

Psychological Stress and its Relationship with Achievement of Science Students of Kendriya Vidyalayas

NARENDRA KUMAR*

RAJIVE KUMAR**

Abstract

This study attempts to assess the psychological stress and its relationship with achievement among senior secondary science students of Kendriya Vidyalayas. They were administered Psychological Stress Scale for Science Students developed by the researcher, which measures 12 dimensions of psychological stress. Results show that the stress dimension associated with examination and achievement is the major factor causing stress, while health factors cause the least stress. Achievement of science students was significantly and negatively related with the content of science while positive significant relationship was observed with dimension of society.

Introduction

Stress is an unavoidable phenomenon in every aspect of human life. It is generally an emotional imbalance which may be due to several reasons such as tests, papers and projects, competitive nature within our chosen field, financial worries about school and future prospects. It was found that science

students are more passionate than arts students. They are more ambitious and need proper guidance in this particular stage. Teenagers, especially those who are students, always face learning problems, career management and also problems in solving personal and social matters. Also, the pressure to earn good grades and to earn a degree is very high.

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

** Assistant Professor, Department of Education, N.A.S. College, Meerut.

Stress mainly comes from academic tests, interpersonal relations, relationship problems, life changes, and career exploration. Such stress may usually cause psychological, physical, and behavioural problems.

Further, Science students have many obstacles to overcome in order to achieve optimal academic performance as compared to Humanities students. 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. Those studies carried out with medical students show that in the academic area, heavy work load, examinations and meeting deadlines for assignments were the most common causes of stress (Evans & Fitzgibbon, 1992; Kohn & Frazer, 1986). This is further supported by Ratana Saipanish (2003) who conducted a study on 686 medical students in the Faculty of Medicine; Ramathibodi Hospital, Thailand. Obviously, test or exam anxiety is one of the main causes of academic stress and most university students seem to be more emotionally vulnerable due to examinations. Increased anxiety from tests has a debilitating effect on students' performance. When information generated by worrying about the test reduces the capacity available for performing the task, the result is that performance breaks down and the result becomes self-confirming (Fisher, 1994).

Most of the time, science students have complaint of dwelling in between their efforts for better achievement and

teachers'/parents' expectations. Studies in different responses to stress have been carried out in dental, medical, nursing, university and college students (Helmets, et al.1997, Henley 1998, Sinha et al. 2000, Kuruppuarachchi et al. 2002, Polychronopoulou, Argy and Divaris, Kimon 2005). Scholars in the field of behavioural science also have carried out extensive research on stress and its outcome and concluded that the topic needed more attention (Ellison, 2004). The researcher has found out that there is not much research conducted in Indian universities particularly in Western Uttar Pradesh pertaining to this issue with regard to the students of remote areas studying in Kendriya Vidyalayas. Therefore, it is time to conduct a research to examine this particular issue. In the present study, the researcher has attempted to study the psychological stress and its relationship with achievement of science students studying in Kendriya Vidyalayas of Meerut province.

Objectives

1. To study the psychological stress of science students of Kendriya Vidyalayas.
2. To study the achievement of science students of Kendriya Vidyalayas.
3. To study the contribution of psychological stress on achievement of science students of Kendriya Vidyalayas.
4. To study the relationship between psychological stress and achievement of science students of Kendriya Vidyalayas.

Hypotheses

1. There is no significant contribution of psychological stress on achievement of science students of Kendriya Vidyalayas.
2. There is no significant relationship between psychological stress and achievement of science students of Kendriya Vidyalayas.

Method

The investigators used the descriptive survey method of research for the present study.

Participants

Science students officially enrolled in 12th standard were identified from Kendriya Vidyalayas in Meerut. Using simple random sampling, 100 science students were selected, out of which information from 95 students was finally used because 5 students did not fill the scale properly.

Materials and Procedure

Psychological Stress Scale for Science Students (PSSSS) developed by the researcher was used to measure psychological stress of science students. It was structured around the 12 dimensions of psychological stress i.e.

curriculum transaction in science, content of science, infrastructure for science, science teachers, peers, workload in science, examination and achievement, home and family environment, vocational aspiration, health, communication problems and society. Thus, PSSSS is a 96 – items scale with a Likert type responses format (5= Always, 4= often, 3= sometimes, 2= rarely, and 1= never). Reliability of the scale determined by split-half method was 0.96. Achievement in Science of the students was considered as the marks obtained in science subjects in 12th class board examination.

Results

To study the nature of psychological stress, all its dimensions and achievement of all the science students (N = 95), mean, and standard deviation (S.D.) were calculated. To find out the contribution of psychological stress and its dimensions on achievement of science students, Simple and Stepwise Regression Analysis was done. To find out the relationship between psychological stress and achievement of students of Kendriya Vidyalayas, Pearson Product Moment Correlation Coefficients were calculated.

Table 1
Statistics showing the nature of distribution of psychological stress and achievement of science students of KVs (N= 95)

| <i>Psychological Stress Dimensions</i> | <i>Mean</i> | <i>S.D.</i> |
|--|-------------|-------------|
| Curriculum Transaction in Science | 21.33 | 5.40 |
| Content of Science | 18.66 | 5.53 |
| Infrastructure for Science | 19.31 | 7.99 |
| Science Teachers | 21.62 | 7.55 |
| Peers | 17.87 | 5.83 |

| | | |
|-----------------------------|--------|-------|
| Workload in Science | 20.13 | 6.36 |
| Examination and Achievement | 22.24 | 6.64 |
| Home and Family Environment | 18.63 | 8.07 |
| Vocational Aspiration | 20.42 | 6.42 |
| Health | 16.26 | 7.04 |
| Communication Problems | 17.84 | 6.66 |
| Society | 16.57 | 6.08 |
| Total Psychological Stress | 230.92 | 55.95 |

Table 2
Statistics showing the nature of achievement of science students of KV (N= 95)

| <i>Variable</i> | <i>Mean</i> | <i>S.D.</i> |
|-----------------|-------------|-------------|
| Achievement | 125.22 | 24.46 |

Mean values of the different dimensions of psychological stress varied from 16.26 to 22.24 which were of moderate level (Table-1). The mean values of total psychological stress score of all students was found to be 230.93 which was of moderate level. Further mean stress score of the students was found to be greater on the psychological stress dimension *Examination and Achievement* in comparison to all the other dimensions,

whereas the lowest mean stress score of science students was found due to psychological stress dimension *Health*. It means that science students of Kendriya Vidyalayas are more stressed due to *Examination and Achievement* in comparison to other dimensions and least stressed due to its dimension *Health*. Table 2 shows that mean value of Achievement scores of science students of Kendriya Vidyalayas was 125.22.

Table 3
Summary of regression analysis for contribution of the dimensions of psychological stress on achievement of science students of KVs

| <i>Step</i> | <i>Constant</i> | <i>Variable Contributed</i> | <i>Beta</i> | <i>Adjusted R2</i> | <i>Percentage Contribution</i> |
|-------------|-----------------|-----------------------------|-------------|--------------------|--------------------------------|
| 1. | 144.22 | Content of science | -0.26 | 0.06 | 6.15** |
| 2. | 131.80 | Content of science | -0.35 | 0.16 | 16.78** |
| | | Society | 0.34 | | |
| 3. | 135.19 | Content of science | -0.22 | 0.19 | 19.61** |
| | | Examination and achievement | -0.25 | | |
| | | Society | 0.43 | | |
| ** p < 0.01 | | | | | |

Table 3 shows that contribution of psychological stress dimension content of science on achievement was 6.15%. Combined contribution of stress dimensions content of science and society was 16.78%. Combined contribution of stress dimensions *content of science, examination and achievement, and society* was 19.61%. All contributions were significant at 0.01 level. Contribution of other dimensions of psychological stress on achievement was not significant at 0.05 level.

The achievement of Kendriya Vidyalayas students was negatively and significantly correlated with psychological stress dimension *content of science* at 0.01. It was also positively and significantly correlated with psychological stress dimension associated with *society*. Relationship of

achievement with total psychological stress and its all other dimensions was not significant at 0.05 level. It means that achievement of KV students is significantly and inversely correlated with psychological stress dimension - *content of science*.

Conclusion

It is apparent from the findings of this study that science students of Kendriya Vidyalayas were found to be under stress in the process of studying science at senior secondary level. Out of 12 dimensions that have been considered for taking as factors responsible for causing psychological stress, the dimension *examination and achievement* has emerged as the major factor causing stress among science students. The reason for this is very obvious. Science students as compared

Table 4
Correlation between psychological stress and achievement of KV students (N = 95)

| Variables | Mean | S.D. | Product | Correlation |
|-----------------------------------|---------|--------|---------|-------------|
| Achievement | 127.400 | 18.670 | ----- | ----- |
| Total Psychological Stress | 230.926 | 55.955 | 2799682 | 0.048 |
| Curriculum Transaction in Science | 21.337 | 5.404 | 257261 | -0.102 |
| Content of Science | 18.663 | 5.538 | 223281 | -0.265** |
| Infrastructure for Science | 19.316 | 7.992 | 236009 | 0.157 |
| Science Teachers | 21.621 | 7.556 | 263101 | 0.106 |
| Peers | 17.874 | 5.837 | 217239 | 0.088 |
| Workload in Science | 20.137 | 6.364 | 243480 | -0.021 |
| Examination and Achievement | 22.242 | 6.646 | 267067 | -0.181 |
| Home and Family Environment | 18.632 | 8.074 | 225368 | -0.009 |
| Vocational Aspiration | 20.421 | 6.422 | 247568 | 0.036 |
| Health | 16.263 | 7.041 | 198436 | 0.128 |
| Communication Problems | 17.842 | 6.661 | 217412 | 0.124 |
| Society | 16.579 | 6.080 | 203460 | 0.260* |

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 examinations. This is seen by the general mentality where even if a student achieves 90% marks, it is not considered good enough. Curriculum transaction in science, science teachers, workload in science, and vocational aspirations have also emerged as major causative factors of stress among science students. This study corroborates Janet et al. (1995) who found that 86% of the subjects reported their top stressors to be examination, amount of class work, lack of free time, long hours of study and grades. The stress resulting due to the dimension *health* is the lowest out of the twelve dimensions. The senior secondary stage is developmentally characterises as late adolescence. The developmental needs

at this stage are greater autonomy and independence. Combined contribution of stress dimensions *content of science, examination and achievement*, and *society* was found to be significant. Negative correlation was observed between *achievement* and total psychological stress and all its dimensions except *society*, but the significant and negative relationship was observed only with the dimensions *content of science* and positive significant relationship was observed with dimension *society*. The variation over the dimensions may be due to the academic environment, academic support system, teachers and other facilities, but the psychological stress among the students may be due to their own capacity, grasping power, scientific attitude, interests etc. The findings from the present study may help in understanding and reducing stress-related factors in schooling so that students can perform better.

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