Stress in Relation to Academic Achievement- A Study of Secondary and Higher Secondary Class Students of a School in Delhi

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D E C L A R A T I O N

Certified that the thesis entitled "STRESS IN RELATION TO ACADEMIC ACHIEVEMENT - A STUDY OF SECONDARY AND HIGHER SECONDARY CLASS STUDENTS OF A SCHOOL IN DELHI" submitted by RASMITA DAS, is in partial fulfilment for the degree of MASTER OF PHILOSOPHY (M.Phil) of this University. This thesis has not been submitted for any other degree of this University and is her own work.

We recommend that this thesis be placed before the examiners for evaluation

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Rasmita Das.

RASMITA DAS

CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER - ONE

INTRODUCTION

The seventeenth century has been called **'the age of enlightment'** the Eighteenth **'the age of reason'** the nineteenth **'the age of progress'** and the twentyth **'the age of stress and anxiety'**. With the conquest of many of the physical ills which have afflicted man throughout history,he has become increasingly aware of the role of psychological factors in human existence. Man suffers from worries due to value, conflicts, loneliness, disillusionment and doubts as to whether one can chalk out a successful course through the complex modern existence. It is found through daily observation that feeling of inadequacy and insecurity. Once developed, give birth to a deep feeling of stress. There seems to be some evidence that disrupting stress is usually related to achievement. Adolescent age is the age of **'Stress and Strain'**.

The concept of stress was first introduced by endocrinologist, **Hans Selye** in 1936. Actually the word 'Stress' itself is originally of Latin derivation. It was first used in the 15th century as a shortened or apathetic form of 'distress' (Rees, 1876) to denote obnoxious human experience. In the 17th century 'stress' denoted 'hardship,

strain, adversity or affliction (shorter Oxford English Dictionary).

Later, during the 18th and 19th century, the term meant "force, pressure, strain or strong effort exerted upon a material object or a person- or upon a person's organs or mental powers"- a meaning which implied that a material object or a person, in such a situation resists the distorting effects of these forces and attempts to maintain its original state (Hinkle 1973). This very meaning inspired workers in the field of physics and engineering in to adopting and conceptualizing the term `Stress' for their ends. Thus the colloquial meaning of Stress became a concept when adopted by physical scientists. In psychology, `Stress' is the demand made on the organism to adapt, to cope, or to adjust (Rathus 1981). Later throughout the 19th and 20th centuries, the twin words `**Stress**' and Strain' remained in popular usage in a non-scientific sense.

Holmes and Rahe (1967), interpret stress in terms of life changes. But Hans selye (1977), holds that "Stress is a reaction to an event - the reaction being the generalized response of the body to the individual's perception of the event, whether it is pleasant or unpleasant". This definition conveys that stress is caused by both pleasant and unpleasant events.

Actually stress is a relational concept, since it involves factors in the environment combined with factors in the individual. Some environments are stressful for all or most persons and some persons are highly susceptiable to stress in almost any environment; but between these extremes it is the particular match-up between certain characteristics of the environment and certain attributes of individual's that produce stress. Thus stress is defined by a set of circumstances under which an individual can not respond adequately to the environmental stimuli, or can only respond in such a manner that it causes excessive wear and tear to the organism; for example it may result in chronic fatigue, tension, worry, physical damage, nervous break down and loss of self-esteem etc.

Four stages have been considered to be involved in the development and manifestation of stress.(1) To begin with there is an event in the individual's environment which exerts force on him.(2) This is followed by the individual's understanding and interpretation of this event. (3) There is then a reaction or response to the causal event, which manifests itself in a physiological, Psychological or behavioral form.(4) Finally, there are the consequences of the response, both for the individual afflicted with stress and the environment in which he lives. The stress may vary from one individual to another and same stress with the same magnitude and direction may have

differential effects on adults and children,two different individual and so on.

Stress may manifest in many ways such as emotional manifestation, behavioural manifestation, physiological functioning and cognitive level etc. (Zimbardo, 1979). These are explained below:

(1) The **emotional manifestation** or reactions are like sadness, anger, irritation, frustration, rage and even elation etc.

(2) The **behavioral reactions** are changes in performance, poor concentration, forgetting, lessened productivity or inability to get along with other people.

(3) Stress may induce a third type of reaction, that is changes in **physiological functioning**. This may lead to head-eche, back-ache, high blood pressure, stomach upset and susceptibility to infection.

(4) Finally at `**cognitive level**´ the person may begin to think of himself/herself in certain ways that may lead to lower self esteem and to feelings of helplessness and hopelessness.

Frequently the individual may express his physiological and emotional consequences of stress within the interpersonal context in his environment as he/she spends most of his/her lives in interactions with other people.

Interpersonal reactions to stress may be divided in to two major categories : (1) Family and (2) Peers.

Family :

In the family stress may manifest in any of the following forms:

(1) Arguments and fights over relatively unimportant things (in the extreme situations and physical abuse).
(2) Withdrawal and uncommunicativeness.
(3) Unreasonableness.
(4) Unreliability.
(5) Withdrawal of love and affection etc.

Peers :

Although an Individual tends to act out the consequences of stress interpersonally and most often in the family context, he/she may also `take it out´ on friends.

Behaviors that are frequently present in taking it out´ on friends includes the following :

(1) Argumentativeness and fighting.
(2) Refusal to socialize.
(3) These behaviors considered to be bad manners".

(4) Over dependence etc.

The consequences or these behaviors are many and generally involve, at some level, the withdrawal of the relationship either temporarily or on a permanent basis.

In an individual stress may be caused by many factors such as for example:

(1) Family problems
(2) Demands of the peer group.
(3) Personal factors.
(4) Psychological factors.
(5) Physical factors in the environment.
(6) Social factors.
(7) Economic factors and,
(8) School factors.

Amongst the above, school factors play an important role.

School :

As children spend most of their working hours in school and thus the schooling experience has a tremendous bearing on them. Emphasizing the importance of the school, Rutter (1980) demonstrated that variations in pupils behaviors, academic records and attendance were systematically and strongly associated with a school's characteristics. The school's influence on its pupils appeared to be related to

how they were dealt with as individuals, and to be ethics of the school as a social institution.

Researches, considering the impact of schooling on young children in terms of stress appears to be relatively lesser than in other fields. The focus of research in this area has been concerned with home, family and their contribution to stress in children.

Cornell's book on child psychiatry (1985) which deals with the school as a source of children's stress, mentions certain typical factors which can be identified as existing or potential sources of stress. These are as follows:

(1) Subject anxiety.
(2) Relationship with teachers.
(3) Excessive work pressure.
(4) Too much home work.
(5) Too many tests and tutorial.
(6) Over loading in the syllabus.
(7) School climate.
(8) Unhealthy competition.
(9) Failure in examinations, pre-examination anxiety and extreme marks orientedness.
(10) Excessive achievement pressure induced by parents.
(11) Stress in sports, games and other extra and co-curricular activities such as not being selected in a

particular team and competition.

(12) Difficulties of Subject opted.

(13) Phobia for Board Examination.

Thus, from the forgoing , it is clear that `stress is a behavioral reaction caused by varied factors and amongst these, school factors play a certain important role. This is particularly so far the students of class X and XII in India who are to appear for an all India level Board Examination, to compete with a very large number of children. This naturally causes anxiety and stress in even a bright student who has always been securing above 80% marks,as he may also find it difficult to perform so well that he could figure amongst the first 1000 positions all over India. Hence, there is a great deal of anxiety to do well and better his own past performance and if possible, come on to the top.

Towards this end, parents and teachers too pressure the students which may increase the stress all the more. At times, the stress may reach such a limit that the student may not do even as well as he has been performing all along. At the same time, there is a highly non-chalant attitude may also cause relatively lower level performance. Hence, the question arises as to what should be the level of stress for the `best' performance? To answer this question, it is necessary to ascertain whether there is a higher degree of

stress amongst students, who take the Board Examination (X, and XIIth Classes). Secondly whether this stress differs from those of other class students (say IX class), who do not appear for Board Examination. Also whether stress level varies amongst students who constantly secure high or low in academic; does it vary in terms of the different classes and between the stress as well as the student's previous academic performance. Answers to these questions may be able to throw light on some of the difficult issues with regards to the factors leading to a high level performance amongst students in a school. With these questions in mind following objectives have been Laid down :

(1) To identify the level of stress amongst the 10th and 12th class students and if this differs amongst them as well as those who are in 9th class but do not take the board Examination.

(2) To ascertain if the level of stress varies between boys and girls in the same class.

(3) To ascertain how far stress affects academic performance in children; and

(4) To ascertain Whether stress varies in terms of subject stream and previous academic performance.

It is hoped that the present study would be able to throw light on some of the objective set up for the study in the field of education.

CHAPTER - TWO

REVIEW OF LITERATURE.

Whenever any investigation is conceptualized, it is useful to review, the related literature before designing it. This helps in lending the proposed research an improved methodology and also in formulating hypothesis. The present section focuses on actual studies conducted in the area of stress which are of relevance to the present study.

Stress in Relation to Examination

In the educational setting, there have been a number of studies on stress and anxiety in relation to examination. Deep seated anxiety, mental and physical exhaustion, depression and nervousness in the student community contribute to the high rate of failures. Thus, they become maladjusted at the time of examinations. While there may be more than little rationalization involved in their reports. Students do typically feel that their academic performance suffers because of this response to testing situation.

Sarason (1960), reviews the literature on anxiety scales and indicates that anxious subjects do vary in performance when threat is perceived in the environment. He also points out that general anxiety is not consistently related to deficits in intellectual measures. Sarason (1952), and Spielberger and Smith (1966), have also investigated the relationship between individual differences in anxiety proneness and the intensity frequency of manifestation of anxiety states (state anxiety, A-state), which has been the subject of extensive theoretical analysis and empirical investigation. Studies have also attempted to determine the extent to which certain personality characteristics mediate the anxiety-performance relationships. Specifically included in this part of the review are investigations of all these variables associated with test anxiety. Studies such as there are clearly important in enlarging out understanding of various effects of anxiety and consequent therapeutic interventions.

There has been an increasing number of studies dealing with physiological concomitants of stressful situation in humans in recent years. Examination is a situational condition which leads to a subjective or cognitive appraisal of threat called evaluation apprehension. The threat involves anticipated harm to the psychological self (e.g. self esteem) and to inter-personal relations. Since the

appraisal process is triggered by the discrepancy between the situational demand and the persons ability to activate appropriate skills (Pepitone, 1967); it follows that an examination with a reputation of extreme difficulty combined with career importance should be stressful to the examinees. Following studies exploring the relationship between biochemical variables and pschological stress have been studied with various diverse physiological symptoms.

Oetting (1966) studied physiological response in relation to examination anxiety and scholastic performance. A random control group and a group of male college freshman whose MMPI patterns suggested examination tension, anxiety were tested, pulse respiration and skin resistance were recorded while a difficult test was administered under stress conditions. Judgement based on an interview tend to validate the MMPI patterns as indicators of severe examination anxiety. Physiological basis suggest that stress occur before the examination for some anxious students and during the examination for others. Prediction of college grades from test results is poor in the anxious group, suggesting that anxiety may have interferred with test taking but not with overall scholastic performance.

Bloch and Brachberidze (1972) attempted to correlate biochemical factors in medical students under examination anxiety. Questionaires of anxiety and other traits were administered to 78 medical students after their final clinical examinaltion. The most prominent psychological biochemical relationship found was the one between cortisol and emotionality supporting the concept of adrenocortical responsiveness to stress situations. Cholesterol was negatively related to self ratings of success. The 11 females were significantly higher in the levels of emotinality but lower in uric-acid concentration.

Similar physiological response was found out by Johansson and Gunn (1977), they measured urinary catecholamine levels in a female Ph.D candidate during public defense of her Ph.D Thesis and durind 2 weeks preceeding and 1 week following the examination. Although females in comparison to males, usually tend to show a weak adrenalin reponse to mental stress, a 300% increase was observed in the female. Results support the assumption that sex differences in adrenal-medullary responsiveness to stress are not determined by sex-linked genetic factors alone and that a "male" responsiveness may be observed in achievement oriented females exposed to a challenging real life situation.

Bocker et al (1979), investigated the role of REM sleep in learning performance and adjustment to stress and the effect of examination stress on physiological measures. 10 psychology students served in each experimental and control group. The results suggested antagonistic effect REM duration increased after learning session but decreased after stress. In both factors acted in conjunction the learning factor dominated in the first phase of REM sleep and lengthened it significantly. Later the stress effect prevailed with corresponding reduction of the later REM phases.

Other biochemical variables with phychological and performance measurement obtained during the period of stress were studied by Janice and Brown (1979). Changes in tactic acid and plasma glucose levels as a function of examination stress were measured using a pin prick blood sampling method. Blood samples were obtained from 12 subjects at each of four times, one weak prior to pre-examination, within 15 minutes post examination and three week after the examination Glucose was significantly elevated pre-examination, over control times and decreased significantly from before to after the examination. Lactic acid was significantly elevated pre-examination over control times and increased significantly before to after the examination. It is suggested that changes in the levels of these

metabolities in the blood are indicative of stress levels. Self rating of `nervousness' were not significantly correlated with either pre-examination glucose or pre-examination lactic acid.

Davis (1985) using similar pre-examination (stress) and post examination condition investigated biological indicators of stress in 18 low anxious and 21 high anxious under graduated selected on the basis of their scores on the Trait anxiety scale of the state trait Anxiety Inventory. Assessment at each condition involved drawing 20 ml. of blood followed by self reports included state anxiety, general psychological symptomatology, dysfunctional attitude, academic confidence, sleep patterns and intake of drugs including alcohol and caffine. Blood was analysed whole blood serotonria content, plasma, 3 methoxy- 4 hydroxyphenylgycai (MH PC) and platelel imipramin binding. Baseline differences between high and low trait anxious assess subjects on biological measures were significant only for whole blood serotonin content variation across situational condition were significant for whole blood serotonin with an increase under the stressful conditions for both anxiety groups.

Haruyo and Mine (1980) present a literature review of test anxiety, considering theories of test anxiety measurement techniques, physiological indices and psychological therapy. Experiments on test anxiety, identified 5 factors - escape through fantasy and anxiety aroused physiologically, or by ego defense, worry of emotion. High test anxiety was related with neausea but not blood pressure.

All these studies provide evidence of stress arousal and the detrimental effect of test anxiety on physiological response. Hence positive steps are needed to keep the students physiologically and mentally healthy before examinations.

Becker, Peter and Schneider (1976) tested a number of hypothesis on the relationship of personality characteristics and reaction to an approaching stress situation. Three personality questionnaire designed to establish the position of each S along the dimensions `emotionally stable-emotionally labile´ and controlled-impulsive´ were presented twice to 154 students in economy, 4 weeks and 2 weeks before a major examination. No significant intensification of stress reaction was observed between test and retest. Emotionally labile, subjects demonstrated more symptomatic reactions and more defense mechanisms than stable subjects. The strategies of

controlled subjects to cope with examination stress differed significantly from the strategies of impulsive students.

Paul (1978) determined the impact of a familiar stress situation, the college examination on commonalty of verbal association. Three groups of 32 college students responded to a word association test under the following conditions.One group was tested first under examination stress and then in a normal classroom setting, a 2nd was tested in the reverse of this order. While a 3rd group serving as an overall control, was tested twice under normal conditions. Contrary to drive theory, the results indicate that anxiety tends to weaken the bond between pairs of verbal associations reduction the frequency of common responses. The decrement in commonalty was least in words of high response strength. It is concluded that loosened verbal associations in mild from are typical reactions to stress in normal persons.

Further, Deffenbacher (1978) noted that the lower performance of the highly test anxious is not a simple artifact of ability since the highly anxious perform as well as or better than the less anxious when the stress is low. Evaluative stress appears to elicit behaviours which interfere with the performance of the highly anxious.

Deffenbacher (1978) found that for the highly anxious, evaluative stress elicited interfering anxiety in the form of attention to worrisom thoughts and ruminations, physiological arousal and upset and elements of task irrelevances.

Stephenson, Spielberger (1976) tested a theoretical model derived from Drive Theory and Trait-State Anxiety Theory which posits that trait anxiety (A - Trait) influences state anxiety (A - State) which influences achievement. The subjects were 83 students enrolled in two graduate education courses. Measures of A-Trait, A-State and achievement were obtained at three times in the pro-test, midterm and final examination periods. A-Trait and A-State were assessed using the State Trait Anxiety Inventory; achievement was evaluated using course examinations. The findings suggested that A-Trait may have a direct influence on achievement in addition to influencing it through A-State. Results confirmed expectations that A-Trait is relatively stable over time and that A-State is less stable.

Morris and Fulmer (1976) investigated the effects of feedback on fluctuations in immediately experienced test anxiety. In two studies, 55 and 144 college students responded to a brief test anxiety questionnaire in the

context of a course examination, during which experimental subjects received item by item feedback. Results support the hypothesis of study 1 that, worry, the cognitive component of anxiety hypothesized to be partially dependent on information available to the student during testing decreased from pre-examination to post-examination only in the feedback group. Emotionality, the physiological affective component thought to be much less directly influenced by cognitive considerations, was not differentially affected by feedback conditions. Study 2 results indicate an interactive effect of test importance and feedback conditions on worry and emotionality.

Holroy,d et al. (1978) found that percentage of time spent worrying correlated highly with anagram performance, whereas state anxiety was unrelated to performance. Liebling and Shaver (1973) equated worry and its effects with the concept of "objective self-awareness", that is, the focusing of attention on oneself as an object to be evaluated. Although using no anxiety measures, these researchers produced the worry and stress effect on performance on a laboratory task by manipulating self-awareness through the presence or absence of a mirror facing subjects as they worked.

Bunsky (1982) studied the impact of test anxiety on test performance and the cognitive appraisals of test anxious students. State and dispositional measures of test anxiety were used over repeated performance trials. Sixty two students who were enrolled in an undergraduate statistics course that required multiple examinations served as subjects. The students expectations, thoughts and performance were assessed at each of the four examination occasions. Results indicatted that test anxiety was related to poor test performance, both early and late in the term. When state anxiety levels were controlled for, the test anxiety - test performance relation was apparent only during the later stages of the course. The pattern anxiety and apprisals suggest that test anxious of students experience most doubt and concern early in the term.

Several studies (Doctor and Allman, 1969: Morris and Liebert, 1970; Spiegler, Morris and Liebert, 1968) have shown that worry was inversely related to performance expectation of high school and college students taking classroom exxaminations. Emotionality, on the other hand was negatively related to performance expectations in some samples (Doctor and Allman, 1969; Morris and Liebert, 1970; Spiegler, Morris and Liebert, 1968) but unrelated in others (Liebert and Morris, 1967; Morris and Liebert, 1970; Spiegler et al., 1968). Worry has been found to be most consistently and more strongly related (inversely) to academic performance, whether it be examination scores or

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course grades (Morris and Liebert, 1970; Morris, Finkelstein and Fisher, 1976; Morris, Kellaway and Smith, 1978; Deffenbacher, Daits and Mazelens, 1981; Sharma and Rao, 1983a, 1983b).

Cognitive models of test anxiety was also supported by Minor, Scolt and Gold, Steven (1986). They investigated the stability of the internal dialog and self reported arousal in 98 test anxious psychology undergraduates (an measured by the Test Anxiety Scales) during an actual college examination and again 1 week later. Findings show that high test anxious subjects had more negative thoughts and reported more arousal during an examinaion than less test anxious subjects; negative thoughts and self reported arousal were consistent across time, while positive thoughts were unstable.

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Numerous studies on academic performance as dependent and environmental variables (Hunt 1964, Dave 1965, Karp and Siegel 1965; Hill and Giamatio 1963, Wiseman 1964, Coleman 1966), father's occupation (Jamuar 1963, Gupta 1967), socio-economic status of parents (Chauney 1966, Rao 1965, Bennur 1966, Kakkar 1970; Mathur and Hundel 1972, Bennur and Abraham 1973, Ahluwalia and Deo 1975, Bayti 1972), Deprivation (Panda 1976, Miler 1968, Das 1969, Chopra 1969,

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Sen 1976), and such other phychological, personal and socio-cultural factors as independent variables effect academic achievement.

Dhami (1974) found there was higher relationship between scholastic achievement and emotional stability in the case of class IX students that in the case of class X students who were more anxiety-ridden due to the coming public examination.

Singh (1966), in his study on manifest anxiety and university examination, found a negative relationship between anxiety level and the drive theory of manifest anxiety.

Sabberwal (1967), in his study on "emotional tension and its effect on studet performance in school examinations, found that students with high tension performed poorly, where as absence of tension, resulted in hgher marks."

Contractor (1981), in his study on educational attainment as a function of certain variables, found a significant correlation between examination marks, and

anxiety. In fact he demonstrated that anxiety contributed significantly to educational achievement.

Though remote from the essence of the present study academic performance as related to deprivation seems relevant as it is a form of stress.

Thus to sum up, it may be said that studies which related stress with Board examinations are almost non exiestent in the Indian context. The focus in the past has been on stress and performance in the experimental setting, anxiety and academic performancce and deprivation and academic performance. The present study is thus different from the above mentioned studies in that it attempts to study the level of stress which vary between those who take the Board examination and those who do not. However this study is totally different from past studies.

Stress in Terms of Sex Factor and Class Factor.

In the realm of student's stress, there are very few studies which focus on boy-girl differences in the manifestation of stress. Most of the studies are in the

domain of anxiety or other wise study sex differences in the context of manifestation of problem behaviour. These studies, however, would be useful in indicating whether the sex factor would be significant in influencing children's stress, since in the present study, 'stress' since in the present study, 'stress' is being studied in terms of behaviour problems and anxiety has been taken as a significant manifestation of stress.

Carrier Neil A. (1957) examined the relationship of four personality variables i.e., permeability, stability, need for achievement and need for affiliation to performance of students or course examination under experimental manipulated stress was analyzed. 250 students in introductory general psychology served as subjects. The findings were that the students most detrimentally affected by the stress conditions were: highly permeable students, low stability males, females with low achievement motivation, females of high permeability combined with high stability and females of low achievement motivation combined with low affiliation motivation. Also stress had a greater detrimental effect on females that on males. It is found out that a student's performance on an examination is determined by many factors-Intelligence, amount of knowledge of the subject matter and familiarity with test taking procedures are commonly accepted as determining influences. Singru

(1972) and Choksi (1975) reported that low achievement motivation is significantly associated with high test anxiety. Nijhawan and Chaudhry (1970) demonstrate that when intelligence was controlled, high need achievement - low test anxiety group has realistic vocational aspirations while low need achievement-high test anxiety group was unrealistic in vocational aspirations. Dealing with sex differences in test anxiety, females reported higher test anxiety than their male counterparts (Nijhawan, 1972; Kapur, 1982; Sharma, Parnean and Spielberger, 1983). In a cross-cultural study, Sharma et al. (1983) compared text anxiety levels of Iranian and Indian school and college students. A significant culture and educational level and sex interaction revealed that level of education had opposite effects within Indian culture. Indian school females reported more test anxiety than their college counterparts; Indian college males had higher test anxiety that their school counterparts. Iranian school males and females both reported higher test anxiety that their college counterparts. Tricultural differences in the test anxiety levels of comparable student groups in Iran, India and the U.S. were interpreted as reflecting East-West cultural factors that influenced reactions to objective examinations resulting in greater test anxiety in Eastern cultures.

However, since exsamination situations can be different in different cultures, culture-specific perceptions defined in terms of worry and otehr cognitive processes that are involved with stressful encounters with academic demand need to be investigated.

Studies Done Abroad :

In order to understand sex differences on anxiety Sinha (1975) administered revised and comprehensive Test of Anxiety to 50 male and 50 female 11th graders. The findings revealed that although the mean anxiety score of males was lower than that of the females the difference was not significant. This result failed to corroborate the findings of other studies that revealed females to be more anxious than males.

Stoner and Kaisor (1978) studied sex - differences in self - concepts of adolescent. Tennesse Self-Concept Scale was administered to 29 male and 33 female high school seniors. Significant differences were found on 3 of the 10 subscales; males were found to score significantly higher on personal self, social - self and self - criticism.

Abadzi and Florez (1981), developed the Puerto-Rico self Concept Scale to assess the relationship of self-concept with academic achievement and other school related variable in Puerto Rico. Responses to the 88 item Scale were obtained from 2, 445 IV, VII and X graders. Results showed low but significant correlation with subjects' previous year Grade Point Averages.

A study was conducted by Torested et al (1981) to test the generalisability of the earlier findings revealing a systematic relationship between the size of the sex - difference scores and the general level of anxiety in different anxiety - provoking situations. The present study tested this with varying (a) situations within situational types; (b) methods of stimulus presentation; (c) cultural context; and (d) age of subjects (15 - 17 year olds); on 321 subjects. Results confirmed the earlier findings. Two alternative interpretations of the results suggested were; (a) sex role stereotypes might be pronounced in high arousal states, and (b) the systematic relation between sex difference and anxiety level may be due to structural complexity of situations. The structural degree of situations might differentially influence males and femeals.

Richert (1981), examined the possibility whether the sex differences existed in the relationship between locus of control and reported anxiety using 27 males (mean age 18.5 years) and 19 females (mean age 17.8 years). The subjects completed the 8.8 Inventory of Anxiousness and the Adult Nowicki - Strickland Internal - external Control Scale, A positive relationship was found between locus of control and anxiety in different situations for men and women, and between externality and different expressions of anxiety for each sex. Externality was found to be positively related to anxiety for each sex in this study.

Hsiung (1982) surveyed locus of control in 324 adolescents in their 1st year of Junior high school and 357 students in Ist year of Senior high School (a total of 335 males and 346 females). Results indicated that (1) 80 - 90% of subjects were internally controlled; (2) in achievement tasks, the senior; high students were more internally controlled than the junior high students were; (3) when they failed, the junior high females and junior high males had higher internal scores than did senior high females; (4) it was also found that among the internal group females tended to attribute success to effort more than did males.

An investigation was carried out by Ying (1982) to examine the relationship among sex - role, self - concept and locus of control in 203 college students, using the Ben Sex - Role Inventory, Tennessee Self - Concept Scale and Rotter's Internal - Locus of Control (I-E) Scale. The results of the study revealed that the subjects classified as androsygous had the highest self - esteem scores, and those classified as undifferentiated the lowest. No significant differences were found on I-E scores between sexes and among 4 sex - role indentities.

Studies Done in India :

Raghwa (1980) compared boys and girls on different levels of anxiety and achievement, and studied the efects of different levels of anxiety on scholastic achievement. For this purpose, IPAT Anxiety Scale by Cattell and Schieir was administered to 40 IX grade students, both girls and boys. Total examination marks of the subjects' from the current sessions' examination were taken as their achievement. The findings revealed that girls differed from boys significantly on anxiety as well as achievement scores. It was found from the results that girls scored significantly higher then boys on anxiety scale, while on scholastic achievement boys scored significantly higher than girls.

Rao and Murthy (1984) investigated the psychological correlates of locus of control for a group of 540 undergraduate boys and girls, studying in 17 colleges affiliated to Banglore University, and belonging to the two levels of achievement-high and low; and five faculties. Instruments to assess locus of control orienntation, malajustment indices, motivational predispositions and social familial variables were group administered. Results showed that significant sex differences existed in locus of control; with girls being more external. Externally oriented subjects in contrast to internals tended to below achievers, more anxious, psychologically morbid and neurotic with a low need for achievement, studying in the faculties of Arts and Commerce, coming from the lower SESs (socio-economic statuses) and with mothers who were not gainfully employed outside the home.

Julka (1963) in his study found no significant difference between anxiety of boys and girls. Nijhawan and Brar 1966), in their study on young children demonstrated that girls were significantly more sympathetic than boys and boys were significantly more competitive than girls.

Varma (1961), in her study on `behavior problem of young children, found that boys showed significantly more problems thant girls specially in aggression, delinquency and non-compliance.

Minton et al 1971; Yarrow et al 1972; found boys are to be more physical in their style of play.

Kabia et al (1975), in a clinical analysis of speech defects in children, found the male-female ratio to be 3:1. Defective articulation was the commonest disorder.

Sex-role typing has been appropriately demonstrated by Masters and Wilkinson (1976), in the rating of toys by boys and girls.

Akhtar (1983), found that girls were more anxious than boys. Bisht (1984) also found that girls showed greater institutional stress than boys.

Bhan (1984), in her study on children's aggression, found boys to be significantly more aggressive thant girls.

Malhotra and Chaturvedi (1984), in their study on "Patterns of Childhood Psychiatric Disorders in India", found a predominance of boys afflicted with problems in the age range of 6-14 years.

The above mentioned studies throw light on sex differences in stress reactions among student. The present study, differs from these in that the attempt is to study boy-girl differences in regard to the manifestation of stress and not in regard to specific life events. The earlier studies relating to various behavior problems reviewed at the beginning of this section, while establishing sex differences in regard to certain behavior problems were not specific studies in stress research and hence the present study differs from them in its prime focus, being on stress.

Stress and Subject Stream :

There is considerable paucity of research in the area of stress in terms of subject stream opted by the students, as the difficulty level of the various subjects varies for different students. Although, there is no direct research

evidence in the past to suggest that stress reflected in terms of various subject stream opted by students, there are yet some studies which do throw light on subject stream in contest other than stress such as academic performance, interest etc. Sharma (1967), Bokil (1956), Rao and Arunajati (1971) found that the nature of curriculum and subjects offered by students influenced their achievement scores. Ramachandran et. al. (1971) studied the prediction of scholastic achievement in two major streams through multiple discriminant function based on the interest scores. They found that students could be classified with considerable precision in to science and humanities streams on the basis of their interest pattern.

Mitra et al (1978) found that interest in Science could be employed as a differentiating factor in the identification of more capable science students.

Mukherjee (1969), Dhami (1974), Bhushan and Ahuja (1977), Sharma (1979), Singh and Kumar (1977), Goswami (1978), Shah (1978), Choudhury (1980), Shivappa (1980), Kumar (1981), Patel (1981), Gandhi (1982), Menon 1982), Zachariah (1982) studied anxiety, stress, intelligence in relation to general academic achievement.

Salunke (1979) found while studying four faculties viz science, commerce, arts and home science of M.S. University Baroda, he found that the socio-economic status, home environment and economic management of students of different faculties differed. The students of home science and science faculties belonged to higher socio-economic status that Commerce and Arts group, He also found socio-economic status had relationship with age group.

Sinha (1966) studied more of the high achievers had received their secondary education in convents or in government of public school and were students of science. As regard the discrepancy between the marks expectd and marks obtained, there was little difference amongst the groups at the high school level.

Sharma (1982) found `in higher secondary stage the high as well as he low achievers of both the science and commerce stream were superior to those of literary stream on creativity. He also found there was no significant difference between the students of science and commerce with anxiety and study habit.

However, there appears to be no study which studies stress in relation to subject stream, in the context of higher secondary level and thus the present study has undertaken this task.

Academic Performance In Relation to Sex Factor and Class Factor :

A number of studies (Thakur 1972; Abraham 1974; Bayti J 1975; Breedawat (1976), Sengupta and Veeraraghvan (1985) and Bhattacharya (1986) have undertaken an analysis of sex differences in regard to academic performance, the results of these studies are varied and contradictory. While some demonstrate the superiority of girls over boys in general, other show exactly the opposite results. Still other studies show no sex differences in academic performance.

However, the most recent evidence of sex differences in academic performance was the results of the Xth and XIIth C.B.S.E. and Delhi higher Secondary examinations (Times of India, May-June, 1987) Where-in, girls in general performed better than boys.

Thus, since the presence of sex difference in academic performance appear to vary from study to study and in differing contexts, it was thought worthwhile to analyse them in the present study too.

Academic Performance in Terms of Subject Streams :

Once again, in the realm of academic performance there are very few studies which focus on academic achievement of higher secondary students in terms of subject streams. Actually there is no direct research related to subject stream. Some studies do emphasize the importance of subject stream for determining academic performance of students.

Arunajati (1971) found that the nature of curriculum and subjects offered by students influence their achievement scores.

Mukherjee (1969), Dhami (1974), Bhushan and Ahuja (1977), Goswami (1978), Shah (1978), Chaudhury (1980), Shivappa (1980), Kumar (1981), Patel (1981), Gandhi (1982) studied anxiety stress, intelligence in relation to general academic achievement. There is however no Indian studies or

stress in relation to subject stream viz science, commerce and arts in higher secondary class.

Mishra (1978) found intelligence and creativity were significantly correlated amongst the high achievers in science, commerce and low achievers in arts. Intelligence and anxiety exhibited no relationship in any of the streams or levels of achievement except the low achievers in science. Creativity and anxiety were related in the case of the low achievers in commerce and science only. He also found science students were relatively more creative, intelliget and low in anxiety than their counterparts in other streams. The arts students were low in creativity and in intelligence but high in anxiety. The science students exhibited more creative talent and low general anxiety.

Sharma (1982) found in higher secondary stage the high as well as the low achievers of both the science and commerce streams were superior to those of the literary stream on creativity but the low achievers of literary and science stream were superior to those of the commerce stream. he also found no significant difference between student of science and commerce streams with anxiety and study habit.

Thus the present study, however totally different from the studies high lighted above. It aims to study academic performance different subject streams in higher secondary class.

Stress and Academic Performance :

Research studies, realting stress and academic performance are numerous and have emerged with very contradictory findings in regard to the nature of the relationship between two variables. It must be mentioned at this juncture, that the number of studies which consider "stress" per se are very few mainly because in the Indian context, there were lack of adequate standardized instruments/tests to measure stress' until quite recently in the educational setting in fact, almost all the stress performance studies were experimental on nature. however, a number of studies have focused on "anxiety" and "deprivation" in relation to academic performance. These studies will be cited in the present section as it is felt that both anxiety and deprivation are closely related to Stress, Anxiety being an index of stress, while deprivation is a cause of stress.

Stress and Performance :

Korchin (1964) and Easterbrook (1959) found effects of stress on performance that impairment of performance results from the narrowing or restricting of perception that occurs under stress.

Grether (1971) reviewed how environmental stress affects different type of human performance capabilities.

George et al (1974) studied the effects of intermittent moderate intensity noise stress on human performance. He found the reaction time task was affected.

The effect of stress on immediate memory was studied by many investigators (Sullivan 1927), Alpen 1946, Postman an Breener 1948, William 1947, Zeller 1950, Hockey and Hamilton 1970). It was noticed that noise impaired memory drastically.

There has been a tendency to assume that under stress performance will either deteriorate or remain unchanged. In

fact most of the experiments that have done along these lines have produced situations in which effective performance degradation was clearly visible (Mc Kinney 1933, Thorndive and Woodyard 1934, Zander 1944, Alper 1946, Williams 1947, Marguart 1948).

Bhagat (1979) found that stress affects performance negatively on selective attention task.

Nisha (1981) found stress to be a significant factor in her study while investigating the effect of stress on performance on selective attention task of normal and moderately neurotic subjects.

Gour (1982) found in his study the dimension of locus of control to be non-significant for selective attention task under four conditions of stress. But, stress was found to be a significant factor affecting both the groups in the same way.

Munshi (1983) did not find any effect of stress on the performance of subjects on selective attention task. However har findings show a significant increase in the energy cost

of work under the conditions of stress.

Sullivan (1927) in a failure stress experiment with non sense syllables found, success produced most rapid learning and most complete recall and failure produced showed learning and poor recall.

Alper (1946) found a decrement in production in a sentence formation task because of failure stress. In another experiment, stress induced by pacing an inherent difference of problems reduced the rate of learning.

William (1947) found impairment of performance on a Digital Symbol Test following an induction of failure stress.

Postman and Bruner (1948) studied recognition threshold under stress using three word sentences. Stress produced by failure and ridicule resulted in poorer performance.

Zeller (1950) working with nonsense syllables found a

decrement in recall and relearning following an experience of failure.

Hockey and Hamilton (1970) presented subjects with single sequence of eight words on slides ad tested immediate recall offer a short break. The effect of noise was seen when subjects were asked to recall in which corner of slides words appeared. Noise drastically impaired memory for this low priority informantion. These results were replicated by Davis and Johnes (1975), who also showed that monetary incentives produced these pattern of change. Anderson and Hockey (1975) have shown that the same effect is found in subjects who have smoked a cigarette.

Bursill (1958) used a task on which subject were required to carry out primary persuit tracking task and to detect occasional visual signals presented or lamps arranged in semicircular display around the tracking task, He found that an increase in ambient temperature produced an impairment on the secondary detection task without affecting tracking performance. He argued that this effect was not a visual restriction but control in origin, since an easier tracking task produced no impairment of secondary task performance. Of course, it could be argued that greater peripheral scanning is possible in the latter case, though

there is no data on eye movements, to provide any evidence on this. In a number of studies, the task has been used by many investigators C Hockey 1970 a,b,c.. Hamilton and Copeman 1970) an provides general support for the idea that changes in performance with stress are characterized by 'selective' rather than general deterioration.

Noose (100 dB) is seen to actually improve tracking performance (time or target) over the forty minute task, compared to a control condition of 70 dB and to reduce the number of visual signals detected from the fair most peripheral lamps only. The effect of noise is dependent on the subject being aware of clear difference in probability of signals occuring in control and peripheral locations, supporting the idea that noise is affecting same attentional strategy based on relative, priorities or utilities of different actions. Easterbrook's observations on emotional arousal, though it suggests a more specific form for relaionship in terms of attentional sampling if noise is regarded as increasing arousal and sleep loss as decreasing it, then emerges monotonic relation between degree of arousal and level of selectivity. More general support for these interpretations comes from a number of studies showing attentional changes under stress. Effects similar to those of noise have been observed for induced anxiety (Wachtel 1968, Bacon 1974) incentives (Bahrick, Riffs and Rankin

1952) open sea diving (Weltman and Egstrom 1966) and others and stressors. Baddleley (1972) has summerized much of such literature from the point of view of effects of anxiety, induced by perceived danger. Whether all effects of arising stressors may be considered on this way is not known, though laid noise may certainly be perceived as tuneatening. This perception of stress is probably critical to the effects of an external stressor. Both Watchtel (1968) and Glass I Singer (1972) have shown that changes in performance are minimized by allowing subjects some degree of 'control' over the situation. In contrast there have been very few studies of effects of a reduction in stimulation on arousal.

Hockey (1973) showed that noise increased the tendency to sample the high probability source, while loss of sleep produced the opposite effect resulting in almost unselective observing of the three sources, This shows direct evidence of changes in the pattern of attention with stress, though it's effect on responses involved in informantion selection. The over all picture from both sets of studies is consistent. The selectivity of attention is increased by noise and decreased by sleep loss.

Bacon (1974) interprets stress in the case of threat or shock. The activity which suffers most from stress is the

one which is given less attentional priority by instructions and is carried out less efficiently. A further experiment (Hockey 1970 c) using one high's loss of sleep as the stressor found effects which were essentially oposite to these. While in this case impairment was evident over the task as a whole it was most pronounced or tracking. Component and least on the detection of peripheral signals. This does not mean, of course, the sleep loss makes attention better for low priority activities but it does suggest that loss of sleep results in a `levelling' of allocation priorities, such that a sleepy man is unable to give important activities, the special attention they require.

In another study (Hockey, Dornic and Hamilton 1975) subjects were asked to read one of the two interleaved passages and were than tested for recognition memory of words from both passages. Although no differences in stimulus sensitivity were found for the unattended passage, noise increased stimulus sensitivity for the passage read. Both these effects may be considered in more specific terms but they have in common the same increased bias. Towards dominent aspects of the task. In a rather different context Broadbent and Gregory have found similar effects in techinstoscopic recogniton (Broadbent 1971) on which common

words were seen more easily and rare words less easily in noise.

The above studies point to a qualitative change in the pattern of parformance, which is more fundamental than the efficiency.

Buck et al (1970) studied physiological and behavioural response to electrical shock on 120 male undergraduates. Shock showed increase on both skin conductance and heart rate. Wenzel and Illamarine (1977) studied the effects of environmental heat on performance and some physological response of a man during psychonic for task. It was found that the subject had to put in an additional effort for maintaining performance under conditions of increasing heat stress.

In a study on how environmental stress affects different type of human performance capabilities. Grether (1971) found that where as manual tracking capability in most seriously affected by vibrations at 5 Hz and below, the tasks involving central neural processes i.e. RT, monitoring and pattern recognition were highly resistent to the affects of vibration.

Henry (1973) found the subjects performance on a Matching femiliar Figure Test, to be poorest under reward conditions and better under reward plus punishment.

Increase in either speed or load stress resulted in poor performance (Gold Stein, Irwin and Peter 1978). In another study reduction of tension was significantly found to improve performance (French et al 1978).

Stave (1979) conducted a study in which he exposed army pilots to vibration stimuli while flying stimulated helicopter sissions in a realistic fixed base stimulation environment. Missions involved transporting loads in a stimulated logistic environment. Performance was evaluated by measuring flight path deviations from described route, approach and haver parameters perforamnce tended to improve with increased stress. While in another experiment performed by Bell (1978) a primary persuit motor task and concurrent subsidiary number processing task were performed by 72 male and 72 female paid volunters who were experiencing ambient temperature of 22°, 29° or 35° C and noise levels of either 55 or 95 db. Performance decrements associated with high noise levels and high temperatures were additive for subsidiary task. However neither noise nor heat affected

performance on the primary task.

Nisha (1981) found stress to be significant factor in the motor coordination task on normal subjects.

Gour (1982), in his study found the dimension of locus of control to be non-significant for selective attention task under four conditions of stress. However stress was found to be a significant factor affecting both the groups in the same way.

Munshi (1983), in her study did not find any effect of stress on the performance of subjects on selective attention task. But her findings show a significant increase in the energy cost of work under the condition of stress.

Barnes, Vallria Potter, Earett and Feidler, Fred E (1983), studied the effect of interpersonal stress on the prediction of academic performance. 186 military cadets were administered measures of interparsonal stress (study 1) and test anxiety (study 2 The Text Anxiety Scale) their G.P.A.S. and scholastic Aptitude Test (SAT) scores were obtained. Results show that interpersonal stress generated by

competing demands for attention, decreased the power of intellectual ability test (SAT) to predict academic performance (GPA). Stress in rlations with patents and faulty reduced academic performance but did not moderate the correlations between the predictor test and the criterion. Findings have implications for selection research by indicating the need to specify the situations in which tests will best predict intellectual performance. Findings also suggest the cognition associated with different sources of stress play a significant role in determining the impact of stress on performance.

Abrol Sunil (1983), investigatd the effect of stress and anxiety on psychomoter performance of 40 high and low anxious undergraduates on a psychomoter test, which was given under stress and non stress conditions. Results revealed that performance under stress and non stress conditions differed significantly and that there were significant difference between the high and low anxious subjects.

It is concluded that stress adversely affected performance on the task in both groups of subjects, and adversely affected the high anxious subjects significantly more than low anxious subjects.

consequently the conflicting results by several investigations and also the importance of the study on stress in the present day tension, ridden world call for further probing in their area.

Anxiety and Scholastic Achievement

Studies Done Abroad :

McCondless and Castenada (1956), conducted a study on anxiety, scholastic achievement and intelligence in children. School achievement and the anxiety scores from the children's form of the Manifest Anxiety Scale were found to be related. They found that anxiety score made a contribution to the successful prediction of academic achievement.

The effects of manifest anxiety on the academic achievement of college students were studied by Spielberger (1962), to draw inference that anxious students in the middle range of ability obtained lower grades and a higher percentage of academic failures than non-anxious students of comparative ability. For the very superior students (with

ACE scores over 150) however, they found that anxiety appeared to facilitate academic performance.

Seemannova' (1981), examined anxiety and intellectual abilities in relationship to school progress. He administered the Manifest Anxiety Scale and the Test of Intelligence Structure to high school students and collected data on their scholastic achievement. Findings showed that scholastic achievement in low anxiety subjects depended mainly on their level of intellectual abilities this relationship was found to be a linear one. High anxiety was found to have a different effect on the scholastic achievement of males and females. High anxious males with an average IQ had higher scholastic achievement scores thant their high IQ counterparts, although the difference was not significant. A high anxiety level adversely affected the scholastic achievement of females.

A review of 'causal inference' from non-experimental research on anxiety and educational attainment by Hodapp (1982), suggested appropriately that correlation can give a wrong impression of a variable relationship when the remaining variables of the system are not taken into account. Using the methods described here (for example, covariance selection and path analysis), it is possible to

analyse directed and non-directed variable realtionships More precisely and to represent the effects of single variable separately. Thus, more valid conclusions of field experiments may be reached that go beyond the interpretation of correlation studies. The researcher here said that the more subtle correlation analysis challenge the cognitive view that the anxiety-achievement relationship is characterized by the negative effect of task irrelevant self centered cognition. He also said that although the causal sequence - trait anxiety influences achievement through the anxiety state - was proven by the present results to some extent, a clearer distincion between emotonal and cognitive state anxiety measures would be useful. This part of the review are investigations of all these variables associated with test anxiety. Studies such as there are clearly important in enlarging our understanding of various effects of anxiety and consequent therapcutic interventions.

Anxiety and Performance :

Studies of the relationship between test anxiety and performance have consistently demonstrated that high-test anxious individuals perform more poorly than low-test anxious individuals in variety of contexts (Sarason and Mandler, 1962; Sarason, 1963; Nijhawan and Cheema, 1971;

Nijhawan, 1972; Dusek, Kermis and Mergler, 1975; Noltelman and Hill, 1977; Deffenbacher, 1978; Sharma and Sud, 1982).

Laboratory studies (Sarason, 1961, 1972, 1973) have shown that the highly test anxious perform as well as or better than the less anxious when evaluative stress is low. Even in naturally occurring tests, it has been observed that high-test anxious students perform more poorly in tests given in the regular manner, but not in low stress (e.g., Gaudry and Bradshaw, 1970).

Thus, performance of highly test anxious varies with evaluative stress. When evaluative stress is low, the high anxious perform as well as the low anxious. Evaluative stress appears to elicit behaviors which interfere with performance of the highly anxious.Evaluative stress elicits a sort of state anxiety (A-State) in the high-test anxious individuals, whose performance thus suffers as less time is spent by him upon the taksk; the high-test anxious inividuals attends less to the task and more to task irrelevant variables, such as, cognitive concerns or undue worrying about his performance, heightened physiological reactions (emotionality) and task-produced competing responses.

Sabberwal (1867), attempted to determine how far tension distorts behavior and work of pupils at the time of examination and to what extent repressed and suppressed feelings discolor their emotional maladjustment. Three groups: 2 experimental groups of high and low tension and a control group were formed. The effect of tensions on the personality was observed in the three groups taken separately. Results showed that due to the operation of tensions three groups differed widely in their performance. There is negative correlation between tension and performance in the examination, that is, high tension produce low marks and absence of tensions results in high marks.

Osterhouse (1875), examined the academic performance of a total of 412 low, moderate and high test anxiety University students (as measured by the Inventory of Test Anxiety) within two classrooms which differed significantly in the mean level of anxiety aroused by examination. When differences in classroom anxiety were not considered, a significant negative linear trend was observed between anxiety level and academic performance of low anxiety. Subjects within two class rooms, but a significant interaction was observed between class room anxiety level and the academic performance of modorate and high test anxiety subjects. Moderate test anxiety subjects tended to

obtain slightly higher examination score in the high anxiety section than in the low anxiety section while opposite was true for high test anxiety subjects.

Studies Done in India :

Sexena (1965), conducted a study on 150 adolescents, 75 boys and 75 girls of Allahabad Schools. The study showed that with higher intelligence performance tends to improve, sex differences being irrelevant. The findings of the research suggested that in general, anxiety tends to increase when the intelligece level falls and wen the intelligence level increases anxiety increases. Adolescents of higher intelligence were found to be able to retionalise and control theri anxiety better. He found no relationship between anxiety and attainment.

In a study Sharma (1970) investigated the nature of relationship between menifest anxiety and school achievement of 7000 Indian adolescents. An anxiety scale was administered under non-stress conditions about 4 months before the final examination. The achievement scores in the final examination included the scores obtained by the same in a similar examination held a year earlier by the same

university. The eta coefficients for the whole group and for boys were found to be significant beyond. 01 level while the eta coefficient for girls was significant at the .05 level. The conclusions drawn from the study were : (a) the relationship between these two variables is curvilinear thus supporting the inverted U' hypothesis and (b) this relationship holds for both males and females.

Tiwari and Rai (1876) attempted to determine the extent to which high, average and low achievers differed on various selected personality variables, anxiety being one of them. Eleven hypothesis were tasted through an ex-post facto design of study on 1,000 class X students of biology from 12 higher secondary schools of Agra, after controlling for SES (socio-economic status). Scores for different personality variables were analysed on 6 appropriate tests. The results indicated that anxiety was negatively correlated with changing scholastic achievement.

Kanaker et al (1976) administered the Taylor Manifest Anxiety Scale and the Ravan standard Progressive Matrices to 229 female 10th graders to test the hypothesis that there would be a positive correlation between anxiety and academic performance for more intellignet students and a negative

correlation of less intellignet student. Findings did not suppose the hypothesis in the study.

Tiwari et al (1980) studied the effect of anxiety and aspiration on academic achievement of adolescent boys and girls. 200 male and 200 female intermediate school children (mean age 16.2 years) were given anxiety and aspiration scales. Statistical analysis revealed no sex differences in the effect of anxiety on achievement on the level of aspiration. They found that when anxiety was high achievement was low, and high levels of aspiration increased anxiety.

A Rorschach study of high and low achievers was conducted by Jindal and Panda (1982). They administered the Rorschach test to 60 high and low achieving Indian students aged 14 + years. Results indicated that low achieving boys had a high level of general anxiety; low achievers, irespective of sex were more anxious than higher achievers Girls in general, irrespective of achievement level, have been stated to possess more anxiety that boys. The researchers revealed that girls had more anxiety only concerning their bodily functions, whereas they were not found to differ from the other group in personality disposition of general anxiety.

In sum, the results are conflicting and inconclusive as for as the effect of anxiety on scholastic achievement of adolescents is concerned.

In regard to academic performance and stress in higher secondary and secondary classes, there appears to be no specific study. Drawing from the previous studies cited there it may be expected that there will be a negative correlation between academic performance and student's stress. The present study thus seeks to explore this.

Concluding Remark on This Chapter :

Thus, from the review of related studies presented in the foregoing sectons, it is evident that there are number of studies on anxiety of children in relation to examination. In regard to higher secondary and secondary student's board examination, the focus was not on stress but on the other stress related factors. Similarly, while the relationship between stress and performance has been studied in the experimental setting, it has not been investigated in the higher secondary and secondary classes particularly before and during the Board Examination. Researches relating

anxiety and academic performance, and deprivation and academic performance have been vast and numerous, but there have been very few studies relating stress and academic performance.

There is no direct research evidence in the past to suggest the stress reflected interms of various subject streams opted by students, specifically in higher secondary and secondary class level. So the subject stream as a variable influencing "stress" has not been studied, Similarly, while sex differences in regard to anxiety, specific behavior problems and stress reactions to specific life events have been studied, sex differences in terms of 'stress' in secndary and higher secondary students (who are appearing Board Examination) have not been emphasized.

Furthermore, in regard to academic performance in terms of higher secondary, secondary classes, sex factor and stress factor, the results have been rather contradictory. There are also very few studies on stress of higher secondary and secondary students in relation to previous academic performance.

Thus, the present research has made an attempt to study

first, the level of stress in higher secondary and secondary students (perparing for Board. Examination). Thus, in this context the study differs from other studies.

Higher secondary and secondary class as a variable contributing to stress has not been studied so far and to this extent the present study has taken up a new area of research. The present study also attempts to investigate the relationships between academic performance and (a) between higher secondary and secondary classes (b) sex factor and (c) subject Stream.

CHAPTER - THREE

METHODOLOGY

The review of literature showed that there are very few studies in India which ascertain the level of stress amongst students, particularly those who are in the 10th and 12th class appearing for an examination, where in they have to compete with students from all over India. Such a situation naturally could be expected to produce considerable stress amongst students, which would be quite different from the stress/anxiety, students go through in the other classes. Whether the stress affects the performance of students positively or negatively and what this level of stress is etc., are some of the issues which the present study is concerned with. To ascertain the level of stress it is imperative to have a tool to measure it. In India, one study which comes very close to the present one is the tough Ranganathan's (1988) study, which developed a tool to study stress but that was again for primary schlool children which was not applicable to students of higher classes

Hence, the main objectives of the present study was to devise a tool to identify the level of stress and ascertain the difference in stress amongst 10th and 12th class students; also to ascertain if this differs from those who are in 'ix'class and do not take Board Exam. It also intends

to find out the effect of stress on academic performance of students.

Specifically, the **main objectives** of this study are as follows :

(1) To identify the level of stress among the 10th and 12th class students and to find out if this differs amongst them as well as those who are in 9th class & do not take Board Examination.

(2) To ascertain if level of stress varies between boys and girls in the same class.

(3) To ascertain if there exists a relationship between stress and academic performance of students and if this relationship varies in terms of the three classes taken up for the study, if stress influences the academic performance of students.

(4) To find out if stress is a function of sex factor and the class in which a student studies.

(5) To find out if stress varies in terms of sex, subject streams and previous academic performance.

To accomplish the above mentioned objectives, the following specific **hypothesis** were laid down :

Hypothesis

(1) The level of stress may vary between those who take the Board Examination and those who do not.

(2) The level of stress may vary between boys and girls.

(3) (a) There may be a difference in the level of stress between male and female students irrespective of class in which they study.

(b) Stress may vary in terms of subject stream.

(4) (a) Varying levels of stress may lead to varying levels of academic performance.

(b) This correlation obtained (in 4(a) above,) may vary between boys and girls irrespective of the class in which they study.

(c) The degree of correlation between stress and academic performance may vary in terms of the class in which the student study.

(5) Stress may vary in terms of previous academic performance.

(6) Academic performance may vary in terms of class, sex and stress factor.

(7) There will be an interaction effect of class sex and stress factors on academic performance.

(8) Academic performance may vary in terms of subject stream.

(9) There will be a correlation between stress and academic performance irrespective of class.

Operational Definition :

Stress :

Stress is defined as "any behavioral manifestation of threat experienced by the subject in his life situation" Hans Selye (1956), a famous Canadian medical scientist, who is father of stress defined "Stress is a mental or emotional disruptive or disquieting influence". Stress are problems which render adaptation difficult and put the individual under considerable strain.

Academic Performance :

For the purpose of the present study, academic performance is judged by the percentage of marks obtained by the students in the selection examination (1988-89) held before the Board examination.

Previous Academic Performance:

Class XII, X and IX students previous years final examination results, are also taken.

Subject Stream:

Subject stream here has included science, commerce and arts faculties of 12th class only

Sampling :

The setting chosen to conduct this study was the central school run by the central government, in Delhi. This was chosen because in central School, children from all sections of the population and from all states and region of India come to study and therefore there would be a fair representation of children from all over India.

From this school 3 classes were taken, 12th, 10th and 9th classes. While 10th and 12th classes were taken as experimental groups, the 9th class was taken as control group. As mentioned elsewhere, the 10th and 12th classes were choosen because they appear for an all India level board examination and so may be expected to undergo relatively greater stress than students of other classes.

From each class, the total number of students was listed down separately and alphabetically. From each class thus a total of 80 students were randomly selected and thus the total sample consisted of 240 students. Table below presents the size of sample chosen from each class out of the number of students.

Table - I

Size of sample chosen from 9th, 10th and 12th classes.

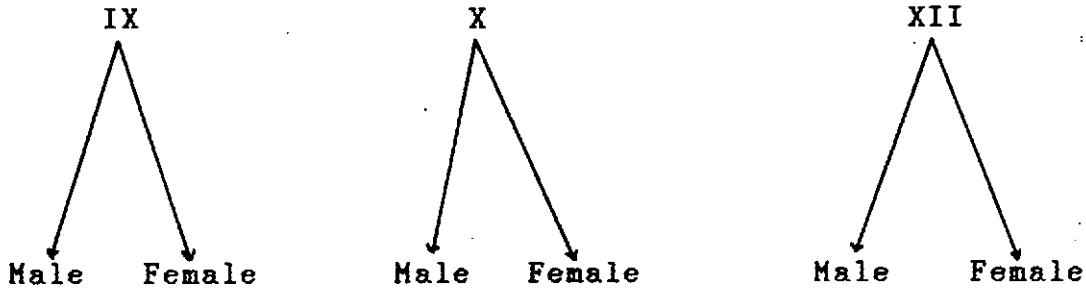
Sections	9th Class	10th Class	12th Class	
A	28/56	28/56	32/60	Science
B	26/52	26/52	32/60	Commerce
C	26/52	26/52	16/30	Arts
	80/160	80/160	80/150	Total 240

Research Design :

The entire study was conducted in 3 phases and the research design followed was as given below :

To test hypothesis 1, 2 and 3, a 3 X 2 Anova design was used.

To analyse classes at 3 levels and sex at 2 levels.



The analysis came out were

main effects

1. Class

2. Sex

Interaction effects

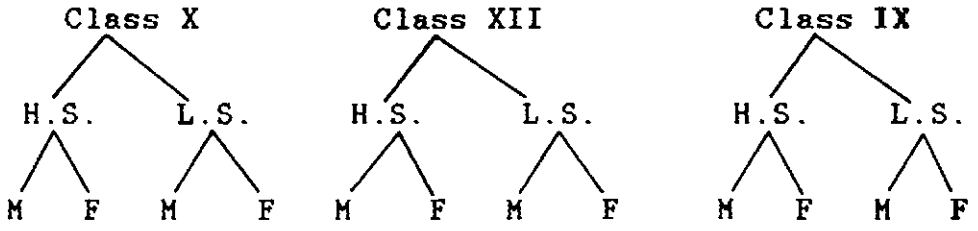
Class X Sex

To test hypothesis 3(a), the mean stress scores of students was computed and the students were divided into above mean and below mean stress student. These two groups then were compared for their respective mean stress score and by using t-test, the differences between these means were checked for .05 level of significance.

A similar design was used to test hypothesis 3(b), taking three subjects and working out this mean stress scores.

To test hypothesis 4(a) correlational design was used to ascertain if stress and academic performance were correlated.

To test hypothesis 6, a 3x2x2 Anova was used with class at three levels, stress at two levels (above mean and below mean) and sex at two levels (male and female).



Main Effects

Class (A)

Stress (B)

Sex (C)

Interactional Effects

Class X Stress (A X B)

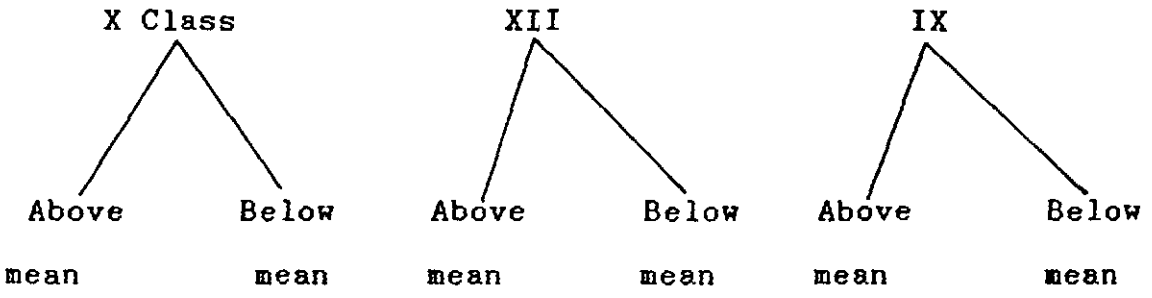
Class X Sex (A X C)

Stress X Sex (B X C)

To test hypothesis 5 previous academic performance of students was taken, later were divided into above mean and below mean previous academic performance. Then a 3 x 2 anova was used with class at three levels and previous academic

performance at two levels (above mean and below mean). Then stress scores were compared.

Design used is given below:



Stress Scores, - - - - - - - - - - .

The main effects of stress

1. Class (A)
2. Previous academic performance (B)

Interactional effect

1. Class X previous academic performance

Tools For Collection of Data :

The instruments used for the collection of data were as follows :

(1) A scale was devised to ascertain the degree of stress amongst the 10th, 12th and 9th class students.

(2) The academic performance was taken in terms of marks

obtained in the selection examination and previous year's final examination results.

The Stress Scale:

A stress scale was devised on the notion of life change developed by Holmes and Rahe (1967) and their Schedule of Recent Experiences. (SRE). The basic idea behind the SRE is that every one experiences changes in their life and that these changes are sources of stress for the persons concerned.

The procedure adopted was as follows:

(1) The first step was to write out a large number of statements relating to stress (personal stress). In all, a total of 100 statements was written, covering positive, negative and neutral phenomenon of stress specifically related to high school.

(2) The second step was to pool all these statements together in a random manner.

(3) The third step was to select a large number of judges from different walks of life for rating the scale items, so as to arrive at a scale value for each of the 100 statements. The total number of judges selected were 100, of which 10 each were counsellers, Laymen, college teachers, psychologists, Lawyers,

Educationists, scientists, Psychiatrists and 20 school teachers.

(4) The fourth step was to give all these 100 statements to all the 100 judges, with the following instructions:

"A stress measurement scale is being developed to measure stress amongst students of secondary and higher secondary classes. There are 100 statements in this list, pooled together of which some are indicate ofpositive, some negative and neutral aspects of stress. As a judge you are requested to indicate to what extent each one of these statements indicates positive, negative or neutral aspects of stress.

Please do not give your own opinion or attitude towards the statements, but merely indicate the degree to which a statement reflects very high stress, high stress average stress low and no stress. A 5-point scale is being provided for this purpose as given below:

5 Point Scale

1 2 3 4 5

5. Very high stress in school.
4. High stress
3. Moderate stress.

2. Low stress

1. No stress

The next step was to calculate the *median scale value* for each statement, on the basis of the scale values assigned to them by judges.

After having determined the median scale value for each statement, 65 statements were selected finally.

To select these 65 statements following criteria were used :

(1) The scale value assigned to statement should not differ too widely between the judges for e.g. one judge placing the item at the 1 point and an other placing the same at 5 point.

and

(2) The interval between the chosen items should be such that there should be an equal interval between one item and the other.

The 65 statements finally chosen were then pooled together in a random order to produce the final stress, measurement scale.

The stress score of each subject was then to be determined on the basis of their response to the statements.Thus, the score on the scale indicating level of stress possible was 57.14 and the score possible in indicating high stress was 61.35, and score indicating nil stress 54.31. Very high stress with the middle levels indicating varying levels of stress.

Procedure

Pilot Study:

A pilot study was conducted using the tools devised for this study on 50 students. After due modification based on the results of the pilot study, the final datacollection commenced.

The stress measurement scale was then administered to all the 240 students selected as sample subjects for this study. The subjects were given instructions as follows :

"Please check whether you generally engage in the following behaviors at school. Give your rating for each item in the column provided. (1) very highly applicable (2) Highly applicable (3) Moderately applicable (4) Somewhat applicable (5) not at all applicable. Please don't leave any statement unanswered". Read each statement carefully and give your real agreement or disagreement to each statement"

After receiving the questionnaire back, the stress score for each student was computed. The next chapter presents the result analysis of the data.

CHAPTER-FOUR

RESULT ANALYSIS

Having presented the methodology in the previous chapter, the result and analysis of the data are presented in the following sections. The present study aims to ascertain the comparative effect of stress on the academic performance of 10th and 12th class students and if this differs from those who are in 9th class. It may be mentioned here that 9th class students do not appear for any board examination and to that extent they may be having relatively lower stress than those who are appearing for the Board Examinations.

As mentioned already in the methodology chapter, a measurement scale has been devised to mesaure the level of stress amongst the students.

This scale was administered on the students selected for this study and the data obtained from the students on the stress scale was analyzed and the mean of all the scores were calculated separately for XII, X and IX classes respectively.

Table 1, presents the mean, SD, and t-values for stress scores for class XII, X and IX respectively; and figure 1

MEAN STRESS SCORE OF STUDENTS OF DIFFERENT CLASSES - IN TERMS OF SEX, IRRESPECTIVE OF SEX.

Fig.2

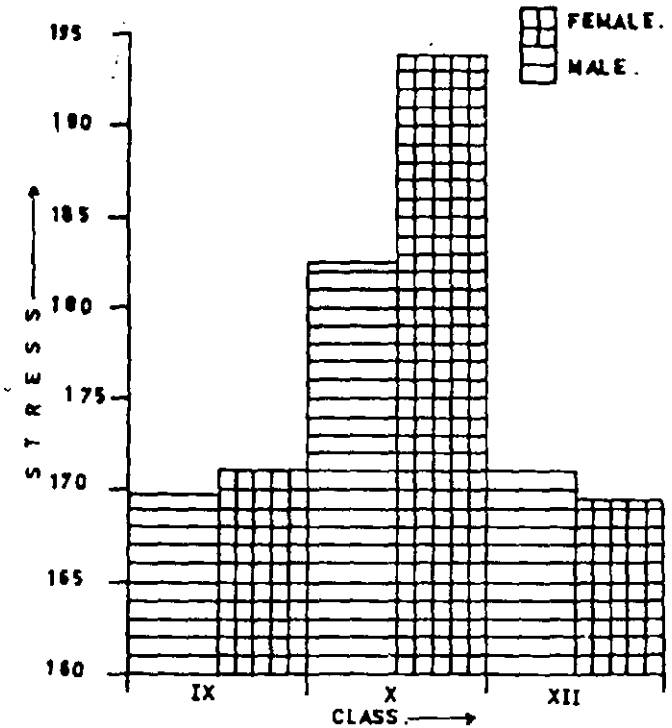
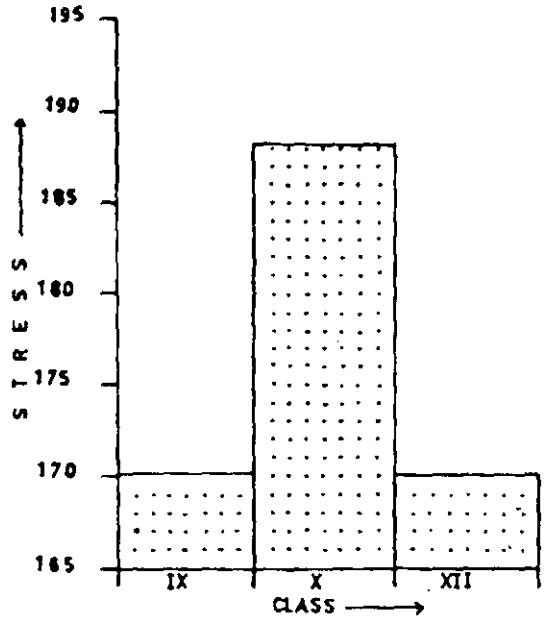


Fig.1



presents graphically the stress scores for the different class students .

Table - 1

Mean, SD and t- values for stress scores for class XII, X and IX

	XII Class	X Class	IX Class
Classes	Mean = 170.25 SD = 28.49 N = 80	Mean = 188.12 SD = 24.82 N = 80	Mean = 170.31 SD = 29.58 N = 80
XII	-	t = 4.23 df = 158 p = <.01	t = 0.013 df = 158 P = ns
X	-	-	t = 4.13 df = 158 P = <.01
IX	-	-	-

From the above table and graph-1 following conclusions emerge :

1. Class 10 students have registered the highest stress scores followed by class 9th and 12th students in that order.
2. There appears a significant difference in the stress scores of students of class 12 and 10 as well as between

students of classes 9 and 10 respectively. In other words, class 10 students appear to have significantly higher stress than those of classes 9 and 12 respectively.

3. There is however, no significant difference in the stress scores of 9th and 12th class students.

Thus the *hypothesis (1) which states that the level of stress may vary between those who take the Board Examination and those who do not* appears to be only partially validated, as there was no difference between class IX and XII student's stress scores.

Stress in terms of Sex and Class Factor:

Having observed that stress scores are higher amongst class X students as compared to those of class IX and XII, an attempt was made to ascertain if these differences are also obtained between male and Female students.

Table-2 presents two sets of data (1) stress scores of boys and girls irrespective of class in which they study. and
(2) stress scores of boys and girls in each of the three classes.(see figure 2)

Table - 2

Mean, SD and t-values for stress scores of boys and girls irrespective of class in which they studied and stress scores of boys and girls of XII, X and IX class separately.

	Boys	Girls
Total Male and Female Students	M = 173.43 SD = 28.143 N = 120	M = 178.108 SD = 28.858 N = 120
	t-value=1.249 (NS)	
Class XII	M = 171.05 SD = 26.73 N = 40	M = 169.45 SD = 30.80 N = 40
	t - value=0.248 (ns)	
Class X	M = 182.525 SD = 25.265 N = 40	M = 193.725 SD = 23.694 N = 40
	t - value = 2.045<.05 Sig	
Class IX	M = 169.475 SD = 30.979 N = 40	M = 171.150 SD = 28.869 N = 40
	t - value= 0.250 (ns.)	

From the above table one may conclude that there is no significant difference in the stress scores of boys and girls irrespective of class in which they study. Also there is no significant difference between boys and girl of class XII and IX though the stress scores vary significantly between boys and girls of X class.

Thus, hypothesis 2 which states that the level of stress will vary between boys and girls is partially validated.

Stress and Subject Streams

An attempt has been made to ascertain if stress varies in terms of the Subject stream opted by the students, as the difficulty level of the various subjects experienced may vary for different students.

Since only in class XII, the options for taking a particular subject stream is given, for this analysis therefore only 12th class student's stress scores have been considered.

Table 3 below presents mean, SD and t - values for stress scores of Science, Commerce and Arts group student of class XII.

MEAN STRESS SCORE OF STUDENTS OF DIFFERENT SUBJECT STREAMS.

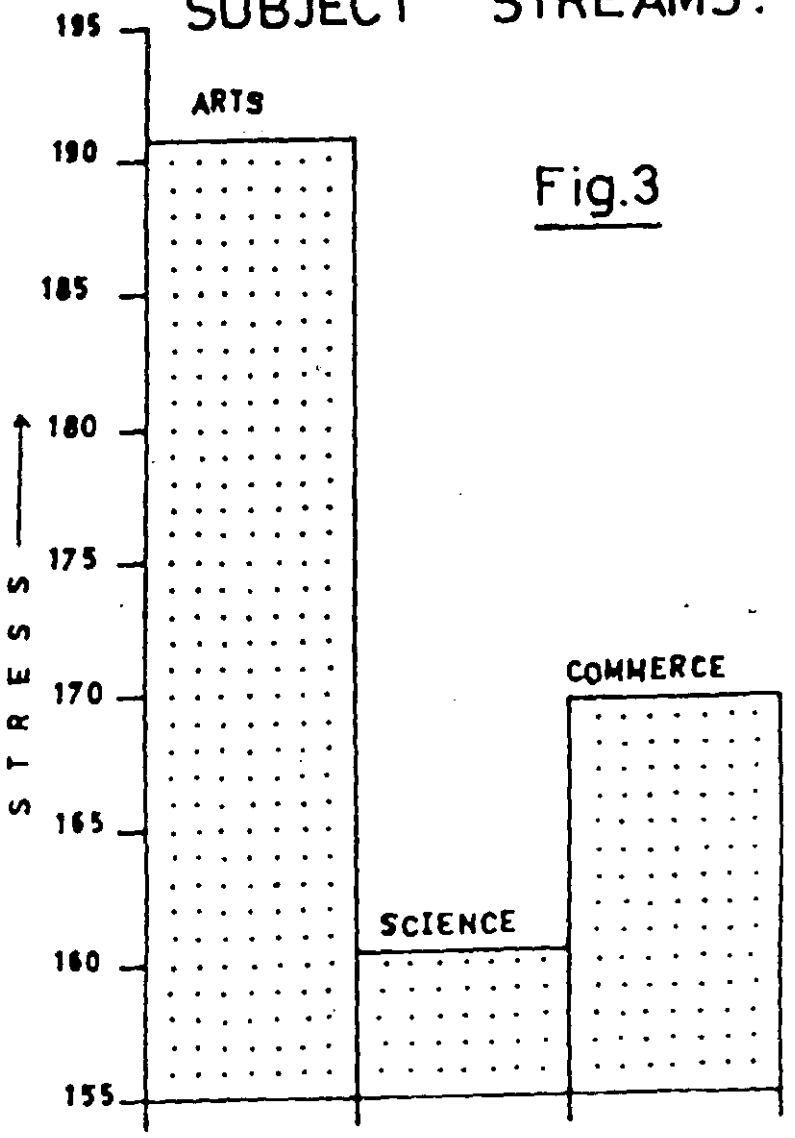


Fig.3

Table - 3

Mean, SD and t values of Students Stress Score - Subject Stream-wise

	Science	Commerce	Arts
	M = 160.468 SD = 18.347 N = 32	M = 168.812 SD = 25.749 N = 32	M = 190.750 SD = 38.268 N = 16
Science	*******	t = 1.492 Df = 64-2 = 62 P = NS	t = 3.144 df = 48-2 = 46 P = <0.01 Sig.
Commerce	*******	*********	t = 2.162 df =46 P = <0.05 sig.
Arts	*******	*********	********

From the above table following Conclusions emerge :

(1) There appears a significant difference in the stress scores of Science and Arts, and Commerce and arts group of 12th class students. Specifically the stress scores of commerce group appears to be significantly higher than those of science and arts group respectively (see figure 3).

(2) There is however, no significant difference in the

stress scores of science and Commerce group of class 12th students.

Thus, the hypothesis (3b) which states that stress may vary in terms of Subject streams such as Science, Commerce and Arts is found to be only partially validated.

High Stress and Low Stress Students of XII, X and IX class.

Since the obtained results only partially validated the hypothesis regarding the variation of stress score in terms of Sex, class and subject stream factors it was considered worthwhile to find out if these partial differences were obtained only at certain extreme levels of stress. For instance the question was that if the stress is considered at a high and a low level and within these specified levels, if the difference between male and female are worked out, would it then show a difference? This aspect has been considered in the following section.

To decide the high and low levels of stress, the meanstress scores were computed by taking the cut off point as 176 which is the actual mean stress score for the 240 students. All students securing above mean 176 were considered to be `high stress' students and those who secured below 176 were taken as `low stress' students.

Then all male students who secured above 176, were taken up and each of their scores was added to get a composite score of stress and divided by the N in that category to get the mean stress score of the high stress boys. Similar,computation was worked out for girls also.

Table 4 presents the mean, SD, N and t- values of high stress boys and girls of different classes XI, X and IX.

Table 4

Mean Stress score,SD and t- values of high stress students

	XII	X	IX
Boys	M = 185.666 SD = 15.71 N = 18	M = 203.55 SD = 15.948 N = 20	M = 196.052 SD = 15.813 N = 19
Girls	M = 203.00 Sd = 18.330 N = 15	M = 205.689 SD = 14.139 N = 29	M = 197.555 SD = 13.988 N = 18
t = df = P-->	1.220 33-2 = 31 ns	t = 0.483 df = 49-2 = 47 ns	t = 0.306 df = 37-2 = 35 ns.

From the table-4, it is seen that in each class XII, X and IX, there appears no significant difference between boys and girls of high stress in regard to the mean level of stress they show. That is whether boy or girl irrespective of the class in which they studied the high stress students

MEAN STRESS SCORE OF STUDENTS OF HIGH AND LOW STRESS GROUPS OF DIFFERENT CLASSES IN TERMS OF SEX.

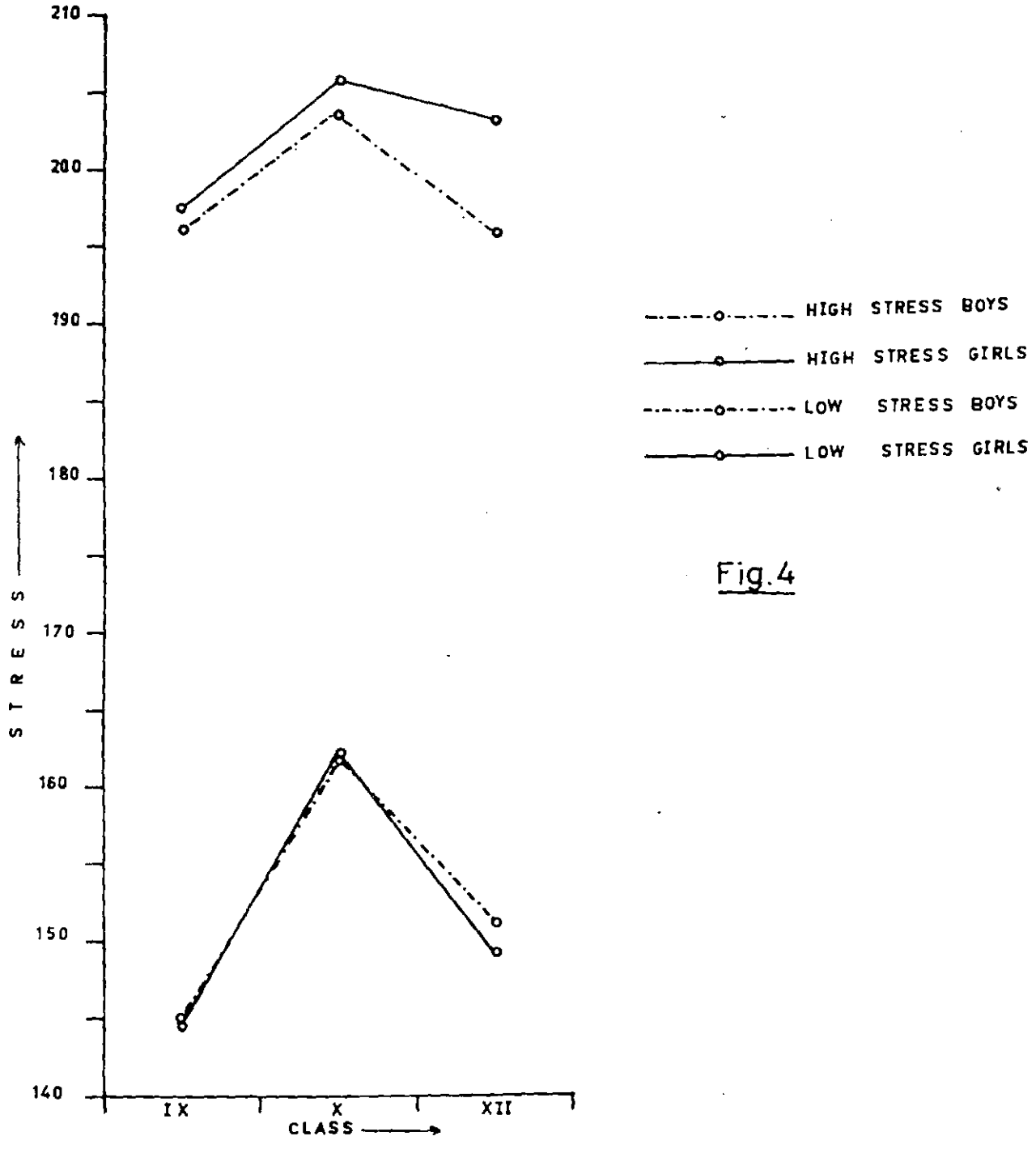


Fig.4

were all having almost the same level of stress, and sex Factor didn't make any difference in regard to the stress.

A similar picture was obtained when male and female students of low stress were compared in regard to their mean level of low stress. (Table 5 below and figure 4)

Table - 5

Mean, SD, t- value of Low Stress boys and Girls of XIIth Xth and IXth Classes.

	XII	X	IX
Boys	M = 150.909 Sd = 13.529 N = 22	M = 161.50 SD = 11.194 N = 20	M = 145.428 SD = 19.190 N = 21
Girls	M = 149.32 SD = 14.845 N = 25	M = 162.181 SD = 10.831 N = 11	M = 149.545 SD = 17.402 N = 22
t---> df--->> P--->	0.384 45 ns	t = 0.164 df = 28 ns	t = 0.735 df = 41 ns

From the above table and figure-4 it may be concluded that there was no significant difference between boys and girls in regard to their mean or low stress scores, irrespective of the class in which they studied.

Academic Performance

In the foregoing sections an attempt was made to ascertain whether levels of stress varied in terms of sex, class and subject stream factor. In the present section stress has been related to academic performance. The hypothesis was academic performance may vary in terms of calss, sex and stress factors (Hypothesis 6)to be tested was. To test the above hypothesis a 3x2x2 factorial design with class at 3 levels, (XII, X and IX), stress at 2 levels(above mean and below mean and sex(male and female) at 2 levels was used.

Table - 6, presents the data in 3x2x2 factorial design.

Table 6

ACADEMIC PERFORMANCE OF HIGH AND LOW STRESS LEVEL STUDENTS OF VARIOUS CLASSES SEX WISE.

CLASS XII

STRES SEX	HIGH MALE		HIGH FEMALE		LOW MALE		LOW FEMALE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	185	61	191	58	175	35	150	52
2	185	73	205	36	154	45	149	63
3	177	46	181	38	141	38	168	35
4	177	25	178	42	163	45	143	56
5	176	26	184	50	146	51	158	66
6	189	54	192	55	158	48	127	46
7	185	43	203	26	174	50	118	59
8	203	35	203	29	153	50	161	53
9	180	46	227	52	131	63	164	69
10	201	24	227	52	154	57	142	72
11	189	52	248	45	155	48	168	41
12	195	50	191	46	140	35	161	85
13	205	35	198	39	138	38	163	56
14	205	44	201	65	140	55	141	61
15	215	60	205	62	175	55	161	59
16	192	35	3045	693	150	58	133	69
17	228	42			144	48	157	67
18	225	37			186	33	165	45
18					129	61	127	72
20					137	40	134	39
21					142	43	137	66
22					152	148	150	45
23								
24						₹ 1046	170	42
25							150	54
							138	51
							₹ 1405	

CLASS IX

STRES SEX	HIGH MALE		HIGH FEMALE		LOW MALE		LOW FEMALE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	185	81	185	71	131	78	102	74
2	231	55	167	74	152	74	155	57
3	178	73	195	83	145	60	87	80
4	183	58	182	63	150	72	156	78
5	178	80	218	38	172	65	150	95
6	212	76	160	64	111	61	162	70
7	208	83	198	46	187	71	145	90
8	218	55	208	61	113	56	153	62
9	205	65	193	70	159	75	159	87
10	186	41	200	40	106	55	172	66
11	180	83	225	85	165	77	130	84
12	189	46	224	58	134	48	123	52
13	202	73	205	85	120	58	153	50
14	190	87	177	53	158	68	149	80
15	188	77	192	68	153	44	188	58
16	188	82	187	54	150	70	137	58
17	208	57	183	58	161	58	162	47
18	200	51	198	75	137	47	137	59
19	180	51			145	37	150	60
20					165	74	160	53
21	₹ 3725	₹ 1258		₹ 1098	140	47	139	53
22							171	
	—			—		₹ 1344		₹ 1487

CLASS X

STRES SEX	HIGH MALE		HIGH FEMALE		LOW MALE		LOW FEMALE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	177	58	208	57	151	46	175	45
2	182	75	226	51	162	78	165	48
3	206	53	221	57	161	83	159	41
4	204	67	213	66	157	78	164	67
5	230	48	222	69	185	59	148	48
6	204	37	226	72	169	30	171	38
7	214	48	225	77	155	40	169	62
8	202	74	220	68	188	48	188	84
9	231	40	210	82	183	68	173	44
10	226	71	207	55	125	34	154	33
11	217	78	209	34	188	51	140	89
12	212	53	213	47	168	68		
13	178	48	221	45	171	28		₹ 548
14	185	49	187	55	171	70		
15	209	62	185	49	168	36		
16	205	18	223	45	166	67		
17	198	18	208	38	170	70		
18	181	69	223	41	154	48		
19	187	37	195	30	171	64		
20	200	35	195	42	147	72		
21			184	21				
22		₹ 1035	182	58		₹ 1117		
23			188	49				
24			203	41				
25			180	84				
26			194	52				
27			193	58				
28			185	64				
29			201	50				
			₹ 5965	1514				

Table 7, presents the summary of 3x2x2 anova.

Table - 7

3x2x2 anova for academic performance scores of XII, X and IX classes.

Source of Variation	Sum of square	df	Mean square	f	p
A (Classes)	10397.86	2	5198.93	29.24	P<.005
B (H & L Stress)	785.19	1	785.19	4.42	P<.05
C (Sex) M,F	78.2	1	78.2	0.43	Ns
A x B	358.45	2(2x1)	179.23	1.01	Ns
A x C	911.36	2(2x1)	455.68	2.564	Ns
B x C	266.83	1(1x1)	266.83	1.5	Ns
A x B x C	40795.6	2(2x1x1)	20397.8	114.72	P<.005
within treatments	40538.01 ****	228 (239-11)	177.79 ***	***** ***	* ***
Total.	94131.51	239	***	***	***

From the above analysis following findings emerge:

(1) The academic performance varied significantly in terms of class factor. Hence, the hypothesis(6) which states that *the academic performance of children will vary as a function of difference in classes* has been validated.

(2) Academic performance of students varied in terms of stress factor. That is, high stress and Low stress were found to affect academic performance significantly differently.

(3) Academic performance did not vary in terms of sex factor. Hence the statement *academic performance of children will vary as a function of the sex factor stands rejected.*

(4) The interactional effects of different classes and intensity of stress have not been found to affect significantly the academic performance of students.

(5) Non of the interaction effect was found to be significant.

(6) The academic performances were found to differ significantly in terms of class , Stress and sex factors. In other words, *academic performance does vary*

as a function of the interaction between class, stress and sex factors.

Thus, the ***Hypothesis*(6)** *which states that academic performance* may vary in terms of class, sex and stress factor is found to be validated.

Academic Performance of XII, X and IX Class.

Since the academic performance of students was found to significantly vary in terms of class factor (F value= 29.24061, P<.005), an attempt was made to find out amongst which classes the academic performance varied; to ascertained this t-test was applied to the data (Refer Table - 8)

Table 8

The mean, SD and t- values for academic performance of different classes. i.e. XII, X and IX.

	XII Class	X Class	IX Class
	Ap	Ap	Ap
	Mean = 49.15 SD = 11.906 N = 80	M = 52.675 SD = 14.81 N = 80	M = 64.537 SD = 13.618 N = 80
XII	--	t = 1.660 df = 158 P = ns	t = 37.613 df = 158 P = <.01 Sig.
X	--	--	t = 5.276 df = 158 P = <.01 Sig.
IX	--	--	--

From the above table following conclusions emerge :

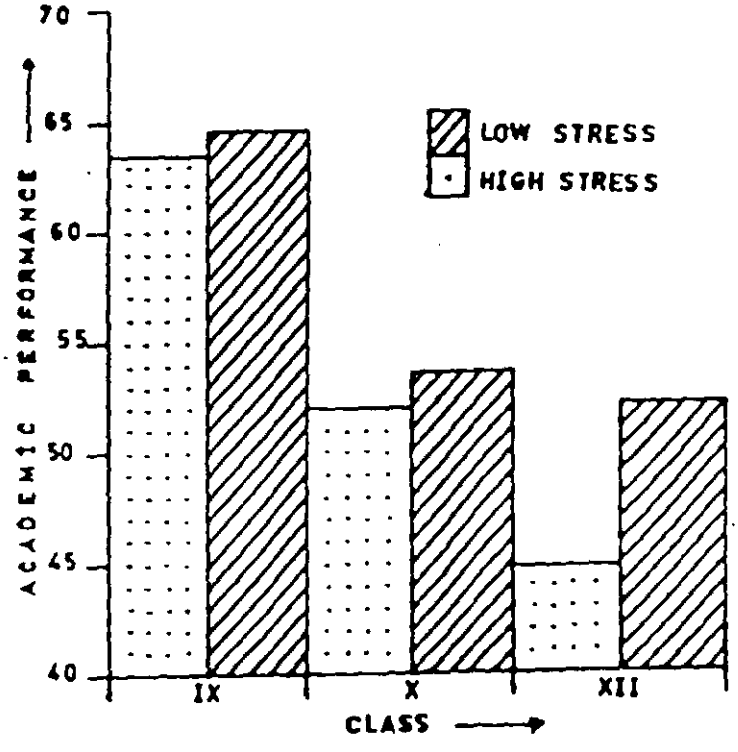
(1) The academic performance of 9th class students appears the highest, followed by that of class X and Class XII in that order.

(2) There was however, no significant difference in the academic performance of students of XII and X class.

(3) There was a significant difference in the academic performance of 12th and 9th class students, so also between 9th and 10th class students respectively. More

MEAN ACADEMIC PERFORMANCE OF STUDENTS OF HIGH & LOW STRESS IRRESPECTIVE OF SEX FACTOR.

Fig.5



specifically the academic performance of 9th class students was significantly higher than those of XII and Xth class students .

Thus, the hypothesis 6 which states that academic performance may vary in terms of class factor, is found to be validated.

Academic performance of Students of high and low stress irrespective of Sex Factor.

Since the Academic performance was found to vary significantly in terms of stress factor (f value = 4.42, P<.05) an attempt has been made to ascertain with which level of stress the academic performance varies.

Table-8 and Fig.5 below present the academic performance of students of high and low stress in terms of the 3 classes irrespective of sex factor.

Table - 9

Academic performance scores of high and low stress students of XII, X, and IX classes irrespective of Sex factor.

		High Stress	Low Stress
XII	Mean AP	M = 44.88 SD = 12.08 N = 33	M = 52.15 SD = 10.67 M = 47
		t - value = 2.78 (Sig)	
X	Mean Ap	M = 52.02 SD = 14.79 N = 49	M = 53.71 SD = 14.55 N = 31
		t - value = 0.50 (ns)	
IX	Mean Ap	M = 63.57 SD = 13.17 N = 37	M = 67.44 SD = 16.07 N = 43
		t - value = 0.26 (ns)	

From the above table it is seen that the academic performance varies significantly between high and low stress students, only in respond to class XII students and not for class X or IX students. Thus, one may conclude that the academic performance of stusents of high and low stress varies for XII th class students only and not for other classes.

Academic Performance of XII, X and IX student as a function of the interaction between class, stress and sex factor.

Since the academic performance was found to vary as an interaction of class, stress and sex factor (t value = 114.724,p<.05) an attempt was made to ascertain which level of stress, in which class and with which sex in combination brings about the variation in the academic performance of students.

Table below presents the academic performance of the students in terms of class sex and stress interaction effect.

Table - 10

Mean SD and t- values of Academic performance in terms of the second level interaction viz. class X sex X stress factor.

Ap	H.S.Boys M = 54.018 SD = 17.546 N = 57	LS.Boys M = 55.66 SD = 14.704 N = 63	H.S.Girls M = 53.274 SD= 13.149 N = 62	L.S.Girls. M = 58.965 SD = 13.501 N = 58
Class H.Stress Boys	--	t = 0.554 df = 118 P = ns	t=0.259 df = 117 P = ns	t= 1.692 df = 113 P = ns
Class L.Stress Boys	--	--	t = 0.959 df = 123 P = ns	t = 1.28 df = 119 P = ns
Class. H.Stress Girls	--	--	--	t = 2.336 df = 118 P = <.05 Sig.
Class L.Stress Girls	--	--	--	--

From the above table it is observed that the academic performance varies significantly in result of the interaction effect of Class, stress and Sex factor, only in the case of high and low stress girls of all classes and in no other context the interaction effect has brought about any significant results. Perhaps the Significant F - value (2.336) of the interaction effect may be due to the differences obtained between high and low stress girls. Hence, the hypothesis(7) which states that *their will be an interaction effect of class,sex and stress factors on academic performance* found to be validated.

Stress and Academic performance - A correlational analysis.

The analysis of the data in the preceeding section clearly showed that class and stress factors affect the academic performance of students, though the same was confined to class 12 students only.

Within this, it was thought worthwhile to ascertain the degree of relationship between stress and academic performance. As mentioned elsewhere in this study, researches relating academic performance to anxiety have been many (eg. Singh 1987, Ahluwalia and Nijhawan 1968, Sharma 1983) and these researches had also demonstrated the need for an optimal level of anxiety to reach the peak level

in academic performance. Nijhawan (1968), Sharma (1970), and Srivastava (1980) showed the level of performance going down with increasing and decreasing level of anxiety, demonstrating thereby that stress too is a factor like anxiety which may be significantly associated with performance.

To ascertain the relationship between stress and academic performance product moment co-efficient of correlation was computed for stress and academic performance scores of the entire sample of students (240) irrespective of class and sex factor.

Table below presents mean, SD and r-values between stress and Academic performance for the 240 students.

Table - 11

Stress	Academic performance	r - value	Significance level
M = 176.22 SD = 28.01 N = 240	M = 55.45 SD = 14.87	-.140	t= 2.177 p <.05

The computed correlation above shows a significant but negative relationship between stress and academic performance i.e. greater the stress poorer the academic performance.

Thus hypothesis (4a) which stated that stress will influence the Academic Performance of Students was found to be validated.

Since the negative relationship between stress and academic performance was found to be significant, an attempt was made to ascertain the degree of correlation between these two factors for males and females separately.

Table-12 presents M, SD and r-values between stress and Academic performance for the male students irrespective of the classes in which they studied.

Table - 12

The r-values between stress and academic performance for the male and female students.

	Stress	Academic Performances	r-values	significane
Whole Males 120"	M = 173.43 Sd = 28.143 N = 120	M = 54.88 SD = 1620	-.045	NS
Whole Female 120"	M = 178.108 SD = 29.859 N = 120	M = 56.025 SD = 13.677	-.254	P<.05

The following conclusions emerge from the above table :

There was a negative but not statistically significant

correlation between stress and Academic performance for the male students where as there was a significant negative correlation between stress and academic performance for the female population.

In other words, the stress and academic performance of boys appeared to be not so much affected by stress as that of the girls in whose case it was observed that lower the stress, higher was their academic performance.

Thus the hypothesis (4-b), which stated that there may be a difference in the level of stress between male and female irrespective class in which they study was found to be partially validated.

Having observed that the degree of correlation between stress of academic performance was statistically significant , it was thought worthwhile to ascertain if high correlation were obtained between the two variables for each of the 3 classes and also whether there was any difference in the obtained correlation amongst the three classes.

Table below presents r-values and t-values of for stress and academic performance for the XII, X and IX classes.

Table - 13

r-value and t-values for stress and Academic performance for the 3 classes.

	XII	X	IX
XII r = -.313 N = 80	*****	t = 1.88 ns	t = 2.24 P<.05
X r = .012 N = 80	*****	*****	t = ns
IX r = -.046 N = 80	*****	*****	*****

From the above table following conclusions emerge:

(1) The r-value between stress and academic performance was statistically significant only in the case of class XII students, meaning there by that *higher the level of stress better the academic performance.* In the case of classes X and IX the correlation between stress and academic performance was rather low; while this low correlation was positive for class X students, it was however, negative in the case of class IX students.

(2) When the degree of correlation between stress and academic performance was compared amongst the 3 classes, it was observed that the degree of correlation differed significantly between class XII and IX students, but not in terms of other classes.

In other words the performance of class XII students was positively influenced by stress were as that of class IX students was not and this difference between class XII and class IX was statistically significant.

Thus the hypothesis (4c) which states that the degree of correlation between stress and academic performance may vary in terms of class in which the student study, was found to be validated partially. So an attempt was made to ascertain whether such a difference in the correlation is obtained within boys and girls of the same class.

Table 14 and Fig. 6, Presents Mean, SD and r values of stress and academic performance of boys and girls of Particular class like XII, X and IX.

MEAN STRESS SCORE AND ACADEMIC PERFORMANCE OF STUDENTS OF DIFFERENT CLASSES IN TERMS OF SEX.

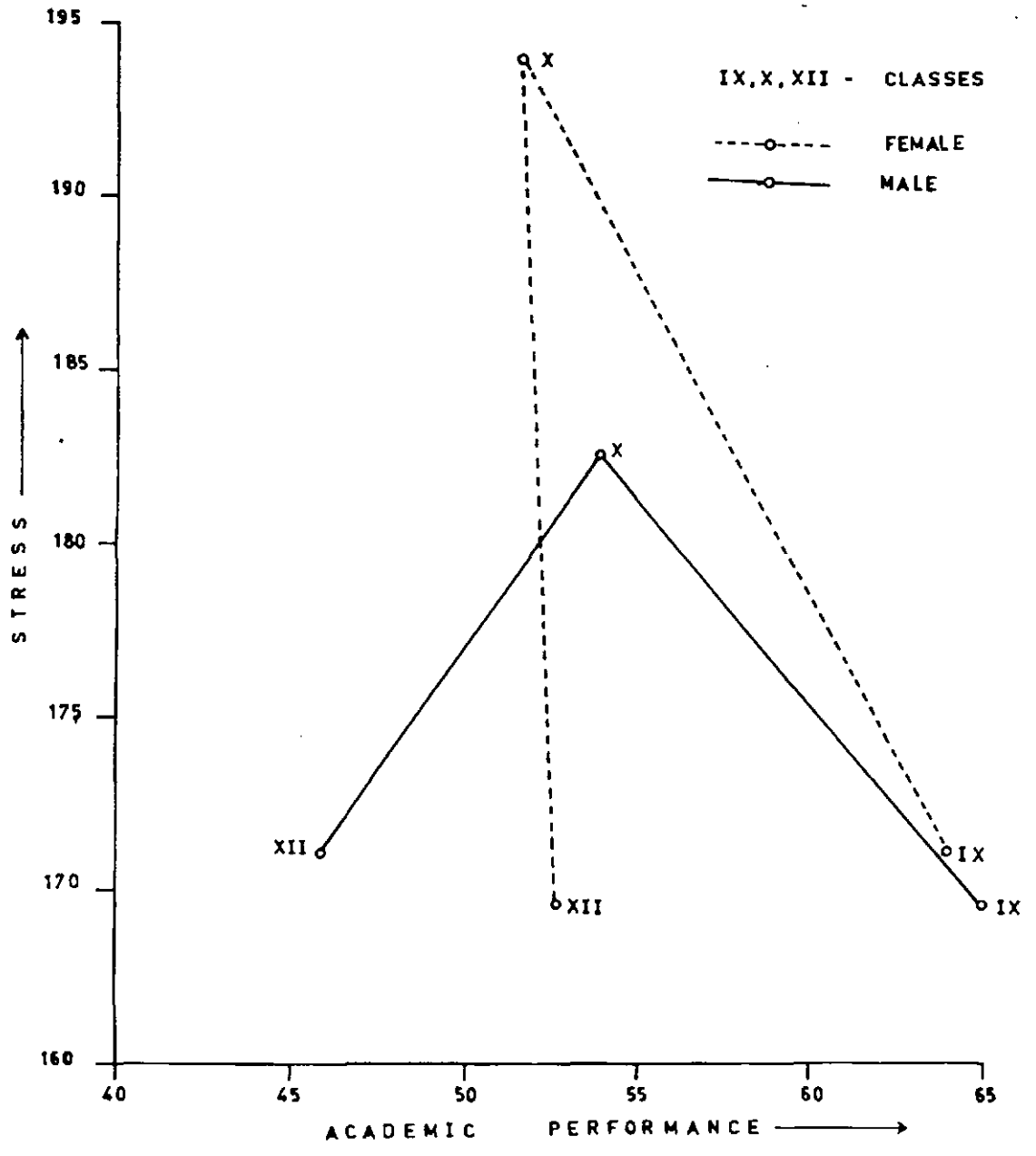


Fig.6

Table -14

Mean, SD and r-value of stress and academic performance of the male and female students of class XII, X and IX

	Male		Female	
	Stress	**Academic Performance**	**Stress Performance**	**Academic**
XII	M = 171.05 SD = 26.73 N = 40 r = -.203	M = 45.85 SD = 10.97	M = 169.45 SD = 30.80 N = 40 r = -.409	M = 52.45 SD = 12.02
X	M = 182.525 SD = 25.265 N = 40 r = -.064	M = 53.80 SD = 16.94	M = 193.725 SD = 23.694 N = 40 r = .168	M = 51.55 SD=12.452
IX	M = 169.475 SD = 30.979 N = 40 r = .121	M = 65.00 SD = 14.286	M = 171.150 SD = 28.869 N = 40 r = -.309	M = 64.075 SD=13.082

From the above table as well as from the analysis and Fig. 6, following conclusions emerge:

(1) In case of both boys and girls of XII class there was a significant negative relationship between stress and academic performance i.e., higher the stress, poorer was the academic performance.

(2) In case of Xth class boys, there was a negative but not statistically significant correlation between stress

and academic performance.

In other words, stress has a positive effect on academic performance in the case of girls indicating higher the stress higher the academic performance.

(3) In regard to class IX boys there was a low significant positive correlation between stress and academic performance i.e higher the stress higher the academic performance of male students of 9th class. On the other hand in the case of girls of the same class there was significant but negative correlation between stress and academic performance; that is, in the case of IX class girls, higher the stress, poorer was the academic performance.

Thus *stress appears to affect the academic performance of students differentially for different classes.*

Stress and academic performance of students- subjectwise

In the foregoing sections, it has been demonstrated that stress affects academic performance and also these two factors are correlated. However this correlation appears to vary in terms of classes particularly class XII and perhaps this may be due to the subject stream opted by the student. Hence an attempt has been made in this section to ascertain

MEAN STRESS & ACADEMIC PERFORMANCE : Subject Stream-wise, Class- XII .

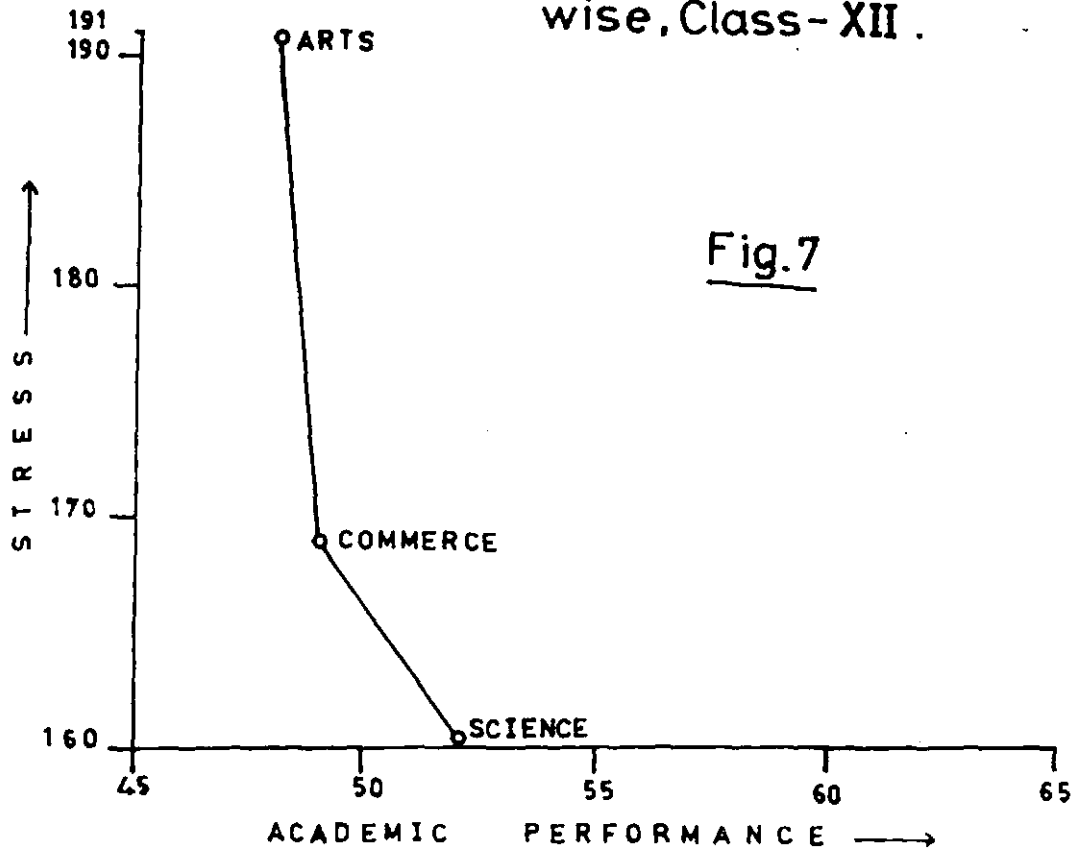


Fig.7

the correlation between stress and academic performance in terms of the three subject streams, science, commerce and arts. (for the XII class only)

To verify the hypothesis(8) whether stress affects academic performance in terms of subject stream, an attempt was made to correlate the two variables, for science, commerce and arts subjects seperately. The results are shown in Table below, which presents Mean SD, N and r-values of stress and academic performance for the students of *science group, commerce group and arts group* irrespective of sex factor.

Table - 15

Mean, SD and N-values of Stress and AP and correlational analysis of stress and Ap of students of various subjects streams irrespective of sex.

XII Class, Subject Stream

	Science	**Commerce**	**Arts**
Stress	M= 160.468 SD = 18.347 N = 32 (M+F)	M = 168.812 SD = 25.749 N = 32 (M+F)	M = 19.750 SD = 36.268 N = 16
Academic Performance	M = 51.625 SD = 12.362 r = -.251	M = 47.906 SD = 13.086 r = -.518	M = 47.687 SD = 8.994 r = .033

From the above table and figure 7 following conclusions emerge:

(1) There appeared significantly high negative correlation

between stress and academic performance for the science group students, i.e. lower the stress higher the academic performance. In the arts group, however, there was almost zero correlation between stress and academic performance though this was in the positive direction.

(2) There was a significantly high negative correlation between stress and academic performance for the commerce group students showing that lower the stress in commerce group higher was the academic performance.

A similar correlational analysis was carried out differentiating the subject streams and also sex factor

Table-16 and figure-8 resents mean, SD, and r-values for the 12th class Science, Commerce and Arts group students with a break up of boys and girls.

MEAN STRESS SCORE AND ACADEMIC PERFORMANCE OF STUDENTS OF DIFFERENT SUBJECT STREAMS IN TERMS OF SEX.

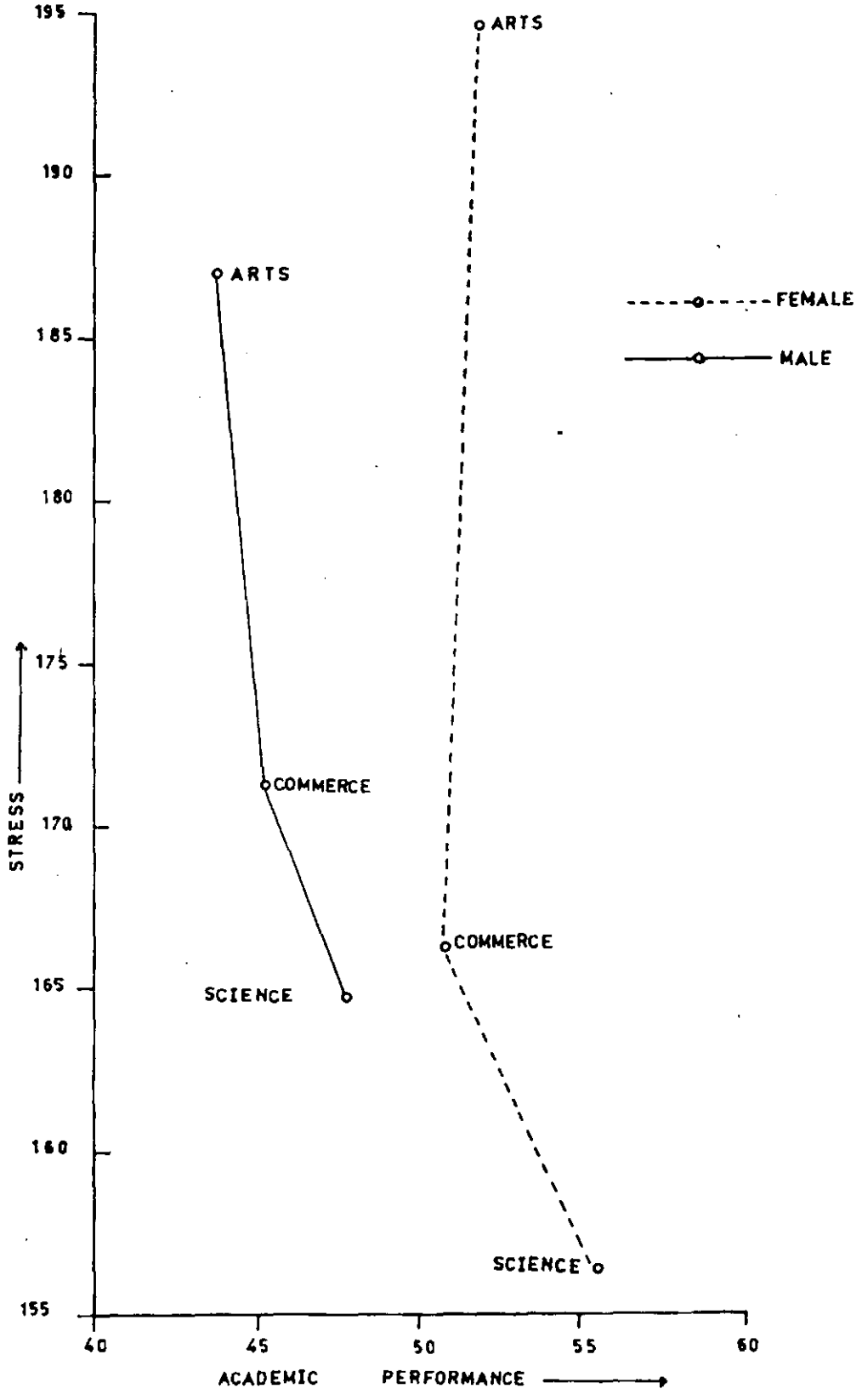


Fig. 8

Table - 16

	Male		Female	
	Stress	**Academic Performance**	**Stress**	**Academic Performance**
Science N = 32	M = 164.125 SD = 14.059 N = 16 r = -.004	M = 47.625 SD = 12.701	M = 156.812 SD = 21.649 N = 16 r = -.362	M = 55.625 SD=10.871
Commerce N = 32	M = 171.250 SD = 26.933 r = -.376	M = 45.187 SD = 10.814	M = 166.375 SD = 25.144 r = -.633	M = 50.625 SD= 14.890
Arts N = 16	M = 187.00 SD = 87.811 N = 8 r = .078	M = 43.625 SD = 7.763	M = 194.50 SD = 36.83 N = 8 r = -107	M = 51.75 SD = 8.680

From the above table following conclusions emerge:

(1) In both science and commerce stream, there appears significant correlation between stress and academic performance. Specifically, amongst the female students of class XII, there appears a significant negative correlation between stress and academic performance in the science (r = -.36) and commerce (r = -.63) streams. In *other words, in these two subject streams lower the stress, better the academic performance for the girls of class XII.*

and not in the other two subject streams.

(3) In the arts group, in both boys and girls the correlation between stress and academic performance is rather very low. However, within this, girls have registered a negative correlation between these 2 factors as in the other two streams, whereas the boys have registered a positive correlation.

Thus to sum up this section, it appears that subject streams opted by students appear to affect the relationship between stress and academic performance, which may be attributable to the difficulty level of the subject and interest and aptitude of the students concerned.

Academic performance in terms of High Stress and Low Stress.

Stress and academic performance have been found to be highly correlated in certain subject streams than in others, and more negatively in girls than in boys. However when the overall correlation between these two factors are considered, there is a negative but a low correlation. This leads to the question whether a high correlation is obtained more at high stress than at low stress levels.

To ascertain this, the students as before were considered in terms of high and low stress students on the

basis of the cut off score of 176.095 on stress. The academic performance and stress score of the students were correlated to find out in which group (high or low stress group) the correlation between the two factors was high and in which low.

Table below presents the comparison of the r-values at high and low stress levels for classes XII, X and IX.

Table - 17

Correlation between stress and academic performance class XII, X and IX.

	High Stress		Low Stress	
	Boys	**Girls**	**Boys**	**Girls**
Class XII	r=-.045	r = -.061	r = -.201	-.268
X	r=.017	r = .229	r = .164	-.057
IX	r=-.112	r = -.135	r = .269	-.284

From the above table following conclusions emerge :

In three out of six cases positive correlation has turned to negative correlation. In the other three cases the signs have remained same but level of r has increased. Thus lower the stress, higher the academic performance

Stress in terms of previous academic performance

In this section an attempt has been made to ascertain whether levels of stress varied in terms of the student's previous academic performance i.e. the result of the classes XII, X and IX the year before. The hypothesis to be tested was that stress may vary in terms of previous academic performance.

To test the above hypothesis a 3 x 2 factorial design, with class at 3 levels XII, x IX, and previous academic performance at 2 levels (above mean and below mean of pre-academic performance) were taken into consideration.

The aim was to find out if the student had not done well in the previous final examination he/she would have relatively greater stress than those who had done well in the previous examination. For this purpose the results of previous final examination (one class previous to the present one) of student was taken and divided in to above mean and below mean academic performance as mentioned above.

The detailed stress scores on 3 x 2 Anova presented in table - below.

Table - 18

PREVIOUS ACADEMIC PERFORMANCE AND OF STRESS AMONGST CLASS-XII STUDENTS IRRESPECTIVE OF SEX.

	ABOVE AVERAGE		BELOW AVERAGE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	154	71	185	43
2	148	65	175	54
3	150	67	141	55
4	149	68	163	58
5	191	86	158	55
6	143	61	174	56
7	158	71	168	56
8	153	61	205	50
9	185	71	127	59
10	151	73	177	48
11	154	68	177	54
12	118	71	176	59
13	164	71	155	59
14	142	70	161	58
15	161	71	168	54
16	163	61	140	53
17	141	64	139	57
18	150	61	140	57
19	161	72	175	55
20	133	72	189	56
21	157	68	195	57
22	127	77	203	52
23	129	61	191	56
24	180	60	165	57
25	189	66	134	56
26	195	65	179	54
27	137	70	144	59
28	150	61	166	43
29	192	68	201	49
30	176	75	205	59
31	170	64	184	56
32	205	61	203	51
33	215	65	203	57
34	227	64	142	51
35	150	63	137	44
36	136	61	192	52
37	201	65	152	59
38	205	60	228	56
39			225	52
40			248	58
41			191	54
42			198	56

PREVIOUS ACADEMIC PERFORMANCE AND LEVEL OF STRESS AMONGST CLASS-X STUDENTS IRRESPECTIVE OF SEX.

	ABOVE AVERAGE		BELOW AVERAGE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	151	69	169	46
2	177	65	204	54
3	192	75	268	48
4	162	72	174	50
5	157	73	185	50
6	161	66	159	46
7	165	60	164	55
8	206	57	148	46
9	204	64	171	47
10	230	57	125	54
11	155	62	188	51
12	208	65	202	42
13	226	58	171	44
14	211	66	231	55
15	213	85	189	44
16	222	67	210	51
17	228	68	207	54
18	225	59	209	43
19	220	67	213	53
20	163	65	221	46
21	214	63	173	49
22	169	65	185	52
23	171	73	223	48
24	166	68	208	43
25	228	85	223	45
26	170	72	212	38
27	169	60	178	50
28	186	83	185	55
29	197	57	199	37
30	217	73	154	39
31	209	58	187	42
32	205	56	200	40
33	181	71	195	46
34	171	71	195	51
35	174	63	182	38
36	194	59	186	49
37	154	57	203	51
38	140	59	194	46
39	180	67	201	51
40	193	60		
41	195	87		

PREVIOUS ACADEMIC PERFORMANCE AND LEVEL OF STRESS AMONGST CLASS-IX STUDENTS IRRESPECTIVE OF SEX.

	ABOVE AVERAGE		BELOW AVERAGE	
S.NO.	STRESS SCORE	% MARKS	STRESS SCORE	% MARKS
1	185	85	231	57
2	178	70	183	60
3	151	81	176	65
4	152	80	167	65
5	145	75	113	60
6	150	75	218	60
7	172	66	106	61
8	111	80	155	62
9	222	80	153	63
10	206	84	192	65
11	159	76	218	40
12	205	67	180	60
13	165	78	198	51
14	162	75	208	63
15	195	70	186	45
16	097	80	134	50
17	156	75	120	53
18	187	74	189	50
19	150	86	153	59
20	162	71	181	64
21	145	90	208	59
22	158	72	137	50
23	195	87	200	60
24	172	68	145	51
25	130	80	190	53
26	123	80	140	56
27	180	85	200	43
28	202	75	153	56
29	158	89	224	59
30	190	80	149	53
31	188	70	177	56
32	150	69	168	64
33	188	80	137	60
34	165	70	137	50
35	193	72	187	56
36	225	66	150	60
37	205	66	160	61
38	162	67	139	55
39	192	69	171	58
40	186	70	183	62

The summary of 3 x 2 Anova is presented in the table below:

Table 19

Sources of Variations	Sum of Squares	df	mean Squares	f	p
Classes (A)	4280.688	2	2140.344	47.5463 Sig.	<.01
Stress (b)	14468.01	1	14468.01	321.397	<.001 Sig.
ClassXStess (A x B)	830.2363	2	415.1182	9.2216	<.01 Sig.
Error	10533.75	234	45.016		
Total	30112.69	239	125.9945		

From the above table following findings emerge:

(1) Stress scores varied significantly in terms of class factors. That is, class X students were significantly higher in their stress than class IX and XII respectively.

(2) Stress varied in terms of previous academic performance. That is, those who had scored above mean performance (more than 60%) in the previous examinations had significantly lesser stress than those who had score below mean performance(less than 60%).

(3) Stress varied in terms of the interaction effect of class and previous academic performance of students.

Since `f'-values were found to be . significant for stress scores in terms of the interaction effect of class and previous academic performance, an attempt was made to ascertain, if different classes combined with a level of previous academic performance has a different level of stress. For this purpose ` t-' values were computed and the same is presented in the Table-20 .

Thus, the hypothesis (8) which states the *stress will vary in terms of previous academic performance has been found validated.*

Since the stress was found to vary as a function of the interaction between classes and high and low previous academic performance, an attempt has been made to ascertain academic performance, the stress varies.

Table below presents the stress score of high previous academic performances and low previous academic performances irrespective of sex and class in which they study.

Table - 20

The mean, SD and `t-vlues' of stress scores of high previous academic performance and low previous academic performance of XII, X and IX class students.

Class	XII high Pre. Ap	XII low Pre. Ap	X high Pre. Ap	X low Pre. Ap	IX high Pre. Ap	IX low Pre. Ap
	M=163.42 SD=26.04 N=38	M=175.69 SD=27.51 N=42	M=180.05 SD=26.29 N=41	M=188.18 SD=23.20 N=39	M=170.7 SD=28.22 N=40	M=169.83 SD=30.87 N=40
XII high Pre Ap_	--	t=2.05 (sig.)	t=4.18 (sig.)	t=4.41 (sig.)	t=1.18	t=1.01
XII low Pre Ap	--	--	t=2.09 (sig.)	t=2.22 (sig.)	t=.81	t=.89
X high Pre Ap	--	--	--	t=.02	t=2.85 (sig.)	t=2.83 (sig.)
X low Pre Ap	--	--	--	--	t=3.01 (sig.)	t=2.98 (sig.)
IX high Pre Ap	--	--	--	--	--	t=.12
IX low Pre Ap	--	--	--	--	--	--

-

From the above table following conclusions emerge:

1. Class XII students with high and low pre-Ap showed the lowest stress amongst all the groups. On the other hand, students of class X having had a low previous academic performance showed highest stress amongst all the groups. These difference between the class XII and X students with high and low previous academic performance were statistically significant. In other words, it appears that irrespective of pre-academic performance being high or low the class X students showed the highest stress as compared to class XII students even though the combination of class XII with previous high academic performance has shown relatively lower level of stress than a combination of *low* previous academic performance.

2. The highest level of stress obtained amongst class X students with high and low academic performance vary significantly from that of class IX students with high or low previous academic performance. That is, the interaction of class X with high or low previous academic performance brought about a high stress as compared to any other combination of class with previous academic performance. This trend may be due to the above fact.

To sum up the whole study, it can be concluded that the class X students have registered the highest stress scores followed by class IX and XII students in that order. It is thought to be due to class X student's highest stress level because, they are taking Board examination for the first time. But, class XII students had already once appeared the Board examination thereby perhaps have lesser tension and stress as compared to that of class X students. Further, it was found that stress affects academic performance of students and stress also varies in terms of subject steams and previous academic performances.

CHAPTER-FIVE

DISCUSSION

Before attempting a discussion on the results of the present study, it would be worthwhile to recapitulate the main aims of the study which were as follows:

(1) To identify the level of stress amongst 10th and 12th class students and if this differs amongst them as well as those who are in 9th class and do not take the Board Examination.
(2) To study the relationship between stress and academic performance.
(3) To study stress and academic performance in the context of classes, sex, subject stream and previous academic performance factor.

Nine specific hypothesis relating to the above mentioned aims were set up. The discussion of the results are attempted in terms of other related findings.

Stress amongst the Board Examination Students and Non Board Examination Students.

The results of the study presented in the previous chapter have categorically shown that the mean stress scores of XII, X and IX class were separately. It was found that

the students belonging to 10th class have registered the highest stress scores followed by 9th and 12th class students in that order.

The above result appears to be quite in line with the thinking that 10th class students are for the first time in their life appearing for a board examination in which they are to compete with students from all over India. So one may expect that these students may be going through a very highstress before as well as during examination. The 12th class students may be expected to have relatively lesser stress as they have already appeared for one of the Board Examinations (i.e 10th class Board Examination) and having less tension and stress. *Thus the hypothesis (1) which states that the level of stress, may vary between those who take Board Exam and those who do not appears to be only partially validated.*

Studies in this area also show that there was higher relationship between scholastic achievement and emotional stability in the case of class IX students than class X students who were more anxiety ridden due to the coming public examinations. (Dhami, 1974).

Mechanic (1962) on the basis of his research on graduate students, observed that these students experienced some anxiety three months, prior to their final

examinations. They were not that very anxious until the examination were nearly very close. This variation in anxiety during examination and before examination was confirmed by Fenz and Epstoin (1969), who also found that anxiety peaks in anticipation of the stressful situation. He also found that examinations served as stressful situations since it increased the anxiety of the individuals.

Pollitt and Young (1971) stated that some individuals are quite unaware of the build up underlying depression because it remains unmarked. The process of externalizing the depression is brought about by the arousal level of the brain. Some individuals discover that if they take part in exciting things, it may mask their depression and so make them feel much better. Also there another opinion that the response to self starvation if it is particularly going to benefit the girl studying for examination. Then it is differ to dissuade from self starvation.

Sabberwal (1967), in his study on emotional tension and its effect on student performance in school examinations found that students with higher level of tension performed poorly, whereas absence of tension resulted in higher marks.

Cowen et al (1965), in studying the relation of anxiety in school children to achievement found a negative relationship between anxiety and intelligence.

Singh (1966), in his study on manifest anxiety and university examination, found a negative relationship between anxiety level and the drive theory of manifest anxiety.

Contractor (1981), in his study on educational attainment as a function of certain variables, found a significant correlation between examination marks and anxiety. In fact they demonstrated that anxiety contributed significantly to educational achievement.

Srivastava (1980), in his study on Examination anxiety and academic achievement, found a negative relationship between the two variables.

Siddiqui and Akhtar (1982), in their study on anxiety in relation to academic achievement of high school students demonstrated an inverse relationship between anxiety and achievement, i.e. highly anxious students showed poor performance and less anxious students showed high academic performance.

Singh, Nigam and Singh (1984), in their study on neuroticism and academic achievement, found that high achievers are likely to be more anxious than low achievers.

Lahey et at (1984), in their study on student's achievement, found that anxious children performed poorly in school.

There are a number of studies which relate deprivation to academic performance. These then, can be said to be of relevance to `stress' Research. Deprivation in its social, cultural, economic and emotional parameter has been studied very intensively. Numerous studies on Academic performance as dependent and environmental variables (Hunt 1964, Dave 1965, Karp and Siegel 1965; Hill Giamatio 1963, wiseman 1964, coleman 1966, singh 1976) Father's occupation (Jamuar 1963, Gupta 1976), Socio - economic status of Parents (Chauney 1966, Rao 1965, Bennus 1966, Kakkar 1970; mathur and Hundel 1972, Bennur and Ahrahaum 1973; Ahluwalia and Deo 1975, Bayti 1972), deprivation (panda 1976, miller 1968, Dass 1969, Chopra 1969, Sen 1976) and such other psychological, personal and socio-cultural factors as independent variables appear in the literature on ***Deprivation and academic achievement***. Though remote from the essence of the present study academic performance as related to deprivation seems relevant as it is a form of stress. Thus to sum up, it may be said that studies which relate stress with Board Examinations are almost non existent in the Indian context. The focus in the past has been on stress performance in the experimental setting, anxiety and academic performances and deprivation and academic

performance. The present study is different from the above mentioned studies in that it attempts to study the level of stress which vary between those who take the Board Examination and those who do not, Mechanics (1962), Fenz and Epstoin (1969) Studied stress in relation to examination of graduate. Frankenhouser (1976) studied sex difference in psychoen-docrine reactions to examinations stress. However these studies are totally different from present study.

Stress Interms of Sex Factor and Class Factor

The results of the present study revealed that there was no significant difference in the stress scores of boys and girls irrespective of class in which they studied. Also there was no significant difference in stress score between boys and girls of XII and IX though a significant difference exist in the stress scores of boys and girls of X class. *Thus the hypothesis (2)* which states that the level of stress will vary between boys and girls is partially validated.

Earlier studies by Julka (1963), in the realm of anxiety and Bisht (1984), in terms of academic stress, demonstrated no sex differences in the high school students. However, the present study in regard to sex difference and stress to some extent corroborate their findings partially.

Further analysis of sex differences in terms of class showed that boys differed significantly from girls in X class. In X class girls showed significantly greater stress than boys.

Siddiqui and Aktar (1983), also demonstrated that girls were more anxious than boys. Bisht (1984), pointed out relatively male students were found to have less institutional stress than female students.

Dale (1969), Found that females were more school anxious than male students. The present study corroborate the finding of Bisht (1984).

Frankenhouser (1976) Studied sex differences in psycho-endocrine reactions to examination stress. She found that during the control condition, sex differences were non significant. But during examination stress, the urinary, erection of cortisol adrenalin etc. increased in both sexes but to a greater extent in males. Both sexes performed well but self report Show that feeling of success and confidence were common among males, where as feeling of discontent and failure was dominant among females. High discomfort correlated with poor performance in males but good performance in females.

Nowicki (1978) Found that for females and males stress

in the pre school and pubescent years was related to externality.

Elkind (1981), the normal stress of growing up is increased when children are hurried in to taking on adult behaviors and responsibilities. He believed today's middle class parents push their children to grow up too quickly. This creates unnecessary stress, and children often display emotional problems, psychosomatic complaints and appear to be hyperactive or lethargic.

A set of studies which shows boys were found to experience and display more stress than girls, (Rutters 1970, 1981), Dunn,et al (1981), Hetherington (1980) and wallerstein and Kelly (1980)., Bhan(1984).

The reason for this contradiction may be because Rutter (1981) studied with respect to the effect of hospital admission, Dunn et al (1981), found with the birth of sibling boys were more likely than girls show an increase in withdrawal, with diverse, both Hertherington (1980) and wall restein and Kelley (1980), found that disturbance tended to be more severe and more prolonged in boys. Really these are the studies of stress but in other context. Secondly once again these studies were not based on high school children but in general school going children. The present study was conducted on high school children especial related to the

stress on examination. As far the Hertherington (1980), wallerstein and Kelley (1980), found with divorce of parents, boys tended to be more is disturbed than girls. While the present study took stress to be a wider concept encompassing all types of social, educational, Psychological factors in family, school, peer group and other environmental situations of the students especially related to examination.

Stress and Class Factor :

In this study it is found that X class students both boys and girls have significant difference in stress than XII and IX class students. It can be presumed X class students are prone to stress because they are taking Board Examination for the first time. But XII class students had already once appeared the Board Examination there by perhaps are lesser tension and stress then Xth class comparatively. As far as IX class students are concerned, they do not have any pressure from parents and teachers and this may perhaps be the reason for the IX class students to so lesser stress than the X and XII class students.

Stress and Subject Stream

Stress varies in terms of the subject stream opted by the students, as the difficulty level of the various

subjects varies for different students. Since only in class XII, the options for taking a particular subject stream is given, it is seen that there was a significant difference in stress scores of science and arts, commerce and arts group of 12th class students. Specifically the stress score of commerce group was higher than those of science and arts group. At the same time there was no significant difference in stress score of science and commerce group of class 12th students. So the *hypothesis (3b) which states that stress may vary interms of subject stream is only partially validated.*

Although, there is no direct research evidence in the past to suggest that stress reflected in terms of various subject stream opted by students, there are yet some studies which do throw light on subject stream in context of other than stress such as academic performance, interest etc. For instance, Sharma (1967), Baoil (1956), Rao and Arunajati (1971), found that the nature of curriculum and subjects offered by students influenced their achievement scores.

Ramachandran et al (1971), studied the prediction of scholastic achievement in two major streams through multiple discriminant function based on the interest scores. They found that students could be classified with considerable precision in to science and humanities streams on the basis of their interest pattern.

Mitra et al (1978) found that interest in science could be employed as a differentiating factor in the identification of more capable science students.

Mukherjee (1969), Dhami (1974), Bhushan and Ahuja (1977), Sharma (1979), Singh and Kumar (1977), Goswami (1978), shah (1978), chaudhury (1980), Shivappa (1980), Kumar (1981), Patel (1981), Gandhi (1982), Menon (1982), Zachariah (1982) studied anxiety, stress intelligence in relation to general academic achievement. There is however no indian studies on stress in relation to subject streams that is science, commerce arts in 12th class.

As far the reason why commerce group of 12th class should display more stress than science and arts group, it may be point out that students studying commerce being basically from the middle class and average standard are prone to tremendous achievement pressure from their parents. Chopra (1982) found parents from higher socio-economic classes gave greater help and encouragement to their children for studies students from higher socio-economic classes had higher educational and occupational aspirations.

Salunke (1979) found while studying four faculties viz science, commerce, arts and home science of M.S. university Boroda, the socio-economic status, home environment and

economic management of students of different faculties differed. The students of home science and science faculties belonged to higher socio economic status than commerce and arts group. He also found socio-economic status had relationship with age group.

Gadgil (1979)studied the cases of failures in commerce is due to inadequate grounding in the subject, inadequate motivation of students for study and inadequate guidance in answers to questions. Lack of adequate motivation of students for study may become an important source of stress in student. The fact that lowest stress score was recorded in arts group can be attributed to the nature of subject. There was no pressure of examinations, and the curriculum included in arts, and are perhaps relatively easier than science and commerce for certain students. Sinha (1966) studied more of the high achievers had received their secondary education in convents or in government or public school and were students of science. As regard the discrepancy between the marks expected and marks obtained there was little difference amongst the groups at the high school level.

Mishra (1978) found intelligence and creativity were significantly correlated amongst the high achievers in sciences, commerce and low achievers in arts. Intelligence and general anxiety exhibited no relationship

in any of the streams or levels of achievement except the low achievers in science. Creativity and general anxiety were related in the case of the low achievers in commerce and science only. Also other finding of this study were that the science students were relatively more creative, intelligent and low in anxiety than their counter parts in other streams. The arts students were low in creativity and in intelligence but high in general anxiety. The science students exhibited more creative talent and low general anxiety. Medeiros et al (1983) have also discussed certain school factors being responsible for the causation of stress in children. These included school phobia, subject anxiety, stress in sports etc.

Sharma (1982) found in higher secondary stage the high as well as the low achievers of both the scientific and commercial streams were superior to those of the literary stream on creativity but the low achievers of literary (arts) and Scientific streams were superior to those of the commercial stream. There was no significant difference between the students of the scientific and commercial streams with anxiety and study habit. These then can be said to be some of the factors contributing to lower stress in the arts group.

Academic Performance in Terms of Class, Stress and Sex Factor

The academic performance of students was studied in terms of class, stress factor and sex factor, and their interactional effect. The obtained results were as follows:

Academic Performance and Classes

Academic performance of students was found to significantly vary in terms of class factor. There was a significant difference in the Academic performance of 12th class and 9th class, so also between 9th and 10th class students. Specifically higher than those of XII and X class respectively. *Thus the hypothesis (6) which states that Academic performance may vary in terms of class factor is found to be validated.*

Dhami (1974) found there was higher relationship between scholastic achievement and emotional stability in the case of class IX students than in the case of class X students who were more anxiety-ridden due to the coming public examination.

Sabberwal (1967), in his study on emotional tension and its effect on student performance in school Exams, found that students with high tensions performed poorly, where as

absence of tension resulted in higher marks.

Contractor (1881) in his study on educational attainment as a function of certain variables, found a significant correlation between examinations marks and anxiety. In fact they demonstrated that anxiety contributed significantly to educational achievement.

Siddiqui and Akhtar (1982), in the study on anxiety in relation to Academic performance of high school students demonstrated an inverse relationship between anxiety and achievement i.e. highly anxious students showed poor performance and less anxious students showed high academic performance. The findings of the presents study viz Academic performance vary interms of class factors appears to find considerable support in the above mentioned researches.

The difference in academic performance in XII, X and IX class probably is due to the stress level of student in class. Stress had a significant effect on academic performance and this may be the reason for the obtained difference in the academic performance of students.

Academic Performance in Terms of Stress Factor

From the present study it is fond that Academic performance significantly varies in terms of stress factor.

It is also found that low stress students have secured significantly high academic performance than those who have high stress score. *Thus the hypothesis (6) which states academic performance varies interms of stress found to be validated.*

Sarason (1857) found that there was negative correlation between anxiety and scholastic achievement, but there was a significant correlation between anxiety and school grade.

Speilberger and Mayer (1957) found that there was a negative correlation between anxiety and intelligence.

Cook (1959) Found that the low achievers of high anxiety group and high achievers were of low anxiety group.

Burton (1966) found the high achievers have less anxiety and are emotionally balanced. *Sinha (1965)* found low achievers were of high anxiety group in comparison to high achievers. *Muthayya* (1965) studied in the field of scholastic achievement' where he compared low and high achievers. He concluded that there was no difference between level of high and low achievers. But it was clear that there was difference between need achievement of both the groups.

Siddiqui and Aktar (1982) in their study on anxiety in

relation to academic achievement of high school students demonstrated an inverse relationship between anxiety and achievement. i.e. highly anxious students showed poor performance and less anxious students showed high academic performance.

As anxiety was one the behavioral indicant of stress. Thus the present study can be said to corroborate the findings of earlier researches, as has already been highlighted.

Academic Performance and Sex Factor

The analysis of academic performance scores in terms of sex factor showed that boys and girls did not differ significantly. *Thus, the hypothesis (6) which states that the academic performance will vary interms of sex factor"* has been rejected.

Studies by Veeraraghavan and Bhattacharya (1986) and the results of the 1986-87 (Times of India may-June 87) C.B.S.E. examinations for classes 10th and 12th respectively, showed that girls performed better than boys. In the present study however, the same result was not obtained.

Thus, since the presence of sex differences in academic

performance vary from study to study and in differing contexts, it was thought worthwhile to analysis them in the present study.

The present study deals with academic performance 10th and 12th class students of one central school of Delhi. probably for this sex typed attitudes and behaviour are difficult detect secondly, the pressure to achieve is also not high in central school in comparison to other schools. Thus these may be some of factors which may account for the level of difference, in the academic performance of boys and girls.

Academic performance of XII, X and IX class student as a function of the interaction between class, stress and sex factor.

The interactional effect between the classes, stress and sex factor was found to be significant. *Thus the hypothesis (7) which states that there will be an interaction effect of class, sex and stress factor on academic performance found to be validated.*

Academic Performance in Terms of Subject Streams

The present study shows the academic performance not varies significantly interms of subject stream. Thus,

hypothesis (8) which states that academic performance may vary in terms of subject stream is found to be rejected.

Although there is no direct research evidence to suggest academic performance varies in terms of subject stream. Some studies do emphasize the importance of subject stream for determining academic performance of students.

Rao and Arunajtai (1971) found that the nature of curriculum and subjects offered by students influenced their achievement scores.

Romachandran et al (1971) studied the prediction of scholastic achievement in two major streams through multiple discriminant function based on the interest scores. They found that students could be Classified with considerable precision in to science and humanities streams on the basis of their interest pattern.

Buch (1963), found that S.S.C Examinations composite scores of Physics, chemistry, and mathematics were better predictors than the individual set of scores while predicting success in the next higher Examinations.

Mitra S.K., Chatterjee, S. and Mukherjee, M. (1978), studied there was a high and very significant positive relationship between the intensity of scientific interest

and the probabilities of success in higher secondary course.

Singh (1978) studied the marks in the S.S.C. examination had got high predictive value for predicting the performance in the S.S.C. aggregate percentage marks were the single best predictor for predicting the success in the preparatory science examination. The abilities identified under the preparatory science examination indicated that the examination was comprehensive in nature and measured many dimensions of achievement abilities.

Sinha (1966) Found that the level of anxiety in the facultywise i.e.science, commerce and arts in University Examination, in the case of high achievers as with intelligence, no association between anxiety scores and the faculty was observed. But the difference between the high and lows within each faculty observed. The high achievers tended to score lower on the anxiety measure irrespective of the faculty. The picture was how ever, radically different among the low achievers. The mean of the low achieving students of the Arts and Commerce faculties was the highest, being over six points more than that of the science students.and this difference was highly significant. As a group, the unsuccessful students of the Arts and Commerce faculties were highly anxious. They were so anxious that the condition was likely to have a disruptive an interfering influence on their behaviour. Low academic achievement was

probably an evidence of such inhibiting effect of anxiety. Katiyar (1979) found no significant difference in the average scores of boys and girls study advanced mathematics on the achievement test in high school.

Ravinder (1977) found general anxiety by itself had relatively little effect on academic achievement and the combination of anxiety with intelligence considerably increased the accuracy of predicting academic performance.

Sharma (1982) found high and the low achievers of both the scientific and commercial streams were superior to those of the literary stream on creativity, but the low achievers of the literary and scientific streams were superior to those of the commercial stream.

However the aim of present study is totally different from the studies highlighted above, since the presence of academic performance and subject stream vary from study to study in differing contexts, it was thought worthwhile to analyze them in the present study.

The present study dealt with academic performance of science, commerce and arts stream of 12th class students. one can presume, pressure to achieve high must be same in the students of each subject stream for further education. Even there may be other factors operating here for no

difference in the academic performance of different subject streams.

Stress and Academic Performance

A significant negative relationship between stress and academic performance, was a major finding of the present study. A negative correlation was obtained between stress academic performance when whole population taken. A similar trend was observed when whole male population and whole female population taken irrespective of class. However similar trend was also observed in case of boys and girls in general too.

When whole male population and whole female population taken it was fond that the correlation coefficient of males are negative but not statistically significant. Where as there was a significant and negative correlation between stress and academic performance for the female population. *Thus the hypothesis (4b) which stated that there may be a difference in the level of stress between male and female irrespective of class will effect academic performance was found to be partially validated.* The results of the present study have corroborated the findings of Singh (1967), Shankar and Brar (1973), Srivastava et al (1980) and Lahey et al (1984) who also in their respective studies between anxiety and achievement demonstrated a negative relationship

between two variables. Ruebush (1963) found that anxiety is higher for girls. This holds for test anxiety general and school anxiety.

Siddiqui and Akhtar (1983), also demonstrated that girls are more anxious than boys. In a recent study by Bisht (1984) male students were found to have less institutional stress than female students. Hence the present study corroborate the past studies that girls were more affected by stress than the boys.

The degree of correlation between stress and Academic performance may vary in terms of class, in which the student study. The study.in this area in india is non-existent. The studies available represent the relationship between stress and academic performance not in terms of classes.

Thus in the present study *the hypothesis (4c) which states that the degree of correlation between stress and academic performance may vary in terms of class in which the student study was found to be partially validated.* These may be due to various reasons like there are 2 classes (X and XII) who are preparing for board examinations. One of them (X class students) they are appearing for board examination for the first time, and there is another class (IX) they are free from board Examinations. Examination pressure, anxiety, emotional stability of students may vary from class to

class. So the degree of correlation between stress and academic performance were varied in terms of class.

It is found in the present study that correlation between stress and academic performance in terms of three subject stream, science, commerce and arts, varies. It appears that subject streams opted by students appear to affect the relationship between stress and academic performance which may be attributable to the difficulty level of the subject and interest and aptitude of the students concerned. Stress and academic performance have been found to be highly correlated in certain subject streams than in others, more negatively in girls than in boys. At last from the present study it is clear that lower the stress higher the academic performance.

Stress in Terms of Previous Academic Performance

The interactional effect between class and previous academic performance (above mean performance and below mean academic performance) was found to be significant. Thus the hypothesis (5) stress may vary in terms of previous academic performance was found to be significant. Bokil (1958b), Buch (1963), and Sengupta (1963), used the final examination marks for predicting achievement in the next final examination. Studying the prognostic value of higher secondary examination marks of Delhi.

Hiriyanniah (1963), While finding out the prognostic value of Pre-university Examinations, found that the science students were relatively consistent in their level of attainment at later stages in the university that the arts and commerce students.

Nath (1973) used M.A. (Previous) Examination marks for predicting success in the M.A. final Examination for the Subjects of English, economics and political science. The correlation coefficients were high and ranged from 0.76 to 0.83. Not a single indian study has focused light on stress interms of Previous academic performance. Thus,the present study deals with over all academic of students.

Concluding Remarks

Thus, while some research has been conducted in the area of stress, and its relationship with performance has also been studied, the present study has emerged with some novel and significant findings.

Firstly, it has clearly identified the level of stress that vary between those who take board examination and those who do not. Then it has demonstrated the relationship between stress with academic performance.

The degree of stress differs in terms of sex, class factor and subject stream has been highlighted. Further, the nature of the relationship between stress and academic performance has been established.

Apart from this, the findings of many earlier studies in the context of academic performance varying as a function of class, stress and sex factor have also been either corroborated of refuted, through the findings of the Present study.

Thus, the present study has contributed significantly to the existing literature in the realm of stress in higher secondary and secondary school students, relating the same to academic performance. The study has been able to make a valuable contribution in identifying the level of stress as well as demonstrating which level it affect academic performance.

The study has also been able to corroborate and substantiate the findings related to sex dichotomy and stress related and academic, performance related to time and again the performance of higher secondary, and secondary school students has been high lighted.

CHAPTER - SIX

SUMMARY AND CONCLUSIONS

As mentioned elsewhere the present study set out with the objective of ascertaining the level of stress amongst school students, particularly of class Xth and XII, who appear for the Central Board of Secondary School examination. Many studies have shown that students appearing for such examinations are relatively more prone to stress and when this stress goes beyond a limit, it has a debilitating effect on them. In the Indian context, as there is considerble paucity of research in this area particularly amongst students of secondary and higher secondary classes, the present research has been taken up. Specifically, the present study has the following objectives:

1. To identify the level of stress amongst 10^{th} and 12^{th} class students and if this differs amongst them as well as between them and those who are in the 9^{th} class and do not take the Board examination.

2. To study the relationship between Stress and academic performance.

3. To study the relationship between stress and academic performance in the context of class, sex, subject stream and previous academic performance of students.

In line with the above objectives, nine hypothesis were laid down and these were:

1. The level of stress may vary between those who take the Board Examination and those who do not.

2. The level of Stress may vary between boys and girls.

3 a) There may be a difference in the level of stress between male and female students irrespective of the class in which they study.

b) Stress may vary in terms of subjsect streams.

4 a) Varying levels of stress may lead to varying levels or academic performance.

b) The correlation between stress and academic performance (as obtained in 4(a) above) may vary between boys and girls irrespective of the class in which they study.

c) The degree of correlation between stress and academic performance may vary in terms of the class in which the student study.

5. Stress may vary in terms of previous academic performance.

6. Academic performance may vary in terms of class, sex and stress factor.

7. There will be an interaction effect of class, sex and stress factor on academic performance.

8. Academic performance may vary in terms of subject stream.

9. There will be a correlation between stress and academic performance irrespective of class.

Students from three classes, namely, XIIth and Xth who appeared for the Board Examination, and students from IXth class who did not appear for the Board examination were taken as sample for this study From each class 80 students were taken randomly and . the `stress' was studied at 2 levels "high" stress and "low" stress likewise sex factor was studied at two levels viz - boys and girls. Finally, the relationship of stress and academic performance with class, subject streams was studied.

Stress was measured by using a stress questionaire which was specially designed for the purpose by the researchers, which was indicative of the total numbeer of stressful events present in each student.

The academic performance of students was adjudge bythe

percentage of marks they obtained in the selection examination. The previous academic performance was taken as the percentage of marks obtained by the students in the final examination of their previous class respectively. The students were administered the stress scale specially devised for this purpose and the analysis was carried out on the obtained information from students in all the three classes.

The results obtained were as follows:

1. Stress was found to differ significantly between the students of classes 12, and 10 as well as between students of class 9 and 10 respectively. To be more specific Class X students had significantly greater stress than the students of class XII and IX in that order. However, stress did not vary significantly amongst students of IXth and XIIth class

2. There was a significant difference in the stress scores of boys and girls of X class, but not between any other class students.

3. There was a significant differnce in the stress scores of science and arts, and commerce and arts group of 12^{th} class students. To be more specific commerce group had significantly greater stress than the science and arts group in that order. However there was no

significant difference in stress scores of science and commerce group students respectively.

Academic Performance

1.a) Academic performance was found to vary significantly in terms of the 3 classes. The academic performance of 9th class appeared to be the highest followed by the 10th and 12th class in that order.

b) The academic performance of students varied interms of Stress factor viz high stress and low stress, that is, low stress students had secured significantly higher academic performance than those who had higher stress score. Such differences were obtained only in regard to students of class XII on academic performance between high and low stress students and not to the other two class students.

c) Boys and girls were not found to differ in terms of their academic performance

2. Academic performance also varied in terms of the interaction between class, stress and sex factors. To be more specific students of IXth. class with low stress and belonging to male sex had significantly high academic performance than other.

Stress and Academic Performance

1. Stress and academic performance were found to be significantly negatively related. In other words higher the stress, lower the academic performance of students.

2. In the study it was found that the degree of correlation between stress and academic performance among XII and IX differed significantly, but not in terms of other classes.

3. In the study it was also found subect Streams opted by students appear to affect the relationship between stress and academic performance, which may be attributable to the difficulty level of the subject matter students interest and aptitude for the subject concerned.

Stress in terms of Previous academic Performance

Stress was found to vary significantly in terms of classes and previous academic performance (above mean and below mean academic level).

1. To sum up it may be stated that stress varied significantly between the students who appeared for Board examination and those who did not. More specifically, students who appeared for Board Examination of 10^{th} class had significantly greater

stress than those of 12^{th} and 9^{th} class.Again the students of 12^{th} class who appeared Board examination significantly greater stress than those of 9^{th} class who did not appear for Board examination.

2. Stress was significantly higher among students who were in the commerce stream as compared to those in science and arts stream respectively. Again, the stress amongst the student of science stream significantly greater stress than those in arts. Thus stress significantly related both class and subject stream factor. There was no significant differnce in the boys and girls stress except among 10^{th} class.

3. The academic performace was found significantly but negatively correlated with stress. That is higher the stress, lower the academic performance.

4. When the previous academic performance of students considered by dividing it, in to above mean and below mean performances, there was significant difference in the mean stress scores of those who had above mean performance and below mean performance. In other words, the stress scores were significantly lower for those who had high mean previous academic performance as compared to the low mean previous academic performance.

From the above results one may conclude that stress appears to act as a positive influencer in enhancing the

academic performance of students in large number of cases. It would be worth while to find out the exact level of stress which may be needed to induce or bring about the best performance among students. By highlighting the relationship between stress, class, subject stream, previous academic performance and academic performance as such, the present study may be considered as having contributed to a relatively difficult area, that is of the influence of stress of the academic performance of students particularly in 10^{th} and 12^{th} that is in Board examination.

Limitations of the Present Study

1. One of the limitations of the present study lies in the validation of the stress questionaire designed to measure stress. Only content validity of the scale based on the judgemental opinion of experts was done and thereby selection of items which had a consensus opinion of 80% and above, could be established. A potential weakness in this scale is the absence of any direct procedure to determine whether there is one factor of stress or more involved in the statements. Although statements with high inter judge variability are removed, from the scale this is also not a very precise method for removing the discrepancies.

2. Since, the nature of the present study was largely exploratory, only the stress in higher secondary board examination and secondary board examination and those who are not taking board examination was studied. The specific causes of stress, and the reasons for variation in stress across all examinations could not be covered and thereby highlighted.

3. Another limitation of the present study stemming from its exploratory nature was that only one school has been taken for the study. Thus, what emerged was a trend and so the results can not be generalised about any other school.

4. Stress was also seen in the context of previous academic performance of students. For instance, the previous academic performance was taken into above mean and below mean academic performance. For these two groups, mean stress scores were computed and it was found tht students with higher mean previous academic performance had significantly lower stress than there with low previous academic performance.

Suggestions For Future Research

1. The nature and intensity of stress, in students could be studied specifically in terms of the causal factors.

2. Identification and classification of the causal factors of stress and evaluating the individual contribution of each of these, can be attempted.

3. The specific examination factors responsible for stress, such as nature of subject, work load on the students, evaluation etc., can be studied.

4. The debiliatating impact of stress on the health, growth and personality development of higher secondary and secondary students can also be studied.

5. Replication of the present study, using the same stress questionaire to index stress, would help in establishing its reliability and validity.

Thus, to conclude, the findings of the present study have clearly shown that stress in higher secondary and secondary children can be identified, that stress adversely affects academic performance and that academic performance varies as a function of classes, sex and stress factor. It is hoped that these findings if found consistent with larger sample classes, would be able to contribute to the solution of the long standing problem of relieving stress in students which affect their academic performance. Towards this end, the findings of this study have made a contribution.

APPENDIX

FOR PILOT STUDY

Stress Measurement Questionnaire

Direction :

To what extent each one of the statement is indicative of Stress in School. Give your rating for each item in the column provided (1) very highly indicative (2) Highly indicative (3) Mederately indicative (4) Somewhat indicative (5) Not at all indicative of Stress

		1	2	3	4	5
		Very highly indicative	Highly indicative	Moderately indicative	Somewhat indicative	Not at all indicative
1.	Bothersome thoughts run through my mind.					
2.	I frequently worry					
3.	I feel uncertain about the future					
4.	I get whatever I expect in exam.					
5.	I cry a lot over minor things.					
6.	I worry regarding having to act nicely to others.					
7.	I am more often late for the School					
8.	I am worried about having to be thoroughly competent at all things					
9.	I do'nt feel happy most of the time					
10.	Often concerned over my family members growing older					
11.	I am impatient most of the time					
12.	I prefer curricular activities suiting to my needs to release pent up emotional feeling.					
13.	I enjoy seminers & debates					
14.	I try to extend the length of holidays by merely absenting myself from School					
15.	I feel insecure					
16.	I often argue with my superiors					

Contd...2...

17.	I like my School environment					
18.	I can'nt sit or stand still					
19.	I become overjoyed when I win a game.					
20.	I try to do several things at the same time.					
21.	Mouth become dry					
22.	I can'nt concentrate well					
23.	I feel my future is bright					
24.	I frequently worry about the course I have taken.					
25.	I act helpless & unable to do things for myself.					
26.	I find it difficult to stick to study					
27.	I often lose interest in coming to school.					
28.	I expect others to satisty my needs.					
29.	I feel my heart pounding					
30.	I often belittle myself					
31.	I often argue unnecesserily with peer graps					
32.	Wishing to be liked by everybody.					
33.	I feel hurt when peer grap stops taking my suggestions.					
34.	I criticize the actions of friends & teachers.					
35.	I fail to keep school work uptodate.					
36.	Many times I feel nervous					
37.	I do'nt believe in suppressing my weakness in front of my teacher.					
38.	I feel hurt losing in a game					

Contd...3..

39.	Bedwetting					
40.	I get a sinking feeling in my stomach.					
41.	I have habit of blushing					
42.	I keep counting the days for holidays.					
43.	I get diarrhea quite often.					
44.	I have difficulty in sleeping at night.					
45.	I feel tense to help my friends in exam.					
46.	I worry about my health					
47.	I sometime feel depressed					
48.	I became over excited.					
49.	I get dizzy for no apparent reason					
50.	I participate actively in extra curricular activities.					
51.	I lose interest in giving class test					
52.	I worry about failure.					
53.	I like to discuss my problems with my teacher.					
54.	I often imagine frightening scenes.					
55.	Unable to understand others points of view.					
56.	I deliberately disobey rules & regulations of school.					
57.	I find class test concept boring.					
58.	I have a very strong will power.					
59.	I avoid discussing with friends					
60.	I feel tense when I am unable to understand questions in tests					
61.	I experience ringing in my ears					
62.	I am particular about securing good marks in class tests.					

Contd..4...

63. I stutter or stammer when I speak.

64. My hands become cold

65. I worry about losing my way

66. ~~I worry about losing my way.~~ I Like to talk my Friend en Exam When I Cannt recall & understand the Concept.

67. My achievement is quite high in relation to my expectation in the exam.

68. I am self confidont.

69. I prefer remedial classes for those who are frustrated or discouraged in regular classes.

70. I usually drink more cups of coffee or tea in a day.

71. I feel hurt in peer grap when my presence is not recognised

72. I feel that I am rather over scsative.

73. I swaat frequently.

74. I do my duty but never bother for result.

75. I feel happy receiving a good report card

76. I like to attend remedial classes for improvement.

77. I have good ability to write correctly in exam.

78. I feel faint frequently.

79. I suffer from an ability to put across in the exam all the known information.

80. My hands become moist.

81. I feel hurt being made fun of in the class.

82. I feel constently tense for my achievement in exam.

83. Often concerned about who I am

84. I prefer co-curriculer activity to study.

Contd...5..

85. Often concerned over my physical appearance.

86. I feel my future is bleak.

87. I often feel that I make an unusual departure from regular behaviour.

88. I feel seminars & debates give good opportunities to expose oneself.

89. I become easily confused & forgetful.

90. I feel tremendous relief when examination is over.

91. It takes me a long time to make a decision.

92. My fingers and hands shake.

93. I like loneliness.

94. Often concerned over myself growing older.

95. Too numerous demands are placed on me.

96. I feel hurt when teacher scolds me

97. I have been taking the class tests seriously.

98. I obtain good marks in the main tests but not in the class tests so I feel tense.

99. I feel proud of my friends who do very well in exams.

100. I some time feel like talking with the teacher regarding evaluation.

FOR FINAL STUDY

STRESS MEASUREMENT QUESTIONNIRE

Direction.

Please check whether you generally engage in the following behaviours at School. Give your rating for each item in the column provided. (1) Very highly applicable (2) Highly applicable (3) Moderately applicable (4) some what applicable (5) Not at all applicable.

	Very Highly Applicable	Highly applicable	Moderately applicable	Some what applicable	Not at all Applicable
1. I frequently worry					
2. Often concerned about who I am					
3. I try to extend the length of holidays by merely absenting myself from School.					
4. I feel constantly tense for my achievement in Exam.					
5. I prefer remedial classes for those who are frustrated or discouraged in regular classes					
6. I like to talk with my friend in exam when I can't recall & understand the concept					
7. I act helpless & unable to do things for myself					
8. I often argue unnecessarily with peer groups.					
9. Too numerous demands are placed on me					
10. I do'nt believe in suppressing my weakness in front of my teacher					
11. Bedwetting					
12. I feel that I am rather over sensative					
13. I feel xxxx proud of my friends who do very well in exam.					
14. I like to attend remedial classes for improvement					
15. I don't feel happy most of the time					
16. I worry regarding having to act nicely to others					
17. I can'nt concentrate well					

	Very highly applicable	Highly applicable	Moderately applicable	Somewhat applicable	Not at all applicable
18. I like to discuss my problems with my teacher.					
19 I participate actively in extra curricular activities					
20. I feel happy receiving a good report card					
21. I expect others to satisfy my needs					
22. I fail to keep school work up-to-date					
23. I do my duty but never bother for results					
24. I feel my future is bright					
25. I become overjoyed when I win a game					
26. I feel uncertain about the future					
27. Wishing to be liked by every body					
28. I often argue with my Superior					
29. I often belittle myself					
30. I prefer Co-curricular activity to study					
31. I often lose interest in coming to School.					
32. Often concerned over my family members growing older.					
33. I cry a lot over minor things					
34. I feel Seminars & debates give good Opportunities to expose oneself					
35. I have been taking the class tests seriously					
36. I try to do several things at the sametime					
37. I become over excited					

	Very highly applicable	Highly Applicable	Moderately Applicable	Somewhat applicable	Not at all applicable
38. I sometime feel like talking with the teachers regarding evaluation.					
39. I feel faint frequently					
40. I prefer curricular activities suiting to my needs to release pent up emotional feeling					
41. My achievement is quite high in relation to my expectetion in the exam.					
42. I usually drink more cups of coffee or tea in a day					
43. I feel hurt when teacher scolds me					
44. I experience ringing in my ears.					
45. My fingers and hands shake					
46. I feel tremendous relief when exam is over					
47. I like my school environment					
48. I am more often late for the School.					
49. I feel hurt in peer group when my presence is not recognised.					
50. I have good ability to write correctly in Exam.					
51. Often concerned over myself groming older.					
52. I feel insecure					
53. Bothersome thoughts run through my mind					

	Very highly applicable	Highly applicable	Moderately applicable	Some what applicable	Not at all applicable
54. I am worried about having to be thoroughly competent at all things.					
55. I can't sit or stand still.					
56. Often concerned over my physical appearance					
57. I get diarrhea quite often					
58. I am self-Confident					
59. I keep counting the days for holidays					
60. I am particular about securing good marks in class tests					
61. I obtain good marks in the main tests but not in the class tests.					
62. I deliberately disobey rules & regulations at school					
63. I feel hurt when a peer group stop taking my suggestion.					
64. I enjoy seminars & debates.					
65. Unable to understand others point of view					

Thanks!

Name

Sex

Age

Class

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