EFFECTS OF SOCIAL BEHAVIOUR ON ACADEMIC ACHIEVEMENT OF ADOLESCENTS TRIBAL STUDENTS: AN INTERPRETATION THROUGH CLUSTER ANALYSIS

Subhasree Pal[1], Dr. Parimal Sarkar[2]

Abstract

India's unique blend of cultural diversity, thriving communities, and emphasis on education offer an exceptional setting for examining how social behaviour and academic results intersect. In Indian society, the interactions and connections between individuals greatly shape students' educational paths. The influence of family, peers, teachers, and the broader community weaves a complex fabric of social dynamics that impact students' scholastic achievements. Foremost, the family unit exerts a profound influence on students' educational accomplishments. In India, families are typically viewed as the primary source of support and guidance for students. Positive family dynamics, where parents actively participate in their child's education, provide encouragement, and establish high expectations, can fuel academic success. Conversely, challenging family circumstances such as financial limitations or lack of parental involvement can create obstacles that impede a student's performance in school. Peer relationships also wield significant sway over academic outcomes. In India, students often form close-knit social circles within their schools and communities. Peer pressure, whether positive or negative, can strongly impact academic performance. Healthy competition and collaborative learning among peers can motivate students to strive for excellence. Conversely, negative peer interactions like bullying or social exclusion can lead to stress, diminished self-esteem, and hindered academic performance. Teachers, as influential figures in students' lives, play a vital role in shaping social behaviour and subsequently affecting academic performance. The quality of teacher-student relationships, effective communication, and supportive classroom environments can enhance student engagement and learning outcomes. Conversely, instances of teacher bias, favouritism, or ineffective teaching methods can undermine student motivation and achievement. Moreover, Indian society as a whole, along with its cultural values,

[1] Research Scholar, School of Education,
Netaji Subhas Open University, Kolkata
e-mail: subhoriddhipal2010@gmail.com
[1] Assistant Professor, School of Education,
Netaji Subhas Open University, Kolkata
e-mail: p.sarkar@wbnsou.ac.in
whatsapp: 9433143234

contributes to social behaviour and academic performance. India's collectivist culture places importance on social harmony, respect for authority, and conformity. These societal norms can influence students' behaviours and choices, thereby impacting their academic performance. Additionally, disparities in access to educational resources, infrastructure, and socioeconomic factors can further shape social behaviour and, consequently, academic outcomes. Recognizing and comprehending the intricate relationship between social behaviour and academic performance in the Indian context is crucial. The present paper will contribute to this periphery to realise this aforesaid relation. Again it will be a pathfinder to the policymakers by improving social behaviour skills helps an adolescent to step strongly on the academic ground. The present study is quantitative in nature and approach. The study finds out a positive correlation between social behaviour and academic achievement. Cluster Analysis is conducted to test both the psychographic and demographic picture of the tribal students. SPSS 26. version is used for Inferential analysis. 89 adolescent respondents who read in class IX are selected through random sampling and their responses are collected on 12 items of the Social Behaviour scale. Samples are collected from 4 schools, among 4 schools, two belong to urban areas and two are from rural areas. For academic achievement, the scores of 1st and 2nd terms of class IX are considered and the total score of the two terms is calculated. The result of cluster analysis serves the role of a councillor to improve teaching strategies and ambience for the successful academic careers of those tribal students.

Keywords: *Tribes, Adolescents, Social Behaviour, Academic Achievement, Cluster Analysis*

Introduction:

India is the fifth of the youngest countries in the World (Cassen, 2016). Therefore, the shining youth of the country can play a pivotal role in upgrading the economy as well as the status of the country. Even the target of the Sustainable Goal is to use the plethora of opportunities that can be ushered by those young aspirants through learning skills and quality of education (Pal & Sarkar, 2022). A cup only can contain tea if it is empty, in this way, if a child has positive social behaviour, he can empty himself and acquire knowledge and skills from his surroundings and can emerge as manpower. The surroundings can be his peer groups, teachers, families and associates: both the inner and outer spheres of his surroundings (Vandell, 2000). The sense of 'self-worth' (Crocker & Wolfe, 2001) and to 'live a meaningful comfortable life' thus cultivated in his mind and he works for it to achieve those goals. Academic achievement fuels up the speed to go through every hurdle in achieving desires. It is the desired gate pass to

upgrade his skills and proficiency through achieving higher skills and degrees. The Delor's Commission (Ross, 1993), while describing the four pillars of education stresses 'learning to be' and 'learning to live together'. Even Voygotsky, 1978 emphasized that social groups play a crucial role in the learning process. Voygotsky's "Zone of Proximal Development" also asserts that the social behaviour of an individual develops through social interaction of different mediums both formal and non-formal. (Vygotsky, 1978) In a competitive society, what an aspirant aspires to can be achieved only by securing his academic achievement. On the other hand, social behaviour helps him to adapt to the changing environment. In this 21st century, an individual can't spend his life doing a single job, he changes his jobs for a better job profile, and to do this he needs both two (Fruyt, Wille & John, 2015)

One of the major tools to calculate academic progress is the score of academic achievement. The score of any academic achievement is an integrated effect of different socio-economic and psychological factors. (Borghans et. all 2011, Farrington et.al, 2012, Lecher et.al.2017). In a study, it is asserted that the social behaviour of students plays a crucial role in determining the futuristic academic progress of an individual as an indirect factor. (Durlak et.al, 2010) The National Panel Study (NEPS; Blossfeld et. al.,2011) asks for such type of multi-cohort study to determine the effects of different factors on academic achievement. Therefore this study is conducted to analyse the relationship between social behaviour and academic achievement, and how much variance social behaviour can explain along with cluster analysis to picture the psychographic and demographic profile of tribal students who participate in the study.

Research Questions:

The paper examines the relationship between Social Behaviour and Academic Achievement in secondary-level tribal students. Through a linear regression model, it examines how social behaviour influences academic achievement. Further, it analyses how many clusters are formed by accumulating common traits of secondary-level tribal students.

Those underwritten research questions guide and solve the purpose of the study:

RQ1: What is the relation between Social Behaviour and Academic Achievement of Second-level Tribal Students?

RQ2: To what extent Social Behaviour can explain the variance of Academic Achievement in a Model of Secondary level tribal children?

RQ3: How many different Clusters are formed by common traits of Social Behaviour of secondary level Tribal students?

Materials & Methods Used:

The study area is North 24 Pargana district. There are 199 gram panchayat and 27 municipalities in North 24 Pargana district. Using Random sampling, one gram panchayat and a municipality area are selected under this study. Paltulia gram panchayat and Khardah municipality are selected through sampling procedures. Only government-sponsored or aided schools are visited to collect the samples, Private schools are not considered as a part of this study because the number of tribal students who continue their study in private schools is very few due to economic burden. There is a different approach to handling study-related matters among students between the students of both two schools.

Materials & Methods Used:

The area study is located in North 24 Pargana district. Using Random sampling, a panchayat and a municipality area are chosen for collection of data. Two schools from the Panchayet area and two schools from the Municipality areas are chosen by random sampling. Only samples are collected from only existing government schools of those two localities. No private or missionary schools are selected for the study.

Population & Sample:

Those 4 schools have 145 tribal students in total. Among them, a total of 100 tribal students (68.96%) were selected through random sampling. But on the data collection day, only 89 students were present in those 4 school schools, comprising 61.37% of the total population.

Data Types and Techniques of Data Collections:

Data is collected on different demographic profiles and social behaviour. The academic scores of summative evaluation of term I and term II (Both examinations have 50 marks in total and each examination is on 7 different subjects) are considered. The Social Behaviour scale is on a 5-point Likert scale response on six dimensions. Percentile scores at 33% level, 66% level and 100% level are calculated to determine the three levels of Social Behaviour (low, middle and high). The Social Behaviour scale has six dimensions. Each dimension consists of 2 items.

Therefore the scale of Social Behaviour contains 12 items. The split-half test is used to check the reliability of the scale. The test score is .742 which suggests that the scale is reliable to use. The data on demographic profiles is collected on location, gender, monthly income of the family, and the distance between home and school.

Statistical Analysis:

Descriptive Statistics of Normality Test

		Academic_Achievement	Social Behaviour
N	Valid	89	89
	Missing	0	0
Skewness		-.344	.411
Std. Error of Skewness		.255	.255
Kurtosis		-.448	-.081
Std. Error of Kurtosis		.506	.506
Range		250.00	33.00
Minimum		210.00	19.00
Maximum		460.00	52.00
Percentiles	33	361.1000	30.0000
	66	403.0000	36.0000
	100	460.0000	52.0000

Table 3.1: Descriptive Statistics of Academic Achievement and Social Behaviour of Adolescents Tribal Students of Secondary Standard.

In Table 3.1, the Skewness value of Academic Achievement has negative skewness values which denotes that in the data, there is a greater number of large values, while the positive skewness value of Social Behaviour denotes a greater number of a large number of small values. As the z score of the Skewness of Academic Achievement and Social Behaviour ("value of Skewness / Std. Error of Skewness) is respectively -1.35 and 1.61which ranges between $^{+}$- 1.96, Therefore, the measure of the Skewness value in both two scales has normal distributions. (Hair et.al.,2022)

The negative value of Kurtosis in both scales implies that the shape of the NPC curve has a flatter peak than the normal peak. Again the z score value of Kurtosis of Academic Achievement (-.885) and Social Behaviour (-.16) using the same formula denotes that the value ranges between +1.96 to -1.96. So both scale follows the normal distribution. (Hair et al., 2022).

As both scales follow the normal distribution, therefore, the researcher can conduct the Pearson correlation test to find out whether there is any relation between the two variables or not.

Even the Shapiro-Wilk test value of Academic Achievement *(p=.986, sig =.256)* and Social Behaviour *(p=.746, sig = .103)* which is greater than the significant value of .05, therefore null hypothesis is accepted.

RQ1: What is the relation between Social Behaviour and Academic Achievement?

To get an answer to this research question, the researcher takes the help of 'Pearson Correlation'. All the assumptions to run a correlation are met as the two variables are continuous variables and they approximately follow the NPC curve.

Correlations

		Social Behaviour	Academic_Achievement
Social Behaviour	Pearson Correlation	1	.422**
	Sig. (2-tailed)		.000
	N	89	89
Academic_Achievement	Pearson Correlation	.422**	1
	Sig. (2-tailed)	.000	
	N	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.2: Correlation between Social Behaviour and Academic Achievement

The value of the correlation of the coefficient ranges from -1 to $+1$. In this analysis, the correlation of the coefficient value of Social Behaviour and Academic Achievement is 0.422 which is significant at a 5% significant level and the value of the correlation of the coefficient is positive in nature. Though the correlation value is not too high, therefore, Social Behaviour and Academic Achievement have moderate positive correlations.
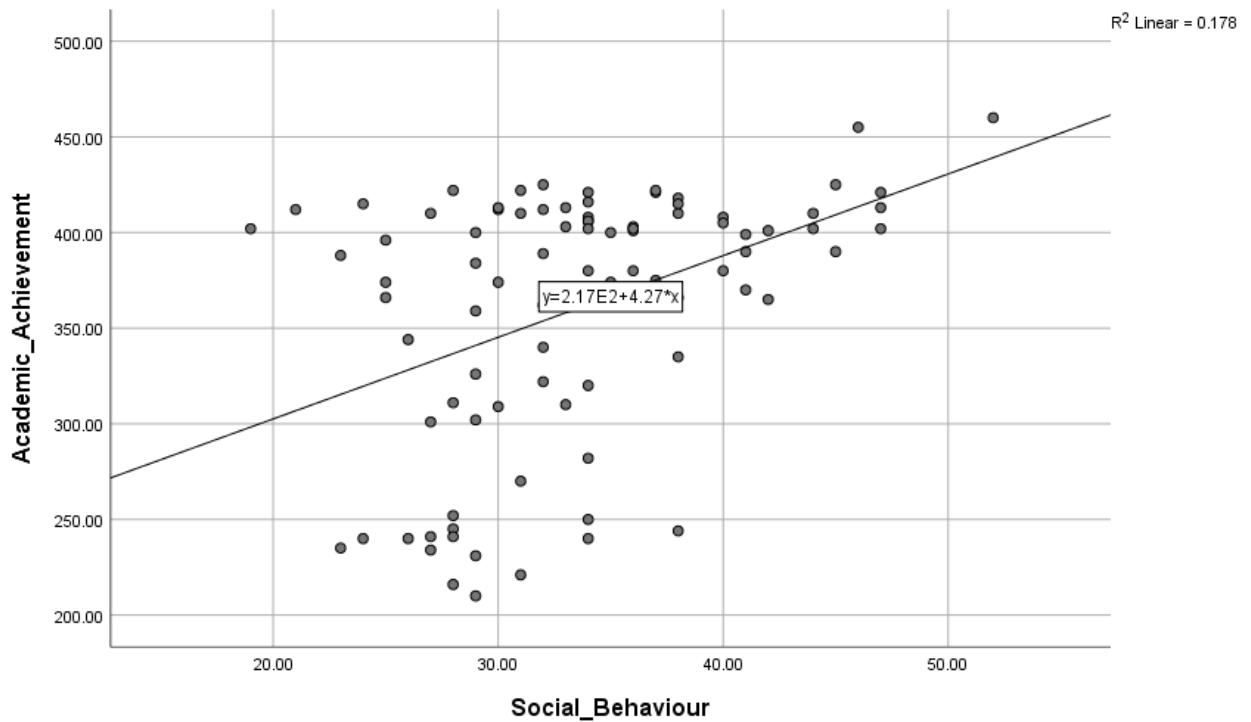
Table 3.3: Scatter Plot of Social Behaviour (x-axis) and Academic Achievement (y-axis).

The scatter plot also portrays that social behaviour and academic achievement have a positive correlation between themselves. The data of the scatter plot is making approximately a straight line from near the '0' axis value to a high "y-value", so Social Behaviour and Achievement Motivation have positive correlations.

RQ2: In What extent Social Behaviour can explain the variance of Academic Achievement in a Model of Secondary level tribal children?

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Social_Behaviour[b]	.	Enter

a. Dependent Variable: Academic_Achievement

b. All requested variables entered.

Table 4: Variables Entered / Removed

Table 4 provides information about which variables are put into this single-step model along with which one is a dependent variable and which one is an independent variable. In this single model, social behaviour is an independent variable and achievement motivation is a dependent variable.

ANOVAᵃ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70172.180	1	70172.180	18.798	.000ᵇ
	Residual	324772.876	87	3733.022		
	Total	394945.056	88			

a. Dependent Variable: Academic_Achievement

b. Predictors: (Constant), Social_Behaviour

Table 3.4: ANOVA table of Model

This table shows that the F value (1, 87) is 18.798 which is significant at the 5% level as the significant value is less than 0.05. It again assures that there exists a linear relationship between social behaviour and academic achievement. So from this result, the researcher can conclude that there is a linear relationship between social behaviour and academic achievement in this model

Model Summaryᵇ

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.422ᵃ	.178	.168	61.09846	.178	18.798	1	87	.000	.413

a. Predictors: (Constant), Social_Behaviour

b. Dependent Variable: Academic_Achievement

Table 5: Model Summary

As the sample value is small, therefore for model summary, the researcher goes with the value of the adjusted R Square rather than the value of R square. Here the value of the adjusted R square is .168, so 16.8% of the variance of academic achievement can be explained by social behaviour.

Coefficientsᵃ

		Model 1	
		(Constant)	Social_Behaviour
Unstandardized Coefficients	B	217.171	4.269
	Std. Error	33.632	.985
Standardized Coefficients	Beta		.422
t		6.457	4.336

Sig.		.000	.000
95.0% Confidence Interval for B	Lower Bound	150.323	2.312
	Upper Bound	284.018	6.226
Correlations	Zero-order		.422
	Partial		.422
	Part		.422
Collinearity Statistics	Tolerance		1.000
	VIF		1.000

a. Dependent Variable: Academic_Achievement

The standardized value of Beta enumerates that social behaviour and academic achievement have a positive moderate correlation (.422). Here t-test is conducted to assure that there is a significant mean difference between social behaviour and academic achievement data set. Here in both two cases, t has a greater value than 1.96 which is significant (sig .000 < .05) in both two data sets. Unstandardized Beta (B) gives a representation of the slope of the regression line between social behaviour and academic achievement. Here increase of 1 unit of social behaviour, academic achievement will increase by 4.269 units. Here the value of the coefficient of the standard error is 33.632 which denotes that the data points of two variables are spreading out a lot, therefore, less significance is found between social behaviour and academic achievement. Therefore the "intercept equation model of the linear regression function" is $y = 217.171 + 4.269\ x$.

RQ3: How many different Clusters are formed by common traits of Social Behaviour of secondary level Tribal students?

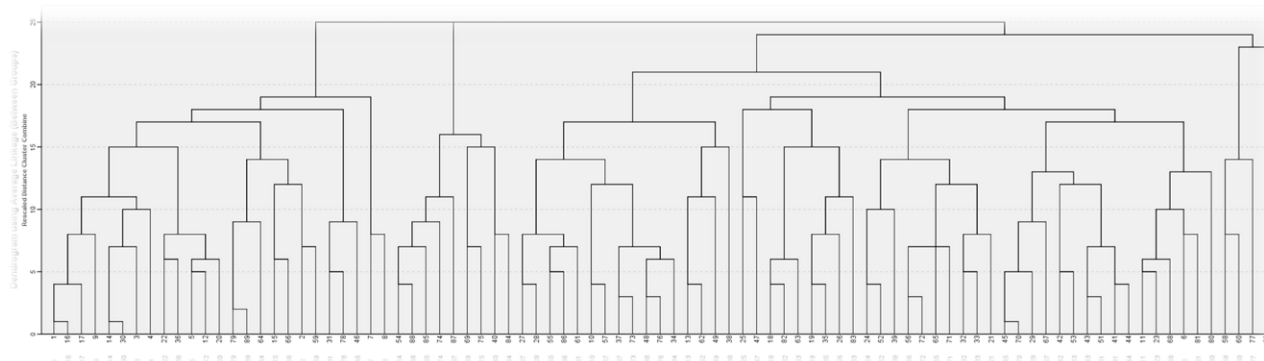**Stage I. Hierarchical Cluster**

Cluster Analysis:

Table 3.4: Dendrogram of Initial Cluster

In this Dendrogram of Cluster Analysis, apparently, the researcher finds FOUR clusters among which all the cases are clustered from the top-down view. It also elaborates on a cut-off point for rescaling the distance given at the top. Again it also helps to locate all objects in clusters.
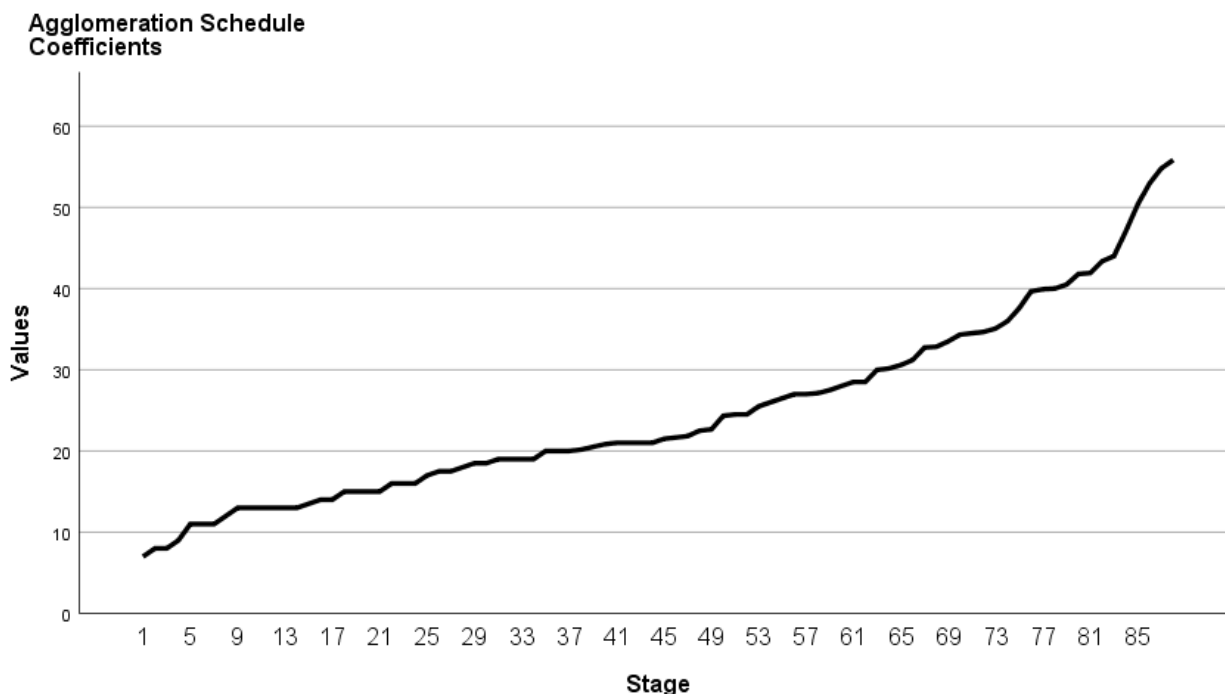

Table 3.5: Agglomerative Coefficient Table

This is the agglomerative coefficient table. From the starting point of the graph to the end, the difference between coefficients is high and is also increasing gradually.

Stage II: K-Means Clustering

After identifying the number of clusters by Hierarchical Cluster, the researcher now uses the K-Means cluster for further processing.

Number of Cases in each Cluster

Cluster	1	37.000
	2	14.000
	3	22.000
	4	16.000
Valid		89.000
Missing		.000

Table 3.6: No. of Cases in Each Cluster

K-Means Cluster Analysis is used to determine the number of participants (cases) in each cluster. In the 1st cluster, there are 37 participants (cases), whereas in the 2nd and 3rd clusters, there are 14 and 22 clusters respectively. Whereas 14 participants are in the 4th cluster.

Distances between Final Cluster Centers

Cluster	1	2	3	4
1		4.655	4.286	3.621
2	4.655		3.840	4.273
3	4.286	3.840		4.371
4	3.621	4.273	4.371	

Table 3.7: Distance between Clusters

Table 3.7 gives distance details between two clusters. From Cluster 1 to Cluster 2, 3 and 4, the Euclidean distance between the two clusters is respectively 4.655, 4.286 and 3.261.

ANOVA

	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
I am cheerful and happy at school	18.313	3	1.504	85	12.178	.000
I show my caring feelings to others	38.596	3	1.038	85	37.172	.000
I take active part in class room discussion	16.382	3	1.352	85	12.115	.000
I am attentive in my class	5.734	3	1.538	85	3.728	.014
I don't attend school regularly in time	24.777	3	1.355	85	18.285	.000
I do my hometask everyday	32.856	3	1.183	85	27.779	.000
I obey every directions of my teacher	4.092	3	1.974	85	2.073	.110
I follow what instruction my teacher gives	15.751	3	1.466	85	10.742	.000
I Make bully of other children	9.663	3	1.896	85	5.095	.003
I adjust with my peer's mood and behaviour	12.449	3	1.551	85	8.026	.000
I never do any delinquent activity in the class	2.599	3	2.170	85	1.198	.316

I respect my peers from other communities.	3.443	3	2.037	85	1.690	.175

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Table 3.8: ANOVA

This ANOVA table explains which statements (variables) contribute significantly to the Cluster Analysis. Except for the last two statements (statements no. 11 & 12), all the rest 10 statements significantly differ. Therefore, for further analysis, the researcher terminates these two statements for not being significantly different.

Final Cluster Centers

		Cluster			
		1	2	3	4
Social Competence	I am cheerful and happy at school	2.57	4.14	3.36	4.56
	I show my caring feelings to others	1.46	4.29	3.32	3.69
Classroom Behaviour	I take an active part in classroom discussion	2.03	3.64	3.59	3.31
	I am attentive in my class	2.65	3.93	3.05	2.81
Self-Responsible Behaviour	I don't attend school regularly on time	3.08	4.36	1.55	2.38
	I do my home task every day	2.32	4.29	3.91	1.38
Compliance Behaviour	I obey every direction from my teacher	2.73	2.79	3.27	2.13
	I follow what instructions my teacher gives	2.11	2.50	3.91	2.38
Peer Relations	I Make bully other children	2.79	2.86	3.27	1.69
	I adjust to my peer's moods and behaviour	2.41	2.86	3.68	1.81
Academic Achievement	High-Level Academic Achievement	14.6%	5.6%	5.6%	4.49%
	Middle-Level Academic achievement	12.35%	10.11%	10.11%	4.49%
	Low-Level Academic Achievement	6.74%	7.86%	8.98%	8.98%
Location	Rural	22.47%	10.11%	14.6%	13.48%
	Urban	19.11%	5.6%	10.11%	4.49%
	5000-10000	10.11%	5.61%	19.11%	8.98%

Monthly Income of the Family	10000-15000	15.73	6.7%	2.24%	8.98%
	15000-20000+	11.23%	3.37%	3.37%	4.49%
Gender	Male	24.71%	7.8%	14.6%	6.7%
	Female	16.85%	7.86%	10.11%	11.23%
Distance	Distance between Home and School within 2km	28.08%	7.86%	10.11%	4.49%
	Distance between Home and School within 2-4km	11.23%	7.86%	10.11%	7.86%
	Distance between Home and School within 5 km	2.24%	2.24%	3.37%	4.49%

Table 3.9: Characteristics of Cluster based on Mean Value and Percentage

Based on the calculated minimal distance to the initial cluster, the mean value of the final cluster is evaluated and the four different clusters are based on the homogenous characteristics of the participants among themselves within the same cluster and heterogeneous characteristics from other clusters on the basis of the Likert questionnaire formed. These classifications and differentiations are made on the basis of the mean value of social competence, classroom behaviour, self-responsible behaviour, compliance behaviour, peer relations and the percentage value of achievement motivation level, locations, monthly income, gender and the distance from home to school or vice versa. The scale is a 5-point Likert scale, therefore, a mean score of 1-2.5 is considered positive for positive sentences and a mean score of 3.5 to 5 is considered positive for negative sentences.

1st Cluster:

A total of 37 members of 89 members belong to the 1st cluster. The maximum percentage of higher and middle-level academic achievement students belong to cluster 1 rather than other groups. Among them 24.71% are male and 16.85% are female participants. A total of 22.47% of students live in rural areas whereas 16.85% of students reside in urban areas. The maximum amount of students (28.08%) only travel a maximum of 2 km to reach school. But all the students are a large amount belonging to all the income categories. They remain cheerful and happy at school as well as caring for others. Therefore, their social competence characteristic falls in the positive category. Though they take an active part in classroom discussions throughout the period they can't put attention at a stretch. With a consciousness, they do their homework daily. They follow the teacher's instructions for better performance. They adjust with peers.

The students who belong to this cluster have more positive traits in social behaviours than others. They are friendly and well-adjusted individuals in a classroom scenario.

2nd Cluster:

2ⁿᵈ **Cluster:**

A total of 14 students are associated with this cluster. A large number of students (10.11%) in this cluster belong to the Middle level of academic achievement category. 14.6% of students are from rural areas whereas 5.6% of students are from urban areas of this cluster. Male and female participants of this cluster are approximately the same in numbers. Maximum students of this cluster either come from within 2km or 2-4km distance. They attend school regularly and on time and this is only the positive trait of the social behaviour of this group. Otherwise, a maximum number of students tend negative traits of social behaviour.

3ʳᵈ **Cluster:**

22 participants are belonging to the 3ʳᵈ cluster. A good number of students from this cluster belong to the middle-level of achievement motivation category. 14.6% of students from this cluster are from rural areas, whereas, 10.11% of students are from urban areas. There are 14.6% of males and 10.11% of females belong to this cluster. In this case also, the same number of students either come to school from 2 km or within a 2-4km radius. A maximum number of students in this cluster (19.11%) are from the 5000-10000 income group. Students from this cluster don't attend school regularly. They in every statement neither agree nor disagree. They sometimes do those things and sometimes don't.

4ᵗʰ **Cluster:**

There are 22 members in the 4ᵗʰ cluster. The concentration of this cluster in the case of achievement motivation level is the same in the case of higher and middle academic achievement levels (4.49%) but the higher concentration in the case of lower level academic achievement (8.98%). Only 4.49% of members of this cluster are from urban areas and 13.48% are from rural areas. A total of 6.7% of males and 11.23% of females are from this cluster. The monthly income of this group ranges between 5000 -15000, and only 4.49% of participants are from the 15000-20000 income group. A total of 7.86% of students in this cluster come to school within a 2-4km radius. The positive traits of the social behaviour among them are: they do home tasks and follow the teacher's instructions but in the class, they sometimes are attentive and sometimes not. Although they adjust to peer groups, they intentionally make bully them.

Conclusion:

The research is carried on to analyse the relationship between social behaviour and academic achievement. When the positive correlation between social behaviour and academic achievement is established, the researcher focuses on finding the characteristics of the participants of the study. Regression Analysis establishes the fact that only 16.8% of the

variance of academic achievement can be explained by social behaviour. The result shows that as per homogenous characteristics of psychometrics and demographics, there are four clusters that are heterogeneous among each other. 1st cluster must orient towards positive social behaviour and have a higher level of academic achievement among participants than other participants of other clusters. While 2nd cluster has the amalgamation of some positive and some negative traits of social behaviour and a maximum of the participants belong to the middle level of social behaviour while 3rd cluster, participants are neutral towards social behaviours, they sometimes follow the positive and sometimes don't follow the same. They are to some extent whimsical in nature. In both 2nd and 3rd clusters, maximum students belong to the middle level of academic achievement. In the 4th cluster, participants in some cases have positive traits, in some cases have negative traits and in some traits have neutral approaches to social behaviour. A maximum of the students in this cluster belong to the lowest level of academic achievement. The four clusters reflect the level of social behaviour among adolescents influencing academic achievement a lot.

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