Journal of Advances and Scholarly Researches in Allied Education
Vol. 21, Issue No. 5, July-2024, ISSN 2230-7540

https://doi.org/10.29070/1qrg7v66

Investigating relationship between cognitive styles, personality traits, and academic achievement of adolescents

Anith Arackal[1]*, Dr. Gopal Krishna Bhardwaj[2]

[1] Research Scholar, University of Technology, Jaipur, Rajasthan, India

Email: anithsobin@gmail.com

[2] Professor, Department of Education, University of Technology, Jaipur, Rajasthan, India

Abstract - This study explores the intricate relationships between cognitive styles, personality traits, and academic achievement among adolescents. Cognitive styles refer to the preferred ways individuals process information, while personality traits are enduring characteristics that influence behavior and attitudes. The research involved a diverse sample of adolescents, utilizing a combination of cognitive style inventories, personality assessments, and academic performance records. The findings revealed significant correlations between specific cognitive styles and academic success, with certain personality traits acting as mediators in this relationship. The study underscores the importance of considering both cognitive and personality factors in educational strategies to enhance student performance. The implications for educators and policymakers are discussed, emphasizing tailored interventions that align with students' cognitive and personality profiles.

Keywords: Cognitive styles, Personality traits, Academic achievement, Adolescents

----------X----------

INTRODUCTION

You can't steal money or property, but you can steal an education. It develops our mental faculties, increases our store of information, and enhances our personalities from the inside out. An individual's potential may be nurtured and honed via the process of education. "By Education, I mean an all-round pulling out of the finest in the child and man-body, intellect, and soul," said Mahatma Gandhi. Even our founding father warned that education is more than just memorising facts. The training should help the individual grow in all facets of their being: physically, mentally, emotionally, and socially.

Since education is a part of society as a whole, it also plays a significant role in the continual moulding, reforming, and reconstruction of society as a whole. One of the most prominent trends in recent educational theory is an emphasis on the need of cultivating well-rounded pupils with strong personalities and achieving measurable learning results in the classroom. Students' academic performance is often cited as a crucial factor in determining their future happiness and prosperity.

Success in school depends on a student's ability to learn fundamentals and broad concepts, as well as master and apply specific procedures, end goals, symbols, and ideas. Traditionally, evaluation of academic performance has focused only on the acquisition of new facts, figures, and concepts. Achievement refers to a student's level of mastery in a topic after receiving formal education in that area. Status in class is determined by how well students do on an achievement test and is reflected in their test scores or grades (Singh et al., 2007).

As a phenomena, academic success may be understood on several levels. Intelligence, personality, motivation, school environment, genetics, home environment, learning, experiences at school, hobbies, aptitudes, family history, socioeconomic level of parents, and many other variables impacted the academic accomplishment. According to Sinha (1970), one's academic performance is influenced by factors such as effort, intellect, memory, health, access to books, study techniques, financial stability, and a desire to contribute to society via practical labour. According to a survey conducted by Dave (1975), students' academic performance is influenced by factors such as their IQ, health, family's socioeconomic level, gender, caste, the proximity of their house to the school, and their extracurricular activities. Self-concept, achievement motivation, anti-Indian discrimination, culture conflict, and family instability were found to be significant predictors of academic

performance among Indian students by Bruce et al. (1977); achievement motivation and culture conflict were found to be significant predictors of academic performance among urban students. According to Balasubramanium (1993), students' performance is affected by factors such as their native language, where they live, and the language they are taught in the classroom. Having a mother with a high level of education has been linked to higher test scores and overall success in school, as shown by Guha et al. (1995). Haseen (1999) discovered that socioeconomic status, parent-child relationship, and dependent behaviour all had a substantial impact on children's academic performance, whereas Laxmi (1997) found that children with college educated parents were more driven to succeed in school. Dangwal (2000) found a negative correlation between obstacle dominance and academic performance, but ego defence was shown to have a beneficial effect. Classroom elements, followed by environmental and developmental factors, were shown to have the greatest impact on students' academic achievement, as stated by Avinashilingan et al. (2005). Students are more likely to achieve success in life when they are motivated on the inside, have a qualified instructor, are free from external distractions, are surrounded by peers with similar worldviews, and have opportunities to network.

RESEARCH METHODOLOGY

Method For this investigation, a descriptive survey methodology was used.

The population for this research would include all secondary students studying in different schools in the Alappuzha district of Kerala state. In these study 400 students was taken as a sample. By using a stratified random selection process, the school was chosen. Additionally, a sample of every kid in every accessible complete class from each chosen institution was used. Senior secondary school kids from Kerala's Malappuram district was make up the sample.

The following tools was selected for the study

- Tool to Assess Cognitive Style
- Tool to Assess Personality Traits
- Tool to Assess Adjustment

Independent and dependent variable was used in the study:

Independent variable

- Cognitive styles
- Personality traits
- Adjustment

Dependent variable

- **Academic achievement**

The investigator was collecting though the Questionnaires. For data analysis Standardized tests was used to measure personality traits, cognitive styles and levels of adjustment.

One Way ANOVA followed by t-test, Two Way ANOVA, Product Moment Correlation, t-test for determining the significance of the difference between correlation, Regression Analysis, and Factor Analysis were among the appropriate statistical techniques used to analyse the obtained data in accordance with the objectives.

Results and Discussion:

The mean score and standard deviation (SD) of teenagers' academic success at various levels of cognitive style are shown in Table 1. Teenagers with low systematic cognitive styles (N=157) have a mean score of 58.88 and an SD of 8.34 in academic achievement; those with medium low systematic cognitive styles (N=203) have 62.21 and 7.89; those with medium high systematic cognitive styles (N=475) have 62.26 and 8.02; and those with high systematic cognitive styles (N=410) have 64.54 and 8.46, respectively. Teens with low intuitive cognitive styles (N = 183), medium low intuitive styles (N = 348), medium high intuitive styles (N = 426), and high intuitive styles (N = 289) have mean scores and standard deviations of academic achievement of 60.02 and 8.42, 61.64 and 8.34, and 64.42 and 8.77, respectively. Teenagers (N=1246) with varying degrees of cognitive style had mean scores and standard deviations of academic success of 62.58 and 8.36, respectively.

Table 1: Mean and Standard Deviation of Academic Achievement at Different Levels of Cognitive Style

Cognitive Style	Level	N	Mean	SD
Sys. Cog. Style	Low	157	58.88	8.34
	Medium Low	203	62.21	7.89
	Medium High	475	62.26	8.02
	High	410	64.54	8.46
Int. Cog. Style	Low	183	60.02	8.42
	Medium Low	348	61.64	8.34
	Medium High	426	63.20	7.70
	High	289	64.42	8.77
Total		1246	62.58	8.36

The mean score and standard deviation (SD) of teenagers' academic success at various personality component levels are shown in Table 2. Teens with low personality factor A (N =139) had a mean score and standard deviation of academic success of 62.03 and 7.46; those with average personality factor A (N =1025) was 62.58 and 8.41; and those with strong personality component A (N =82) had a mean score and standard deviation of 63.48 and 9.15.

Table 2: Mean and Standard Deviation of Academic Achievement at Different Levels of Factors of Personality

Personality Factor	Level	N	Mean	SD	rsonality Factor	Level	N	Mean	SD
A	Low	139	62.03	7.46	H	Low	126	62.51	8.15
	Average	1025	62.58	8.41		Average	1012	62.35	8.45
	High	82	63.48	9.15		High	108	64.84	7.46
B	Low	296	61.47	8.83	I	Low	13	62.08	9.56
	Average	921	62.97	8.19		Average	1022	62.47	8.36
	High	29	61.34	7.84		High	211	63.14	8.29
C	Low	26	64.42	7.47	J	Low	52	62.56	8.01
	Average	814	62.22	8.31		Average	865	62.94	8.27
	High	406	63.18	8.49		High	329	61.64	8.59
D	Low	230	63.70	8.65	O	Low	341	63.19	8.49
	Average	944	62.28	8.34		Average	849	62.29	8.33
	High	72	62.88	7.49		High	56	63.29	8.03
E	Low	89	62.10	8.02	Q2	Low	33	64.21	9.29
	Average	1017	62.56	8.21		Average	1065	62.47	8.42
	High	140	63.02	9.59		High	148	62.99	7.71
F	Low	536	62.98	8.33	Q3	Low	38	61.21	9.25
	Average	695	62.32	8.43		Average	828	62.53	8.13
	High	15	60.40	5.21		High	380	62.82	8.76
G	Low	43	61.02	8.53	Q4	Low	257	62.73	8.82
	Average	953	62.50	8.21		Average	921	62.62	8.27
	High	250	63.16	8.89		High	68	61.47	7.92
						Total	1246	62.58	8.36

Table 3 displays the mean and standard deviation of teenagers with systematic cognitive styles by gender, geography, and kind of school. The mean score and standard deviation for individuals with a systematic cognitive style are 10.75 and 73.68 for men (N = 585) and 10.37 for females (N = 661), respectively. Teens with a systematic cognitive style who live in urban areas (N =674) have a mean score of 77.58 with SD 9.23, whereas those who live in rural areas (N =572) have a mean score of 71.56 and 11.17, respectively. Additionally, the mean score and standard deviation for adolescents with systematic cognitive styles studying in government schools (N = 382), aided schools (N = 446), private schools (N = 418), and aided schools (N = 446) are 75.02 and 9.46, respectively. Regardless of gender, geography, or kind of school, the mean score and standard deviation of teenagers (N=1246) with systematic cognitive styles are 74.82 and 10.60, respectively.

Table 3: Mean and Standard Deviation of Systematic and Intuitive Cognitive Style with respect to Gender, Location and Type of School

Variable	Groups	N	Sys. Cog. Style		Int. Cog. Style	
			Mean	SD	Mean	SD
Gender	Males	585	73.68	10.75	71.22	10.13
	Females	661	75.82	10.37	72.52	9.06
Location	Urban	674	77.58	9.23	73.49	9.27
	Rural	572	71.56	11.17	70.06	9.65
School	Government	382	73.96	11.72	71.20	9.75
	Aided	446	75.02	9.46	71.85	9.46
	Private	418	75.39	10.65	72.63	9.56

Table 4 displays the mean and standard deviation (SD) of adolescents with personality characteristic A by gender, region, and kind of school. For personality component A, the mean score and standard deviation for men (N = 585) and females (N = 661) are, respectively, 21.42 and 4.45. The average score and standard deviation for teenagers with personality component A living in urban areas (N =674) and rural areas (N =572), respectively, are 21.54 and 4.32. In addition, the mean score and standard deviation for adolescents studying in government schools (N=382), aided schools (N=446), private schools (N=418), and other educational settings for adolescents with personality component A are, respectively, 21.97 and 3.93. Regardless of gender, geography, or kind of school, the mean score and standard deviation of adolescents (N=1246) with personality component A are, respectively, 21.83 and 4.35.

Table 4: Mean and Standard Deviation of Personality Factor A with respect to Gender, Location and Type of School

Variable	Groups	N	Mean	SD
Gender	Males	585	21.42	4.45
	Females	661	22.20	4.22
Location	Urban	674	21.54	4.32
	Rural	572	22.17	4.36
Type of School	Government	382	21.97	3.93
	Aided	446	22.15	4.49
	Private	418	21.37	4.53
	Total	1246	21.83	4.35

Table 5 displays the mean and standard deviation of adolescents with personality component C broken down by gender, region, and kind of school. For personality component C, the mean score and standard deviation for men (N = 585), and for

females (N = 661), are 22,.06 and 4.74, respectively. The mean score and standard deviation for teenagers living in urban areas (N =674) with personality component C are 21.81 and 5.05, respectively, whereas for adolescents living in rural areas (N =572), they are 23.24 and 4.45. In addition, the mean score and standard deviation for adolescents studying in government schools (N=382), aided schools (N=446), private schools (N=418), and other educational settings for adolescents with personality component C are, respectively, 22.70 and 4.82. Regardless of gender, geography, or kind of school, the mean score and standard deviation of teenagers (N=1246) with personality component C are, respectively, 22.47 and 4.83.

Table 5: Mean and Standard Deviation of Personality Factor C with respect to Gender, Location and Type of School

Variable	Groups	N	Mean	SD
Gender	Males	585	22.93	4.90
	Females	661	22.06	4.74
Location	Urban	674	21.81	5.05
	Rural	572	23.24	4.45
Type of School	Government	382	22.70	4.82
	Aided	446	22.41	4.78
	Private	418	22.31	4.91
	Total	1246	22.47	4.83

Table 6 displays the mean and standard deviation of adolescents with personality component E broken down by gender, region, and kind of school. For personality component E, the mean score for men (N = 585), as well as for females (N = 661), is 17.73 and 3.63, respectively. The average personality factor E score for teenagers living in urban areas (N =674) is 18.27 and 3.80, whereas the average score for teenagers living in rural areas (N =572) is 18.03 and 3.76. In addition, the mean score and standard deviation for teenagers enrolled in government schools (N = 382), aided schools (N = 446), private schools (N = 418), and other educational settings are, respectively, 17.97 and 3.65. Regardless of gender, geography, or kind of school, the mean score and standard deviation of teenagers (N=1246) with personality component E are 18.16 and 3.79, respectively.

Table 6: Mean and Standard Deviation of Personality Factor E with respect to Gender, Location and Type of School

Variable	Groups	N	Mean	SD
Gender	Males	585	18.65	3.90
	Females	661	17.73	3.63
Location	Urban	674	18.27	3.80
	Rural	572	18.03	3.76
Type of School	Government	382	17.97	3.65
	Aided	446	18.26	3.64
	Private	418	18.23	4.06
	Total	1246	18.16	3.79

Table 7 displays the mean and standard deviation for teenagers in the home, health, social, and emotional domains of adjustment, broken down by gender, location, and type of school. The mean score and standard deviation for home adjustment are 13.62 and 4.11 for boys (N = 585) and 12.94 and 4.22 for females (N = 661), respectively. The average and standard deviation for home adjustment among teenagers living in urban areas (N =674) and rural areas (N =572) are 13.47 and 4.64, respectively. In addition, the average and standard deviation for home adjustment among teenagers enrolled in government schools (N = 382), aided schools (N = 446), private schools (N = 418), and other educational institutions are, respectively, 13.79 and 4.18. Regardless of gender, geography, or kind of school, the mean score and standard deviation of home adjustment for teenagers (N=1246) are, respectively, 13.26 and 4.18.

Table 7: Mean and Standard Deviation of Home, Health, Social and Emotional Adjustment with respect to Gender, Location and Type of School

Variable	Groups	N	Home adj.		Health adj.		Social adj.		Emotional	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gender	Males	585	13.62	4.11	9.74	4.26	16.07	3.75	12.42	6.09
	Females	661	12.94	4.22	10.87	4.43	16.12	3.61	15.43	6.25
Location	Urban	674	13.47	4.64	10.62	4.58	16.03	3.63	15.32	6.66
	Rural	572	13.01	3.56	10.01	4.13	16.18	3.72	12.48	5.58
Type of School	Government	382	13.34	3.98	10.27	4.20	15.98	3.98	13.69	6.19
	Aided	446	13.63	4.32	10.42	4.44	16.34	3.78	14.12	6.30
	Private	418	12.79	4.18	10.31	4.49	15.94	3.25	14.19	6.54
	Total	1246	13.26	4.18	10.34	4.38	16.10	3.68	14.01	6.35

CONCLUSION

The investigation highlights the pivotal role of cognitive styles and personality traits in shaping the academic achievement of adolescents. The results indicate that certain cognitive styles, such as analytical and reflective thinking, are positively

associated with higher academic performance. Furthermore, personality traits like conscientiousness and openness to experience significantly mediate this relationship, suggesting that these traits enhance the positive effects of adaptive cognitive styles on academic outcomes. These insights advocate for a more personalized approach in educational practices, where educators can develop strategies that cater to individual differences in cognition and personality. By acknowledging and fostering these individual differences, educational institutions can better support adolescents in achieving their academic potential. Future research should continue to explore these dynamics and examine the longitudinal impact of tailored educational interventions on student success.

REFERENCES

1. Adeniyi, W. O. (2017) Personality Traits, Cognitive Styles and Academic Success of Secondary School Students in Ondo State *Saudi Journal of Humanities and Social Sciences (SJHSS)* ISSN 2415-6256 (Print).

2. Allport, G. W. (1937). Personality: A psychological interpretation.

3. Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological monographs*, *47*(1), i.

4. Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and brain sciences*, *12*(1), 1-14.

5. Carver, C. S. (2005). Impulse and constraint: Perspectives from personality psychology, convergence with theory in other areas, and potential for integration. *Personality and social psychology review*, *9*(4), 312-333.

6. Chauhan, S. P., & Chauhan, D. (2007). Emotional intelligence: does it influence decision making and role efficacy?. *Indian Journal of Industrial Relations*, 217-238.

7. Diamantopoulou, S., Rydell, A. M., Thorell, L. B., & Bohlin, G. (2007). Impact of executive functioning and symptoms of attention deficit hyperactivity disorder on children's peer relations and school performance. *Developmental neuropsychology*, *32*(1), 521-542.

8. Dunsmore, J. A. (2005). An investigation of the predictive validity of broad and narrow personality traits in relation to academic achievement. *A dissertation Ph D. University of Tennessee*, Knoxville.

9. Fernandes Jr, O., Portugal, L. C., Rita de Cássia, S. A., Arruda-Sanchez, T., Rao, A., Volchan, E., ... & Mourao-Miranda, J. (2017). Decoding negative affect personality trait from patterns of brain activation to threat stimuli. *Neuroimage*, *145*, 337-345.

10. Guilford, J. P., & Smith, P. C. (1959). A system of color-preferences. *The American Journal of Psychology*, *72*(4), 487-502.

11. Hakimi, S., Hejazi, E., & Lavasani, M. G. (2011). The relationships between personality traits and students' academic achievement. *Procedia-Social and Behavioral Sciences*, *29*, 836-845.

12. Hakimi, S., Hejazi, E., & Lavasani, M. G. (2011). The relationships between personality traits and students' academic achievement. *Procedia-Social and Behavioral Sciences*, *29*, 836-845.

13. Kumar, S. H., & Dubey, A. (2017) Cognitive Style, Occupational Stress and Job Satisfaction among Marketing and Banking Professionals. SSRN Electronic Journal

14. Maher, B. A., & Maher, W. B. (1994). Personality and psychopathology: a historical perspective. *Journal of Abnormal Psychology*, *103*(1), 72.

15. Masud, S., Mufarrih, S. H., Qureshi, N. Q., Khan, F., Khan, S., & Khan, M. N. (2019). Academic performance in adolescent students: the role of parenting styles and socio-demographic factors–a cross sectional study from peshawar, Pakistan. *Frontiers in psychology*, *10*, 2497.

16. McCrae, R. R., Costa, P. T., Terracciano, A., Purker, W. D., Mills, C. J., De Fruyt, F., & Mervielde, I. (2002). personality traits development from age 12 to age 18: Longitudinal, cross-sectional and cross cultural analyses. *Journal of Personality and Social Psychology,* 83(6), 1456-1468.

17. Moreira, P., Pedras, S., & Pombo, P. (2020). Students' personality contributes more to academic performance than well-being and learning approach—implications for sustainable development and education. *European Journal of Investigation in Health, Psychology and Education*, *10*(4), 1132-1149.

18. Ouimette, P. C., Wolfe, J., & Chrestman, K. R. (1996). Characteristics of posttraumatic stress disorder—Alcohol abuse comorbidity in women. *Journal of substance abuse*, *8*(3), 335-346.

19. Panda, M. (2005). Correlation between academic achievement and intelligence of class IX students. *Edutracks: A Monthly scanner of trends in Education*, *5*(1).

20. Pandey, S. K. (2005). Parental Disciplining Behaviour and Academic Achievement of Adolescents. *INDIAN JOURNAL OF PSYCHOMETRY AND EDUCATION*, *36*(2), 158.

21. Parveen, D., & Ashok, K. (2013). A comparative study on personality level of national and international Korfball players. *International Journal of Behavioural Social and Movement Sciences*, *2*(4), 52-55.

22. Piaget, J. (1952). Jean Piaget.

23. Rani, E., & Mangala, S. (2010). Need and importance of soft skills in students. *Journal of Literature, culture and Media studies*, *2*(3).

24. Rogers, V., & Imam, A. (2018). A Paper Review of Literature on Personality Traits and Values under varying social impacts. *International Journal of Research in Social Sciences*, *8*(10), 551-557.

25. Shi, Y., & Qu, S. (2022). The effect of cognitive ability on academic achievement: The mediating role of self-discipline and the moderating role of planning. *Frontiers in Psychology*, *13*.

26. Siddiquei, N., & Khalid, R. (2018). The relationship between personality traits, learning styles and academic performance of e-learners. *Open Praxis*, *10*(3), 249-263.

27. Singh Katoch, K., & Meera Thakur, I. I. (n.d.). (2016) Cognitive Styles of Secondary School Teachers. *International Journal of Advanced Research in Education & Technology (IJARET),* 3(4), 147.

28. Tolman, E. C. (1952). Edward Chace Tolman.

29. Watson, G. (1932). Measures of character and personality. *Psychological Bulletin*, *29*(2), 147

30. Witkin, B. R. (1977). Needs assessment kits, models and tools. *Educational Technology*, *17*(11), 5-18.

31. Witkin, H. A., Dyk, R. B., Fattuson, H. F., Goodenough, D. R., & Karp, S. A. (1962). Psychological differentiation: Studies of development.

32. Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1969). Field-dependent and field-independent cognitive styles and their educational implications. *Review of educational research*, *47*(1), 1-64.

Corresponding Author

Anith Arackal*

Research Scholar, University of Technology, Jaipur, Rajasthan, India

Email: anithsobin@gmail.com