



## African Journal of Biological Sciences



### Examining the Effects of Emotional Intelligence Elements on the Academic Development of Students

Dr.T.S.Leelavati, Assistant Professor, SeshadriRao Gudlavalleru Engineering College, [Leela.thota@gmail.com](mailto:Leela.thota@gmail.com) ORCID Id: 0000-0002-3922-1500

Dr.S.Madhavi, Associate Professor, SeshadriRao Gudlavalleru Engineering College [sripathi.madhavi235@gmail.com](mailto:sripathi.madhavi235@gmail.com), ORCID Id: 0000-0001-7534-7955

Ms.Reddy Jhansi Vyshnavi, Seshadri Rao Gudlavalleru Engineering College, [jhansivyshnavir@gmail.com](mailto:jhansivyshnavir@gmail.com), ORCID Id: 0009-0005-3891-0100

Ms.Bolla Keerthi, Seshadri Rao Gudlavalleru Engineering College, [keerthibolla07@gmail.com](mailto:keerthibolla07@gmail.com)  
ORCID Id: 0009-0007-7389-5852

Ms.Konatam Udaya Bhanu, Seshadri Rao Gudlavalleru Engineering College, [srikanthgonugunta402@gmail.com](mailto:srikanthgonugunta402@gmail.com) Orcid Id: 0009-0006-2041-8406

Ms.Vijaya Durga Ramyavi Penta, Seshadri Rao Gudlavalleru Engineering College,  
[Ramyavi043@gmail.com](mailto:Ramyavi043@gmail.com) Orcid Id: 0009-0008-9237-1576

Mr. Gonugunta srikanth Seshadri Rao Gudlavalleru Engineering College,  
Email: [srikanthgonugunta402@gmail.com](mailto:srikanthgonugunta402@gmail.com) Orcid Id:0009-0007-9395-0089

#### Abstract:

The results of the study reveal a noteworthy connection between self-awareness, emotional management, and empathy with academic achievement, reaching a level of statistical significance. The employed statistical analyses indicate that three components of emotional intelligence, namely self-awareness, self-motivation, and empathy, collectively explain a proportion of the variability observed in academic achievement. This proportion is presented in a model that illustrates the interrelationship between the elements of emotional intelligence and academic accomplishment. These outcomes emphasize the significance of emotional intelligence in boosting cognitive capacities among students, highlighting its role in nurturing a skilled and successful generation that aligns with educational philosophies.

**Keywords:** academic success, self-awareness, emotional control, self-motivation, empathy, and interpersonal abilities.

Article History

Volume 6, Issue 5, 2024

Received: 22 May 2024

Accepted: 03 Jun 2024

doi: [10.48047/AFJBS.6.5.2024.11242-11256](https://doi.org/10.48047/AFJBS.6.5.2024.11242-11256)

**Introduction:**

In the face of contemporary challenges marked by globalization, secularism, and diverse obstacles, particularly among school students and the wider populace, the ability to manage one's emotions is of utmost importance. Developing a high level of emotional intelligence empowers individuals to maintain inner harmony, cultivate self-assuredness, and effectively confront the complexities of life and learning within educational institutions.

**Historical Evolution of Emotional Intelligence:**

In the 1940s, David Wechsler introduced the concept 'intelligence' encompassing cognitive (intellectual) and non-cognitive (emotional) aspects. However, emphasis remained largely on cognitive aspects, overshadowing non-cognitive dimensions. Notably, E.L. Thorndike introduced the notion of social intelligence in the 1920s, a precursor to emotional intelligence (Goleman, 1995). Social intelligence entails comprehending human motivations, effective collaboration, and wise interpersonal interactions. Elements such as self-awareness, empathy, and adept interpersonal relationships constitute the foundation of the emotional intelligence, echoing the fundamentals of social intelligence.

Dr. Bar-On, in the 1980s, initiated research into factors contributing to individual success. His investigations identified numerous non-cognitive factors, including emotional intelligence, influencing personal achievement. In 1985, Bar-On introduced the term EQ (Emotional Quotient) to assess general intelligence, emphasizing negotiation skills, self-control, and adaptability. He identified five Intrapersonal, interpersonal, handling stress, flexibility, and moods are all aspects of emotional intelligence. Emotional intelligence entails self-awareness, emotional regulation, motivation, interpersonal sensitivity, persuasion, resilience, and integrity (Higgs and Dulewicz, 1999).

Professor Howard Gardner's seminal work on human intelligence established seven distinct intelligence types. Among them, intrapersonal and interpersonal intelligence align with emotional intelligence, encompassing self-understanding and effective interaction with others. Subsequently, the concept of emotional intelligence got formalized, defining it as social intelligence involving self and emotion regulation, emotional differentiation, and using emotions to guide cognition and behavior.

The expanded definition of emotional intelligence by Mayer and Salovey in 1997 placed an emphasis on this ability to recognize, control, and generates emotions in order to promote thinking and personal development. This concept underscores how individuals with high emotional intelligence effectively manage, understand, and utilize emotions for adaptive purposes, benefiting both themselves and others.

The popularization of emotional intelligence gained momentum with Daniel Goleman's 1995 publication, highlighting its substantial role in life success beyond IQ. Goleman asserts that emotional intelligence, encompassing self-awareness, self-motivation, emotional regulation, empathy, in addition to interpersonal skills, plays a pivotal role in personal and professional achievement. This study presents a model elucidating the interplay between the emotional intelligence elements and academic performance, with self-motivation acting as a potential mediator.

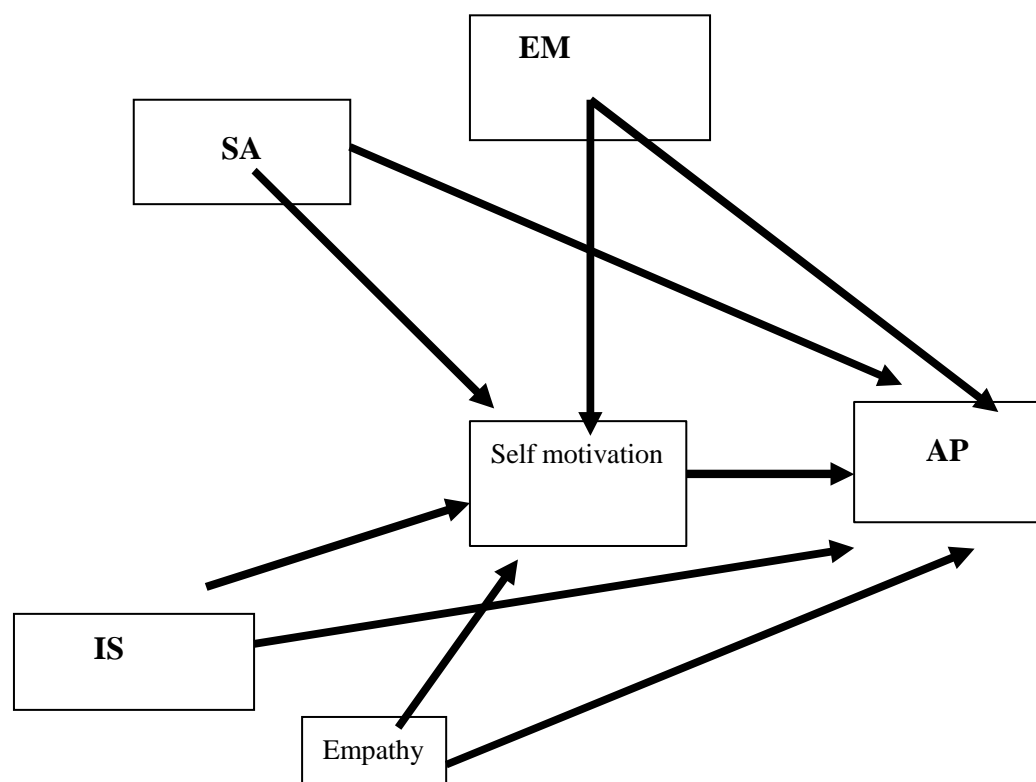


Diagram 1 shows the influence of interpersonal skills, self-awareness, emotional control, and self-motivation on academic performance.

To reinforce the outlined model, it is imperative to engage in a thorough discourse on prior research and existing literature concerning the correlation between emotional intelligence, specifically its constituent elements, and academic performance. This examination of past studies and scholarly reviews is crucial to substantiate the proposed framework and its assertion regarding the interplay between academic success and emotional intelligence.

### Academic Success and Emotional Intelligence: A Relationship

A student's poor performance might be attributed to a number of causes. The reason why students perform poorly in class is one of those dysfunctional personalities that make up the process of developing emotional intelligence.

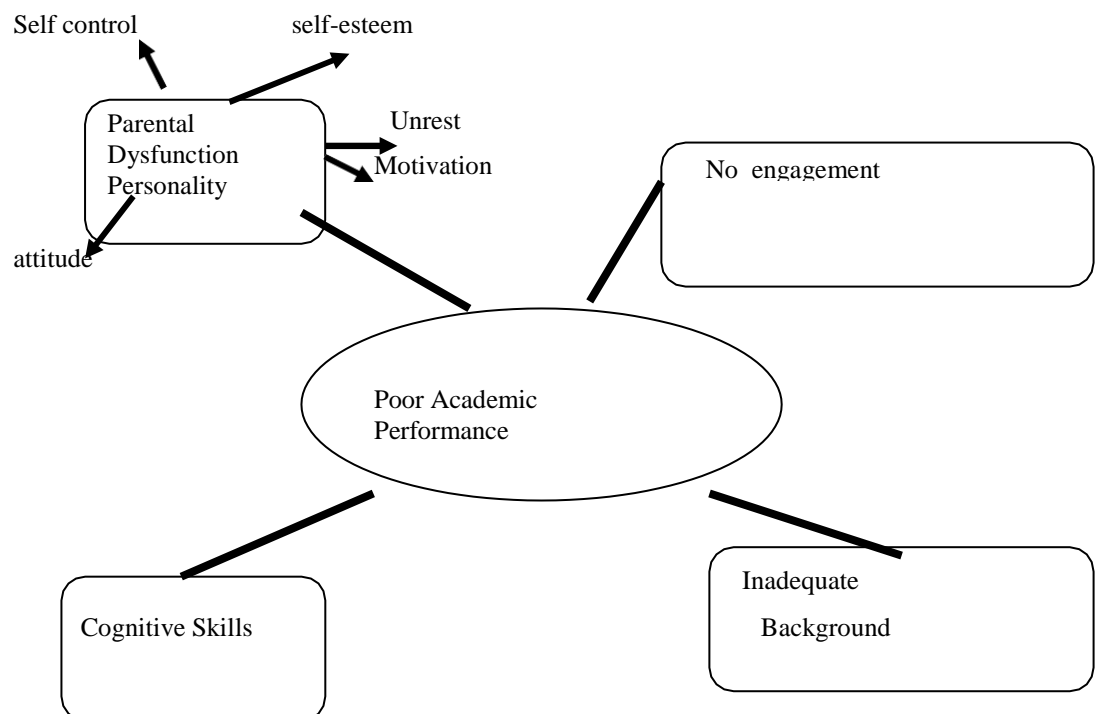


Diagram 2: An example of poor academic performance  
(Adapted from Brown & Langer, 1990; Krouse & Krouse, 1981)

The model presented here implies that dysfunction can manifest as an individual's lack of motivation, absence of confidence, low self-esteem, poor self-control, and heightened anxiety. These traits are indicative of low emotional intelligence (EI), which in turn, has an adverse impact on academic performance.

Rode et al. (2007) put forth a study suggesting emotional intelligence's relevance to academic performance rests on two key factors. Firstly, the ambiguity intrinsic to academic tasks requires robust emotional management skills. Secondly, academic work often demands self-directed efforts, necessitating proficient self-

management. Consequently, individuals with heightened emotional intelligence are better poised for academic success.

### **Self-Awareness Component and Academic Success in Relation to Each Other:**

Self-awareness entails recognizing one's emotions and comprehending their impact on performance. This self-awareness is pivotal in recognizing strengths and weaknesses, fostering self-confidence. Holahan and Sears (1995) conducted a longitudinal study spanning over six decades, revealing that individuals who acquired self-confidence early in life achieved greater success. Johnson (2009) concurred, asserting that emotional well-being is foundational to effective learning, with self-awareness and intrinsic motivation significantly enhancing academic performance.

### **Academic achievement and the emotional management component:**

Within educational contexts, cognitive and behavioral self-control assumes paramount importance, influencing outcomes. Sommerville study, which observed 450 men over time, underscored that emotional management and social skills, rather than IQ, are more closely linked to career and life success (Snarey and Vaillant, 1985). Self-control serves to regulate behavior, thoughts, and emotions, mitigating negative effects and fostering positive outcomes (Yates, 1986). Dweck's study (1996) highlighted the role of self-control in academic achievement and perseverance. MacCann et al.'s research (2011) affirmed the contribution of emotional management to academic outcomes, suggesting that skills in emotion regulation and problem-focused coping can enhance educational attainment.

### **Academic Performance and the Empathy Dimension:**

Empathy enables individuals to understand and empathize with others' emotions, fostering concern and emotional attunement. Fontana (1984) posited that schools provide a platform for children to freely express emotions, enabling emotional control and healthy relationships. Rosenthal et al. (1977) found that individuals adept at recognizing others' emotions tend to excel in both work and social domains. Low empathy levels have been associated with subpar academic performance; Nowicki and Duke (1992) revealed that students scoring higher on empathy achieved better grades. Chow (2006) echoed this sentiment, illustrating the positive link between empathy levels and academic motivation.

### **Self-Motivation Factor and Academic Success: A Relationship:**

Motivation, as the driving force underpinning interest and engagement, is integral to learning. Self-motivation, rooted in individual desires, significantly impacts academic performance. Kamarudin (1989) emphasized that emotions, intrinsic to self-motivation, influence responses and adaptive behaviors. Emotions closely interact with motivation,

influencing behavior and action (McDougall, 1908). The connection between motivation and cognition is vital, with both elements jointly shaping cognitive achievements (Rauste-Von Wright, 1986). Raineri's study (2010) supported the predictive role of motivation in academic achievement, particularly among Caucasian students.

### **Relationship between Academic Success and the Interpersonal Skills Element:**

Academic achievement is often linked to students' social competence and emotional well-being. MacMullin (1994) attributed low academic performance to social challenges and emotional issues. Scott-Jones and Clark (1986) asserted that social skills acquisition is pivotal to academic excellence, as the learning environment's social aspects can either bolster or hinder achievement. Grossman et al.'s (1997) findings highlighted the positive correlation between social skills and academic achievement. Stephen N. Elliott's study (1996-1997) demonstrated that social skills training correlated with improved academic achievements. Johnson (2009) emphasized that emotional intelligence fosters interpersonal relationships and social support, positively influencing academic performance.

The significance of emotional intelligence & its components in influencing academic achievement is made clear by illuminating these linkages.

#### **Research Questions:**

1. Does a correlation exist between students' academic achievement and emotional intelligence?
2. Does academic performance have a relationship with each specific aspect of emotional intelligence?
3. Which component of emotional intelligence most predicts success in college?

#### **Hypotheses:**

Following are some of the hypotheses this project will investigate:

According to the first null hypothesis, there is no statistically significant relationship between students' academic success and emotional intelligence.

Null Hypothesis 2: The association between any one aspect of emotional intelligence with academic success is not statistically significant.

Null Hypothesis 3: None of the 5 emotional intelligence components' regression coefficients are equal to zero when academic achievement is the dependent variable.

**Method:**

**Participants:** The participants in this study consisted of Btech students across all branches undergraduates (N = 370), 127 of whom were male (34.32%) and 243 of whom were female (65.68%).

**Measures:** The study used an instrument for surveying in the shape of a questionnaire and used stratified random sampling according to demographic factors.

**Instruments:** Questionnaires were the primary instruments employed, including the following adaptations: i. Self-Awareness Assessment (Dann, 2001): This section contained 20 questions assessing the ability to recognize personal feelings, with modifications made to suit the students' context. ii. Emotion Control Assessment (Dann, 2001): Comprising 20 questions, this segment evaluated one's capacity to manage emotions effectively. iii. From the 30 questions on the Empathy Index (Caruso and Mayer, 1997), 20 were chosen and modified to better fit the sample. IMI: The Intrinsic Motivation Inventory. This assessment, which included 20 chosen and modified questions related to intrinsic motivation with self-control, was adapted from earlier studies (Ryan, 1982; Ryan, & Koestner, 1984; Plant & Ryan, 1985.; Ryan, Koestner, & Deci, 1991, and Deci, Eghrari, Patrick, et Leone, 1994). v. the Interpersonal Skills Evaluation (Baer and Zimbardo, 1976): This test included items that reflected interpersonal skills and style, and it was based on changes from Baer (1976) & Zimbardo (1976). 20 suitable products were chosen by the researchers.

**Procedure:**

**Research Design:** The study used a survey methodology to examine the association between emotional intelligence with academic achievement in a sample of Andhra Pradesh engineering students. The study examined the relationship between E.I as well as academic success as well as the effects of emotional intelligence's individual components (self-awareness, handling emotions, self-motivation, compassion, and interpersonal skills) on students' academic performance. The study also sought to pinpoint the strongest indicators of academic success.

**Analysis:**

The Pearson correlation coefficient (Pearson-r) was used in the data analysis to determine the correlations between the components of emotional intelligence and academic accomplishment. The predictor of academic

success was identified using multiple regression analysis (stepwise). SPSS was used to process all of the data.

### Regression Analysis

Self-awareness, emotional control, motivation for oneself, empathy, and interpersonal abilities are not significantly related to academic success, according to Null Hypothesis 1.

Self-awareness, emotional restraint, self-motivation, empathy, & interpersonal skills are the five predictors. —were all included in the regression analysis. In an analysis of multiple regression (stepwise), these predictors were evaluated with the dependent variable, which was academic success (criterion). According to the findings shown in Table 1, self-awareness, motivation, & empathy were among the component variables that significantly influenced academic performance.

**Table 1 : Matrix of correlation between the dependent and independent variables**

	M (SD)	S.A	E.M	S.M	Empathy	I.S	A.A
Self Awareness,	3.37 (0.448)	1.0					
Emotional Management	3.44 (0.436)	.833	1.0				
Self Motivation	3.37 (0.444)	.598*	.598*	1.0			
Empathy	3.41 (0.320)	.347*	.383*	.260*	1.0		
Interpersonal skill	3.37 (0.401)	.337*	.348*	.261*	.127	1.0	
Academic Achievement	3.65 (0.902)	.210*	.210*	.016	.210*	.041	1.0

Note: \* $p < .05$ , \*\* $p < .01$

Table 1 demonstrates the findings of the study of the association between the dependent variable (academic performance) and the independent variable (S.A, E.M, self-drive, empathy, & interpersonal skills). Three different iterations of an analysis of variance, or ANOVA, are used to display the findings and highlight key contributions.

Academic success and self-awareness were found to have significant contributions,  $F(1,267) = 16.858$ ,  $p .05$ , where  $p = .000$ . The same study found that self-motivation significantly influenced academic success,  $F(2,357) = 11.192$ ,  $p .05$ , where  $p = .000$ . Additionally,  $F(3,366) = 11.464$ ,  $p .05$ , with  $p = .000$ , showed that empathy made a significant influence to academic achievement. On the other hand, academic success did



not significantly benefit from interpersonal or emotional intelligence.

The R<sup>2</sup> analysis of model 1 (self-awareness) produced a value of 0.043 based on the information in Table 2.  $F(1,267) = 16.858$ ,  $p = 0.000$  less than 0.05, Lower R<sup>2</sup> implies a lower ability of that independent factor (self-awareness) to describe the dependant variable (academic accomplishment). According to an analysis of the self-awareness element's beta value, the proposed model only accounts for 4.3 percent of the variance in the data (beta = 0.210,  $t = 4.118$ , Sig = 0.000, and R<sup>2</sup> = 0.043). This finding is consistent with a significant examination of variance, where a value of 0.000 is significantly below the 0.05 defined significance level. Consequently, a rise of 4.3 percent in the variance associated with the criterion (academic accomplishment) is explained by the self-awareness predictor in the first model. Turning to model 2 (motivation), the R<sup>2</sup> analysis yields a value of 0.062. A lower R<sup>2</sup> value suggests a reduced ability of the variable that is independent (motivation) to explain the dependent variable's (academic success),  $F(2,467) = 12.183$ ,  $p = 0.000$  less than 0.05. Exploring the Beta coefficient, the self-motivation element (beta = -0.169,  $t = -2.673$ , Sig = 0.008, and R<sup>2</sup> = 0.062) indicates that the proposed model explains a mere 6.2 percent of the variance. Consistent with this, the analysis of variance demonstrates a significant value of 0.000, well below the specified significance level of 0.05. Hence, the second model's self-motivation predictor contributes to a 6.2 percent enhancement in the criterion's variation (academic achievement).

Considering model 3 (empathy), the R<sup>2</sup> analysis yields a value of 0.086. A reduced R<sup>2</sup> implies a decreased capacity of the independent variable (empathy) to elucidate the dependent variable (academic achievement),  $F(3,267) = 11.464$ ,  $p = 0.000$  less than 0.05. Examining the Beta value, the empathy element (beta = 0.167,  $t = 3.119$ , Sig = 0.002, and R<sup>2</sup> = 0.086) suggests that the proposed model explains only 8.6percent of the variance. This conclusion is supported by the significant analysis of variance, with a value 0.000 considerably lower than the specified significance level of 0.05. Thus, the third model's empathy predictor contributes to an 8.6 percent amplification in the criterion's variance (academic achievement).

Considering the R<sup>2</sup> values for all three models, it can be deduced that elemental self-awareness contributes 4.3 percent to academic performance. When accounting for the elements of self-motivation, the contribution increases to 6.2 percent. Further, with the inclusion of empathy, the contribution escalates to 8.6 percent in explaining the variance in academic achievement.

**Table 2 shows the results of the regression analysis for the contributions of self-**

**awareness, self-motivation, and empathy to academic achievement.**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig.F Change
1	.210 <sup>a</sup>	.043	.041	.88307	.044	16.858	1	368	.000
2	.250 <sup>b</sup>	.063	.057	.87579	.018	7.145	1	367	.008
3	.294 <sup>c</sup>	.086	.079	.86556	.024	9.726	1	366	.002

a. Predictors: (Constant), self awareness

b. Predictors: (Constant), self awareness, self motivation

c. Predictors: (Constant), self awareness, self motivation, empathy

d. Dependent Variable : Academic achievement

The results of the analysis also allow researchers to get a regression equation that can be used to predict the Y value in the future. The regression analysis results obtained as follows:

$$Y = \beta_0 + \beta_1 x + \beta_2 x^2 + \beta_3 x^3 + \beta_4 x^4 + \text{Constant Standard Error}$$

$$Y = 1.438 + 0.21x - 0.169 x^2 + 0.167x^3 + 0.549$$

Y = Academic achievement

$\beta_1$   
 $\beta_2$   
 $\beta_3$

$\beta_1 x = 0.21$  (Self Awareness)

$\beta_2 x^2 = -0.169$  (Self Motivation)

$\beta_3$

$x^3 = 0.167$

From the analysis based on Table 2, evident is the significant variability in relation to the elements (self-awareness, self-motivation, and empathy) with regard to the academic achievement criterion. This is indicated by F-values of 16.958 (Sig = 0.000 less than 0.05) for self-awareness, 12.193 (Sig = 0.000 less than 0.05) for self-motivation, and 11.564 (Sig = 0.000 less than 0.05) for empathy. When considering the Beta values, the self-awareness element exhibits a Beta of 0.21 (t = 4.118, Sig = 0.000, R<sup>2</sup> = 0.044), the self-motivation element presents a Beta of -0.169 (t = -2.673, Sig = 0.008, R<sup>2</sup> = 0.062), and the empathy element demonstrates a Beta of 0.167 (t = 3.119, Sig = 0.002, R<sup>2</sup> = 0.087).

From the regression results, the following conclusions can be drawn:

i) A unit increase in the elements of self-awareness corresponds to a 4.4 percent increase in academic achievement scores.

- ii) An increment of one unit in the self-motivation element results in a 6.2 percent enhancement in academic achievement scores.
- iii) A per-unit increase in the elements of empathy leads to an 8.7 percent rise in academic achievement scores.

In summary, these findings underscore the significance of elemental self-awareness, with a contribution of 4.4 percent to academic achievement. This contribution elevates to 6.2 percent when accounting for the self-motivation element and further increases to 8.7 percent when incorporating the elements of empathy in explaining changes in student academic achievement.

**Table 3 shows the outcomes of the regression study for the associations between students' academic performance and their levels of self-awareness, motivation for oneself, and empathy**

Variable	Multiple R	$\beta$	Standard error <i>b</i>	Beta	<i>t</i>	Significance of <i>t</i>
Self awareness	0.22	0.523	0.128	0.260	4.052	0.000
Self Motivation	0.24	-0.368	0.126	-0.181	-2.914	0.004
Empathy	0.293	0.484	0.155	0.166	3.118	0.002

**Table 4: Self-Awareness & Empathy Contributions by Self-Motivation: Results of Regression Analysis**

Variable	Multiple R	$\beta$	Standard error <i>b</i>	Beta	<i>t</i>	Significance of <i>t</i>
Self awareness	0.599	0.594	0.041	0.599	14.344	0.000
Empathy (Excluded Variables)	-	0.059	-	0.070	1.335	0.183

**Table 5 : Results of a Regression Analysis for Self Awareness and Empathy**

Variable	Multiple R	$\beta$	Standard error <i>b</i>	Beta	<i>t</i>	Significance of <i>t</i>
Self awareness	0.348	0.240	0.034	0.348	7.122	0.000

Null Hypothesis 2: The association between any one aspects of emotional intelligence with academic success is not statistically significant.

Five predictors—self-awareness, emotional control, self-motivation, empathy, & interpersonal skills—are included in the stepwise regression analysis, with academic attainment acting as the cutoff for each of these variables. Diagram displays the outcomes of a stepwise multiple regression analysis. When taking into account students' academic accomplishment (the criterion), the conducted analysis shows a considerable variation which is statistically significant when compared to the self-awareness, motivation for oneself, and empathy factors.

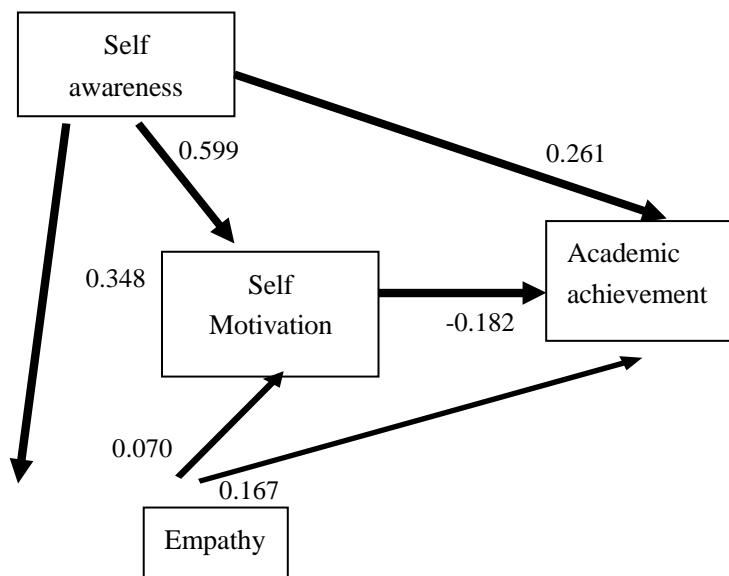


Diagram 3: Model Predictor Elements of Self-Awareness, Self Motivation and Empathy on Student Academic Achievement.

## 8.0 Discussion

The goal of the study was to identify characteristics of emotional intelligence that are strongly associated with academic success. The study also looked at the importance of particular components of emotional intelligence and how they relate to academic success. Only self-awareness, motivation for oneself, and empathy showed a meaningful association as indicators of academic accomplishment, according to the findings. Although these contributions were not particularly significant—self-awareness only contributed 4.3% of the R<sup>2</sup>—the addition of the self-motivation component increased the R<sup>2</sup> to 6.2%, and taking empathy into account further increased the R<sup>2</sup> to 8.6%. These results highlight how important these factors are in influencing academic achievement.

Supporting these findings, Tapia (1998) observed a significant contribution of the empathy element to students' decision-making processes. This observation aligns with Feshbach & Feshbach's (1987) assertion that higher empathy capacities correlate with better grades. Empathetic students, who can adapt to various emotional states in their environment, tend to create a conducive learning environment, thereby indirectly enhancing academic performance. Similarly, the self-motivation element exhibited a strong and significant influence on academic achievement. These findings concur with Wentzel's (1989) research, which emphasized goal-oriented behavior for achieving positive outcomes. Wan Rafaei (1998) also supported the notion that motivation positively impacts academic performance, as motivated students are more self-assured and proactive.

In conclusion, successful learning hinges on undivided attention and concentration during the teaching and learning process, fostering cognitive intelligence development and better information retention (Cross, 1974). Elevated emotional intelligence levels aid in maintaining a calm mental state, thereby enhancing information absorption and, consequently, academic achievement. Maria's (2004) academic achievement and emotional intelligence are positively correlated. It is advisable to bolster students' educational achievements through emotional intelligence training (Hammed, 2010).

Irrespective of their ethnic background, each student aspires to achieve excellence in academics. Besides effective learning strategies and meticulous planning, self-recognition in terms of emotional intelligence is essential to circumvent potential obstacles to success. Thus, emphasizing emotional intelligence is crucial not only for academic progress but also for future accomplishments. To foster resilient and adaptable individuals capable of navigating global challenges, efforts to enhance students' emotional intelligence should be an integral part of the teaching and learning process in classrooms.

## References:

1. Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.
2. Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3-31). Basic Books.
3. Brackett, M. A., & Rivers, S. E. (2014). Transforming students' lives with social and emotional learning. *Phi Delta Kappan*, 96(2), 8-13.

4. Bar-On, R. (2000). Emotional and social intelligence: Insights from the Emotional Quotient Inventory (EQ-i). In R. Bar-On & J. D. A. Parker (Eds.), *The Handbook of Emotional Intelligence* (pp. 363-388). Jossey-Bass.
5. Zeidner, M., Matthews, G., & Roberts, R. D. (Eds.). (2012). *The science of emotional intelligence: Knowns and unknowns*. Oxford University Press.
6. Petrides, K. V., & Furnham, A. (2000). On the dimensional structure of emotional intelligence. *Personality and Individual Differences*, 29(2), 313-320.
7. Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9(3), 185-211.
8. Extremera, N., & Fernández-Berrocal, P. (2006). Emotional intelligence as predictor of mental, social, and physical health in university students. *The Spanish Journal of Psychology*, 9(1), 45-51.
9. Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, 37(2), 91-105.
10. Mayer, J. D., Caruso, D. R., & Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. *Emotion Review*, 8(4), 290-300.
11. Aminabee S., Rao A.L., & Eswaraiah M.C. (2015). Hepatoprotective Activity of *Michelia nilagirica* against Paracetamol Induced Hepatic Injury in Rats. *Pharmacognosy Journal*, 7(4), 1-8.
12. Aminabee S., Rao A.L., & Eswaraiah M.C. (2020). In vivo Antioxidant Activity of Different Fractions of *Indigofera barberi* Against Paracetamol induced Toxicity in Rats. *Turkish Journal of Pharmaceutical Sciences*, 17(2), 136-140.
13. Aminabee S., Rao A.L., Sowmya K., Nymisha D., Lakshmi K.K.N., Manikanta K.V.N.S., & Kumar P.P. (2019). Evaluation of Analgesic Activity of *Ficus palmata*. *Iranian Journal of Pharmaceutical Sciences*, 15(3), 47-60.
14. Aminabee S., Rao Ch.R., Shankar K.R., Adithya V., Babu S.H., Rachana R., Sri G.B., Sultana Sk.A., & Rao A.L. (2023). Influence of *Allium sativum* on Pharmacodynamics and Pharmacokinetics of Gliclazide in Normal Rabbits. *Asian Journal of Pharmaceutics*, 17(1), 64-70.
15. Aminabee S.K., Prabhakara M.C., Kumar K.V., & Rao A.L. (2011). Screening of Bacterial Exotoxins for their Pharmacological Activity In vitro. *Advances in Pharmacology and Toxicology*, 12(3), 69-72.
16. Aminabee S.K., Prabhakara M.C., Prasad R.G.S.V., & Rao A.L. (2011). Screening of Pharmacological Activity of Cerium Oxide Nanoparticles In vitro. *Biomedical and Pharmacology Journal*, 4(2), 287-289.

17. Aminabee S.K., Rao A.L., & Eswaraiah M.C. (2015). Antidiabetic Activity of Ethanolic Extract of *Michelia nilagirica* in Wistar Albino Rats. *International Journal of Research in Pharmacy and Chemistry*, 5(1), 230-234.
18. Aminabee S.K., Rao A.L., & Eswaraiah M.C. (2015). Gastroprotective activity of *Michelia nilagirica* in rats Possible involvement of H<sup>+</sup> K<sup>+</sup> ATPase inhibition. *International Journal of Pharmaceutical, Chemical and Biological Sciences*, 5(3), 748-758.
19. Aminabee S.K., Rao A.L., & Eswaraiah M.C. (2015). In vivo Antioxidant Activity of Different Fractions of *Michelia nilagirica* against Paracetamol Induced Toxicity in Rats. *Indian Journal of Pharmacy and Pharmacology*, 2(3), 176-182.
20. Aminabee S.K., Rao A.L., & Eswaraiah M.C. (2016). M. Antidepressant Activity of Chloroform Extract of *Indigofera barberi* in Experimental Animal Models. *International Journal of Chemical Sciences*, 14(2), 739-750.
21. Leelavati T.S., Madhavi S., Kamal G., Raju P.V.M., Susmitha K., Vinod M., Shaik A., (2023). Revolutionizing Healthcare Delivery: Telemedicine's Influence on Access and Patient Satisfaction. *International Journal of Chemical and Biochemical Sciences*, 24(5), 106-115.
22. Leelavati T.S., Madhavi S., Susmitha K., Venkateswara K.K.S., Vara P.P.G., Ganga K.R., Shaik A., (2023). Exploring University Student Attitudes, Beliefs, and Alcohol Usage Patterns: An Investigation into Alcohol and Drug Use within the Student Lifestyle. *Journal of Drug and Alcohol Research*, 12(8), 1-6.
23. Prasanth D.S.N.B.K., Aminabee S.K., Rao A.L., Teja N., Bhargavi K., Monika C., Pujitha B., Sandhya T., Lalitha A., & Panda S.P. (2020). Antihelmintic Activity of *Mansoa Alliacea* Against *Pheretima Posthuma*: In vitro and In silico Approach. *Thai Journal of Pharmaceutical Sciences*, 44(3), 186-196.
24. Shaik A., Koppula S., Ravi K.S., Gullapalli R., Kasaraneni Y., Jaswanth K.K., Rishitha K., (2023). Pharmacological Interventions for Relieving Neuropathic Pain in Diabetic Patients. *International Journal of Chemical and Biochemical Sciences*, 24(4), 414-419.
25. Shaik A., Santhi K.D., Hanumanth K.R., Sirisha V., Anitha V.K., Nagasen D., Balla S., Leelavati T.S., (2023). Pharmacoeconomic Analysis of Biologic vs. Biosimilar Therapies in Rheumatoid Arthritis. *International Journal of Chemical and Biochemical Sciences*, 24(4), 395-400.