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Effect of Emotional Intelligence of College Going Students on Their Metacognitive Awareness

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Abstract:

The present study was conducted to empirically investigate Metacognitive Awareness and Emotional Intelligence of college going students to develop an in-depth understanding. The main objective of the study was to find out the levels of Metacognitive Awareness and Emotional Intelligence of college going students of the southern part of West Bengal. Moreover, the study focuses on whether there is any relationship exists between Metacognitive Awareness and Emotional Intelligence. The present study also tries to investigate the effect of Emotional Intelligence on Metacognitive Awareness of students across different levels. The study was conducted based on descriptive survey method with 384 general degree college going students of various streams in West Bengal who were selected through incidental sampling technique. Standardized questionnaires, by ensuring reliability and validity of the tools, were used to collect data. Descriptive statistics, Spearman's rho coefficient of correlation and Quantile regression analysis have been used to test the null hypothesis. The result revealed that college going students have moderate level of Metacognitive Awareness and Emotional Intelligence both. From the correlational analysis, it is observed that there is a significant positive correlation between Metacognitive Awareness and Emotional Intelligence. The result of regression analysis showed that Emotional Intelligence significantly and positively predicts the Metacognitive Awareness across all the quantiles. The findings have also been extensively discussed with educational implications.

Keywords: *Metacognitive Awareness, Emotional Intelligence, College going students*

Introduction:

In the present era of student-centric learning process, learners' autonomy is taken into most consideration. According to Holec (1981), it is the ability that is acquired by the learner through which he or she can understand and take charge of his or her own learning himself. It is possible when he

can understand his own abilities and potentialities and regulate them to their maximum end with his cognitive, affective and psychomotor abilities. In this way, the learner should develop his or her cognitive, affective and psychomotor aspects that will help him or her to learn and to adjust with the environment himself. Thus, learners' self-understanding and self-management are now very crucial for learning. So, education should focus on the learner's self-awareness and self-direction process. In this way, Metacognitive Awareness and Emotional Intelligence play a vital role in the learner's self-learning process.

College going students are an important group of people who are adventurous, energetic, ready to learn and they modify their behaviour to make a footprint in society through their interactions with one another. In this stage, learners should know what to do, how to do and when to do and how to express and understand themselves as well as others. In this way, two major aspects of the learner's cognitive learning and social phenomena are considered, one is Metacognitive Awareness and the second is Emotional Intelligence.

Metacognition is the cognitive process that goes beyond general or ordinary thinking. Conceptually, metacognition can be defined as a higher-order thinking process that helps to know and regulate one's knowledge, experience and strategy. According to Flavell (1979), "Metacognition refers to one's own cognitive process and products or anything related to them… And refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes…" (p. 232). So it is such a cognitive process by which an individual can think of his or her knowledge and how to use it. It has two aspects, i.e., knowledge about cognition and knowledge about regulation (Schraw, 1998).

Awareness can be defined as a phenomenon that helps to know how learners experience a situation in their lives. So, Metacognitive Awareness refers to being aware of how one thinks. Metacognitive Awareness is a system of knowledge about basic manifestations of intellectual activity in general and about one's own cognitive possibilities (Shavinina & Seeratan, 2003). More simply, Metacognitive Awareness can be defined as awareness about the learner's knowledge and self-regulation process.

Students' success is not only determined by academic intelligence. Besides academic intelligence, students' success depends on various aspects of intelligence or competencies (Serrat, 2009). Emotional Intelligence, a wider range of intelligence, helps to improve academic performance (Ranasinghe et al., 2017) and personal life as well. Salovey and Mayer (1990) is the pioneer in this field though the concept was later popularized by Daniel Goleman. Emotional intelligence is a very important aspect of one's own unitary ability that helps to know and judge one's own emotions. It is a non-cognitive psychological aspect that shapes human behavior (Ramya, 2014, p. 10).

Metacognitive Awareness and Emotional Intelligence are the major aspects of students' own

learning process. These can ensure students' academic performance and their success in their lives. Thus, many studies have been done in this field of general students as well as medical students, where most of the studies found a positive correlation between Metacognitive Awareness and academic performance or achievement (Young & Fry, 2008; Iqbal et al., 2019; Abdelrahman, 2020; Frnam & Anjomshoaa, 2020). So, the results showed that those students are academically better whose Metacognitive Awareness is high (Rahman et al., 2010). Metacognitive skills also contribute to Academic Achievement (Kristiani et al., 2015). However, there are some studies that revealed negative correlation between Metacognitive Awareness and Academic Achievement (Sonowal & Kalita, 2017).

Previous studies on the level of Metacognition (Metacognitive Awareness and Metacognitive Ability) found higher levels among different groups, including higher secondary students (Alavinia & Mollahossein, 2012; Jagadeeswar & Chandrasekaran, 2014), medical students (Iqbal et al., 2019) and pre-service teachers (Sendurur et al., 2011; Ozcakmak et al.,2021). Though secondary school students also found low level of Metacognitive Awareness (Sarwer & Govil, 2017; Sarwer, 2018). However, most of the studies showed that the majority of students have average level of Metacognitive Awareness (Talekar & Fernandes, 2016; Panchu et al., 2016; Sabna & Hameed, 2016). Even Primary school students were found to have average level of Metacognitive Awareness (Dhyani & Maikhuri, 2018).

Metacognitive Awareness also plays an important role in successful and effective learning, as students' strategies and Academic Motivation have positive correlation with Metacognitive knowledge and awareness (Sarwer, 2018; Abdelrahman, 2020).

Previous studies showed mixed results regarding the levels of Emotional Intelligence of students and teachers, as well as the variability found in Metacognitive Awareness. Emotional Intelligence level found range from high (Ponmozhi & Ezhilbharathy, 2017; Mondal & Faisal, 2025) to average or moderate (Miri et al., 2013; Kumar, 2020; Chaturvedi et al., 2017, Obeid et al., 2021) and even the presence of low emotional competencies level has also been reported in some studies (Rosales-Pérez et al., 2021). Similarly, Miri et al. (2013) reported 12.7 % of students are poor in Emotional Intelligence level.

There are some contradictory findings on the relationship between Metacognition and Emotional Intelligence. Various studies reported a significant positive correlation between Metacognitive Awareness and Emotional Intelligence (Sharei et al., 2012; Mahasneh, 2014) and Emotional Intelligence has a significant effect on factors of Metacognitive Awareness, i.e., Metacognitive Regulation and Metacognitive knowledge (Ekaterina & Valentina, 2019). However, Weigand (2017) reported that there is no significant relationship between Emotional Intelligence and Metacognition.

Previous research in the field of Metacognitive awareness and Emotional Intelligence reported many different findings to study the nature of Metacognitive Awareness and Emotional Intelligence in terms of students' specific characteristics. Literature review also proves the limitation of the associated study on Metacognitive Awareness and Emotional Intelligence. Previous studies reported that there is limited evidence on the relationship between Metacognition and emotion (Ektarina et al., 2019). Thus, the study aims to develop an overview of college going students' Metacognitive Awareness and Emotional Intelligence and to enrich the field, the researchers tried to study this field comprehensively. Therefore, the first objective of the study is to examine the level of Metacognitive Awareness and Emotional Intelligence of college going students. The second objective is to explore the relationship between Metacognitive awareness and Emotional intelligence and it also tries to investigate if Emotional Intelligence can be a significant predictor of Metacognitive Awareness across different levels as the third objective of the study.

Research Question for the Study:

The first objective is to find out the levels of Metacognitive Awareness and Emotional Intelligence of students. For this purpose, two research questions have been framed to fulfill the objectives:

RQ1: What is the level of Metacognitive Awareness of the students?

RQ2: What is the level of Emotional Intelligence of the students?

Null Hypothesis for the Study:

Based on the above-mentioned second and third objectives, the following null hypotheses have been framed:

$H_0$1: There is no significant relationship between Metacognitive Awareness and Emotional Intelligence of students.

$H_0$2: Emotional Intelligence is not a significant predictor of Metacognitive Awareness across different levels.

Methodology:

This is descriptive survey research on undergraduate degree college going students of the southern part of West Bengal, which is considered as population of the study. Though the study was delimited only in Kolkata, North and South 24 pgs. districts of West Bengal. Both Males and Females from rural and urban residences were included. Among these, 384 samples have been chosen by incidental sampling technique. Two major tools, which are based on Likert scale response format, have been used to collect data. One is the Metacognition Inventory (MI), with reliability value of 0.904 (Cronbach's Alpha), which was constructed and standardized by the researchers. And the other one is the Emotional Intelligence Scale (EIS)by Subhas Sarkar and Samrat Sarkar (2019). The reliability, calculated by the split-half (odd - even) method, of the original tool was 0.80 for males and 0.83 for

females. For this study, the English items of the tool have been translated into Bengali and content validity and reliability (Cronbach's Alpha) were also ensured. The final version of the tool has the reliability value of 0.847. Percentile norm has been used for both tools for the results, which have been discussed in the results section.

Results and Findings:

The analysis of the data, along with its interpretation and results, has been presented here. The data collected in this study were analyzed through descriptive and inferential statistics, which are presented below:

The first objective of the study was to examine the level of Metacognitive awareness and Emotional Intelligence of college going students. For this purpose, two research questions have been framed as mentioned earlier. The first research question for the study (RQ1) is to examine the level of Metacognitive Awareness of the students. It was assessed by calculating Percentile (P25=137, P50= 144 and P75=153.75) and categorizing the students into groups based on the scores in MI, which have been presented below:

Table No. 1. ***Showing the levels of Metacognitive Awareness***

Norms	Score Range	No. of students	%of Sample	Levels
<P25	137 and below	102	26.56	Low
Between P25 to P75	138 to 153	186	48.44	Moderate
>P75	154 and above	96	25	High

From the above table it is confirmed with the norm of the tool that levels of Metacognitive Awareness have been categorized into three categories- Low, Moderate and High. From the data obtained, it is found that most of the students have Moderate level of Metacognitive Awareness (48.44% of the students), whose score range is from 138 to 153. Although 26.56% of students have Low and 25% of students have high levels of Metacognitive Awareness. So, from the above discussion, it is concluded that the Metacognitive Awareness of college going students is moderate or average.

The second research question of the study (RQ2) is to find out the levels of Emotional Intelligence of students. Percentiles were calculated for this (P25=150, P50= 160, and P75= 170) and based on the norm of the tool; the students were categorized into three levels. From Table No. 2 regarding the Norm that is presented below, it is found that most of the students have Moderate level of Emotional Intelligence (47.92% of the students), whose score range is between 151and 169. While 25.26% of the students have low level of Emotional Intelligence and 26.82% of students have high

level of Emotional Intelligence. So, it is concluded that the emotional intelligence of college going students is Moderate or average. The Table No. 2 shows the summary:

Table No. 2. ***Showing the levels of Emotional Intelligence***

Norms	Score Range	No. of students	%of Sample	Levels
<P25	150 and below	97	25.26	Low
Between P25 to P75	151 to 169	184	47.92	Moderate
>P75	170 and above	103	26.82	High

Test of Normality:

The Test of Normality (Kolmogorov-Smirnov and Shapiro-Wilk) was done to see whether the scores of the Metacognition Inventory and Emotional Intelligence Scale follow the properties of the Normal Probability Curve (NPC) or not. The scores of MI and EIS are significant at 0.05 level, which denotes that the distribution does not follow the properties of the Normal Probability Curve.

Table No. 3. ***Tests of Normality***

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Emotional Intelligence	.070	384	.000	.949	384	.000
Metacognitive Awareness	.067	384	.000	.990	384	.009

The second objective is to investigate if there is any relationship exists between Metacognitive Awareness and Emotional Intelligence. To study the stated objective, null hypothesis H01 was framed to find out if any significant relationship exists between Metacognitive Awareness and Emotional Intelligence. To test the stated null hypothesis, Spearman's rho correlation was carried out on the scores obtained from MI and EIS. The correlation coefficient between Metacognitive Awareness and Emotional Intelligence is 0.598 (P< 0.01) [Table No. 4]. It means Metacognitive Awareness and Emotional Intelligence are significantly and positively correlated. So it can be concluded that the correlation between Metacognitive Awareness and Emotional intelligence is statistically significant at the 0.01 level. Thus, the H01 is rejected.

Table 4: ***Correlation between Metacognitive Awareness and Emotional Intelligence:***

		N	Correlation coefficient	Sig.	Result
Spearman's rho	MI and EIS	384	.598**	.000	Null hypothesis is rejected

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

Inter-dimensional correlational study of Metacognitive Awareness and Emotional Intelligence:

From the above discussion, it is clear that there is a significant positive correlation between Metacognitive Awareness and Emotional Intelligence. Therefore, the researcher attempts to study the inter-dimensional correlational study in Metacognitive awareness and Emotional Intelligence to make the result more comprehensive. From Table No. 5 below, it is found that there is significant correlation among all the dimensions of MI and EIS.

Table No. 5. ***Interdimensional Correlation between MI and EIS***

		MI1	MI2	MI3	MI4	MI5	MI6	MI7	TOTAL MI	EIS1	EIS2	EIS3	EIS4	EIS5	EIS TOTAL
Spearman's rho	MI1	1.000													
	MI2	.492**	1.000												
	MI3	.536**	.519**	1.000											
	MI4	.486**	.367**	.418**	1.000										
	MI5	.609**	.433**	.548**	.343**	1.000									
	MI6	0.098	0.094	.198**	-0.023	.138**	1.000								
	MI7	.513**	.387**	.480**	.398**	.440**	.135**	1.000							
	TOTAL MI	.836**	.659**	.760**	.584**	.758**	.328**	.667**	1.000						
	EIS1	.176**	.158**	.294**	.146**	.269**	.138**	.321**	.314**	1.000					
	EIS2	.358**	.293**	.378**	.283**	.524**	.220**	.392**	.515**	.360**	1.000				
	EIS3	.391**	.257**	.261**	.301**	.267**	0.017	.390**	.421**	.306**	.344**	1.000			
	EIS4	.273**	.237**	.203**	.282**	.172**	0.008	.246**	.297**	.132**	.255**	.452**	1.000		
	EIS5	.332**	.322**	.338**	.249**	.324**	.104*	.340**	.424**	.313**	.409**	.407**	.414**	1.000	
	EIS TOTAL	.461**	.379**	.446**	.373**	.476**	.166**	.509**	.598**	.579**	.721**	.694**	.638**	.738**	1.000

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The third objective was to investigate whether emotional intelligence can be a significant predictor of Metacognitive Awareness of students across different levels. From the correlational analysis, it has been found that there is a significant positive correlation between Metacognitive Awareness and Emotional Intelligence. The null hypothesis was framed accordingly, i.e., Emotional Intelligence is not a significant predictor of Metacognitive Awareness across different levels. The null

hypothesis tests whether Emotional Intelligence carries a significant impact on Metacognitive Awareness. Here, the researcher used the Quantile regression to test the null hypothesis at multiple quantiles (P25, P50 and P75) to see the effect at different levels and as normality assumption is violated. The overall model (Table No.6) explains 22% variations at q= 0.25, and 17.5% variations at q=0.5 and 16.9% variations at q= 0.75 in Metacognitive Awareness with Pseudo R Square 0.222, 0.175, 0.169, respectively. So, the Emotional Intelligence explains moderate portions of variations in Metacognitive Awareness. It also indicates that the model explains better variations in the lower part (q=0.25) of the variable.

Table No. 6. ***Model Quality***

Quartiles	q=0.25	q=0.5	q=0.75
Pseudo R Squared	.222	.175	.169
Mean Absolute Error (MAE)	10.4357	8.8213	10.6776

The Parameter Estimates table shows the effect of Emotional Intelligence on Metacognitive Awareness across different percentiles of the distribution. It indicates that Emotional Intelligence significantly predicts Metacognitive Awareness (β=0.538, t= 11.851, p<0.01) at the 25th percentile. Also, a similar significant result was found at the 50th percentile (β=0.524, t= 12.473, p<0.01) and at the 75th percentile (β=0.600, t= 10.451, p<0.01). The result suggests that one unit increase in the independent variable leads to increase of 0.538, 0.524, and 0.600 units, respectively, at 25th, 50th and 75th percentile levels of the dependent variable. The overall result revealed that Emotional Intelligence significantly and positively predicts the Metacognitive Awareness across all the quantiles. Thus, the null hypothesis ($H_0$2) has been rejected.

Table No.7. ***Parameter Estimates by Different Quantiles***

Quantiles	Parameter	Coefficient	Std. Error	t	df	Sig.
q=0.25	(Intercept)	52.231	7.2418	7.212	382	.000
	EIS TOTAL	.538	.0454	11.851	382	.000
q=0.50	(Intercept)	60.667	6.6936	9.063	382	.000
	EIS TOTAL	.524	.0420	12.473	382	.000
q=0.75	(Intercept)	56.000	9.1504	6.120	382	.000
	EIS TOTAL	.600	.0574	10.451	382	.000

From the plots of the estimated parameters (Fig.1), it is also seen that the coefficient varies across all the levels. So, the Emotional Intelligence positively predicts all the levels. Though a somewhat strong effect is found at higher level of Metacognitive Awareness. And the prediction line

(Fig.2) also indicates the positive relationships and Emotional Intelligence has a strong effect on high level of students of Metacognitive Awareness.

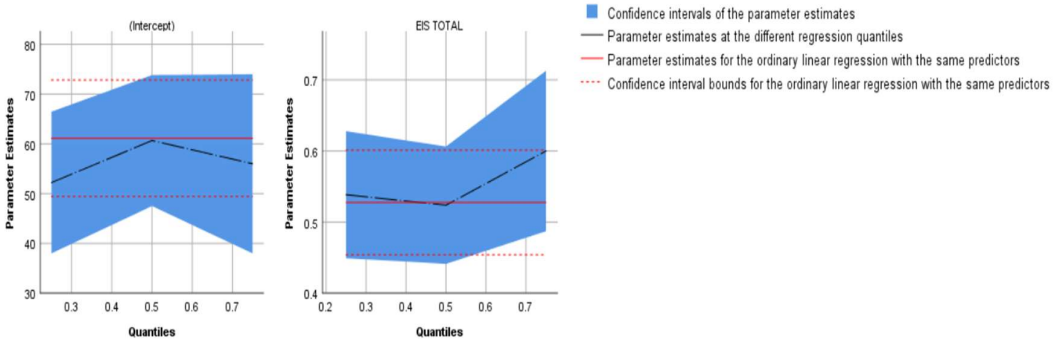

Fig.1. ***Plots of Estimated parameters***

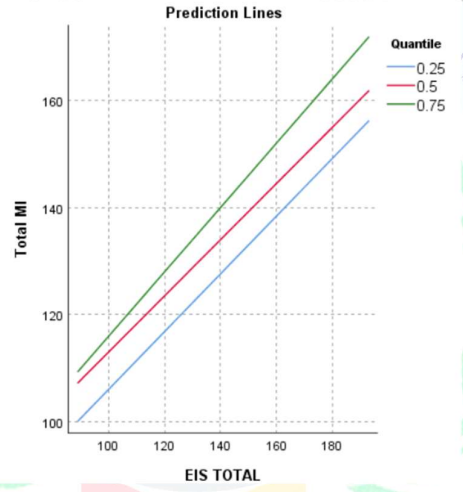

Fig.2. ***Prediction line of MI and EIS***

Discussion and Conclusion:

In the modern system, education focuses on learners' personal competences to deal with the changing environment and to self-monitor their own lives. In this context, Metacognitive Awareness and Emotional Intelligence play a major role in improving the potentialities of the learner. From the result, the levels of Metacognitive Awareness and Emotional Intelligence indicated that most of the students are at a moderate level. The result of the study on levels of Metacognitive Awareness, which is moderate, is supported by the studies of Dhyani and Maikhuri (2018); Sabna & Hameed (2016), and Panchu et al. (2016). The finding on levels of emotional intelligence is supported by the study of Kumar (2020), where the level of emotional intelligence has been found average also. So, from the above discussion, it can be assumed that in the era of child centrism in the 21st century, teaching-learning focuses on individual differences and strategy is prepared accordingly. Thus, students can know their own potentialities that lead to improve their Metacognitive Awareness. In this context, it

can be concluded that modern education should focus on improving students' Metacognitive awareness and emotional intelligence to their maximum level, which will be helpful in quality improvement.

Weigand (2017), in his study, found that there exists no significant relationship between emotional intelligence and Metacognition. But this study reveals that there is a significant correlation between Metacognitive Awareness and Emotional Intelligence of students. That means students who are high in emotional intelligence may be better metacognitively aware, which has also been proven in the findings of Sharei et al. in 2012, who concluded that there exists a significant and positive relationship between emotional intelligence and metacognition. Ekaterina & Valentina (2019) also revealed that Emotional Intelligence components are positively related to Metacognitive Awareness. So, the null hypothesis of the study is truly rejected and it is concluded that Metacognitive awareness and emotional intelligence are positively correlated. From the above discussion, it can be ensured that the strategy used to improve students' emotional intelligence would improve their Metacognitive Awareness level.

From the above result**,** it can be concluded that college going students have moderate level of both Metacognitive Awareness and Emotional Intelligence. As previous studies reported that Metacognitive Awareness and Emotional Intelligence both have significant impact on students' success and their academic achievement. This study found a significant relationship between these two variables**,** indicating that emotionally high students tend to have high level of Metacognitive Awareness. Also, the sub-dimensions of Emotional Intelligence are significantly and positively correlated with all the sub-dimensions of Metacognitive Awareness. The result indicated that Emotional Intelligence has a significant effect on Metacognitive Awareness of students across all the quartiles. The overall result revealed that Emotional Intelligence significantly and positively predicts the Metacognitive Awareness across all the quantiles and Emotional Intelligence explains moderate portions of variations in Metacognitive Awareness. It means that if Emotional Intelligence is enhanced, Metacognitive Awareness will also be improved. Moreover, the effect of Emotional Intelligence becomes better to the higher metacognitively aware students.

The findings of the study will help to choose appropriate strategies to improve teaching-learning process. This result will improve in-depth understanding of this field. The findings on the relationship between Metacognitive Awareness and Emotional Intelligence of college students will help to improve knowledge, which is limited as mentioned in previous literature. The study confirms that there is a positive relationship between Metacognitive awareness and Emotional intelligence and emotional intelligence is a significant predictor of Metacognitive awareness. So, the result will be beneficial for classroom teachers to choose teaching strategies.

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