

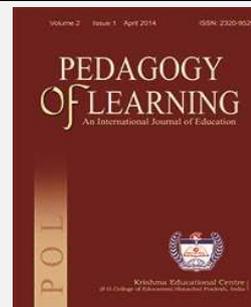
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Metacognitive Styles of Higher Secondary Students in relation to their Personality Factors

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Abstract

Metacognition has been identified as the executive body of cognition or awareness of learners' about their own cognitive strengthen and weakness which plays an important role as elevator in effective learning and personality is characterized by the particular collection of thinking styles and its reflection through different behavioral pattern of human being. The present study is an attempt to investigate the relationship among meta-cognitive styles and personality factors of higher secondary students. For this purpose, the data have been collected through Metacognitive Awareness Inventory developed and standardized by Dr. Gregory Schraw & Rayne Sperling Dennison (1994) and Personality Inventory (1990) developed and standardized by Paul T. Costa and Robert MacCre administered to 112 students from four schools of District Cuttack in Odisha, India. The data were analyzed through product moment coefficient correlation and multiple regression equation. The findings of the study reveal that students are having neuroticism, openness and agreeableness personality shown poor predictors of Metacognitive styles. Students having conscientiousness of personality have exhibited strong predicting factors of Meta-cognitive styles. Conscientiousness personality factors of Higher Secondary students are

positively contributed with the knowledge and Regulation of cognition styles of Metacognition of higher secondary school students.

Keywords: Metacognitive styles, Personality Factors, Higher Secondary students

I. INTRODUCTION

A fundamental tenet of the constructivist theory of learning is people learn in different ways (von Glassersfeld, 1996), using different strategies and goals; some learners may be using metacognitive thoughts while others are not. If students are aware of their own cognitive strengths and weaknesses and monitor their progress during problem solving, will they be more successful in learning. In the progress of specialization, peoples gain knowledge to achieve great feats and heights in their every domain of life where they are work to become experts. As an example, if teacher poses appropriate situations for learning and then encourage reflection and interactive mathematical communication, students can determine for themselves the most effective paths for becoming experts. Students who learn to solve problems independently have evolved from novice learners to expert users of knowledge. Some students enter college with deficiencies in mathematics and reading comprehension, which often results in math anxiety and little skill in knowing how to build on prior knowledge. Perhaps they need more guidance in how to actively use previously acquired mathematical knowledge to better learn—to understand—concepts for elementary probability and statistics. “If the critical role of metacognition can be made clearer, educators will be able to incorporate metacognitive aspects into mathematics instruction” (Garofalo & Lester, 1985). If it can be shown that self-monitoring of progress during problem solving results in students successfully learning probability and statistics concepts, mathematics educators could be better informed about the importance of identifying students’ metacognitive thoughts. Well-developed metacognitive skills can be a tremendously helpful tool in all learning. Following constructivist principles, they may not be essential for all students. Everyone is different. Any two people interpret the same event differently because they bring different subjective experiences to the current situation. “Sharing meaning, ideas, and knowledge, therefore, is like sharing an apple pie or a bottle of wine: None of the participants can taste the share another is having” (von Glassersfeld, 1996). No solution is absolute truth; there are many approaches to learning. Thus, the metacognitive knowledge of learners has played paramount importance in classroom in the present context of learning. Therefore, the researcher attempted to study on metacognitive styles i.e. knowledge about cognition and regulation of cognition correlates with personality factors i.e. neuroticism, extraversion, agreeableness, openness and conscientiousness.

II. RATIONALE OF THE STUDY

The study on relationship among metacognitive styles and personality factors will be implied with an insight about the cognitive processes involved in learning and what differentiates successful students from their less successful peers. Metacognition has been identified as the executive body of knowledge or awareness of understanding of learners, which reflects through cognitive knowledge and cognitive monitoring and has been a topic of scholarly interest since the 1979. It refers to learner’s view and beliefs about learning and to the active regulation of their learning processes. Flavell, the originator of this term considered metacognitive knowledge to be

the declarative knowledge one has about the interplay between personal characteristics, task characteristics and the available strategies in a learning situation.

Meta cognition critically plays an important role as elevator in effective learning by teaching or classroom instruction and also by self-regulation which require some skillful execution such as oral persuasion, oral comprehension, reading comprehension, writing language acquisition, attention, problem solving, critical thinking, self-efficacy, social cognition, self-instruction to elevating the learners who are able to grapple with new situations and learn how to learn and continue to learn through their lifespan. The prime focus here is on to link these metacognitive styles to student's personality factors with the aim of enriching and broadening earlier conceptualization of student's learning styles and strategies in higher secondary education.

There are several studies have conducted by many researchers with taken the variables of cognitive, metacognitive styles, self-regulatory learning, task performance, personality traits and types. Some of the studies are revealing that there is a colossal relationship between personality and cognitive Metacognitive strategy (Baxt,1995);Bidjerano and Dai (2007, Ghami, Farid & Farzanch Sabokrouh,2015; Soleimani. Nadia. Nagahi. Morleza, 2016).Some of the studies are revealing that there is a relationship between metacognition and certain personality variables and the role they play in student's academic achievement(Landine& Stewart, 1998).Some of the studies are revealing that there is predictive correlations among metacognitive awareness of reading strategies, reading self-efficacy, and reading task value (Keskin, 2014).Some of the studies are revealing that Metacognition plays a significant role in teaching, learning, social cognition, attention, self-discipline, problem solving, communication and personality development (Sony & Sony, 2015). Some of the studies are revealing that there is significant relationship between learning styles with Metacognitive strategy (Jafarpanah&Farahian, 2016).

Keeping in view the above conceptual framework and related literature, the investigator felt there is need to explore the student's styles of metacognitive in relation to different personality factors. Which can be proved worthy for the classroom practices both teachers and students. Therefore, the present problem is stated as metacognitive styles of Higher Secondary students in relation to their Personality factors. The research gap is in selection of variable, time and context.

Objectives of the study

The objectives of the present study stated as;

1. To find out the relationship between metacognitive styles and personality factors of higher secondary school students.
2. To determine the contribution of Personality factors on metacognitive styles of higher secondary school students.

Hypotheses

1. Neuroticism personality of Senior Secondary students is negatively related with the Knowledge about cognition style of metacognition.

2. Neuroticism personality of Senior Secondary students is negatively related with the Regulation of cognition style of metacognition.
3. Extraversion personality of Senior Secondary students is positively related with the Knowledge about cognition style of metacognition.
4. Extraversion personality of Senior Secondary students is positively related with the Regulation of cognition style of metacognition.
5. Openness with Experience personality of Senior Secondary students is positively related with the Knowledge about cognition style of metacognition.
6. Openness with Experience personality of Senior Secondary students is positively related with the Regulation of cognition style of metacognition.
7. Agreeableness personality of Senior Secondary students is positively related with the Knowledge about cognition style of metacognition.
8. Agreeableness personality of Senior Secondary students is positively related with the Regulation of cognition style of metacognition.
9. Conscientiousness personality of Senior Secondary students is positively related with the Knowledge about cognition style of metacognition.
10. Conscientiousness personality of Senior Secondary students is positively related with the Regulation of cognition style of metacognition.

Delimitations of the study

The present study was delimited to

- Senior Secondary school in Cuttack District of Odisha.
- A sample of 112 students.
- Students of class XI and XII.
- Variables are metacognitive styles and personality factors.

III. METHODOLOGY OF THE STUDY

The purpose of present study aimed to assess the relationship among personality factors and metacognitive styles of senior secondary students of District Cuttack in Odisha. Keeping in view, the nature and objectives of the study the descriptive survey method was used.

Population and Sample

All senior secondary students studying in different schools in Odisha constitute as the population of the present study. In this present study the selection of sample has passed through different stages.

- Stage-1: The investigator has procured a list of senior Secondary Schools affiliated under CHSE, Odisha existing in District Cuttack from the District Education Office, Cuttack.

- Stage-II: After procuring the list of schools, four schools from Cuttack district will be selected purposively. Keeping in view the criteria, which have similar student-teacher ratio, development and strength?
- Stage-III: Out of the 4 schools from Cuttack district 112 students (i.e.60 male and 60 female) has selected by using random sampling technique. Finally, 28X4=112 students will be included in the sample for present investigation.

Tools used

Keeping in mind these criteria, two types of standardized tools were used.

1. Metacognitive Awareness Inventory developed and standardized by Schraw & Dennision (1994).
2. Neo-Five Factor Personality Inventory developed and standardized by Costa and MacCre (1990).

IV. DATA ANALYSIS AND INTERPRETATION

Table 1: Coefficient of correlation between knowledge about cognition dimension of style Meta cognitive and personality factors of senior secondary school students

Variables	N	Coefficient of correlation 'r'	P- Value
KC Vs Neuroticism	112	-0.315**	.001
KC Vs Extraversion		-0.012	.902
KC Vs Openness		-0.028	.767
KC Vs Agreeableness		0.166	.084
KC Vs Conscientiousness		0.286**	.002
KC Vs Total Personality score		0.009	.921

***Significant at 0.01 level of significance*

It is evident from table 2.a that the obtained value of coefficient of correlation of Neuroticism (-0.351**), and conscientiousness (0.286**) personality of higher secondary students which are significant at 0.01 level of significance and rest of the personality factors Extraversion (-0.012), Openness (-0.028) and Agreeableness (0.166) which are not significant.

Discussion of Results

From the above analysis and interpretation, it can be concluded that Neuroticism, Extraversion and Openness factors of personality was negatively related with knowledge about cognition component of metacognitive style of higher secondary students. The present results were supported the research conducted by Gheemi, Farid, & Sabkrouh (2015); Landine & Stewart (1998) their studies had relationships of personality traits with metacognitive awareness of listening strategies among Iranian adult learners of English.

Further, it was found that Agreeableness, conscientiousness, and total scores of personality was positively related with knowledge about cognition component of meta cognitive style of higher secondary students.

Table 2: Coefficient of correlation among Regulation of cognition Meta cognitive styles and personality factors of senior secondary school students

Variables	N	Coefficient of correlation 'r'	Significant Level
RC Vs Neuroticism	112	-0.229*	0.015
RC Vs Extraversion		0.167	0.079
RC Vs Openness		-0.284**	0.002
RC Vs Agreeableness		-0.224	0.018
RC Vs Conscientiousness		0.484**	0.000
RC Vs Total Personality score		-0.075	0.432

*Significant at 0.01 level of significance

It is evident from table 2.a that the obtained value of coefficient of correlation of Neuroticism (-0.229*), and Openness (-0.284**) and Conscientiousness (0.484**) personality of higher secondary students which are significant at 0.01 level of significance and rest of the personality factors Extraversion (0.167) and Agreeableness (-0.224) which are not significant.

Discussion of results

From the above analysis and interpretation, it can be concluded that Neuroticism, agreeableness and Openness factors of personality was negatively related with Regulation of Cognition component of metacognitive style of higher secondary students. The present results were supported the research conducted by Gheemi, Farid, & Sabkrouh, (2015), Landine & Stewart (1998). Further, it was found that Extraversion and conscientiousness and total scores of personalities was positively related with Regulation of Cognition component of meta cognitive style of higher secondary students. The present findings supported by Baxt (1995), Fernandez (1987), Bidjerano & Dai (2007), Soleimani, Nagahi & Nagahisarchoghaei, Jaradat, (2016). Overall, out of five hypotheses, the researcher retained three hypotheses.

Table 3: Coefficient of correlation among Meta cognitive styles and personality factors of higher secondary school students

Variables	N	Coefficient of correlation 'r'	P Value
Metacognitive styles Vs Total Personality score	112	-0.054	P<0.05(0.570)

*Not significant at 0.05 level of significance

It is evident from table 2.c that the obtained value of coefficient of correlation (-0.054) of Total metacognition styles and Total personality factors of higher secondary student negatively related and not significant at 0.05 level of significance. It means that total personality factor of the higher secondary student is negatively related with the Total metacognitive styles. Further, it means that students' personality factors have shown adversely related with of total metacognition style.

Table 4: Predicting personality factors as independent variables about dependent variable metacognitive styles.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	185.352	1	185.352	5.520	.021 ^b
	Residual	3693.505	110	33.577		
	Total	3878.857	111			
2	Regression	1229.500	3	409.833	16.707	.000 ^c
	Residual	2649.357	108	24.531		
	Total	3878.857	111			
a. Dependent Variable: META COGNITIVE STYLES TOTAL SCORES						
b. Predictors: (Constant), NERO						
c. Predictors: (Constant), CONCEN, OPEN, AGREE						
<p>'F' statistics was carried out to find out the overall significance test assessing whether the group of independent variables when used together reliable predict the dependent variable. The 'F' value (5.520) and (16.707) of different personality factors higher secondary students with meta cognitive styles. The 'P' value associated with this 'F' value was very small in both cases at 0.05 level of significance. Thus it was found that independent variables (Neuroticism, Conscientiousness, Openness, Agreeableness) can reliable predict the dependent variables (Total metacognitive styles i.e. knowledge about cognition and regulation of cognition).</p>						

Table 5: Coefficient between Independent Variables (Personality factors i.e. and neuroticism, openness, agreeableness, conscientiousness) and dependent variables (Meta cognitive styles).

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.473	2.482		17.516	.000
	NERO	-.209	.089	-.219	2.350	.021
	(Constant)	36.373	3.653		9.956	.000
2	CONCEN	.498	.079	.512	6.304	.000
3	Open	-.252	.085	-.236	2.964	.004
4	AGREE	-.208	.094	-.180	2.217	.029
a. Dependent Variable: META COGNITIVE STYLES TOTAL SCORES						
b. Predictors: (Constant), NERO						
c. Predictors: (Constant), CONCEN, OPEN, AGREE						

A sample linear regression was calculated to find out the contribution of personality factors as constant variable on metacognitive styles higher secondary students. The data showed that β coefficient for neuroticism (-0.219), openness (-0.236) and agreeableness (-0.180) personality factors as constant variable predicting the meta cognitive style of students is negatively significant at 0.01 level of significance as the p value is less than alpha level. It

reveals that neuroticism, openness and agreeableness personality negatively predicting the metacognitive styles of higher secondary students. Further, it indicates that students having neuroticism, openness and agreeableness personality shown poor predictors of metacognitive styles. Further, the data showed that β coefficient for conscientiousness (0.512) of personality factors is positively significant at 0.01 level of significance as the p value is less than alpha level. It means that students having conscientiousness of personality factors have exhibited strong predicting factors of metacognitive styles. Thus, the hypothesis no 11 which is stated earlier that personality factors of Higher Secondary students is positively contributed with the knowledge and Regulation of cognition styles of metacognition is not retained. Where as in one case, conscientiousness personality factors of Higher Secondary students are positively contributed with the knowledge and Regulation of cognition styles of metacognition is retained.

V. MAJOR FINDINGS

The main findings drawn from the analysis and interpretation of results. The findings have been given in the following heading.

- a) *Findings based on personality factors with knowledge about cognition components of Metacognitive styles.*
 - i. Neuroticism personality of the higher secondary student is negatively related with the knowledge about cognition components of metacognitive styles. Students having neurotic personality have shown adversely related with knowledge about cognition dimension of Metacognition style.
 - ii. Extraversion personality of the senior secondary student is negatively related and not significant with the knowledge about cognition dimension of metacognitive styles. Students having extrovert personality have poor metacognitive knowledge. Extraversion is not the strong predictor of knowledge about cognition.
 - iii. Openness personality of the higher secondary student is negatively related with the knowledge about cognition metacognitive styles
 - iv. Agreeableness personality of the higher secondary student is positively related with the knowledge about cognition metacognitive styles.
 - v. Conscientiousness personality of the higher secondary student is positively related with the knowledge about cognition metacognitive styles.
- b) *Findings based on the personality factors with regulation of cognition components of Metacognitive styles.*
 - i. Neuroticism personality of the higher secondary student is negatively related with the regulation of cognition components of metacognitive styles. Students having neurotic personality have shown adversely related with regulation of cognition dimension of metacognition style.
 - ii. Extraversion personality of the senior secondary student is positively related and not significant with the regulation of cognition dimension of metacognitive styles.

Students having extrovert personality have poor metacognitive regulation. Extraversion is the strong predictor of regulation of cognition components of metacognitive style.

- iii. Openness personality of the higher secondary student is negatively related with the regulation of cognition metacognitive styles. It means that openness personality of the higher secondary student is significant negative relation with the Regulation of cognition metacognitive styles. It signifies that students having openness personality could not have shown better regulation of cognition component of metacognition style.
 - iv. Agreeableness personality of the higher secondary student is negatively related with the knowledge about cognition metacognitive styles. Students having agreeableness personality have shown poor regulation of cognition components of metacognitive styles.
 - v. Conscientiousness personality of the higher secondary student is positively related with the knowledge about cognition metacognitive styles. Students having conscientiousness personality have exhibited much better regulation of cognition component of metacognition style.
- c) *Findings based contribution of personality factors as constant variable on metacognitive styles higher secondary students.*
- i. Neuroticism, openness and agreeableness personality negatively predicting, contributing the metacognitive styles of higher secondary students. It signifies that students have neuroticism, openness and agreeableness personality shown poor predictors of metacognitive styles. Those personality factors have no contribution on metacognitive styles of higher secondary students.
 - ii. Students having conscientiousness of personality factor has exhibited strong predicting factors of Meta cognitive styles. Only in one case the Conscientiousness personality factors of Higher Secondary students is positively contributed with the knowledge and Regulation of cognition styles of metacognition

VI. EDUCATIONAL IMPLICATIONS

In lieu of main findings and discussion of results, the present study has its greatest implications for the planer, policy maker, administrator, teacher and student in the following ways. Metacognition, simply put, is the process of thinking about thinking. It is important in every aspect of school and life, since it involves self-reflection on one's current position, future goals, potential actions and strategies, and results. That is why the Present study is implied in the followings ways:

1. Shapes active rather than passive learners.
2. Gives students a sense of executive control over learning and thinking. Students use metacognition when they read unfamiliar words and decide to use two strategies

3. Promotes Deep Learning and higher order thinking skills.
4. Makes students aware of their own cognitive strengths and weaknesses.
5. Enrich learner's critical thinking and problem solving ability.
6. Develop the psychological attributes like self-discipline, self-motivation, self-awareness, self-regulation self-concept and self-efficacy.
7. Enhance the learner's ability of meta-comprehension, meta-memory, meta-analysis, and meta-attention.

Importance of Metacognition from the Teacher's Perspective:

It is important for a teacher to foster the process of metacognitive skill development in students. This will help the students to become aware of the art of learning. As discussed above, although Metacognitive is negatively related with some personality factors, there has to be an environment created by the teachers to help students rely on their own intuitive thought processes and logical reasoning to understand their styles of learning. Students need to develop themselves as lifelong learners who will be able to evaluate and self-regulate their learning processes. So, it is important for the teachers to implement the best practices of metacognition within a classroom. It is of paramount importance for students to become self-learners and evaluate their own performances to excel in future.

Importance of Metacognition to Students:

Meta cognition is a medium that empowers the students to review his own performance and self. It enables them to understand the value of revision, which, in turn, makes them understand areas where there still is scope for improvement. It also ensures that they put an effective toolkit of action, which will help them cut down on previous mistakes and further develop their learning abilities.

It helps in the removal of the awe factor, which is so common in existing students. They tend to gasp for relief when they are in an uncomfortable and trying situation. Metacognition skills help the students develop and formulate plans to assess their performance critically. This, in turn, guides them to approach their learning techniques differently and thus, improve their scores in a particular subject. Therefore, these are what the students tend to develop while being trained in nurturing metacognition: a) A definite goal b) a positive frame of mind c) A scalable plan of action, d) An effective monitoring of his or her own efforts, e) A perfect self-evaluating skill and f) Ability to use the skill on critical aspects

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