the claim that, in a rational analysis, the assumptions about the architecture actually do most of the work.

Review of literature:

Yadav (2014) conducted a study on "Emotional Intelligence, creativity and their impact on academic achievement of senior secondary class students". The major findings of the study were: i) there was no significant difference between the emotional intelligence of senior secondary class students of government and non-government schools and ii) there was no significant impact of creativity on the academic achievement of students who fall in 76 and above category and 51 and 75 category but there was a significant impact of creativity on the academic achievement of students who fall in 50 and below category.

Gakhar S.K and Wahi (1978) carried out a study on creativity and intelligence as predictor of academic achievement. The study samples were 150 girls Print to PDF without this message by purchasing novaPDF (http://www.novapdf.com/) 59 from three Government girls higher secondary schools out of which 109 retained. Instruments used were Torrence test of creative thinking, Jalota's test of intelligence, Raven's Progressive Matrices and final examination scores of eighth and ninth standard. Results were 43.78% of academic achievement variance can be attributed general intelligence and creativity.49.99% to verbal intelligence, 5.61% is non-verbal intelligence, 1.11% to verbal creativity and 1.48% to non- verbal creativity. It is concluded that both creativity and intelligence significantly predict academic achievement.

Singh et al. (2010) explored that academic achievement of adolescents with low spiritual intelligence were better than adolescents with average spiritual intelligence; male adolescents had higher academic achievement than females; academic achievement of adolescents studying in aided schools were better than adolescents studying in government schools; academic achievement of adolescents studying in unaided schools were better than adolescents studying in government schools.

Yadav R. (2000) studied the Vocational Preferences of Adolescents in Relation to their Intelligence and Achievement in Relation to their Intelligence and Achievement. Objectives: (1) to find out the vocational preferences of the study; (2) to find out the relationship of vocational preferences with intelligence and achievement. Method: Descriptive survey method as well as qualitative approach was adopted for the study. The sample taken was 200 intermediate students of four intermediate colleges of Agra, using probability sampling method for the study. The tools were R.K. Tandon's Group Test of Intelligence; Thurston's Interest Schedule; and Achievement Test used for data collection. Findings: (1) The students preferred administrative jobs than job related music and artistic. (2) Highly intelligent students prefer to go to jobs related to the area of physical sciences. (3) Average and below average intelligence groups did not differ significantly in any of the area.

Kaur M. (2001) studied Self-concept in Relation to Intellectual Variables, Objective: To find out correlation with the values of self-concept and independent variables such as intelligence, creativity and achievement of rural and urban schools. Method: Descriptive school survey method as well as qualitative approach was adopted for the study. A sample of 510 girls students (230 rural + 280 urban), studying in Class nine, from Punjab, using probability sampling for the study. Tools were used: (1) Children self-concept scale (Ahluwalia, 1986), (2) Group Test of General Mental Ability (Jalota, 1972), (3) Creative Activities Checklist (Torrance, 1982), and (4) Academic Achievement Test. Findings: (1) Variable of intelligence and creativity to be positively significant with self-concept in urban as well as in rural. (2) No correlation found between the variable of achievement and self-concept. (3) It is revealed that variable of achievement contributed 13.6% variance in predicting the self-concept of urban girls. (4) It is clear that conjoint effect of variable of intelligence creativity of achievement is higher in both the samples as compared to predicting the self-concept. Eight references were cited in the study.

Objective:

1. To study and compare intelligence between male and female higher secondary school students.
2. To study and compare intelligence between urban and rural higher secondary school students.
3. To study interaction effect between gender and area of residence in relation to intelligence.

Hypothesis:

1. There will be no significant difference between male and female higher secondary school students with regard to intelligence.
2. There will be no significant difference between urban and rural higher secondary school students with regard to intelligence.
3. There will be no significant interaction effect between gender and area of residence of higher secondary school students with regard to intelligence.

SAMPLE:
The random sampling technique was used for the selection of the sample. The sample was taken from the various schools of Ahmadabad City. The total sample was categorized as under:

Area of Residence	Gender		Total
	Male	Female	
Urban	60	60	120
Rural	60	60	120
Total	120	120	240

5. Variables:
In present study the nature of variable was given in the following table:

No.	Variables	Type of Variables	Levels of variables	Name of the variable
1.	Gender	Independent variable	2	Male Female
2.	Area of Residence	Independent Variable	2	Urban Rural
3.	Intelligence	Independent variable	1	Scores of Intelligence

Tools:
The following tool was used for data collection:

Intelligence Test:
This verbal intelligence test was constructed by R.K.Ojha and Ray Choudhary in 1958. This test measures the intelligence of the students of age group 9-16 years. It is verbal intelligence test. Item analysis was done on 800 students in the beginning. This test is an objective type intelligence test. It is used to test the general intelligence ability or intelligence. It contains eight parts and each parts consists of different number of questions. Different parts of this test are as (i) Classification; (ii) analogies; (iii) synonyms; (iv) Number Test; (v) Completion test; (vi) paragraph test; (vii) Best reasons; and (viii) simple reasons. For the standardization, this verbal intelligence test was done on 1200 students of age group between 13-20 years of class 9 to 12 standards.

Scoring:
For scoring the answer sheets, scoring key available in manual were used. Each test was scored very carefully. The raw scores were converted into normalised IQ score using the tables in manual for this test. The students were asked to fill in the information at the top of answer sheet. Then all the necessary instructions were given to students in accordance with the instruction given in manual. Time limits were strictly adhered to.

Reliability Coefficient of reliability was determined by (i) split half method (ii) Richardson formula.

Ability Tests Reliability	Reliability split Half Method	Reliability by Kuder Richardson Formula
V.I.T	0.87	0.91
V.I.T .1	0.81	0.89
V.I.T .2	0.86	0.88
V.I.T .3	0.71	0.73
V.I.T .4	0.74	0.88
V.I.T .5	0.65	0.68
V.I.T .6	0.58	0.79
V.I.T .7	0.79	0.81
V.I.T .8	0.75	0.83

Validity

The validity of different parts of this test was measured by analyzing the results on a sample of more than 2000 students use for standardization.

S.	Sub -tests	A	S	N	C	P	B	S
		II	III	IV	V	VI	VII	VIII
I	Classification	0.503	0.401	0.560	0.421	0.397	0.382	0.512
II	Analogies		0.501	0.493	0.491	0.461	0.480	0.390
III	synonyms			0.310	0.348	0.407	0.389	0.401
IV	Number test				0.501	0.421	0.497	0.501
V	Completion test					0.513	0.554	0.520
VI	Paragraph						0.437	0.396
VII	Best reason							0.574
VIII	Simple reason							

Procedure:

After established the rapport with participants intelligence scale was administered to each participants of the research. All the instructions were strictly followed which have been given in the manual of tool. After completion of data collection responses of each respondents of the research were scored by scoring key which have given in the manual of scale.

Statistical Analysis:

To find out main and interaction effect of two independent variables such as gender and area of residence two way analysis of variance was used.

Table No.

Showing Results of ANOVA on Intelligence Test of Various Groups of Higher Secondary School Students

Source of Variation	Sum of Square	df	Mean sum of Square	F	Level of Sig.
A (Gender)	290.65	1	290.65	11.13	0.01
B (Area of Residence)	1860.23	1	1860.23	71.27	0.01
A x B (Gender x area of Residence)	270.73	1	270.73	10.37	0.01
Error	6160.70	236	26.10		
Tss	8582.31				

In above Table we can see the results of ANOVA of intelligence test of various groups of higher secondary school students. F ratio for intelligence test of Gender (Ass) is 11.13 which is significant at 0.01 level. It means male and female higher secondary school students differ significantly on intelligence test. The mean scores of male higher secondary school students is 98.20, mean score of female higher secondary school students is 105.83. It clearly indicates that significant difference exists between male and female higher secondary school students on intelligence test. Female higher secondary school students have more intelligence than male higher secondary school students.

F ratio for intelligence test of Area of residence (Bss) is 71.27 which is significant at 0.01 level. It means urban and rural higher secondary school students differ significantly on intelligence test. The mean scores of urban higher secondary school students is 106.58, mean score of rural higher secondary school students is 109.05. It clearly indicates that significant difference exists between urban and rural higher secondary school students on intelligence test. Rural higher secondary school students have more intelligence than urban higher secondary school students.

In above Table we can see the results of ANOVA intelligence test of various groups of higher secondary school students. F ratio for intelligence test of gender and area of residence (AxB) is 10.37 which is significant at 0.01 level. It means gender and area of residence of higher secondary school students interact significantly on intelligence test. The mean scores of male urban higher secondary school students is 104.24, mean score of male rural higher secondary school students is 110.01, mean scores of female urban higher secondary school students is 109.63, mean score of female rural higher secondary school students is 106.10. It clearly indicates that significant difference exists between gender and area of residence higher secondary school students on intelligence test. Male rural higher secondary school students have more intelligence than remaining groups of higher secondary school students.

Conclusions:

1. Significant difference exists between male and female higher secondary school students on intelligence test. Female higher secondary school students have more intelligence than male higher secondary school students.
2. Significant difference exists between urban and rural higher secondary school students on intelligence test. Rural higher secondary school students have more intelligence than urban higher secondary school students.
3. Significant interact effect exists between gender and area of residence higher secondary school students on intelligence test. Male rural higher secondary school students have more intelligence than remaining groups of higher secondary school students.

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