

Cognitive Abilities Of Higher Secondary Students In Southern Districts Of Tamil Nadu

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Abstract

Cognition is concerned with how a individual perceives and acts in the world. It's a set of mental abilities or processes that have a role in practically every human action we do when awake. Cognitive skills are the abilities to solve problems, adapt to and learn from everyday life experiences. The study investigated the cognitive abilities of higher secondary students in southern districts of Tamil Nadu (Kanniyakumari and Tirunelveli). The sample size consisted of eight hundred and twenty seven higher secondary students from Kanniyakumari and Tirunelveli districts. The test of cognitive abilities (2019) developed and validated by the investigator was used to collect data. The findings of the study indicated a significant difference between higher secondary students from Kanniyakumari and Tirunelveli districts in their cognitive abilities. Also, a significant difference is found among male and female higher secondary students of Kanniyakumari and Tirunelveli districts in their cognitive abilities.

Key words: Cognitive abilities, southern districts, higher secondary students.

Introduction

Education gives us different kinds of knowledge and skills. It is a continuous, slow and reliable learning process that helps us to gain knowledge. It is a continuous process that begins at birth and ends at the end of our lives. Education develops the knowledge, skills, and abilities needed to continuously participate in intellectually challenging activities (eg, reading, writing, problem-solving and reasoning, etc.).

In this present technological era, the basic goal of education is to develop the pupils' knowledge and skills that are necessary to think critically and solve complex problems, so that they will become socially independent. Cognitive abilities are brain-based skills we need to carry out any task from the simplest to the most complex. They have more to do with the mechanisms of how we learn, remember, problem-solve, and pay attention, rather than with any actual knowledge. Cognitive ability testing is effective in improving learning and performance outcomes of learners. Some of the findings revealed that Cognitive ability can be used to predict future academic achievement (Cormier et al.,(2016); Chong.,2016; Sambo.,2015;Warnimont.,2010; Kettler.,2012; Proctor., 2012 ; Taub.,2008; Emilio and Mcardle., 2004).

The growth and development of the mental abilities help an individual to adjust the behaviour in ever changing environmental conditions and also enables oneself to accomplish the task that needs complex abilities that begin at birth and continue till early adulthood. These abilities increase with age and significantly affected by biological and environmental factors such as heredity, sense organs, intelligence, maturity, learning opportunities, economic status, health facilities, family and society. Adolescence is the phase of shaping one's personality with high ideals. It is very sensitive age of their lives where they have to take decision for their future. Higher secondary education serves as a foundation for future education and initial pathway for university or higher education. Thus at this stage it is very essential to identify and understand their capabilities and to decide upon subjects which are suitable for them according to their own efficiency. Choosing a particular stream right at the beginning has a long lasting impact on student's future. When students enter into secondary education they begin to understand about their interest more clearly and start their journey to specialize in a particular field.

Objectives

1. To find out the level of the cognitive abilities of higher secondary students in southern districts of Tamil Nadu (Kanniyakumari and Tirunelveli).
2. To find out whether there is a significant difference in the cognitive abilities of higher secondary students in southern districts of Tamil Nadu (Kanniyakumari and Tirunelveli).
3. To find out whether there is a significant difference in the cognitive abilities of higher secondary students in southern districts of Tamil Nadu based on background variables gender and locality.

Hypotheses

1. There exists a significant difference in the cognitive abilities of higher secondary students in southern districts of Tamil Nadu (Kanniyakumari and Tirunelveli).
2. There exists a significant difference in the cognitive abilities of higher secondary students in southern districts of Tamil Nadu based on background variables gender and locality of school.

Methodology

Normative survey method was adopted for collecting data. The sample consisted of eight hundred and twenty seven higher secondary students from twelve schools in southern districts of Tamil Nadu (Kanniyakumari and Tirunelveli). A validated Test of Cognitive Abilities prepared by the investigator (2019) is used for the study. It consists of 72 items with four dimensions namely verbal reasoning, numerical reasoning, non-verbal reasoning and spatial reasoning. Each item is provided with multiple choices. The minimum and maximum scores were 0-72 respectively. The data were analysed using percentage analysis and t test.

Analysis and Interpretation

Table 1- Percentage distribution of cognitive abilities of higher secondary students in Kanniyakumari district

Cognitive Abilities	Count	Percent
Low	58	13.78
Moderate	310	73.63
High	53	12.59
Total	421	100.00

It is inferred from the table 1, that 13.78 % of higher secondary student have low level of cognitive abilities, 73.63 % is with moderate level of cognitive abilities and 12.59% have high level of cognitive abilities.

Table 2- Percentage distribution of cognitive abilities of higher secondary students in Tirunelveli district

Cognitive Abilities	Count	Percent
Low	60	14.78
Moderate	281	69.21
High	65	16.01
Total	406	100.00

It is inferred from the table 2, that 14.78% of higher secondary student have low level of cognitive abilities, 69.21 % students possess moderate level of cognitive abilities and 16.01% have high level of cognitive abilities.

Table 3- District wise comparison of cognitive abilities of higher secondary students

Cognitive Abilities	Mean	SD	N	t	p
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Kanniyakumari	182.29	17.94	421	8.573	0.000
Tirunelveli	171.15	19.37	406		

Table 3 shows that the obtained t value is 8.573($p < 0.01$) which is significant at 0.01 level. Hence there exists a significant difference in the mean scores of higher secondary students from Kanniyakumari and Tirunelveli districts in their cognitive abilities. The mean score of students from Kanniyakumari district in cognitive abilities is 182.29 which is higher than the students from Tirunelveli district whose mean score is 171.15. The students from Kanniyakumari district is found to have high cognitive abilities than the students from Tirunelveli district.

Table- 4 Gender wise comparison of cognitive abilities of higher secondary students

Cognitive Abilities	Kanniyakumari			Tirunelveli			t	p
	Mean	SD	N	Mean	SD	N		
Male	174.8	17.37	147	166.7	18.70	262	4.390	0.000
Female	186.3	16.95	274	179.2	17.9	144	3.907	0.000

Table 4 shows that there exists a significant difference between male higher secondary students from Kanniyakumari and Tirunelveli districts in their cognitive abilities. The male students from Kanniyakumari district is found to have high cognitive abilities than the students from Tirunelveli district. The obtained t value for female is 3.907 which is significant at 0.01 level. So there exists a significant difference between female higher secondary students from Kanniyakumari and Tirunelveli districts in their cognitive abilities. The female students from Kanniyakumari district is found to have high cognitive abilities than the students from Tirunelveli districts.

Table-5 Locality wise comparison of cognitive abilities of higher secondary students

Cognitive Abilities	Kanniyakumari			Tirunelveli			t	p
	Mean	SD	N	Mean	SD	N		
Rural	174.2	14.57	137	163.7	19.6	201	5.652	0.000
Urban	186.1	18.15	284	178.4	16.1	205	4.982	0.000

Table 5 shows that there exists a significant difference between higher secondary students from rural area of Kanniyakumari and Tirunelveli districts in their cognitive abilities. The students

from Kanniyakumari district are found to be higher in their cognitive abilities than their counterparts from Tirunelveli district. From the table the obtained t value for higher secondary students from urban area is 4.982 which is significant at 0.01 level. So there exists a significant difference between higher secondary students of urban area in Kaniyakumari and Tirunelveli districts in their cognitive abilities. The students of Kanniyakumari district who belong to urban area are found to be higher in their cognitive abilities than the secondary students from Tirunelveli districts.

Findings

The higher secondary students of Kanniyakumai and Tirunelveli districts are found to have moderate level of cognitive abilities. While comparing with the mean scores of cognitive abilities of higher secondary students from Kanniyakumari and Tirunelveli districts, the students of Kanniyakumari stood higher in their cognitive abilities than the students from Tirunelveli district. When the males are compared it is found that the students of Kanniyakumari district have higher cognitive abilities than the male students of Tirunelveli district. When the females are compared it is found that the students of Kanniyakumari district exhibited higher cognitive abilities than the female students of Tirunelveli district. A significant difference exists between the students of rural and urban area in Kanniyakumari and Tirunelveli districts. The students of urban as well as rural area from Kanniyakumari district showed higher level of cognitive abilities than the students from Tirunelveli district.

Conclusion

Cognitive abilities can be developed through lifestyle and targeted practice. Some cognitive abilities, particularly executive functions and those which are not used on a daily basis, tend to deteriorate as people get older. Fortunately, studies suggests that with the right lifestyle choices and behaviours, deterioration can be slowed down and low cognitive ability can be improved. Strategies to improve cognitive abilities of students are physical activity, openness to experience, develop curiosity and creativity, social connections, mindfulness meditation, brain-training games, get enough sleep, visualizing more, playing memory card games, practicing crossword puzzles, completing jigsaw puzzles and learning new skills so on. Therefore students should be encouraged and motivated to share their ideas and thought with the teachers and also make them to think themselves which would develop their cognitive abilities. So the students actively engage themselves to develop their cognitive abilities.

References

Chong,Y.L & Jiar-Yeo, K. (2016).Cognitive Ability and Academic Achievement of Undergraduates. Man in India, 96 (6), 1903-1912.

- Cormier, D, C., Bulut, O., McGrew, K.S & Frison, J. (2016). The Role of Cattell–Horn– Carroll (CHC) Cognitive Abilities in Predicting Writing Achievement during the School-Age Years. *Psychology in the Schools*, 53(8), 787–803.
- Emilio, F & Mcardle, J, J. (2004). An Experimental Analysis of Dynamic Hypotheses about Cognitive Abilities and Achievement from Childhood to Early Adulthood. *Developmental Psychology*, 40(6), 935-52.
- Kettler, D, T. (2012). An analysis of critical thinking skills with gifted and general education students: relationships between cognitive, achievement, and demographic variables. *Electronic Theses and Dissertations*, <http://hdl.handle.net/2104/8492>.
- Proctor, B. (2012). Relationships between Cattell-Horn-Carroll (CHC) cognitive abilities and math achievement within a sample of college students with learning disabilities. *Journal of Learning disabilities*, 45(3), 278-87 *Psychology in the Schools*, 47 (7), 698-720.
- Sambo, Aminu. (2015). Relationship of Non-Verbal Intelligence Materials as Catalyst for Academic Achievement and Peaceful Co-Existence among Secondary School Students in Nigeria. *Journal of Education and Practice*, 6(31), 62-66.
- Taub, G.E., Floyd, R.G., Keith, Z.T & Mc Grew, K.S. (2008). Effects of General and Broad Cognitive Abilities on Mathematics Achievement. *School Psychology Quarterly*, 23(2), 187–198.
- Warnimont, C.S. (2010). The Relationship Between Students' Performance On The Cognitive Abilities Test (Cogat) And The Fourth And Fifth Grade Reading And Math Achievement Tests In Ohio. <https://etd.ohiolink.edu/pg>