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MULTIPLE INTELLIGENCE AND EXAMINATION STRESS OF ANDAMAN AND NICOBAR ISLAND STUDENTS

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ABSTRACT--*In a highly competitive world, all the nations provide education to their citizens so that they could contribute their share in the development of the nations. It is known that intelligence is a uniform cognitive capacity possessed by an individual and Gardener's multiple intelligence theory challenged the traditional practices in education and cognitive science. The present study is aimed to investigate the relationship between multiple intelligence and examination stress of Andaman and Nicobar Island students. The study considered a random sample of 1000 secondary students and employed the Multiple Intelligence scale and Examination stress scale to determine the correlation between multiple intelligence and examination stress. It is concluded that the level of multiple intelligence of the secondary students is high and examination stress is average based on the outcome of research also the relationship is significant.*

Keywords-- *Multiple intelligence, Examination stress, Secondary students.*

I. INTRODUCTION

Gardener's (1983) Multiple Intelligence (MI) theory comprises of eight independent types of intelligence and not all recognized by school attributes but it captures precisely the diverse nature of human capability. The MI theory puts forth the fundamental questions about instruction and assessment, calls for restructuring of the classrooms to accommodate modes of learning and evaluation processes. Examination process and the results of examination form basis of student's self-judgments, aspirations and fear. For some students they form a serious obstacle in demonstrating their academic achievements, difficulties in other aspects of life and also alters mental health. Stress is a state of physical, mental and emotional factors and it influences physical and mental illness. Examination stress is a type of natural stressor that elevates the psychological marker, physiological effects such as increasing the cardiovascular activity and producing stress related hormones.

The primary cause for examination stress is due to pressure from peer group, family and society. Due to examination stress the students are unable to satisfy the expectations of parents, withstand the societal pressure which results in lowering of their self-confidence, develop in secured feeling and suffer from mental illness. Hence it is essential to study how multiple intelligence is related to examination stress to in order to restructure the teaching learning process.

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II. REVIEW OF LITERATURE STUDIES RELATED TO MULTIPLE INTELLIGENCE

Winarti, Yuanita, Nur and Moh. (2019) studied the method of enhancing teaching strategy through effective multiple intelligences and science process skills of junior high school students. Multiple tests, science process skills (SPS) and observatory sheets provides necessary data are obtained. The formulated hypotheses were tested with the application of t-test, simple linear regression and one-way ANOVA. Multiple intelligences can be demonstrated to be important predictors of the level of student skills development. This study further showed that science process skills were improved, particularly in the questioning capacity. As a result of this study, the teaching strategy in the future may focus on a new dimension. Thus the teaching strategy moves from academic skills that focus on multiple intelligences and on each student's potential.

Garmen et al., (2019) conducted an impact assessment and intervention study with TOI Software on the impact of multiple intelligence and video games. With his Multiple Intelligence Theory Howard Gardner revolutionized the concept of intelligence. His prediction, which takes into account different learning forms and the access to knowledge, supported the examining community. Despite its impact, a method for reliably and easily assessing the multiple intelligences still needs to be developed. This paper describes the design, design and management of Tree of Intelligence (TOI) Software, a digital tool for evaluating multiple intelligences.

Sadiq and Jafar (2019) conducted a study to identify the Multi-Intelligence analysis domain and its relationship to the objective English test. The results of this research were proposed to alter the objective tests to alternate tests based on the skill and intelligence of the student but not the devaluation tests.

Muhammad Saqib and Kaleem Ur Rehman (2018) investigated the effect of academic stress on secondary school academic performance of students. Different statistical analytical methods, for example factor analysis and regression, have been used. The main results of this study show that stress has significant effects on the academic performance of students. The study found that the teacher and parents are the main stress among the students.

Wilson and Stefanie (2018) have been researching ways to transform classroom experiences with the implementation of co-creation and multiple intelligence practice. Co-creation with a diverse student population requires skills, namely multiple intelligence practices, to improve their exam experience. This study integrates the broader literature on theories of learning for adults to include theories of multiple intelligences and creates a new dimension to research and insight for current and future teachers.

Arulselvi and Evangelin (2018), carried out a study on incorporating the many intelligences in the English language. In this research, several methods of implementing multi-strategies of intelligence in the English lesson are thoroughly analyzed and possible activities and tasks that are suitable for language learners with various skills and intelligences are organized and listed.

III. STUDIES ON EXAMINATION STRESS

Rahman and Mehadi (2019) have investigated the attitude towards Junior School Certificate (JSC) examination of secondary school students in Bangladesh. The investigated research revealed that students have positive attitude on examination and suggestions were offered for changing the existing JSC examination systems by way of creating the test procedures with a main focus on problem-solving and creativity skills to ensure the quality education.

Ibara et al., (2019) aimed is to analyze the English pronunciation teaching method. The study revealed that none of the teacher had the ability to teach compound noun stress and no learner succeeded in the practice of this language item. Hence for teaching and learning strategies, the practical suggestions is made of exercises and teaching cards to deal with compound noun stress. This study is an attempt to prove that it is a parallel strategy that can be applied between the techniques of teaching of reading and that of practicing compound noun stress.

Michaela C. Pascoea B., et al., (2019) made investigation on the impact of secondary school student's stress on higher education, tertiary education. Students were shown to have a variety of constant stressors linked to academic requirements. The latest study on the impact of academic stress, including discussion of student learning ability and academic performance impacts, mental health issues, such as depression and anxiety, sleep disturbances and the use of medicines.

Jesus et al., (2018) have investigated relationships between cognitive strategies, motivational strategies and academic stress in professional examination appearing candidates. A very significant, positive interdependence relationships between cognitive learning strategies and motivational strategies were revealed through this study. These are interrelated variables which allow cognitive and motivational strategies, in particular in highly stress-prone situations, to be worked out not merely as support for studies, but also as a means to prevent and remedy academic stress.

IV. NEED AND SIGNIFICANCE OF THE STUDY

Intelligence is the most important single variable in today's education research that affects school and life success. In general, intelligence means the way a person handles facts and circumstances. Intelligence means the individual's aggregate or global capacity for deliberate action, rational thinking and efficient treatment of the environment.

Intelligence is the most important single variable in today's education research that affects school and life success. In general, intelligence means the way a person handles facts and circumstances. Intelligence means the individual's aggregate or global capacity for deliberate action, rational thinking and efficient treatment of the environment.

Each human being comprises one or more intelligences in the nine categories identified. And therefore they are all intellectuals. It is easy to teach and study a concept or unit, through either of its subtypes that are more suitable for teaching and learning.

Hence, multi-intelligence studies are important to offer solutions for realistic and creative situations, to offer the opportunity to design products with strengths and interest, to offer students opportunities to acquire skills and

information through multiple intelligence, to plan learning experiences on abstract topics and to bring learning to the students.

The aim of this study is to investigate the impact of school students ' multiple intelligence with regard to their stress of examination. This is why research work on the topic of the high school students ' multiple intelligence regarding their exam stress has emerged.

V. OBJECTIVES OF THE STUDY

The following are the objectives framed for this research work after carrying out the literature survey:

To find out

1. The level of multiple intelligence with its dimensions of the secondary students.
2. The level of examination stress of the secondary students.
3. The significant difference in (a) multiple intelligence (b) examination stress with respect of their

a. Gender : Male/Female

b. Type of Family : Joint family / Nuclear family

4. The significant relationship between the multiple intelligence and examination stress of the secondary students.

VI. HYPOTHESES OF THE STUDY

To reach the formulated objectives the following hypotheses have been framed for testing and arriving the interpretations.

1. The secondary student shows high level of multiple intelligence and its dimensions.
2. The secondary student shows low level of examination stress.
3. There is no statistical significance in (a) multiple intelligence (b) examination stress with respect of their

a. Gender : Male/Female

b. Type of Family : Joint family / Nuclear family

4. There is no significance relationship between the multiple intelligence and examination stress of the secondary students.

VII. METHODOLOGY

Method of Study

The present study incorporated normative survey method in order to collect the primary data from the population..

Sample and Sampling Technique

A sample of 1000 secondary students studying in Government schools of Andaman Nicobar Islands, India have been chosen by applying the random sampling method.

Statistical Techniques Used

For the present study, the following statistical techniques have been used:

1. Differential and
2. Correlation analysis

TOOLS USED FOR THE STUDY

A. Multiple Intelligence scale constructed and validated by Diana Dipti and Babu (2018).

B. Examination stress scale constructed and validated by Diana Dipti, and Babu, (2018).

Multiple Intelligence Scale developed and Validated by the investigator

Multiple intelligence scale for secondary students has been constructed by the investigator. A lot of literature on multiple intelligences, tool construction procedures was used for the construction of the tool. The multiple intelligence scale was constructed after having discussions with teachers of schools and colleges, psychologists and experts in the field of education. The tool has been prepared on five-point rating scale based on Likert scale. The total number of statement is 35 and initially 9 dimensions were prepared in English. The multiple intelligence dimensions considered are verbal linguistic intelligence, visual spatial intelligence, bodily kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence, lmgical mathematical intelligence, Musical rhythmic intelligence, naturalistic intelligence and existentialistic intelligence. The minimum score for the tool is '35' and maximum score of the tool is 175. Scoring procedure: **s**tatement that does not describes at all (1), statement that describes very little (2), statement that describes somewhat (3), statement that describes pretty well (4), statement that describes exactly (5).

Item analysis:

A sample of 100 secondary school students were considered for administering the multiple intelligence and examination stress tool. Secondary students were asked to mark their opinion among the given alternatives. Each statement has five alternative responses; namely statement that does not describes at all, statement that describes very little, statement that describes somewhat, statement that describes pretty well and statement that describes exactly. Scoring was done for all the statements.

Item analysis was carried out for the final selection of statements. The total scores were calculated separately and they were arranged in the descending order. The top 25 % and the bottom 25% of scores alone were taken into consideration. The difference in means of the high and low groups for each item was tested for significance by computing the t- ratios. Items with't' value of 1.96 and above were selected for the final tool. Thus the final tool arrived was found to contain 27 statements.

Reliability

The correlation between two or more sets of scores on equivalent tests from the same group of individuals is defined as the reliability. The greater the degree of consistency and stability in an instrument, the greater is its reliability. Hence a scale or test is reliable based on the extent that repeat measurements under constant conditions will give the same result (Moser & Kalton 1989). Stability and trust worthiness depend upon the degree to which

the score is an index of "true-ability" free from chance of error. Test-retest method was used to arrive at the reliability of the tool. Repetition of a test is the simplest method of determining the agreement between the two set of scores. The test is given and repeated on the same group and correlation was computed between the first and second set of scores. Given sufficient time between the two tests the administration results show the stability of the test scores.

Validity

Validity is the foremost requirement on the minds of those developing measures and genuine scientific measurement is the foremost in the minds of those who seek valid outcomes from assessment (Bond 2003). The first essential quality of valid test is that it should be highly reliable. Besides, the content or face validity, the investigator intended to arrive intrinsic validity. Guilford (1950) defined the intrinsic validity as "the degree to which a test measures what it measures." The square root of reliability gives the intrinsic validity. Hence the intrinsic validity of multiple intelligence scale is 0.83.

Description of the Final Tool

The final tool with 27 statements is prepared in English. The final tool has been prepared on a five-point rating scale based on Likert scale. Initially, the scoring procedure for the tool with the option statement that does not describes at all (1), statement that describes very little (2) , statement that describes somewhat (3), statement that describes pretty well(4) and statement that describes exactly (5). The minimum score for the tool is '27' and maximum score for the tool is 135.

Examination stress Scale developed and Validated by the investigator

Examination stress scale for the secondary school students has been constructed by the investigator. A lot of literature on examination stress, tool construction procedures was used for the construction of the tool. The examination stress scale was constructed after having discussions with teachers of schools and colleges, psychologists and experts in the field of education. The tool has been prepared on five-point rating scale based on Likert scale. The total number of statement is 40 and initially 14 positive and 26 negative statements were prepared in English.

The scoring procedure for positive statement on the tool is as follows: the option never is given 5; rarely is given 4; sometimes is given 3; often is given 2; and very often is given 1. For negative statements it is reversed as never is given 1; rarely is given 2; sometimes is given 3; often is given 2; and very often is given 1. The minimum score for the tool is '40' and maximum score for the tool is 200.

Item analysis

The tool prepared by the investigator was administered on a sample of 100 secondary school students. Students were asked to mark their opinion among the given alternatives. Each statement has five alternative responses; namely Never, Rarely, Sometimes, Often and Very Often. Scoring was done for all the statements. Item analysis was adopted for the final selection of statements. The total scores were calculated separately and they were arranged in the descending order. The top 25 % and the bottom 25% of scores alone were taken into account.

The difference in means of the high and low groups for each item was tested for significance by computing the t-ratios. Items with‘t’ value of 1.96 and above were chosen for the final tool. Thus the final tool contained forty items.

Reliability

The correlation between two or more sets of scores on equivalent tests from the same group of individuals defines the reliability of a test. A test score is called reliable when there are reasons for believing the score to be stable and trust worthy. Stability and trust worthiness depend upon the degree to which the score is an index of “true-ability” free from chance of error.

Test-retest method was used to arrive at the reliability of the tool. The correlation was computed between the first and second set of scores. Given sufficient time between the two tests the administration results reveal the stability of the test scores.

Validity

Validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration (Babbie, 1990). Besides the content or face validity, the investigator intended to arrive intrinsic validity. Guilford (1950) defined the intrinsic validity as “the degree to which a test measures what it measures.” The square root of reliability gives the intrinsic validity. Hence the intrinsic validity of examination stress inventory is 0.86.

Description of the Final Tool

The final tool with 32 positive and 19 negative statements was prepared in English. A five-point rating scale based on Likert’s type was used to prepare the final tool. Initially positive and negative statements were prepared in English. The scoring procedure for the tool with the option strongly agree as 5, agree as 4, undecided as 3, disagree 2 and strongly disagree as 1, and 44 for positive statements. For 15 negative statements it is reversed as strongly disagree is given 5, disagree is given 4, undecided score as 3, agree score as 2, and strongly agree 1. The minimum score for the tool is ‘32’ and maximum score for the tool is 160.

VIII. RESULTS AND DISCUSSION

Table 1: Mean, SD and t- value with multiple intelligence scores of the gender component

Gender with multiple intelligence Variables	Gender	N	Mean	SD	t– value	Significant at 0.05 level
Verbal linguistic intelligence	Boys	555	6.59	1.829	2.261	Significant
	Girls	445	6.85	1.752		
Visual spatial intelligence	Boys	555	10.21	2.370	0.289	Not Significant
	Girls	445	10.25	2.836		
Bodily kinesthetic intelligence	Boys	555	10.06	2.681	0.792	Not Significant
	Girls	445	10.20	2.667		

Interpersonal intelligence	Boys	555	9.69	2.811	1.709	Not Significant
	Girls	445	10.06	3.851		
Intrapersonal Intelligence	Boys	555	9.66	2.605	1.230	Not Significant
	Girls	445	9.86	2.492		
Logical Mathematical intelligence	Boys	555	9.71	2.492	0.075	Not Significant
	Girls	445	9.72	2.831		
Musical Rhythmic intelligence	Boys	555	10.22	2.839	1.346	Not Significant
	Girls	445	9.97	2.972		
Naturalistic intelligence	Boys	555	10.43	2.725	0.766	Not Significant
	Girls	445	10.57	2.861		
Existentialistic intelligence	Boys	555	10.92	2.931	0.189	Not Significant
	Girls	445	10.96	3.123		
Multiple intelligence	Boys	555	87.49	14.896	0.970	Not Significant
	Girls	445	88.44	15.725		

As seen in the table 1, the calculated‘t’ value is significant at 0.05 level, which confirms that There is a statistical significance between secondary students Verbal linguistic Intelligence on the basis of gender. Hence the stated hypothesis is rejected. To sum up the boys and girls differ significantly in their Verbal linguistic Intelligence.

Further it is evident from table 1 that the calculated‘t’ value is not significant at 0.05 level, which confirms that no significant difference exists between secondary students Visual spatial intelligence, Bodily kinesthetic intelligence, interpersonal, intrapersonal intelligence, Logical Mathematical intelligence, Musical Rhythmic intelligence, Naturalistic intelligence, Existentialistic intelligence and Multiple intelligence on the basis of gender. Hence the stated hypothesis is accepted. To summarize, the boys and girls do not differ significantly in their Visual spatial Intelligence and Bodily kinesthetic intelligence, interpersonal, intrapersonal intelligence, Logical Mathematical intelligence, Musical Rhythmic intelligence, Naturalistic intelligence, Existentialistic intelligence and Multiple intelligence.

Table 2: Mean, SD and t- value with multiple intelligence scores of the type of family component

Type of family with multiple intelligence Variables	**Type of family**	**N**	**Mean**	**SD**	**‘t’ – value**	**Significant at 0.05 level**
Verbal linguistic intelligence	Joint Family	326	6.76	1.748	0.642	Not Significant
	Nuclear Family	674	6.68	1.823		
Visual spatial intelligence	Joint Family	326	10.13	2.352	0.847	Not Significant
	Nuclear Family	674	10.27	2.693		
Bodily kinesthetic intelligence	Joint Family	326	10.02	2.720	0.803	Not Significant
	Nuclear Family	674	10.17	2.653		
Interpersonal intelligence	Joint Family	326	9.83	2.928	0.152	Not Significant
	Nuclear Family	674	9.87	3.493		

Intrapersonal Intelligence	Joint Family	326	9.76	2.614	0.108	Not Significant
	Nuclear Family	674	9.74	2.529		
Logical Mathematical intelligence	Joint Family	326	9.58	2.703	1.062	Not Significant
	Nuclear Family	674	9.77	2.619		
Musical Rhythmic intelligence	Joint Family	326	10.10	2.949	0.020	Not Significant
	Nuclear Family	674	10.11	2.879		
Naturalistic intelligence	Joint Family	326	10.48	2.749	0.107	Not Significant
	Nuclear Family	674	10.50	2.805		
Existentialistic intelligence	Joint Family	326	10.95	3.032	0.123	Not Significant
	Nuclear Family	674	10.93	3.011		
Multiple intelligence	Join Family	326	87.63	15.507	0.399	Not Significant
	Nuclear Family	674	88.05	15.164		

It is evident from the above table 2 that the calculated‘t’ value is not significant at 0.05 level, which confirms that no significant difference exists between secondary students Verbal linguistic Intelligence, Visual spatial intelligence, Bodily kinesthetic intelligence, interpersonal, intrapersonal intelligence, Logical Mathematical intelligence, Musical Rhythmic intelligence, Naturalistic intelligence, Existentialistic intelligence and Multiple intelligence on the basis of type of family. Hence the stated hypothesis is accepted. To summarize the results obtained it can be stated that the joint family and nuclear family do not differ significantly in their Verbal linguistic Intelligence, Visual spatial intelligence, Bodily kinesthetic intelligence, interpersonal, intrapersonal intelligence, Logical Mathematical intelligence, Musical Rhythmic intelligence, Naturalistic intelligence, Existentialistic intelligence and Multiple intelligence.

Table 3: Mean, SD and t- value with examination stress scores of the entire sample and its sub samples.

Demographical Variables	**Sub Samples**	**N**	**Mean**	**SD**	**’ Value**	**Significant at 0.05 Level**
Entire Sample		1000	92.810	15.873	-	-
Gender	Male	555	92.12	16.242	1.246	Not Significant
	Female	445	93.36	15.159		
Types of family	Joint family	326	92.44	16.417	0.317	Not Significant
	Nuclear family	674	92.78	15.464		

Next from the above table 3, the calculated t’ value is not significant at 0.05 level. It is inferred in the case of gender, that the calculated mean and S.D of examination stress of secondary school students are found to be higher mean (93.36) for female than the male secondary students mean (92.12). Thus the female students have higher examination stress than the male students. According to table 3, for the types of family, the nuclear family students

have secured mean (92.78) which is higher than the joint family students mean (92.44). Thus the nuclear family school students have higher examination stress than the joint family students.

Table 4: Correlation Co-Efficient (r) among Multiple Intelligence with Dimension and Examination Stress

Multiple Intelligence with Dimension	**Examination Stress**
Verbal linguistic intelligence.	0.005
Visual spatial intelligence.	-0.043
Bodily Kinesthetic intelligence.	-0.013
Interpersonal intelligence	-0.015
Intrapersonal intelligence	-0.051
Logical mathematical intelligence.	-0.008
Musical rhythmic intelligence.	-0.092**
Naturalistic intelligence	-0.071*
Existentialistic intelligence	-0.053
Multiple intelligence-Total	-0.063*

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

It is evident from the above table that the calculated co-efficient of correlation ('r') between multiple intelligence and examination stress (-0.063*) is significant. Hence, the stated hypothesis is rejected. It is inferred that there is significant relationship between multiple intelligence and Examination stress.

IX. FINDINGS

1. The level of multiple intelligence of the secondary students is high.
2. The educational stress of the secondary students is average.
3. Gender with dimensions of multiple intelligence

a. There is a statistical significance between verbal linguistic intelligence on the basis of gender of the secondary students.

b. There is no statistical significance between visual spatial intelligence on the basis of gender of the secondary students.

c. There is no statistical significance between bodily kinesthetic intelligence on the basis of gender of the secondary students.

d. There is no statistical significance between interpersonal on the basis of gender of the secondary students.

e. There is no statistical significance between intrapersonal intelligence on the basis of gender of the secondary students.

f. There is no statistical significance between logical mathematical intelligence on the basis of gender of the secondary students.

g. There is no statistical significance between musical rhythmic intelligence on the basis of gender of the secondary students.

h. There is no statistical significance between naturalistic intelligence on the basis of gender of the secondary students.

i. There is no statistical significance between existentialistic intelligence on the basis of gender of the secondary students.

j. There is no statistical significance between multiple intelligence on the basis of gender of the secondary students.

4. Type of family with Dimensions of Multiple Intelligence

a. There is no statistical significance between verbal linguistic intelligence on the basis of type of family of the secondary students.

b. There is no statistical significance between visual spatial intelligence on the basis of type of family of the secondary students.

c. There is no statistical significance between bodily kinesthetic intelligence on the basis of type of family of the secondary students.

d. There is no statistical significance between interpersonal on the basis of type of family of the secondary students.

e. There is no statistical significance between intrapersonal intelligence on the basis of type of family of the secondary students.

f. There is no statistical significance between logical mathematical intelligence on the basis of type of family of the secondary students.

g. There is no statistical significance between musical rhythmic intelligence on the basis of type of family of the secondary students.

h. There is no statistical significance between naturalistic intelligence on the basis of type of family of the secondary students.

i. There is no statistical significance between existentialistic intelligence on the basis of type of family of the secondary students.

j. There is no statistical significance between multiple intelligence on the basis of type of family of the secondary students.

k. There is no statistical significance between examination stresses on the basis of gender of the secondary students.

l. There is no statistical significance between examination stresses on the basis of type of family of the secondary students.

5. It is inferred that there is significant relationship between multiple intelligence and Examination Stress.

X. CONCLUSION

The results of the present study reveals that no relationship between multiple intelligence and examination stress exists. Hence the conclusion can be arrived that for gender and type of family have no significant effect in the multiple intelligence and examination stress of the secondary school students. Further it is observed that gender has significant effect in their Verbal linguistic Intelligence only. The finding shows the level of multiple

intelligence of the secondary students is high and examination stress of the secondary students is average. It is inferred that there is significant relationship between multiple intelligence and examination stress.

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