Study of Examination and Achievement as Dimension of Psychological Stress among Science Students

Narendra Kumar* and Rajive Kumar**

Abstract

This study attempts to assess the examination and achievement as dimension of psychological stress among senior secondary science students studying in different types of institutions. A sample of 631 students was randomly selected from the schools recognised by different boards in Meerut district. They were administered Psychological Stress Scale for Science Students (PSSSS) developed by the researcher himself. Mean, S.D., F-test and t-test were used to analyse the data. Results show that male and female science students do not differ significantly on psychological stress dimension examination and achievement. While significant difference was observed between rural and urban science students, rural science students were found to be more stressed than urban science students. Further, significant difference was observed among the students of different types of institutions. Highest psychological stress due to its dimension examination and achievement was found in the students of U.P. Govt. Aided Schools (GAS) and lowest in the students of Kendriya Vidyalayas (KVs). Similarly, significant difference was observed between the students of different types of boards UPB and CBSE, UPB and ISC. No significant difference was observed between the students of CBSE and ISC. Highest psychological stress due to examination and achievement was found in the students of UPB and lowest in the students of ISC.

* *Assistant Professor*, Department of Education, S.G.P.G. College, Sarurpurkhurd, Meerut, U.P.
** *Assistant Professor*, Department of Education, N.A.S. College, Meerut, U.P.

Introduction

Science is a process of development of physical and meta-physical world through interaction between human mind and universe. It is a continuous quest for new knowledge through investigation, observation and experimentation, which leads to new theories, new instruments and so on. It is a dynamic, changing, tentative and ongoing process. Understanding its conceptual and methodological concepts is an important part of learner or an educated person. The present scenario is coming up with technological revolution, web technology and web culture. Naturally, it is the achievement of people especially in the field of science besides humanities. It is a well considered opinion proven rationally that science is the great potential factor for the development of country. Hence, science education in every country occupies a significant emphasis. The very structured knowledge in science education demands good intellect people with scientific attitude and rationale mind. Difficulty in understanding of science experienced by students in general, fear of science and underachievement in science subjects are the common problems due to which students used to suffer. Science also exerts a number of additional demands on students. The science curriculum requires enormous commitment and hard work by students. The intense curriculum may produce stress on science student's life. The school setup, teacher's expectations, infrastructure facilities, modalities of teaching, etc., promote the feeling of pressure associated with being in the science stream. Most of the time, science students complain of dwelling in between their efforts for better achievement and teacher's/ parent's expectations. Even investing time and efforts is something they find difficult and therefore get easily stressed. It is being experienced by parents and teachers in schools that science students suffer from psychological stress which affects their achievement.

Students worry about selecting careers and post-schooling programmes. The problems encountered by students may differ from those faced by their non-student peers. Students are starting to shift from a life that is dependent on others to a life that needs them to release the dependency and start carrying their own responsibilities (Sulaiman *et al.*, 2009). A number of researches have been done looking at the correlation of many stress factors that science students experience and the effects of stress on their academic performance. Most of the studies in different responses to stress have been carried out in dental, medical, nursing, university and college students (Ellison, 2004; Polychronopoulou and Divaris, 2005, Hussain and Kumar, 2008, Kumar

and Singh, 2004, Kaplan Liu, and Kaplan, 2005, Chapell *et al.* 2005, Vijayalakshmi and Lavanya, 2006, Nicholson, 2009). Many scholars in the field of behavioural science have carried out extensive research on stress and its outcomes and concluded that the topic needed more attention. In addition, there are important sources of stress such as homework, curriculum transaction, assignments and uncomfortable classrooms, relationships with faculty members and friends, eating and sleeping habits, and time pressure may also be sources of stress. Examination and to achieve good scores is the major source of stress among science students. This refers to the stress among science students due to fear of exams, inadequate preparation for exams and also due to the fact that the science student is expected to achieve highly. The researcher found that there is not much research conducted particularly in Western U.P. in India pertaining to this issue with regard to the students of different types of institutions recognised by different boards. Therefore, it is timely to conduct a research to examine this particular issue. In the present study, the researcher attempted to assess the examination and achievement as dimension of psychological stress among senior secondary science students studying in different types of institutions.

Objectives

1. To study the nature of examination and achievement as dimension of psychological stress among science students.
2. To study the difference between male and female science students on psychological stress dimension examination and achievement.
3. To study the difference between rural and urban science students on psychological stress dimension examination and achievement.
4. To study the difference among science students of different types of institutions on psychological stress dimension examination and achievement.
5. To study the difference among science students of different types of boards on psychological stress dimension examination and achievement.

Research Methodology

Method

Methods of research are generally determined by the theory of the topic under study, objectives of the study, resources of researchers, etc. These considerations have led the investigator to use the descriptive survey method of research for the present study.

Participants

For the present study, science students officially enrolled in 12th standard were taken from different types of institutions *viz. Kendriya Vidyalayas (KVs), Jawahar Navodaya Vidyalayas (JNVs), U.P. Government Inter Colleges (GIC), U.P. Government Aided Schools (GAS), Public*

Schools (PS), Christian Missionary Schools (CMS) and Army Schools (AS) recognised by different boards in Meerut district. Using simple random sampling, 100 senior secondary science students were selected from each type of institutions. Out of 700 science students, only 631 students were finally taken because 69 students did not fill the scale properly.

Material and Procedure

To achieve objectives of this study, Psychological Stress Scale for Science Students (PSSSS) developed by the researcher was used to measure psychological stress of science students. Each item was followed by five options, namely, 'Always', 'Often', 'Sometimes', 'Rarely' and 'Never'. Reliability of the scale was determined by split half-method and was found 0.96.

Data Analysis Techniques

To study the nature of examination and achievement as dimension of psychological stress, all the science students (N = 631), mean and standard deviation (S.D.) were calculated. To find out the differences among science students on examination and achievement as dimension of psychological stress, analysis of variance (ANOVA) was used. In case of significant F-value, t-test was used. Results are presented in the following tables.

Results

After analysing the data, it was observed that the mean, median and mode values of all the 631 science students on psychological stress dimension examination and achievement were found to be 24.727, 25 and 25 respectively, which indicate moderate level of stress among science students due to examination and achievement.

It is evident from Table 1 that t-values between the means of male and female science students on psychological stress dimension examination and achievement was found to be 0.76 which was not significant at 0.05 level of significance. This reveals the fact that male and female science students do not differ significantly on psychological stress dimension examination and achievement. It means that both male and female science students were found to be stressed equally due to psychological stress dimension examination and achievement.

Table 1

Summary of t-test for Difference between Male and Female Science Students on Examination and Achievement as Dimension of Psychological Stress

Dimensions of Psychological Stress	Male (N = 419)		Female (N = 212)		t-value
	Mean	S.D.	Mean	S.D.	
Examination and achievement	24.86	6.45	24.43	6.98	0.76

Table 2
Summary of t-test for Difference between Rural and Urban Science Students on Examination and Achievement as Dimension of Psychological Stress

Dimensions of Psychological Stress	Rural (N = 218)		Urban (N = 413)		t-value
	Mean	S.D.	Mean	S.D.	
Examination and achievement	26.38	6.47	23.84	6.55	4.64**

It is evident from Table 2 that t-values between the means of rural and urban science students on psychological stress dimension examination and achievement was found to be 4.64 which was significant at 0.01 level of significance. This reveals the fact that rural and urban science students differed significantly on psychological stress dimension examination and achievement. Since mean differences were in favour of rural students, it indicates that rural science students were found to be more stressed than urban science students due to examination and achievement.

Table 3
Sums, Sum of Squares, Means and S.D.s of Science Students of Different Types of Institutions on Psychological Stress Dimension Examination and Achievement

Types of Schools	N	Sum	Sum of Squares	Mean	S.D.
KV	95	2113	51149	22.24	6.65
JNV	82	2166	60670	26.41	6.53
GIC	90	2354	64818	26.16	6.04
GAS	79	2157	61535	27.30	5.82
PS	98	2459	66021	25.09	6.67
CMS	96	2267	57425	23.61	6.40
AS	91	2080	51548	22.86	6.67

Table 4
Summary of ANOVA for Difference among Science Students of Different Types of Institutions on Psychological Stress Dimension Examination and Achievement

Source of Variation	Df	Sum of Squares	Mean Sum of Squares	F
Between	6	1978.30	329.72	
Within	624	25711.92	41.21	8.002**
Total	630	27690.22	** p < 0.01	

Table 4 indicates that F-value was 8.002, which was significant at 0.01 level. This means that students of different types of

institutions differed significantly on psychological stress dimension examination and achievement. This analysis shows significant difference among groups. To know the significance of difference between groups, t-values were calculated. Results of t-test for the stress dimension examination and achievement are given in Table 5.

It is evident from Table 5 that significant differences were obtained between the students of KV and JNV, KV and GIC, KV and GAS, KV and PS, JNV and GIC, JNV and CMS, JNV and AS, GIC and CMS, GIC and AS, GAS and PS, GAS and CMS, GAS and AS, PS and AS on psychological stress dimension examination and achievement. No significant differences were observed between the students of KV and CMS, KV and AS, JNV and GAS, JNV and PS, GIC and GAS, GIC and PS, PS and CMS, CMS and AS on psychological stress dimension examination and achievement. It is also clear from Table 3 that highest mean on psychological stress dimension examination and achievement was found for the students of GAS and lowest for the students of KV.

Table 5
Summary of t-matrix for Difference between Science Students of Different Types of Institutions for Psychological Stress Dimension Examination and Achievement

Types of Schools	KV	JNV	GIC	GAS	PS	CMS	AS
KV	0	4.175**	4.161**	5.260**	2.956**	1.446	0.626
JNV		0	0.269**	0.905	1.330	2.866**	3.517**
GIC			0	1.247	1.136	2.765**	3.466**
GAS				0	2.307*	3.930**	4.571**
PS					0	1.565	2.288*
CMS						0	0.788
AS							0

Table 6
Sums, Sum of Squares, Means and S.D.s of CBSE, UPB and ISC Science Students on Psychological Stress Dimension Examination and Achievement

Types of Boards	N	Sum	Sum of Squares	Mean	S.D.
CBSE	303	7333	191803	24.201	6.890
UPB	169	4511	126353	26.692	5.948
ISC	159	3752	95010	23.597	6.400

Table 7
Summary of ANOVA for Difference among Science Students of Different Types of Boards on Psychological Stress Dimension Examination and Achievement

Source of Variation	Df	Sum of Squares	Mean Sum of Squares	F
Between	2	939.26	469.63	
Within	628	26750.96	42.60	11.025**
Total	630	27690.22	** p < 0.01	

It is depicted in Table 7 that F-value has come out to be 11.025, which was significant at 0.01 level. This means that students of different types of boards differed significantly on psychological stress dimension examination and achievement. This analysis shows significant difference among groups. To know significance of difference between groups, t-values were calculated. Results of t-test for psychological stress dimension examination and achievement are given in Table 8.

It is evident from Table 8 that significant differences were obtained between the students of CBSE and UPB, UPB and ISC on psychological stress dimension examination and achievement. No significant difference was observed among the students of CBSE and ISC on psychological stress dimension examination and achievement. It is also clear from Table 6 that the highest mean on psychological stress dimension examination and achievement was found for the students of UPB and lowest for the students of ISC.

Conclusion

It is apparent from the findings of this study that examination and achievement has emerged as the major causing factor of stress among science students. Male and female science students were found to be equally stressed due to examination and achievement. Rural science students were found to be more stressed than urban science students due to examination and achievement. Significant differences were obtained among the students of KV and JNV, KV and GIC, KV and GAS, KV and PS, KV and CMS, KV

Table 8
Summary of t-matrix for Difference between Science Students of Different Types of Boards on Psychological Stress Dimension Examination and Achievement

Types of Boards	CBSE	UPB	ISC
CBSE	0	3.942**	0.915
UPB		0	4.525**
ISC			0

and AS, GIC and CMS, GIC and AS on psychological stress dimension examination and achievement. Highest mean on psychological stress dimension examination and achievement was found for the students of GAS and lowest for the students of KV. Further, significant differences were obtained among the students of CBSE and UPB, UPB and ISC on psychological stress dimension examination and achievement. Highest mean on psychological stress dimension examination and achievement was found for the students of UPB and lowest for the students of ISC.

In the end, it can be concluded that science students have been found experiencing stress due to examination and achievement. The reason for this is very obvious. Science students, as compared to arts students, are always pre-occupied with their performance in examination because science subject is comparatively difficult to grasp and understand. There is a consistent pressure on students' mind to secure maximum possible marks in exam. In today's competitive world, a race to achieve more and more marks is in progress. This is seen by the general mentality where even if a student achieves 90 per cent marks, it is not considered good enough. Overtly or covertly, this trend is reinforced by teachers, parents, neighbours, etc. Also, the admission process for the coveted advent into higher education being difficult is critically dependent on achievement in terms of marks.

Implications of the Study

The findings of the present study may be utilised by educational planners and administrators in order to assess and modify their schemes pertaining to the development of science students. The findings of the study may be of immense interest to teachers, headmasters and principals to re-orient their efforts to help the students. Science students need to feel as a part of school. They should be involved in various activities and also be able to take up leadership roles like prefectorial positions. This is important so that students do not feel marginalised and isolated from the mainstream. The findings of this study are useful to the persons who are involved to consider the impact of the workload on students' welfare, and to prepare students for challenges in their life. The findings of this study will also be useful for parents because parents often feel stressed and frustrated too, but they must realise that the brains of teens are physically different from adults, they do not see things in the same way, and they react differently. Parents can help enormously by setting a good example, by being patient, by spending time with students and really listening to them.

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