

SCIENTIFIC APTITUDE AND INTELLIGENCE AS CORRELATES OF PERFORMANCE OF STUDENTS IN PRE MEDICAL ENTRANCE TEST

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Abstract

Scientific aptitude is construct of interacting hereditary and environmental determinants producing predispositions or abilities. We can identify to an extent, certain, not all, characteristics possessed by individual who succeed later in scientific endeavor. Scientific aptitude is necessary for pupils to pursue science education. Without having sizable amount of scientific aptitude, one cannot have science education properly, and of course even one cannot adjust in the daily life. It helps in improving the performance of the child in competition examination. So every student of medical stream should possess good scientific aptitude.

Keywords

Scientific Aptitude; Intelligence; Pre Medical Entrance Test

Introduction

Science plays a major role in present age to satisfy the needs and desires of the people and it has also become one of the major human activities. The search for truth became the dominant motive in the prosecution of science. It has been pursued for so many centuries and attracted even wider extent of attention of very persisted group of people.

Science is observation of natural events and conditions in order to discover facts about them and to formulate laws and principles based on facts. It is organized body of knowledge that is derived from such observations and that can be verified or tested by further investigation.

Ultimate purpose of science is to discover the order that exist between and amongst the various facts. Science alone of all the subjects contains within itself the lesson of the danger of belief in infallibility of the greatest teachers in the preceding generation.

Science is intellectual activity carried on by human that is designed to discover information about natural world in which humans' lives and to discover the ways in which this information can be organized into meaningful patterns. A primary aim of science is to collect facts (data).

Intelligence has been defined in different ways including the abilities for abstract thought, understanding, communication, reasoning, learning, planning, emotional intelligence and problem solving. Intelligence is most widely situated in humans but has also been observed in animals and plants.

We can say that intelligence is indicator of the ability to cope successfully with novel situation. We can say intelligence is capacity to learn. Psychologists differ among themselves in defining intelligence. But they agree in reading it as the ability:

1. To carry on the high process of thinking
2. To learn
3. To adapt oneself to noval situation.

Intelligence in education is the ability to learn and understand or to deal with new or challenging situations. Intelligence is thought of as driving from a combination of inherited characteristic and environmental factor. It is the capacity to acquire and apply knowledge, especially toward a purposeful goal

Aptitude may be described as the special ability or specific capacity distinct from the general intellectual ability which help an individual to acquire the require degree of proficiency or achievement in a specific field.

Aptitude for science is called scientific aptitude. Scientific aptitude is complex of interacting hereditary and environmental determinants producing predisposition and abilities in science. The usefulness of the aptitude testing for assessing the identification of potentially talented students at school level was highlighted by Robbin Robert. According to him scientific aptitude begin to germinate by about 12+ to 13+ and tend to be developed in the full form by about 15+ and 18+.

Scientific aptitude is a potentiality of a future accomplishment in science without regard to past training and experience. An individual with right aptitude towards science develop better scientific aptitude which is very useful in selecting a career. Without right aptitude toward a subject one cannot master or show any interest in a subject, likewise without good scientific aptitude individual cannot perform good in science. Factors such as physical, social, emotional, character, interest, abilities, are considered necessary for development of scientific aptitude.

Academic achievement refers to knowledge attained and skills developed in school subject which are assessed by educational authorities with the help of achievement test, which may be standardized or non standardized. In one's life academic achievement is highly valuable as intelligence capabilities of an individual. This area is assessed by scholastic achievement. Academic achievement is product variable which gets tanned up or hugged down by positive or negative influence of hosts.

Marks obtained in particular subject in examination are called achievement of that subject. Marks obtained in science are called achievement in science. Science achievement is of two types. High science achievement accounts for academic success in science and low science achievement accounts for failure in science.

Achievement specially in science in this competitive world is instrument which helps the student in making adjustment. It is a multidimensional phenomenon, so difference in achievement cannot be attributed to single factor only but it results from a number of factors such as intelligence, socio-economic status, emotional pressure, motivation, scientific interest, scientific aptitude, scientific creativity and such other factors.

OBJECTIVES OF STUDY

1. To study the relationship between scientific aptitude and performance in PMET.
2. To study the relationship between intelligence and performance in PMET.
3. To study if sex differences exist in scientific aptitude.
4. To study if sex differences exist in intelligence.

HYPOTHESES

1. There is significant relationship between scientific aptitude and performance in PMET.
2. There is significant relationship between intelligence and performance in PMET.
3. Sex differences do not exist in scientific aptitude of boys and girls.
4. Sex differences do not exist in intelligence of boys and girls.

METHODOLOGY

Sample

Present study includes 180 students studying in different medical colleges who have recently passed the PMET. Sample selection will follows randomized sampling technique.

Research Design

The present study is designed to study the scientific aptitude and intelligence as correlates of performance of students in PMET. For this purpose score of intelligence test and score of scientific aptitude shall be related with high average and low scores of students in PMET representing boys and girls having urban rural background.

This study will proceed by following the normative research as the method of study. The word "survey" indicates that collection of data regarding the current conditions. The word normative is used because surveys are frequently made for the purpose of ascertaining what is the normal or typical condition or practice at present time. In present study investigator intends to survey the effect of scientific aptitude and intelligence with performance of students in PMET. Therefore normative survey is best suitable method to proceed in present study.

Tools

1. Intelligence Test by Dr. R. K. Tandon
2. Scientific aptitude by S. Chatterji and Manjula Mukherjee

Review of Literature

Thakur (1972) conducted a study on 780 science students of class XI he found that correlation between achievement, motivation for boys only, group performance of boys was found to be superior that of girls in all branches.

Nagose (1984) conducted study on a sample consisting of 424 junior college students; 153 from science stream, 159 from commerce stream and 117 from arts stream. He concluded that high scholastic on high aptitude (intellectual abilities).

Pillai (1986) reported that through biology achievement of secondary pupils can be predicted by given intelligence and scientific aptitude of the subjects the contribution of intelligence was found to be more than that of scientific aptitude which was comparatively low. In another study by the same research on the interaction effect of scientific aptitude and attitude towards science on biology achievement, it was found that the two variables contributed independent to the biology achievement showing no significant and interaction between scientific aptitude and attitude towards science.

Kumaran (1997) conducted a study to assess the aptitude of students undergoing B.Ed. Degree course in the institute of correspondence education of the university of Madras and found that almost all the students had more aptitude towards teaching and the female students had better aptitude than their male counter parts.

Sharma (2007-2008) studied scientific creativity and scientific aptitude as predictors of achievement in science and found that scientific creativity and scientific aptitude has emerged as a good predictor of achievement in science.

Ranjit Pal (2004-2005) a study of scientific creativity and scientific aptitude as correlates of academic achievement in science find that there is positive and significant correlation between these.

Sandeep (2010-2011) relationship of academic achievement with emotional intelligence and anxiety among secondary school students.

Table 1

Showing Correlation among Intelligence, Scientific Aptitude and Scores in PMET (N=160)

Sr. No.	Variables	Correlation
1.	Intelligence and scores in PMET	0.70
2.	Scientific aptitude and scores in PMET	0.36

The Table 1 reveals that the value of 'r' came out to be 0.36 which is significant at 0.05 level (df=158). Moreover, the positive correlation is an indication that an increase in scientific aptitude is significantly related to performance in PMET. Hence our hypothesis that there is a significant relationship between scientific aptitude and performance in PMET stands accepted.

The close examination of table 1 show that the value of 'r' came out to be 0.70 which is significant at 0.05 level (df=158) moreover, the positive correlation is an indication that an increase in intelligence is significantly related to performance in PMET. Hence our hypothesis that there is a significant relationship between intelligence and performance in PMET stands accepted.

Table 2
Showing Mean, S.D., 't' Value for Scientific Aptitude of Boys and Girls

Standards	N	Mean	S.D.	S.E.D	't' ratio	Inference
Boys	80	47.38	10.05	1.79	1.39	Insignificant at 0.05 level
Girls	80	52.04	12.54			

A careful glance at the result of table 2 reveals that mean score of scientific aptitude of boys and girls is 47.38 and 52.04 respectively. Further 't' value of the magnitude 1.39 show that it is less than the table value at 0.05 level, so it is insignificant. The pictorial view of mean scores of boys and girls is given in bar graph.

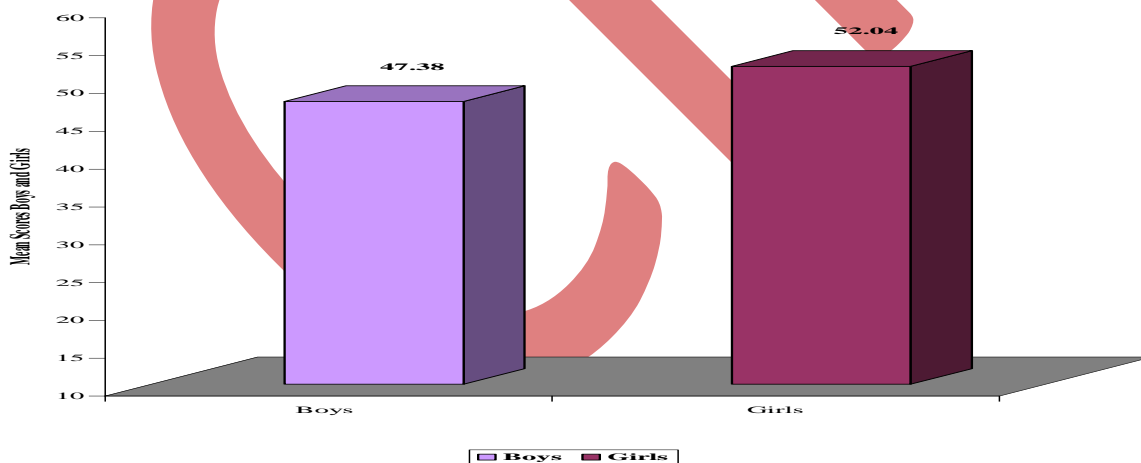


Fig. 4.1: Mean Scores of Scientific Aptitude of Boys and Girls

Table 3
Showing Mean S.D. 't' value for Intelligence of Boys and Girls

Students	N	Mean	S.D.	SED	't' ratio	Inference
Boys	80	52.47	11.40	1.59	2.75	Significant at 0.05 level
Girls	80	48.09	8.62			

A careful glance at the result of table 3 reveals that mean score of scientific aptitude of boys and girls is 52.47 and 48.09 respectively. Further 't' value of the magnitude 1.59 show that it is less than the table value at 0.05 level, so it is significant. The pictorial view of mean scores of boys and girls is given in bar graph.

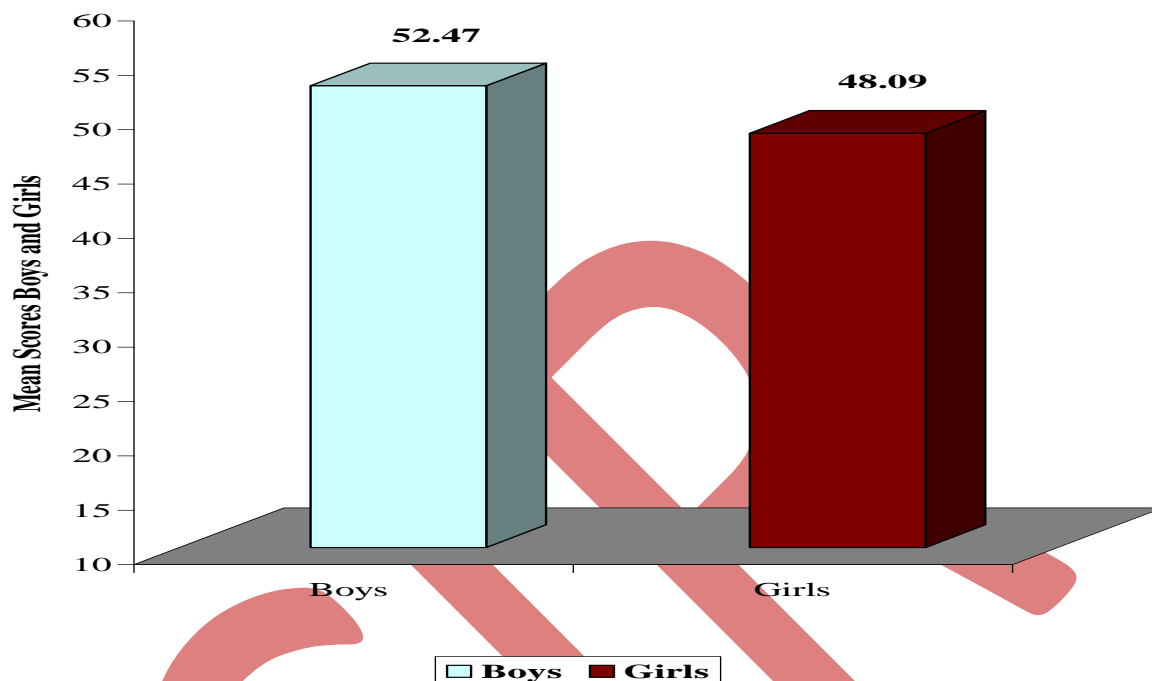


Fig. 4.2: Mean Scores of Intelligence of Boys and Girls

Conclusion

The present study has resulted in drawing the following conclusion which may be utilized in improving the present state of achievement of students. The scientific aptitude in boys and girls was average and the distribution of it was also normal in both cases. As the parents are now-a-days treating either sex equally, so there is no difference in scientific aptitude possessed by both boys and girls but still. Since boys have greater chances of exposure to scientific affairs than their counterparts. Though there seem no differences in boys and girls, proper measures should be taken to promote scientific aptitude in them equally, considering there position, potentialities, perceptions, problem and feasibilities.

The impact of science and technology is visible everywhere. Science has influenced every aspect of man's existence. It is essential to understand science as it is useful to live successfully. Every citizen should have knowledge about the physical and biological world in order to take intelligent decisions and for attacking solving personal as well as environmental problems.