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A STUDY ON THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND COGNITIVE DEVELOPMENT OF ADOLESCENTS IN SELECTED HIGHER SECONDARY SCHOOLS, ODISHA

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ABSTRACT

The present study aimed to examine the relationship between Emotional Intelligence (EI) and cognitive development among adolescents in selected higher secondary schools of Odisha. A total of 115 adolescents were assessed using standardized tools for EI and cognitive development, which included academic, pragmatic, and judgmental domains. Descriptive statistics revealed that the adolescents' EI scores varied across levels, while cognitive development scores indicated moderate performance in all domains. Pearson correlation analysis showed no significant relationships between Total EI and any cognitive domain (Academic: r = -0.007, p = 0.942; Pragmatic: r = 0.045, p = 0.633; Judgmental: r = -0.092, p = 0.328). These findings suggest that EI may not be directly associated with cognitive abilities in this population. The study highlights the need for further research to explore other factors influencing adolescent cognitive development and emphasizes the importance of holistic approaches in education and adolescent growth.

Keywords: *Emotional Intelligence, Cognitive Development, Adolescents, Academic, Pragmatic, Judgmental*.

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Dr. Anasuya Pattanayak serves as a Co-Supervisor in the present research. Dr. Pattanayak is actively involved in mentoring postgraduate and doctoral nursing scholars. She is dedicated to advancing nursing education and research, emphasizing ethical practice, scientific inquiry, and professional development among her students. Her guidance has been instrumental in shaping competent nursing professionals and fostering innovative contributions to healthcare in India.

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INTRODUCTION

Adolescence is a formative period of life when young people experience rapid growth in their thinking, emotions, and social understanding. During the higher secondary years, students develop important mental skills such as focus, decision-making, problem-solving, self-reflection, and logical reasoning — abilities that prepare them for higher education and adult life. At the same time, their emotional awareness and ability to manage feelings also mature, which plays an important role in how effectively they learn and apply new knowledge.

Emotional Intelligence (EI) — broadly defined as the capacity to perceive, use, understand and manage emotions — has gained attention in educational research as a psychosocial resource that may facilitate cognitive performance. EI can support sustained attention, stress regulation during examinations, social cognition in collaborative learning, and adaptive problem-solving — pathways that plausibly link EI with cognitive development and academic outcomes. Empirical studies and theoretical models therefore treat EI as a malleable skillset that schools can potentially foster to improve cognitive and learning outcomes. (Iqbal et al., 2021).

However, the strength and nature of the relationship between EI and cognitive development are not uniform across contexts. Cross-cultural differences, EI measurement models (ability-based vs trait/self-report), outcome definitions (domain-specific cognitive tests vs broad academic scores), and mediators such as resilience, study strategies, sleep and family environment all influence observed associations. In the Indian context — and particularly in states such as Odisha where education reforms are emphasizing holistic student development — region-specific evidence on the EI–cognition link in higher secondary students can inform targeted interventions and policy. This study therefore examines the relationship between EI and cognitive development among adolescents in selected higher secondary schools of Odisha. (Seth, G., Samantaraya, H., & Bhaina, U. (2022).)

REVIEW OF LITERATURE

Conceptual models of EI and cognitive development

Two dominant EI frameworks appear in the literature: (1) ability EI, which conceptualizes EI as performance-based emotional reasoning abilities, and (2) trait EI, which views EI as self-perceived emotional competencies measured via questionnaires. These models differ psychometrically and predict outcomes differently; ability EI tends to align more closely with cognitive ability constructs, while trait EI often correlates with personality and well-being measures. Selecting and reporting the EI model is therefore essential when studying cognitive outcomes. (Megías-Robles et al., 2024)

Evidence linking EI to cognitive outcomes and academic performance

A growing number of studies suggest EI is positively associated with cognitive outcomes and academic achievement, although effect sizes vary. Structural models and surveys indicate that EI can influence *cognitive outcomes* both directly (e.g., better emotion regulation leading to improved concentration and working memory) and indirectly through relational engagement and motivation. A notable study using structural equation modeling reported that EI influenced cognitive outcomes during the pandemic period through relational engagement, illustrating both direct and mediated pathways. (Iqbal et al., 2021)

Meta-analytic and empirical reviews emphasize that the EI–academic link is often small-to-moderate and heterogenous across age groups and measures. These syntheses caution against assuming a large, universal effect; rather, they recommend domain-specific analyses (e.g., executive function, reasoning, memory) and attention to measurement choice. (Iqbal et al., 2021).

Recent empirical findings (2020–2024)

Recent international and Indian studies add nuance:

- **International:** Longitudinal and cross-sectional work through 2023–2024 shows development in ability EI across adolescence and associations with cognitive–executive outcomes; results indicate that ability EI tends to increase with maturation and can predict improved problem-solving under emotional stress (Megías-Robles et al., 2024).
- **India and regional studies:** Multiple studies from Indian settings, including Odisha and South Odisha samples, report positive relationships between EI components (self-awareness, self-regulation, self-motivation) and academic achievement among school students, though sample sizes and methods vary. For example, school-based studies in South Odisha documented associations between EI dimensions and academic performance among grades 8–10 students, suggesting the relationship is present in regional contexts but may differ by sample and measurement (Seth, G., Samantaraya, H., & Bhaina, U. (2022).).

- **Contemporary psychosocial work:** Studies in 2022–2024 show trait EI's protective association with well-being and social functioning in adolescents; given the overlap between emotional regulation and cognitive task performance, this work supports the plausibility of EI–cognitive links, especially through stress buffering and engagement pathways (Full Article: Trait Emotional Intelligence and Adolescent Psychological Well-Being: A Systematic Review, 2024).

GAPS AND THE NEED FOR THE PRESENT STUDY

Despite positive indications, gaps remain: (a) few Indian studies focus specifically on *cognitive development* (rather than general academic scores) in relation to EI at the higher secondary level; (b) comparative evidence on ability versus trait EI in Indian adolescents is limited; and (c) mediation models that position EI as an upstream factor influencing cognition via engagement and resilience are comparatively rare. The present study addresses these gaps by examining the EI–cognitive relationship among higher secondary students in Odisha and by recommending domain-sensitive interpretation of results. (Seth, G., Samantaraya, H., & Bhaina, U. (2022).)

METHODS

A descriptive cross-sectional research design with a quantitative approach was adopted for this study. A total of 115 late adolescents aged 15–19 years were selected through convenience sampling from classes XI and XII of two higher secondary schools in Odisha, based on the inclusion criteria. Data were collected using a structured questionnaire, which included the Emotional Intelligence Scale (EIS) developed by Hyde, Pethe, and Dhar (2002) to assess emotional intelligence, and a self-structured Cognitive developmental factors assessment tool that was validated by experts and demonstrated a Cronbach's alpha reliability of 0.8. The collected data were analyzed using both descriptive and inferential statistics with the help of SPSS version 25, and the findings were presented in the form of tables and graphs.

HYPOTHESES

- H_{01}: There is no significant correlation between Total EI and Academic development among adolescents.
- H_{11}: There is a significant correlation between Total EI and Academic development among adolescents.
- H_{02}: There is no significant correlation between Total EI and Pragmatic development among adolescents.
- H_{12}: There is a significant correlation between Total EI and Pragmatic development among adolescents.
- H_{03}: There is no significant correlation between Total EI and Judgmental development among adolescents.
- H_{13}: There is a significant correlation between Total EI and Judgmental development among adolescents.

RESULTS

Table 1 : EI Score of Adolescents

TOTAL EI SCORE OF ADOLESCENTS	MEAN	MEDIAN	SD	MIN	MAX
14154	123.08	123	11	149	98

INTERPRETATION

Table 1 presents the emotional intelligence (EI) scores of adolescents. The total cumulative EI score of the sample (N = 115) was 14,154, with a mean score of 123.08 (SD = 11). The median EI score was 123, which is very close to the mean, suggesting a fairly symmetrical distribution of scores. The EI scores ranged from a minimum of 98 to a maximum of 149, indicating moderate variability in the emotional intelligence levels among the adolescents.

DISTRIBUTION OF ADOLESCENTS BY THEIR LEVEL OF EI

The Hyde, Pethe & Dhar Emotional Intelligence Scale (EIS) usually has 34 items rated on a 5-point scale, giving a score range of **34–170**. Based on this, EI levels are often classified as:

- **Low EI:** 34–85
- **Moderate EI:** 86–136
- **High EI:** 137–170

Table 2: Distribution of Adolescents by Their Level of EI

EI Level	Score Range	Frequency (f)	Percentage (%)
Low EI	34–85	0	0.0
Moderate EI	86–136	79	68.7
High EI	137–170	36	31.3

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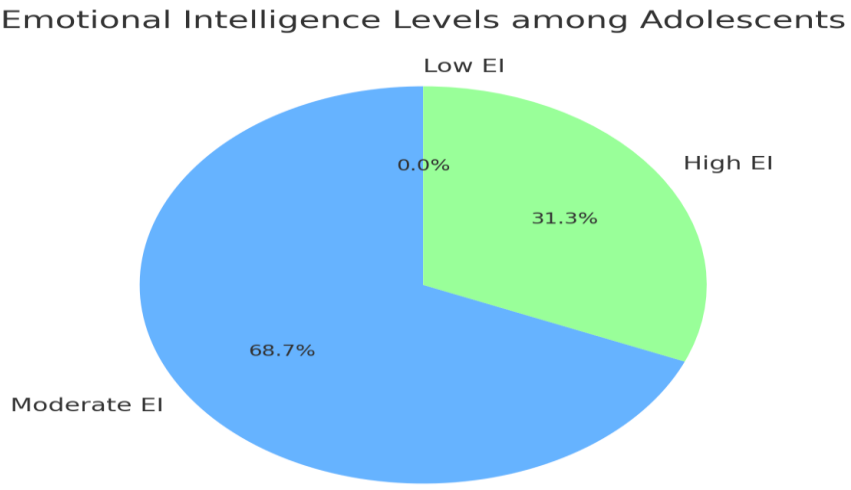

Figure 1: Pie Chart Representing Distribution of Adolescents by Their Level of EI in %

The classification of emotional intelligence scores revealed that a majority of adolescents (68.7%) had a moderate level of EI, while 31.3% demonstrated a high level of EI. None of the adolescents scored in the low EI category. This suggests that most adolescents possessed an average level of emotional intelligence, with a considerable proportion showing well-developed emotional intelligence.

DISTRIBUTION OF ADOLESCENT IN DIFFERENT DOMAINS OF COGNITIVE DEVELOPMENT

Table 3: Distribution of adolescent in different domains of cognitive development

Different Domains Of Cognitive Development	TOTAL SCORE	PERCENTAGE	MEAN	MEDIAN	SD
Academic	1299	32 %	11	10	3.7
Pragmatic	1715	42 %	15	16	3.6
Judgmental	1052	26 %	9	8	4.5
TOTAL	4066	100 %	61	61	11

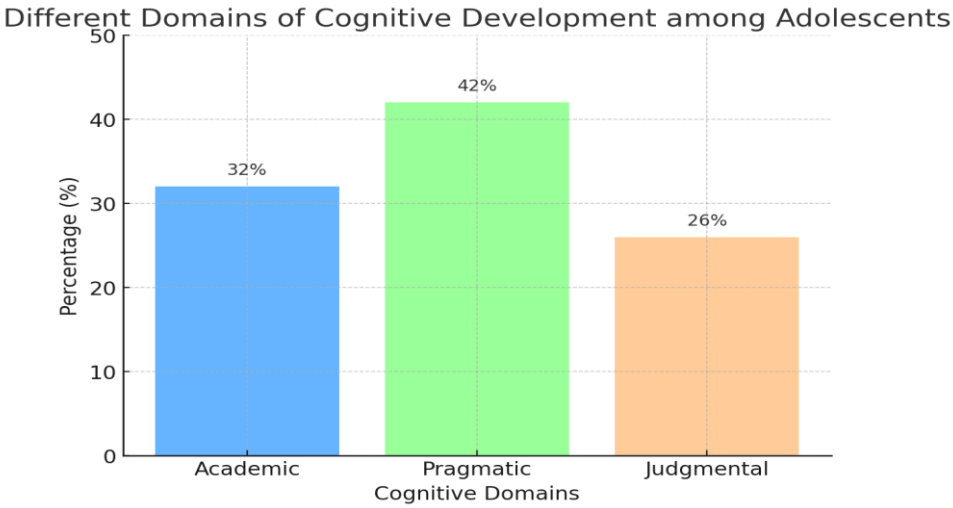

Figure 2: Distribution of adolescent in different domains of cognitive development

INTERPRETATION

The analysis of cognitive development across different domains (Table 3) revealed that the pragmatic domain contributed the highest proportion (42%) of the total score, with a mean of 15 (SD = 3.6) and median of 16. The academic domain accounted for 32% of the total, with a mean score of 11 (SD = 3.7) and median of 10. The

judgmental domain contributed the least (26%), with a mean of 9 (SD = 4.5) and median of 8. The overall cognitive development score across all domains was 4,066, with a mean of 61 (SD = 11) and a median of 61. This indicates that pragmatic abilities were relatively stronger among adolescents compared to academic and judgmental aspects.

Table 4: Correlation between Total EI with Different Domains of Cognitive Development

		Total EI Score	Academic	Pragmatic	Judgmental
Total EI Score	Correlation Coefficient	1.000	-0.007	0.045	-0.092
	Sig. (2-tailed)		0.942	0.633	0.328
	N	115	115	115	115
Academic	Correlation Coefficient	**-0.007**	1.000	0.008	-0.063
	Sig. (2-tailed)	0.942		0.934	0.505
	N	115	115	115	115
Pragmatic	Correlation Coefficient	**0.045**	0.008	1.000	0.133
	Sig. (2-tailed)	0.633	0.934		0.156
	N	115	115	115	115
Judgmental	Correlation Coefficient	**-0.092**	-0.063	0.133	1.000
	Sig. (2-tailed)	0.328	0.505	0.156	
	N	115	115	115	115

INTERPRETATION

The correlation analysis between total emotional intelligence and different domains of cognitive development showed no significant relationships ($p > 0.05$). Specifically, total EI had a negligible negative correlation with the academic domain ($r = –0.007$, $p = 0.942$) and the judgmental domain ($r = –0.092$, $p = 0.328$), while showing a weak positive correlation with the pragmatic domain ($r = 0.045$, $p = 0.633$). None of these correlations reached statistical significance, indicating that emotional intelligence was not significantly associated with academic, pragmatic, or judgmental aspects of cognitive development among the adolescents studied.

TESTING OF HYPOTHESIS

Table 5: Testing of Hypothesis

Cognitive Domain	r (Correlation Coefficient)	p-value	Interpretation
Academic	-0.007	0.942	Not significant
Pragmatic	0.045	0.633	Not significant
Judgmental	-0.092	0.328	Not significant

- For Total EI and Academic development, $r = -0.007$ and $p = 0.942$. Since $p > 0.05$, the null hypothesis H_{01} is not rejected, indicating no significant correlation.
- For Total EI and Pragmatic development, $r = 0.045$ and $p = 0.633$. Since $p > 0.05$, the null hypothesis H_{02} is not rejected, indicating no significant correlation.
- For Total EI and Judgmental development, $r = -0.092$ and $p = 0.328$. Since $p > 0.05$, the null hypothesis H_{03} is not rejected, indicating no significant correlation.

DISCUSSION

Emotional Intelligence and Cognitive Development in Adolescents

The analysis of the relationship between Total Emotional Intelligence (EI) and the domains of Academic, Pragmatic, and Judgmental cognitive development in adolescents revealed no significant correlations. This suggests that, within this sample, EI does not exhibit a measurable impact on these specific cognitive domains.

ACADEMIC DOMAIN

The lack of significant correlation between EI and academic development aligns with findings from Matešić (2015), who reported that EI did not significantly predict academic achievement among Croatian high school students. Similarly, a study by Perpiñà Martí (2020) found that EI was not a primary predictor of academic success, even when compared to cognitive intelligence. These studies support the notion that academic performance may be more closely linked to cognitive abilities and other factors, rather than EI.

PRAGMATIC DOMAIN

Regarding the pragmatic domain, characterized by practical decision-making and social adaptability, the absence of a significant correlation with EI suggests that pragmatic abilities may be influenced by a broader range of environmental and developmental factors beyond EI.

JUDGMENTAL DOMAIN

In the judgmental domain, which involves moral reasoning and ethical decision-making, the lack of significant correlation with EI is noteworthy. A study by Mahmud (2019) explored the role of EI in adolescent development and found that while EI influences various aspects of development, its impact on moral judgment was not explicitly addressed. This indicates that moral reasoning may develop through different mechanisms, possibly independent of EI.

THEORETICAL IMPLICATIONS

These findings contribute to the ongoing discourse on the role of EI in adolescent development. While EI is recognized for its influence on emotional regulation and interpersonal relationships, its direct impact on specific cognitive domains remains inconclusive. The absence of significant correlations in this study suggests that EI may not be a primary determinant of academic, pragmatic, or judgmental development in adolescents. This aligns with the perspectives of Saarni (1999), who emphasized the multifaceted nature of emotional competence and its complex interplay with cognitive development.

LIMITATIONS AND FUTURE DIRECTIONS

Several limitations should be considered when interpreting these findings. The cross-sectional design of the study precludes causal inferences, and the reliance on self-reported measures may introduce response biases. Future research employing longitudinal designs and objective assessments could provide deeper insights into the temporal dynamics between EI and cognitive development domains. Additionally, exploring other factors such as socioeconomic status, cultural influences, and educational interventions may elucidate the complex relationships underlying adolescent development.

CONCLUSION

The findings reveal that Total Emotional Intelligence does not have a significant relationship with any domain of cognitive development among the adolescents in the study. This suggests that, in this sample, emotional intelligence and cognitive development may be independent constructs.

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