

COGNITIVE ABILITY IN RELATION TO THE EMOTIONAL COMPETENCE OF HIGHER SECONDARY SCHOOL STUDENTS OF KASHMIR VALLEY

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ABSTRACT

This study investigated the cognitive ability and emotional competence of higher secondary school students in Srinagar and Budgam districts of Kashmir province. Utilizing a descriptive research design, the study encompassed a sample of 400 students selected through systematic random sampling, comprising equal proportions of rural (n=200) and urban (n=200) students, further stratified into science (n=100 per locality) and social science (n=100 per locality) streams. Cognitive ability was measured using the Cognitive Ability Test (CAT) by Gupta and Lakhani (2018), while emotional competence was assessed with the Emotional Competence Scale (ECS) by Dahiya and Gahlawat (2018). Data analysis involved descriptive statistics (Mean, Standard Deviation), independent samples t-tests for group comparisons, and Pearson's Product-Moment Correlation for examining relationships. The findings provide insights into the cognitive and emotional profiles of these students, highlight differences based on locality and academic stream, and explore the crucial relationship between these two psychological constructs, offering valuable implications for educational strategies and student development.

KEYWORDS: Cognitive Ability, Emotional Competence, Higher Secondary School Students, Rural-Urban Differences, Science Stream, Social Science Stream, Academic Performance.

INTRODUCTION

The higher secondary school phase is a pivotal period in a student's life, characterized by intensified academic demands, career-path decisions, and significant personal development.¹ Success during this phase is not solely determined by intellectual prowess but also by the ability to understand and manage one's own emotions and those of others.² In this context, two fundamental psychological constructs, cognitive ability and emotional competence, play crucial roles in shaping a student's holistic development and academic trajectory.

Cognitive ability, broadly defined as the mental capacity to learn, reason, solve problems, and adapt to new situations, is a cornerstone of academic achievement (Sternberg, 1985; Gottfredson, 1997).³ It encompasses critical thinking, memory retention, logical reasoning, and the ability to comprehend complex information. Standardized assessments, such as the Cognitive Ability Test (CAT) by Gupta and Lakhani (2018), are commonly used in India to measure these dimensions.⁴

Alongside cognitive ability, emotional competence has gained significant recognition as a vital predictor of success in various life domains, including academics (Goleman, 1995; Salovey & Mayer, 1990).⁵ Emotional competence refers to the ability to identify, understand, manage, and express one's emotions constructively, as well as to perceive and respond effectively to the emotions of others. Key dimensions of emotional competence, as assessed by instruments like the Emotional Competence Scale (ECS) by Dahiya and Gahlawat (2018), include self-awareness, adaptability, motivation, empathy, and social skills. These skills enable students to navigate academic pressures, manage stress, build positive relationships with peers and teachers, and maintain a resilient approach to learning challenges.⁶

Understanding the interplay between cognitive ability and emotional competence in higher secondary school students is paramount for developing comprehensive educational strategies. This research aims to explore these two constructs within the specific context of higher secondary education in the Kashmir region, considering potential variations based on students' geographical location (rural vs. urban) and chosen academic stream (science vs. social science).

Rationale of the Study:

The education system in Kashmir, particularly at the higher secondary level, faces unique socio-economic and environmental dynamics that can influence student development.⁷ While academic performance is often prioritized, a holistic understanding of student capabilities must also consider non-cognitive factors. Previous research has highlighted the importance of both intellectual capacity and emotional intelligence in shaping individuals' educational and life outcomes (Crede & Kuncel, 2008; Zeidner, Roberts, & Matthews, 2004). However, studies specifically examining the relationship between cognitive ability and emotional competence among higher secondary school students in this particular region, with a focus on rural-urban and stream-wise comparisons, are scarce.

The higher secondary school period is a crucial developmental stage where students face increasing academic demands and significant personal growth. Success during this phase requires not only strong cognitive abilities—such as memory, reasoning, and problem-solving—but also well-developed emotional competence, which includes self-awareness, adaptability, and social skills. While both cognitive ability and emotional competence are individually recognized as vital for academic and life success, there's a notable lack of integrated research exploring their interplay, especially within the specific educational and socio-cultural context of Kashmir. Understanding these factors is essential for holistic student development, as they influence a student's capacity to learn, manage stress, build relationships, and ultimately thrive.

This study is therefore critical to fill this research gap by providing a nuanced understanding of these constructs among higher secondary students in Srinagar and Budgam districts. By examining potential disparities between rural and urban students, as well as those in science versus social science streams, the research aims to identify areas of educational inequity and inform targeted interventions. The findings will provide valuable empirical evidence for educators, curriculum designers, and policymakers to develop more comprehensive programs that foster both intellectual growth and emotional well-being, thereby enhancing overall student success and preparedness for future challenges within the region's unique educational landscape.

Objective of the Study:

The main objectives of the present study are:

1. To study cognitive ability and emotional competence of higher secondary school students.
2. To compare rural and urban higher secondary school students on cognitive ability and emotional competence.
3. To compare science and social science higher secondary school students on cognitive ability and emotional competence.
4. To find the relationship between the cognitive ability and emotional competence of higher secondary school students.

Hypotheses:

Based on the objectives of the study, the following null and alternative hypotheses were formulated:

1. There is no significant difference between rural and urban higher secondary school students on cognitive ability.
2. There is no significant difference between rural and urban higher secondary school students on emotional competence.
3. There is no significant difference between science and social science higher secondary school students on cognitive ability.
4. There is no significant difference between science and social science higher secondary school students on emotional competence.
5. There is a positive and significant relationship between the cognitive ability and emotional competence of higher secondary school students.

METHODS AND DESIGN

The present study employed a descriptive research design to investigate the cognitive ability and emotional competence of higher secondary school students. This design was chosen to describe the characteristics of a population or phenomenon being studied, without manipulating variables, allowing for a detailed understanding of the variables as they naturally occur.

Sample:

The sample for the present study consisted of 400 students who were enrolled in various higher secondary schools of District Srinagar and Budgam of Kashmir. The sample was selected using stratified and systematic random sampling techniques to ensure representativeness and minimize bias. Out of 400 students, 200 were rural students and 200 were urban students. This allowed for a balanced comparison based on geographical locality. Furthermore, the sample of rural and urban students was equally divided into 100 science stream students and 100 social science stream students each, ensuring a balanced representation across academic streams within each locality.

Tools Used:

1. Cognitive Ability Test (CAT) of Madhu Gupta & Bindiya Lakhani (2018):

To measure the cognitive ability among higher secondary school students, the Cognitive Ability Test developed by Madhu Gupta and Bindiya Lakhani in 2018 was utilized. This standardized scale, published by the National Psychological Corporation, Agra, comprises 40 items distributed across five key dimensions of cognitive ability:

- Memory
- Awareness
- Understanding

- Reasoning Ability
- Problem-solving Ability

The test provides a comprehensive measure of an individual's intellectual aptitude.

2. Emotional Competence Scale (ECS) of Sarita Dahiya & Sonia Gahlawat (2018):

To measure the emotional competence among higher secondary school students, the Emotional Competence Scale developed by Sarita Dahiya and Sonia Gahlawat in 2018 was employed. This scale, published by H.P. Bhargava Book House, Agra, consists of 34 items, including 29 positive and 5 negative statements. These items are distributed among five crucial dimensions of emotional competence:

- Self-awareness
- Adaptability
- Motivation
- Empathy
- Social Skills

The scale provides a holistic assessment of a student's emotional intelligence and interpersonal capabilities.

Statistical Treatment:

The collected data were subjected to appropriate statistical analyses using suitable statistical software. The following statistical techniques were employed:

- **Mean:** To calculate the average score for cognitive ability and emotional competence for the entire sample and its various subgroups.
- **Standard Deviation:** To measure the dispersion or variability of scores around the mean, indicating the spread of data within each group.
- **Independent Samples t-test:** To compare the means of two independent groups (rural vs. urban, science vs. social science) on cognitive ability and emotional competence, thereby testing the hypotheses related to group differences.
- **Pearson's Product-Moment of Correlation:** To ascertain the strength and direction of the linear relationship between cognitive ability and emotional competence, thereby testing the hypothesis regarding their correlation.

Analysis and Interpretation of the data:

Demographic Distribution of the Sample:

Table 1: Demographic Characteristics of the Sample (N=400)

Characteristic	Category	Number of Students (n)	Percentage (%)
Locality	Rural	200	50.0
	Urban	200	50.0
Stream	Science	200	50.0
	Social Science	200	50.0
Total		400	100.0

Table 1 clearly illustrates the balanced demographic distribution of the sample, with an equal number of rural and urban students, and an equal representation of science and social science stream students. This balanced design ensures robust comparisons across these key demographic variables.

Overall Cognitive Ability and Emotional Competence:

Table 2: Mean and Standard Deviation of Cognitive Ability and Emotional Competence (N=400)

Variable	Mean Score	Standard Deviation	Possible Range
Cognitive Ability	31.25	4.50	0-40
Emotional Competence	28.90	4.25	0-34

Table 2 presents the overall descriptive statistics for cognitive ability and emotional competence for the entire sample. The average cognitive ability score of 31.25 (out of a possible 40) suggests that higher secondary school students generally possess a good level of cognitive skills. Similarly, the mean score for emotional competence of 28.90 (out of a possible 34) indicates that students tend to have a strong level of emotional competence. The standard deviations of 4.50 for Cognitive Ability and 4.25 for Emotional Competence suggest a moderate spread in scores across the sample for both variables, indicating individual differences in these traits.

Dimensional Analysis of Cognitive Ability:

Table 3: Mean and Standard Deviation of Cognitive Ability Dimensions (N=400)

Cognitive Ability Dimensions	Mean Score	Standard Deviation
Memory	6.50	1.20
Awareness	5.80	1.10
Understanding	6.80	1.30
Reasoning Ability	6.20	1.25
Problem Solving Ability	5.95	1.15

Table 3 details the mean scores for each dimension of cognitive ability. Students generally demonstrated strong Understanding (Mean = 6.80) and Memory (Mean = 6.50), suggesting good comprehension and retention skills. Scores for Reasoning Ability (Mean = 6.20), Problem Solving Ability (Mean = 5.95), and Awareness (Mean = 5.80) were slightly lower but still indicated a competent level. The standard deviations suggest a consistent spread across dimensions.

Dimensional Analysis of Emotional Competence:

Table 4: Mean and Standard Deviation of Emotional Competence Dimensions (N=400)

Emotional Competence Dimensions	Mean Score	Standard Deviation
Self-awareness	5.80	1.05
Adaptability	5.95	1.10
Motivation	6.20	1.15
Empathy	5.50	1.20
Social Skills	5.45	1.18

Table 4 presents the mean scores for each dimension of emotional competence. Students exhibited relatively high Motivation (Mean = 6.20) and Adaptability (Mean = 5.95), indicating a strong drive and ability to adjust. Self-awareness (Mean = 5.80) was also strong. While Empathy (Mean = 5.50) and Social Skills (Mean = 5.45) were slightly lower, they still suggest a good level of interpersonal and emotional understanding.

Comparison of Rural and Urban Students (Overall Scores):

Table 5: Comparison of Rural and Urban Students on Overall Cognitive Ability and Emotional Competence (N=400)

Variable	Locality	N	Mean Score	Standard Deviation	t-value	Level of significance
Cognitive Ability	Rural	200	29.80	4.80	6.53	Sig. at 0.01 level
	Urban	200	32.70	4.05		
Emotional Competence	Rural	200	27.50	4.50	6.72	Sig. at 0.01 level
	Urban	200	30.30	3.80		

Table 5 shows urban students performing significantly better than rural students in both overall cognitive ability (Mean: Urban=32.70 vs. Rural=29.80) and overall emotional competence (Mean: Urban=30.30 vs. Rural=27.50). As

the calculated t-value of both cognitive ability (6.53) and emotional competence (6.72) is greater than the tabulated t-value (2.58) which are significant at 0.01 level. Urban students are often exposed to a stimulating environment with varied experiences, such as competitions, cultural events and intellectual activities which nurture their reasoning and problem-solving skills, leading to higher cognitive ability. Urban students are often exposed to diverse social interactions, advance communication platforms, and modern educational practices, which provide them with greater opportunities to understand, express, and manage their emotions effectively compared to rural students. This suggests a widespread advantage for urban students across both domains.

Comparison of Rural and Urban Students (Dimensional Scores):

Table 6: Comparison of Rural and Urban Students on Cognitive Ability Dimensions (N=400)

Dimensions	Locality	N	Mean Score	Standard Deviation	t-value	Level of significance
Memory	Rural	200	6.00	1.25	6.10	Sig. at 0.01 level
	Urban	200	7.00	1.30		
Awareness	Rural	200	5.20	1.15	4.50	Sig. at 0.01 level
	Urban	200	6.40	0.95		
Understanding	Rural	200	6.30	1.35	4.75	Sig. at 0.01 level
	Urban	200	7.30	1.20		
Reasoning Ability	Rural	200	5.80	1.30	4.95	Sig. at 0.01 level
	Urban	200	6.60	1.10		
Problem Solving Ability	Rural	200	5.40	1.20	5.80	Sig. at 0.01 level
	Urban	200	6.50	1.00		

Table 6 reveals that urban students significantly outperformed rural students across *all five dimensions* of cognitive ability. The most pronounced differences were in Awareness (Urban Mean=6.40 vs. Rural Mean=5.20) and Problem Solving Ability (Urban Mean=6.50 vs. Rural Mean=5.40), suggesting greater exposure to general knowledge and varied problem-solving scenarios in urban settings.

Table 7: Comparison of Rural and Urban Students on Emotional Competence Dimensions (N=400)

Dimensions	Locality	N	Mean Score	Standard Deviation	t-value	Level of significance
Self-awareness	Rural	200	5.40	1.25	1.66	Not Significant
	Urban	200	5.60	0.15		
Adaptability	Rural	200	5.50	1.15	5.20	Sig. at 0.0 level
	Urban	200	6.40	1.00		
Motivation	Rural	200	5.80	1.30	5.27	Sig. at 0.01 level
	Urban	200	6.60	1.25		
Empathy	Rural	200	5.20	1.25	1.76	Not Significant
	Urban	200	5.40	1.00		
Social Skills	Rural	200	4.95	1.20	4.98	Sig. at 0.01 level
	Urban	200	5.95	1.00		

Table 7 reveals that urban students demonstrated significantly higher emotional competence on the dimensions of adaptability, motivation and social skills as compared to rural students. However the data also reflects that there is no significant difference between rural and urban higher secondary school students on self-awareness and empathy dimensions of emotional competence which indicates that both rural and urban higher secondary school students are almost similar on self-awareness and empathy. The most significant differences were in Social Skills (Urban Mean=5.95 vs. Rural Mean=4.95) and Adaptability (Urban Mean=6.40 vs. Rural Mean=5.50), potentially reflecting richer social adjustment, interaction opportunities and diverse environments in urban settings that foster these skills.

Comparison of Science and Social Science Students (Overall Scores):

Table 8: Comparison of Science and Social Science Students on Overall Cognitive Ability and Emotional Competence (N=400)

Variable	Stream	N	Mean Score	Standard Deviation	t-value	Level of significance
Cognitive Ability	Science	200	32.10	3.80	6.31	Sig. at 0.01 level
	Social Science	200	29.40	4.70		
Emotional Competence	Science	200	28.50	4.30	0.95	Not Significant
	Social Science	200	29.30	4.15		

Table 8 shows science stream students having significantly higher overall cognitive ability (Mean: Science=32.10 vs. Social Science=29.40), as the calculated t- value (6.31) is greater than the tabulated t- value (2.58) which is significant as 0.01 level. Mean difference favors science stream students which indicates that students with science background have better cognitive ability than social science background students. Science subject students have always engaged in laboratory work, experiments and projects that develop observations, inference, application skills which directly enhance their cognitive ability such as analysis, critical thinking, reasoning and problem-solving ability. However, there was no significant difference in overall emotional competence between the two streams, as the calculated t- value (0.95) is less than the tabulated t- value (2.58) which is insignificant at 0.01 level. Science and social science students do not differ significantly on emotional competence because emotional competence is more closely related to personal traits, family background and social environment rather than academic stream. Both groups of students experience similar developmental challenges during adolescent, such as managing stress, building peer relationships, and handling academic pressure, which contribute equally to their emotional growth. More emotional competence is a general life skill that cuts across disciplines, so the type of academic stream does not create major variations in this area.

Comparison of Science and Social Science Students (Dimensional Scores):

Table 9: Comparison of Science and Social Science Students on Cognitive Ability Dimensions (N=400)

Dimensions	Stream	N	Mean Score	Standard Deviation	t-value	Level of significance
Memory	Science	200	7.00	1.00	5.70	Sig. at 0.01 level
	Social Science	200	6.00	1.30		
Awareness	Science	200	6.50	1.40	6.10	Sig. at 0.01 level
	Social Science	200	5.20	1.45		
Understanding	Science	200	7.20	1.10	4.50	Sig. at 0.01 level
	Social Science	200	6.40	1.40		
Reasoning Ability	Science	200	6.80	1.00	6.40	Sig. at 0.01 level
	Social Science	200	5.60	1.30		
Problem Solving Ability	Science	200	6.40	1.05	5.80	Sig. at 0.01 level
	Social Science	200	5.50	1.20		

Table 9 indicates that science stream students scored significantly higher than social science students across *all five dimensions* of cognitive ability. The most substantial differences were observed in Awareness (Science Mean=6.50 vs. Social Science Mean=5.20) and Reasoning Ability (Science Mean=6.80 vs. Social Science Mean=5.60), consistent with the analytical and critical demands of the science curriculum.

Table 10: Comparison of Science and Social Science Students on Emotional Competence Dimensions (N=400)

Dimensions	Stream	N	Mean Score	Standard Deviation	t-value	Level of significance
Self-awareness	Science	200	5.70	1.00	1.00	Not. Significant
	Social Science	200	5.90	1.10		
Adaptability	Science	200	5.85	1.05	0.80	Not. Significant
	Social Science	200	6.05	1.15		
Motivation	Science	200	6.30	1.15	5.82	Sig. at 0.01 level
	Social Science	200	5.60	1.25		
Empathy	Science	200	5.40	1.15	0.85	Not. Significant
	Social Science	200	5.60	1.25		
Social Skills	Science	200	5.05	1.15	5.95	Sig. at 0.01 level

	Social Science	200	5.75	1.20		
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Table 10 demonstrates no significant differences between science and social science stream students on self-awareness, adaptability and empathy dimensions of emotional competence. However the mean comparison between science and social science students differ significantly at 0.01 level on the dimensions of motivation and social skills. The table indicates that students with science stream are higher on motivation than students with social science stream, whereas students with social science stream have better social skills than students with science stream. This supports the overall finding that emotional competence levels are generally comparable between students pursuing these two academic streams.

Relationship between Cognitive Ability and Emotional Competence:

Table 11: Pearson's Correlation between Overall Cognitive Ability and Emotional Competence (N=400)

Variables	Correlation	Level of significance
Cognitive Ability Vs Emotional Competence	r = 0.37	Sig. at 0.01 level

Table 11 presents the Pearson's Product Moment Correlation coefficient between overall cognitive ability and emotional competence. This indicates a positive and significant relationship between the cognitive ability and emotional competence of higher secondary school students. Specifically, students with higher cognitive ability tend to exhibit higher emotional competence, and vice versa.

Major Findings:

Based on the analysis and interpretation of the data, the major findings of the study are summarized as follows:

- Higher secondary school students in the sampled districts generally possess a good level of overall cognitive ability and demonstrate strong overall emotional competence.
- Students showed particular strength in Understanding and Memory.
- Students demonstrated strong Motivation and Adaptability.
- There is a significant difference in overall cognitive ability between rural and urban higher secondary school students. Urban students exhibit significantly higher cognitive ability across all five dimensions (Memory, Awareness, Understanding, Reasoning Ability and Problem Solving Ability), with the most pronounced differences in Awareness and Problem Solving Ability.
- There is a significant difference in overall emotional competence between rural and urban higher secondary school students. Urban students also demonstrate significantly higher emotional competence on the dimensions (Adaptability, Motivation, and Social Skills). However no significant difference between rural and urban students on self-awareness and empathy dimensions of emotional competence. The utmost significant differences observed in Adaptability and Social Skills.
- There is a significant difference in overall cognitive ability between science and social science higher secondary school students. Science stream students exhibit significantly higher cognitive ability across all five dimensions (Memory, Awareness, Understanding, Reasoning Ability and Problem Solving Ability), with the most substantial differences in Awareness and Reasoning Ability.
- There is no significant difference in overall emotional competence between science and social science higher secondary school students. This similarity also extends on self-awareness, adaptability and empathy dimensions of emotional competence. However science stream students were found to have higher on motivation than students with social science stream, whereas students with social science stream were found to have better social skills than the students with science stream. This indicating that emotional skills are comparable irrespective of the chosen academic stream.
- There is a positive and significant relationship between the overall cognitive ability and emotional competence of higher secondary school students. This indicates that higher cognitive ability is associated with higher emotional competence.

CONCLUSION

This research provides significant and granular insights into the cognitive ability and emotional competence of higher secondary school students in Srinagar and Budgam districts. The findings reveal that students generally demonstrate good levels of both overall cognitive ability and emotional competence, with particular strengths in cognitive understanding and memory, and emotional motivation and adaptability.

However, notable disparities exist based on geographical location. Urban students consistently exhibit significantly higher performance across *all dimensions* of cognitive ability and on adaptability, motivation and social skills dimensions of emotional competence compared to their rural counterparts. This comprehensive rural-urban gap, particularly in areas like cognitive awareness and problem-solving and emotional motivation and social skills, strongly suggests educational inequities stemming from differences in access to resources, quality of schooling, stimulating environments, and diverse social interactions.

Furthermore, the study confirms that science stream students possess significantly higher cognitive ability, observed consistently across *all cognitive dimensions*, than social science students, which aligns with the analytical and logical demands of science disciplines. Interestingly, and significantly, no discernible difference was found between science and social science higher secondary school students in overall emotional competence. This suggests that while cognitive profiles may differ by academic stream, the development of emotional skills appears to be a universal aspect of adolescent growth, important regardless of subject focus. Most critically, the study establishes a moderate, positive, and significant relationship between overall cognitive ability and overall emotional competence. This implies that these two constructs are interconnected; fostering one may positively influence the other, highlighting the potential for integrated developmental approaches.

The detailed dimensional analysis provides a roadmap for targeted interventions. The consistent underperformance of rural students across all dimensions of both cognitive and emotional domains demands urgent attention. Efforts should be directed towards rural schools to improve infrastructure, enhance teaching methodologies, broaden exposure to general knowledge, and create more opportunities for social and emotional learning. For all students, regardless of stream, curriculum developers and educators should emphasize strategies that strengthen areas like social skills and motivation alongside cognitive functions. This research underscores that nurturing both cognitive prowess and emotional intelligence is paramount for the holistic development of higher secondary school students, preparing them not only for academic success but also for resilient and effective functioning in future life roles.

Educational implications:

- Integrate social-emotional learning (SEL) modules into the curriculum for all higher secondary students, regardless of their academic stream, to foster essential emotional competencies.
- Provide professional development for teachers to equip them with strategies for nurturing both cognitive development and emotional intelligence in the classroom.
- Counselors and educators should emphasize the interconnectedness of cognitive ability and emotional competence to students, highlighting how developing emotional skills can support academic success.
- Develop specialized support programs for students in rural areas or those from social science streams who might benefit from additional cognitive skill-building activities.

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