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DIFFERENCES BETWEEN THE MALES AND FEMALES IN VERBAL REASONING AND NUMERICAL ABILITY

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ABSTRACT

Objective: To investigate the gender differences on numerical ability and verbal reasoning and social factors which influence on N.A & V.R.

Methodology: for this study Differential Aptitude test Battery (DAT). The sample of 136 students (62 females of 74 males) was taken from 1.E.R. Department of Punjab University. A short questionnaire was also administered to the subjects to find out their bio-data & social factors which influence on N.A & V.R. Between group design and purposive sampling was used.

Results: Z test was used to find out the differences between V.R & N.A. The results on V.R both males and females were Z - (1.78) n = (136) P> 0.05 which indicate that is insignificant difference between males & females. The results on N.A. both males and females were Z (2.67)

n = (136) P< 0.05 which indicated that there is significant difference between males and females.

Conclusion: The finding of this study the results are consistent with the reported by Benbow & Staley (1985, 1983) males have high scores in math's numerical ability than females. Whether (1981) reported female's superiority to some extent on verbal reasoning.

Key words: gender differences, Numerical Ability, verbal reasoning

1. INTRODUCTION

"Gender" is a grammatical term need to. Investigate the differences among males and females. It is known that male is different from women not only in their appearance but also in

developmental process. Gender also emerged as the term of choice in discussion of male/female differences identity, societal roles.

lt is believed that boys can do better in mathematics and physics than girls, however according to hyde (1981) the gender Iinked differences in these areas are quite minimal. In a study conducted by JacquelYnne Eccles (1982), it was found that parent attribute good performance of their boys in maths to their high ability and if their daughters do equally well, they attribute it to their work hard.

Gender differences are in motives, attitude, interests and behavior. It begins to crystallize by the time the child is of 5 years (Mussen, Conger, Kagan & GeiWitz, 1979). For one thing children show a strong preference for playing with toys that are "appropriate for their gender. (Blackmore and ocejnik, 1979). Showed that by about two years of age, boys show a preference for male toys, regardless of how the toys are labeled, whereas girls show a preference for female, toys at a later age and are more Influenced by whether toys are described as going for boys or girls.

Gender differences become more numerous more highly differentiated, and more stable as children develop. For instance, Block (1976) found that the percentage of investigations

reporting reliable differences between the sex increases with the age of the subject. Block, Marianne (1987). Conducted a research on "The development of Gender differences in young

children's activities at home". He found that there were fewer in activities and activity partner than expected. Girls spent most of their time engaged in house Work and social activities than boys. While boys spent more time in social grass motor play with other children and in sell Care activities.

1.1 Social View of Gender Differences

The social perspective sees gender as a culturally learned pattern of thought and behavior social expectations vary for each sex, resulting in different roles for men and women in society.

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Several researches indicate that males and females differ on various aspects of intellectual performance.

1.2 Opportunities to Learn

Researches indicate that Child's Contact with adults influences his language development so assumption about girls early verbal Superiority may be due to their spending more time

with adults. Because pre schooling girls are kept at home, while boys are allowed to go out to play with age-mates. Therefore, girls have more opportunity to develop language skills.

Similarly, it is suggested that boys have statical and perceptual-analytic ability because they have more opportunity to manipulate objects.

1.3 Identification & Modeling

It has been thought that girls may be more verbal and boys more quantitative because children tend to mode themselves primarily upon the same sex parent. Since mothers are more

verbal and fathers are more skilled at quantitative tasks, therefore. modeling the same Sex pattern will produce different abilities in boys and girls.

1.4 Problem Solving and Intellectual Mastery

Males tend to take a more analytical independent approach to problem solving than female. Males tend to show a greater preference for science and mathematics, while females more often move toward the arts and humanities (Kagan, 964).

1.5 Expression Of Standard Through Games

According to Carims: "It should not be surprising to learn that boys and girls typically prefer to play different kinds of games (Weisler and Mecall, 1976). What may be surprising is that play

actively preferences appear to be the most reliable may to distinguish between boys and girls in terms of behavior" (Carins, 1979, p. 276).

Males have greater interest in playing such games as soldiers, Cops-and-robbers contact sports and in using tools and building things such as radios and model air planes. In contrast, girls show a significantly greater preference for playing with dolls, dressing up, playing house, and activities such as hopscotch, stoop tag and jumping rope (Rosenberg & Sutton smith, 1964)

In our society it is assumed that females are good teachers due to their worm and affectionate behavior. Similarly, males are assumed to be more suitable for Army and Air

Force as having better control over their selves than Women.

1.6 Numerical Ability & Verbal Reasoning

Numerical Ability & verbal reasoning are two of the eight tests of Differential Aptitude Test Battery (D.A.T) "Measured by vocabulary test requiring examine to Indicate which two words in each set have either the same or either the same or opposite meaning". Numerical ability includes both computation and arithmetic reasoning test. (Anastasi, 1982, p. 379). The numerical ability test is a measure of the student's ability to reason, and to deal intelligently with quantitative materials. The verbal reasoning test may be expected to predict with reasonable success in fields where complex verbal relationships and concepts are important.

2. METHODOLOGY

Methodology includes the detail of the procedure for the selection of the sample and the construction & administration of the of data collection. In this study between group research design was used. purposive sampling technique was used because this Sampling technique does not involve any random selection process and guarantee that certain elements will be included that are relevant to research design. the sample was selected on the basis of students of l.E.R. of Punjab University. The sample was consisted of 62 females and 74 males including. (N= 136)

Female Students

34 females from elementary education part (1)

28 females from secondary education part (1)

Male Students

41 males from elementary education part (1)

33 males from secondary education part (1)

Independent Variable

In this research gender differences were independent variable.

Dependent Variable

In the research Numerical Ability and verbal reasoning were dependent variables.

The other variables like age, family, background, birth order, family size was also included.

2.1 Hypothesis

2.1.1 Null hypothesis was that, Ho =

i. There is no difference between males and female Scores on Numerical ability.
ii. There is no difference between Male and Female Scores on verbal reasoning.

2.1.2 Research hypothesis were that, HA =

i. There is difference between male and female on Numerical ability.
ii. There is difference between male and female on verbal reasoning.

2.1.3 Instrument

The instrument was used

i. Questionnaire
ii. Numerical ability and verbal reasoning subtest from Differential Aptitude Tests (D.A.T) battery.

2.2 Construction of Questionnaire

The questionnaire was constructed in English. It was consisting of 15 items. Items of the questionnaire were constructed in a way to find out biographic data of subjects and the social factors that lead to the numerical and verbal ability.

2.3 Differential Aptitude Test (D.A. T) Battery

D.A.T. battery b George K. bonnet, Harold g. Seashore, Alexandery g. Wesman

It was developed in 1947 to provide an integrated scientific and well standardized procedure for measuring the abilities of males and females for the purpose of educational and vocational guidance. Each test has two parallel forms "A" and "B and V.R. and N.A. were taken from D.A.T. battery and from "B was used. Verbal and Numerical abilities of students were assessed on the basis of these tests.

2.4 Pilot Study

Before starting the actual research, a pilot study was conducted for the purpose of selecting the appropriate questions from the questionnaire. Ambiguous and difficult item were removed and new items were adding. Simply pilot study was carried out to find out the reliability and validity of questionnaire.

3. PROCEDURE

The total sample was divided into four parts in order to administer questionnaire, verbal reasoning and Numerical ability subset form D.A.T. battery. This division was in the following way. Females of elementary education, males of elementary education. Females of secondary education and males of secondary education. The test was administered to the subjects in the Waheed Shahid Hall of institute of educational Research (I.E.R.). First of all, consent was taken from all subjects individually. They were seated in Hall at appropriate distance. They were provided with the booklets, answer books, pencils and rubbers.

N.A. and V.R. tests were on the same booklets. First of all, they were asked to attempt N.A. test was provided with important instruction prior to it. Duration of the test was 30 minutes. After it they were asked to attempt V.R test. Subjects were provided with important instructions before starting the test. There was no uniformity in style of instructions because they were given by different researchers. After completion of both tests the subjects were administered short questionnaire of 15 items. So, the same procedure was repeated with the three other groups.

3.1 Statistical Analysis and Results

The mean, standard deviation standard error of difference and value of males and females on numerical ability are summarized in table-1.

The results presented in table shows that the calculated Z value (Z = 2.6N = 136P < 0.05) indicates that there is a significant difference between the scores of males and females on numerical ability. So null hypothesis is being rejected.

The mean, standard deviation, standard error of difference and Z value of males and females on verbal reasoning are summarized in table-2.

The result presented in the table Z value (Z=1.78N = 136, P > 0.05) indicates that there is no significant difference between the scores of males and females on verbal reasoning. So, the null hypothesis is being accepted.

Abbreviation

N=Total number of students.

N=Mean.

SD=Standard deviation.

SE (Diff)=Standard error difference.

Z=Z Calculated value.

P=Probability

Table 1

Genders	N	X	SD	SE (Diff)	Z	P
Male	74	11.61	8.13	1.32	2.67	P<0.05
Female	62	8.09	7.23			

Table 2

Genders	N	X	SD	SE (Diff)	Z	P
Male	74	-0.34	3.006	0.767	1.78	P<0.05
Female	62	-1.71	5.38			

4. DISCUSSION

The finding of the present research is consistent with the reported by Benbow & Staley (1985, 1983) males have high scores in math's ability than females. Whether (1981) reported female's superiority to some extent on verbal ability.

In this research, demographical characteristic of sample (that is background family size, birth order age and the medium of instruction) were also studied. The purpose of the study is to determine the influence of variables on numerical ability and verbal reasoning of male and female.

The results of numerical ability test of males and females (NM = 11.61 and NF = 9.09) are quite better, while as the results of verbal reasoning test of males and females (NM – 0.34 and NF = -1.71) respectively) are very low.

Firstly, data shows that mostly students both males and females (males 75.7%, females 90.3% got their previous education in Urdu. Secondly, the families of the students are not well educated.

Mills Ablard & Stump conducted a research on "Gender Differences in Academically Talented Young Student's Mathematical Reasoning" The sample consisted of 2,568 students in grades 2-6. These subjects were given a test of mathematical reasoning ability. Boys performed better than girl Maccoby & Jacklin (1974) reviewed more than 2,000 books and articles on "gender differences in social behavior and intellectual ability". They found that the sexes don't differ in term of sociability. However, males appeared to be more aggressive than females and performance better on visual-spatial tasks as well as in mathematics. On the other hand, females appeared to be better in verbal abilities.

Kramer conducted research on "Sex differences in verbal learning". The sample consisted of 68 males of 68 females were aged 20-65 years. They were administered "California verbal learning test" to examine sex differences in recall, recognition and learning characteristics. The results indicate that females displayed higher level of immediate recall than males.

Maccoby & Jacklin reported four reliable sex differences

i. Girls tend to perform better on tasks Involving verbal skills.
ii. Boys tend to score higher on tasks Involving mathematical abilities.
iii. Boys tend to do better on tasks Involving perceptual spatial skills.
iv. Boys tend to show more aggressive behavior than girls.
v. In a research Conducted by Dornbusch (1974), Fennemal and Shevman (1977, 1978), Wise and Steel and Mac Donald (1978), It was found that at the age of 13 or 14 boys give more momentous and importance to math than girls.

5. LIMITATIONS

To conduct the research there are following limitations.

i. It was not possible to assign the subjects randomly because of the small size of population.
ii. The sample was taken from only two classes of 1, E. K. department University of the Punjab so the results cannot apply for all the male and female students in the University. The tests were in English language and in our society few people can speak and write English.
iii. The tests were used of American version and they are standardized on American population not in Pakistan differ significantly population because two populations from each other.
iv. The motivation of Subjects IS also affected on scores. Some students did not take the test seriously.
v. Irksome or Fatigue effect also be involved in current research.

RECOMMENDATIONS

i. Use a relatively large sample. So that the results can be generalized.
ii. The two test N.A. & V.R. of D.A.T. Battery test should be adapted for Pakistani students.
iii. The item (in the verbal reasoning test) which is Culture biased especially foreign culture, should be replaced.
iv. The item analysis of both verbal reasoning and numerical ability test should be a continuous process, so that these can be improved.
v. The numerical ability test should be administered on males before the administration of the verbal reasoning test, the verbal reasoning test should be administered on females before the administration of the numerical ability test so that the fatigue effect can be controlled.
vi. These tests should be used in Urdu language, so that every One can understand easily and by using norms based on Pakistani population.

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