

EFFECT OF ANXIETY ON ACHIEVEMENT TEST SCORES
OF CHILDREN IN THE SIXTH GRADE

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TABLE OF CONTENTS

| | Page |
|---|------|
| LIST OF TABLES | iv |
| Chapter | |
| I. INTRODUCTION. | 1 |
| Statement of the Problem | |
| Purpose of the Study | |
| Limitations of the Problem | |
| Definition of Terms | |
| Hypotheses | |
| Procedure | |
| Chapter Summary | |
| II. RELATED LITERATURE | 15 |
| III. PROCEDURE AND ANALYSIS OF DATA | 32 |
| IV. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS. | 40 |
| APPENDIX | 46 |
| BIBLIOGRAPHY | 51 |

LIST OF TABLES

| Table | Page |
|--|------|
| I. Correlations Between Achievement Scores, Anxiety Scores, and Degree of Significance | 33 |

CHAPTER I

INTRODUCTION

The influence of anxiety factors on an individual's learning processes has been an area which has received increasing attention, and many different approaches have been utilized in studying important variables which might affect the occurrence and the consequences of anxiety. It has become increasingly apparent that anxiety is an important factor in both emotional and physical disorders. The stress of getting ahead or just plain survival in an ever-changing, increasingly larger world has brought anxiety into central focus. Psychiatric theory pictures the mental apparatus of an individual as continuously maintaining and re-establishing its stability after disturbances by external and internal stimuli. Whenever a stabilizing process fails, a type of emergency state arises. Anxiety may represent repetitions of early traumatic states or may be related entirely to the social environment. While much attention has been given to anxiety in terms of correlational and experimental researches, the concept is not yet

fully understood and cannot be viewed as if it were a neatly wrapped theoretical package. This study will deal with the importance of the problem as it influences the individual's learning processes. Anxiety is often strikingly related to learning events and the educator being concerned with teaching, guiding, and modifying the behavior of children is concerned with the inner states of mind as they affect learning, participation, production, or cause conduct which deviates from the group norm.

Statement of the Problem

Anxiety appears to be a general problem to man in our culture. Sadler (10, pp. 588-589) affirms that it is not abnormal for a thoughtful human being to manifest a reasonable degree of anxiety respecting matters which threaten his safety or jeopardize his life plans. The ability to look ahead is one of the characteristics which distinguishes man from animals. It is inevitable, therefore, that a mild degree of anxiety is present in forethought, one of the earmarks of advancing civilization. The uncertainties of life on our planet would appear to more or less yield a certain degree of anxiety as being inevitable. Anxiety it seems is ever attached to the

living state. Life is the one great source of worry, and death alone affords protection and permanent relief from this tendency. It is not surprising then, that anxiety is not just a general problem of adults, it is also an essential problem of great significance for the children in our society.

The result of research indicates inconsistencies as well as agreements in the implications that anxiety has for education. Therefore, there are difficulties in evaluating anxiety and its effect upon learning. In using the child's self report, distorting tendencies have been found to be significant and a lie-scale has been developed to measure intraindividual variations (13, p. 96). These variations refer to "test-taking" attitudes and tendencies the individual has to make himself look better, or worse, than he really is. There is also the tendency to answer questions to fit a pattern regardless of the content of the question. Data have reported anxiety differences between high and low anxiety boys, but not between high and low anxiety girls (13, p. 250; 4; 5; 7; 8; 16). Some studies have consistently reported negative correlations between anxiety and achievement in the school situation

(8; 9; 14; 15; 13, pp. 79-84), while other studies have provided no support to the basically interfering effects of anxiety upon school achievement (8; 12; 13, pp. 11, 265). The majority of studies relating the measurement of general anxiety to intelligence performance have yielded non-significant correlations. Few studies have dealt with achievement performance. Highly anxious children have been found to be high achievers who continued throughout their life doing well on tests, achieving successes rather than experiencing failures (13, pp. 11-12; 18). Some significances which are attributed to anxiety in the development of the child may actually be less in the nature of anxiety. Sarason, Davidson, Lighthall, Waite, and Ruebush in their observations have suggested that although there apparently is a close relationship between theoretical conceptions of anxiety and the clinical handling of anxiety, neither theory nor practice is securely based on research findings. This situation is in part due to the fact that those who are most interested in anxiety have been clinicians who, understandably, are primarily concerned with problems of amelioration (17). It has also been suggested that the lack of adequate anxiety measures have made it difficult to compare various studies (15).

By following a pure scientific procedure and attempting to operationalize the theoretical conception of anxiety, much of the flavor, the diverse and interrelated significances of the study may be lost. Working on problems may result in better methods later. However, it is important to look closely at that which is being measured; it may not be pertinent to that which is to be proved. Specific manifestations of anxiety should be focused on and studied in order to arrive at greater homogeneous, rather than heterogeneous content (11).

The present study was conducted to note relationships of anxiety, as measured by an anxiety scale and the way a subject performs on an achievement test. The anxiety scale would yield an anxiety level, and scores taken from the achievement test from the beginning of the school year and at the end of the school year would explore the consequences of the student's learning experiences and indicate how much gain there was in various mental processes as measured by the achievement tests.

Purpose of the Study

The purpose of the present study will be to test the relation between Test Anxiety Scores and Stanford-Achievement

Test scores and to determine whether there will be differences of significant values within the sub-tests on the achievement tests. These differences will reflect certain characteristics inherent in the test which will involve more inner stress and will provoke anxiety. The study will attempt to arrive at further attempts to evaluate theoretical conceptions of anxiety by the use of similar instruments and similar samples of the previous investigations that have been reported in the literature.

Limitations of the Problem

The present study will be limited to the sixth grades of the Sam Houston Elementary School in Denton, Texas, and to scores on the Stanford Achievement Test and the Sarason Test Anxiety for Children. No sex or age interactions will be indicated.

Definition of Terms

Sarason, Davidson, Lighthall, Waite, and Ruebush developed two scales primarily for the measurement of anxiety in elementary school children (13, pp. 84-96; 15). These are the Children's General Anxiety Scale and the Test Anxiety Scale for Children. The Test Anxiety Scale served as a

measure of specific anxiety and was expected to represent an overtly manifested anxiety brought on by worry over grades and school activity. It was felt that the anxiety experienced in these types of situations was related to the subject's home, family, and social experiences (1; 2; 3; 6; 7; 13, p. 43). The General Scale would report on anxious reactions that had no close connections between test anxiety processes but involved anxiety in other types of situations. The primary focus in this study was on test anxiety, and therefore the Test Anxiety Scale for Children (see Appendix) was the one selected for determining test anxiety. The scale is a questionnaire of thirty questions presented to the children and read to them by the teacher. The questions are concerned with how children think and feel in a test or test-like situation. They are answered by circling either the "yes" or "no" placed in front of each question. The authors of the test administered the scale to 2211 pupils from grades two through five in Milford and Greenwich, Connecticut. A degree of systematic relationship between the Test Anxiety Scale for Children and teacher's ratings were found. Because the test was conceived as being primarily interfering in its effect upon intellectual performance, it was

correlated with achievement. The results were significant and negative. The Test Anxiety Scale for Children was found related to the intelligence quotient and mean achievement and was therefore felt to be a dependable instrument to measure anxiety in elementary school children. The correlations were significant at the 1 per cent level of confidence for most of the correlations. A few were significant at the .05 level. The scale's reliability ranged from .64 to .79, with an average of .72 (13, p. 127).

The Stanford Achievement Test is a comprehensive achievement test designed to measure the important knowledges, skills, and understandings commonly accepted as desirable outcomes of the elementary curriculum. These tests are intended to provide to teachers, supervisors, administrators, and others concerned with the growth and development of elementary school children, dependable measures of these outcomes, comparable from subject to subject and grade to grade, for use in connection with improvement of instruction, pupil guidance, and evaluation of progress. The tests have been planned with a view toward simplicity of administration, scoring, and interpretation, so that they may be used effectively by persons

with little or no formal training in the use of standard tests. The present edition of the Stanford Achievement Test is organized in four levels or batteries for various grades, covering various subjects. The Intermediate Battery for grades five and six were used in the present study. This battery includes nine tests as follows: Paragraph Meaning, Word Meaning, Spelling, Language, Arithmetic Reasoning, Arithmetic Computation, Social Studies, Science, and Study Skills. The tests were scored on separate answer sheets by an IBM test scoring machine. There was no premium placed upon speed of work and the time limits in all sub-tests were generous and calculated to give nearly all the subjects enough time to answer or to attempt to answer all those questions which they were capable of answering. The achievement battery was fundamentally a power test and not a speed test.

Hypotheses

The basic assumption of the study is that there is a correlation between anxiety and academic achievement that can be scientifically measured. The resulting score can become a meaningful variable and useful in predicting school achievement. While some anxiety seems necessary

for learning, too much anxiety will be detrimental to learning. A high anxiety score will affect the emotional state of the subjects, and these children can be predicted to perform less adequately than low anxious children. The following hypotheses will be investigated:

1. High anxious children can be predicted to perform better than low anxious children in certain learning areas on the achievement test. The sub-tests measuring these are postulated: Spelling, Social Studies, Science, and Word Meaning.

2. High anxious children can be predicted to perform less efficiently in certain areas on the achievement test involving more complex skills than the simpler mnemonic skills listed above. These tests will involve novel tasks, spatial manipulations, perceptual grouping, and those tasks which allow for little latitude in response and require a higher level of conceptual thinking. These tests are postulated to be: Arithmetic Comprehension, Arithmetic Reasoning, Average Arithmetic, Paragraph Meaning, Average Reading, and Study Habits.

Summarizing, the major hypothesis is that anxiety is a measurable and meaningful variable which can be computed

by a test anxiety scale. A consistent pattern of relationship will be manifested for the sixth-grade classes wherein a tendency will be noted for the more complicated skills of reading, arithmetic, and composite performance, to suffer more interference from anxiety than more mnemonic, rote, and simpler skills such as spelling, social studies, science, and word meaning.

Procedure

The level of manifest anxiety was obtained for each student through the use of the Sarason Test Anxiety Scale for Children (see Appendix). The Stanford Achievement Test Intermediate Battery was used to measure each student's achievement (see Appendix). The anxiety scale was administered to each of the classes by the classroom teacher while the investigator remained outside the room. The teacher had printed instructions, and made it explicit that she would not see the answer sheets nor would any other person connected with the school. The anxiety scale was administered during the middle of the Spring semester while the achievement tests were given at the beginning of the school term in the Fall and again at the end of the school term in the Spring so that the scores could be

correlated with advances or losses of performances on the sub-tests of the achievement test. A child's score on the test, Anxiety Scale for Children, was the number of times he encircled "yes" on his answer sheet (11, p. 87).

An indication of the spread of scores was made, measures of deviation and Pearson-Product-Moment coefficient of correlation were computed, and their level of significance obtained through use of Fisher's t.

Chapter Summary

Chapter I has treated the statement of the problem and the purpose of the study. The limitations of the problem were given and terms defined. The hypotheses were formulated and the procedure of the study was discussed. Chapter II presents a historical perspective as well as a review of literature in order to ascertain the status of the hypotheses in the light of previous work. Chapter III contains the study carried out at the Sam Houston Elementary School, Denton, Texas. The results are discussed and the hypotheses evaluated. In Chapter IV, the study is summarized, opinions and conclusions are discussed, and recommendations are suggested for further study.

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CHAPTER II

RELATED LITERATURE

A survey of the literature indicates that anxiety and its ramifications have been of concern to many serious writers prior to the present century.

Spinoza (14, p. 22) thought that anxiety could be eliminated from man's mind through the power of logical reasoning which could remove fear as well as general anxiety. Once reason gave man a degree of certainty, anxiety would be dispelled.

Pascal (14, p. 25) believed that reason could not overcome fear and that reason was insufficient in the face of anxiety. Therefore, reason was no protection from anxiety. Kierkegaard and the Existentialists (14, pp. 26-45) believed that freedom from anxiety was dependent upon how responsibly the individual was able to relate with the self. Anxiety was being afraid of one's inner conflicts. However, once the individual confronted the anxiety creating situation he became mature in the self; he became autonomous, and thus anxiety was dispelled. Kierkegaard pointed out that becoming mature and autonomous involved

both negative and positive aspects. The negative process destroyed the status quo and created new and different patterns of living which would be anxiety arousing. On the positive side, anxiety was the force that enabled one to work through personality constriction and then actualize the personality. In this way, anxiety would "dog-the-steps" of the individual until the problem became resolved, thus opening the doors to freedom. A self-strength would evolve from this process of successfully confronting anxiety and in this way the individual would become educated to a mature self.

May (14, p. 46) interprets anxiety biologically as a startle pattern and as an immediate reflex to sudden and intense stimulation which demands some out of the ordinary treatment by the organism. May indicated that Goldstein saw anxiety as a catastrophic reaction which was a condition with which the individual could not cope, and was experienced as a threat to the very existence of the person. May's hypothesis is now widely accepted in that reduction in anxiety serves as a reward and is positively correlated with learning. X

Mowrer (14, pp. 87-146) saw anxiety as having a constructive and positive role, serving as a reward in reducing

anxiety and therefore being "adjustive" to the individual. He agreed with Freud in that the subject formed symptoms as solutions to his anxiety. The real fear was repressed and neurotic anxiety was developed in order to subdue the real fear. The individual fears punishment, social rejection, withdrawal of approval, and love; he also fears disapproval from persons. The fears and guilts associated with these feelings become repressed, and in this repressed state, neurotic anxiety is developed. Rank believed that the main problem in the development of human emotions was the need for individualism. From his need for individualism, the person developed in a series of separations from significant figures in his environment. This separation resulted in self-autonomy.

Anxiety was seen by Rank as the apprehension connected with these separations. In his concept of "birth trauma," he suggested that there was anxiety in facing life.

Adler felt anxiety developed in the person's drive to overcome basic inferiority feelings. When the self assertive instinct was frustrated, anxiety occurred. The striving person had to demote others, thus elevating his own personal sense of power. Anxiety was seen also as having secondary

gains, serving the purpose of evading decisions and responsibilities. Horney pointed out that Adler's drive and striving for power only served to make the subject's own position more isolated because of the increase in intra-social hostility.

Jung (14, pp. 87-146) stated that anxiety is a threat of unknown and irrational ideas, an upsurging of repressed material that was unstructured and "periled the soul."

Horney (14, pp. 87-146) took into consideration the normal anxiety that comes from a realistic view of one's own inadequacies as well as a neurotic anxiety which grew from the inner conflicts the individual had between hostility and dependence feelings. These were defined as conflicting personality trends. To her the source of danger became the anticipated reaction of others' hostility. Anxiety was a challenge of the individual, however; a need to take a firm stand against one's conflicts and thus resolve them.

Sullivan (14, pp. 87-146) viewed anxiety as apprehension to rejection and disapproval in one's relations with others. Anxiety was that which restrained the individual's activities and prohibited those of which others would not approve. This led to repressions and conflicts in the subject's attempt to preserve his security.

Fromm (14, p. 174) viewed anxiety as the competition one feels with his fellowman. The individual is thrown into conflict about his own inner valuation. Fromm viewed the individual as one who must sell himself, and his self esteem depends upon his success in this endeavor. When the concept of the self is positive, the individual's drives for success and his aim to achieve dispel his anxiety. If he cannot validate the self, then anxiety occurs.

Freud (5, pp. 42-46) wrote that anxiety was created by external and internal stimuli and a primary anxiety was experienced at birth. Anxiety was a development of an unmastered tension state. It became a motive for defense. The infant, unable to attain satisfaction by his own efforts, gets into situations which arouse danger. This floods the organism with excitement and the organism becomes helpless. Anxiety is connected with the infant's physiological inability to satisfy his drives himself. The idea that one's own instinctual demands might be dangerous is the ultimate basis of psychoneurosis according to Freud. His three criteria of the anxiety reaction were that there was unpleasantness, there were physiological concomitants, and there was consciousness awareness.

Normal anxiety remained on a conscious level and could be confronted and relieved when the environment was altered. Fenichel (5, p. 46) felt anxiety develops from the fear that external means of satisfactions might fail to arrive. It is the "fear over loss of love" that causes anxiety.

According to Hull (8, p. 130), anxiety serves as motivation and drive in learning situations. Hull classified fear and anxiety as secondary drives and their reduction was said to be reinforcing. Spence (25) extended Hull's theory and suggested that anxiety was motivation and the effects of the motivational level on performance depended upon the relative strength of the correct and incorrect, or the competing response.

Hilgard (8, p. 308) expressed anxiety as a fear and a form of insecurity that was manifested over undue concern of one's own conduct; the young child being susceptible to influences that leave a permanent mark upon his personality.

Sadler (19, p. 587) defined anxiety as a state of neurotic expectance dominated by fear. He stated that certain physical disorders accompanied anxiety states frequently and these occurred when the individual is frustrated

in his self assertion. He also felt anxiety is produced when there is a frustration of purpose, a distortion of view point, or a defeat in goal attainment.

The test method of study of anxiety was first developed by Castaneda, McCandless, and Polermo (1, 2), who were among the first to devise and experiment with an anxiety scale for children which would provide those in research with a quantitative statement and an operational definition of anxiety. This was called the Test Anxiety Scale for Children, or the TASC. The retest reliability averaged .90 for the anxiety scale and became a valuable instrument at the fourth, fifth, and sixth-grade levels. Later the scale was extended down to the third-grade level by Holloway (9).

Sarason, Davidson, Lighthall, Waite, and Ruebush (21, pp. 306-315) conceived of anxiety as a conscious experience and they attempted to determine the occurrence of anxiety by direct questioning. They developed two scales of direct questioning which would determine anxiety in test and test-like situations. The second questionnaire would show anxiety-like reactions in a variety of life-like situations which became the General Anxiety Scale. They

believed that if an anxious child could be found before serious incapacitating problems developed, beneficial approaches could be made. A high score on these group tests would be found to reflect an anxious child and the effects of this anxiety on his performances in school as well as his behavior in school could be evaluated with relevance to anxiety (21, pp. 89-90). There were further studies which indicated that test-anxious children are also anxious in many other general types of situations. The anxiety reaction is said to flood the immature child's nervous system and produce a fear and insecure reaction that has serious implications on intellectual development. This condition was felt to be due to a sensitivity toward certain learning situations, thus the achievement of these children and their productions may be altered.

Relationships were demonstrated between the Children's Manifest Anxiety Scale and the Test Anxiety Scale for Children and school achievement as well as performances on simple and complex learning tasks. It was found that children with high scores on the Children's Manifest Anxiety Scale and Test Anxiety Scale were superior to those with low scores on these two scales on simple tasks, but inferior on complex tasks. On easy and simple items, the

highly anxious children perform better because their anxiety serves as motivation (1, 7, 10, 11, 13, 16, 17, 18, 22, 26).

Anxiety was related to school achievement more strongly for sixth grades than for fifth and fourth grades. Anxiety scores were found to increase with grade (16).

Other studies reported still other relationships. Taylor and Spence (25) were concerned with serial learning and the results of their study showed that the high anxiety subjects made a significantly greater number of errors and required more trials to reach a learning criterion than the low anxiety children.

When there is a presence of more complicated tasks and of competing-incorrect responses, detrimental results are produced in the highly anxious child (1, 17, 25). If the test becomes increasingly complex or is prolonged in nature, the efficiency of the high anxious child is also lessened (1, 11). If there is importance placed on the test and an element of uncertainty regarding the task, the test becomes potentially threatening and anxiety reduces functioning (13, 24). Also, if the correct response is stronger, the performance is aided by the drive level

(high anxiety), but if the incorrect response tendency is stronger, the heightened drive would be deleterious to performance. Effects of anxiety can be more profitably studied if the characteristics of the tasks are specified with regard to the number and the relative strength of the competing response tendencies that may be aroused as well as to whether or not the correct response is dominant (17).

Certain items in learning situations were felt to be abnormally difficult and potentially threatening to the subject. If the subject's ignorance in these tasks proved bothersome, he was called anxious. This was seen as an "effect of uncertainty" and was regarded as equivalent to situational anxiety. If the subject was sensitive to the implied threat, he was called anxious.

Anxiety scores were found to be significantly related to intelligence at certain grade levels; fourth, fifth, and sixth-grade boys and girls and a significant relationship was seen with school achievement. Low anxiety subjects made a higher mental ability index, using the Otis Quick Scoring and the Iowa Every Pupil Test, than did high anxious subjects (7), and generally the high anxious subjects have a tendency to do better on tests taken the

second time than on tests taken the first time. High anxious subjects tended to improve markedly in the course of learning (27). Also, the more critical the use of the test, and the more importance the score is given, the more anxiety producing the situation (13).

High anxious children were found to show less spontaneity, were more constricted, and less able to become involved in a creative task (24, 6).

Sex differences were obtained only at close-age spacing. Perhaps the arrival of a sibling close on the heels of the boy may threaten him more than the girl, since he cannot identify completely with the mother. Threatened more, he may adopt by clinging to the mother while the girl may reach out more (3, 4, 6, 12).

A significant correlation between tests of anxiety and teacher's ratings were found (20, 22); this was felt to speak for the face validity of the Anxiety Scale (22, pp. 26-30).

High anxious children tended to be lower on sociometric studies, more anxious children tended to be less popular (15).

The anxiety and the lie score from the anxiety questionnaires were found to be related to school achievement

when intelligence was parceled out (16). A small contributory element was felt to exist in predicting academic achievement by anxiety scores, over and above the predictive efficiency of the intelligence scores alone.

High anxious college students received lower aptitude scores than low anxious students and low anxious college students received higher grades (23).

Many bright children, however, have high anxiety and this cannot be explained on the basis of intellectual inadequacy. For these students experience "successes" rather than failures and yet appear anxious.

Anxiety is operationally defined in terms of a score on the Sarason General Anxiety Scale.

A review of the literature reveals the following generalization:

1. Highly anxious children are self-defensive children with a need to prove themselves. They are afraid that if they do not know an item, it will indicate weakness and immaturity to their peers and others. This is threatening to the ego.

2. The anxious reaction has been engendered in the child and is biologically interpreted and subjectively experienced by the child, and gives rise to other conflicts.

These properties inhibit and impede various types of intellectual performances and achievements.

3. The anxious child is less likely to live up to self-expectations, and anxiety possesses both conscious and unconscious significances related to what he has felt and experienced in situations of the past that were threats to his security.

4. If ego involvement and aspiration level are the same, anxiety does not enter in significantly and performances of the high anxious children are not inferior to performances of the low anxious children.

5. The more critical the use of the test to determine the lives of those who take them, the higher the degree of test anxiety.

6. It is more socially acceptable for girls to admit to an anxious response.

7. Anxiety tends to increase as grades advance, and anxiety will be stronger for sixth-graders than for fourth-grade students because of the complexity of the learning tasks and the more complicated and competitive social relationships.

8. Certain types of mental ability appear to show greater differences when related to anxiety level.

9. Those tasks that allow less latitude in response will become the most anxiety provoking to the subject.

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CHAPTER III

PROCEDURE AND ANALYSIS OF DATA

Seventy-one students in the three sixth-grade classes of the Sam Houston Elementary School, Denton, Texas, were administered both the Test Anxiety Scale for Children and the Stanford Achievement Test. The achievement battery was administered in October of 1961 and again in May of 1962 at which time the Test Anxiety Scale for Children was also administered.

It was assumed that there would be a significant relationship between the scores made on the TASC and gains or losses in the various skills and knowledge evidenced by scores on the achievement test.

The product-moment coefficients of correlation between the TASC and the achievement test are presented in Table I.

The coefficients were calculated and the level of significance obtained through use of Fisher's t. A coefficient of .302 was observed to be significant at the .01 level of confidence while a coefficient of .233 was significant at the .05 level.

TABLE I
CORRELATIONS BETWEEN ACHIEVEMENT SCORES, ANXIETY
SCORES, AND DEGREE OF SIGNIFICANCE

| Achievement Tests | Correlations with Anxiety | <u>t</u> |
|-----------------------------|------------------------------|----------|
| Science | .000 | .05 |
| Paragraph Meaning | -.184 | .05 |
| Word Meaning | -.215 | .05 |
| Average Reading | -.196 | .05 |
| Spelling | .323 | .01 |
| Language | -.126 | .05 |
| Arithmetic Reasoning | .208 | .05 |
| Arithmetic Comprehension | -.057 | .05 |
| Average Arithmetic | .117 | .05 |
| Social Studies | -.073 | .05 |
| Study Skills | -.002 | .05 |
| Battery Median | -.033 | .05 |

As indicated in Table I, the only coefficient of correlation between the subject tests that was significant at the .01 level of confidence was that of .323 between the Spelling sub-test and anxiety as measured by the TASC.

The next highest relationship occurred between TASC and Word Meaning with a coefficient of .215 and TASC and Arithmetic Reasoning with a coefficient of .208. However, neither of these was significant at the .05 level of confidence.

The overwhelming tendency for the correlations of anxiety measured by the Test Anxiety Scale for Children with achievement gains or losses measured by the Stanford Achievement Test was not found to be significant. The highly stable trend was toward non-significant relationships.

Therefore, the expected negative and positive relationships between the TASC scores and the achievement indicators were not confirmed. The hypothesis was tested and the statement that anxiety scores would reveal an interfering effect on some test performances and not on others was not represented, with the exception of Spelling which showed a correlation of .323, indicating that this area of achievement suffered less interference from anxiety. All other scores related differently and were not found predictable.

The gains or losses in both high and low anxious students showed no striking features. Low anxious children

in this study had no gain significantly over the high anxious children.

The study was obviously not in line with the basic hypotheses as follows:

1. High anxious children can be predicted to perform better than low anxious children in certain learning areas on the achievement test. These tests were postulated to be Spelling, Social Studies, Science, and Word Meaning.

2. High anxious children can be predicted to perform less efficiently in certain areas on the achievement test involving more complex skills than the simpler mnemonic skills listed above. These tests will involve "novel" tasks, spatial manipulations, perceptual grouping, and those tasks which allow for little latitude in response and require a higher level of conceptual thinking. These tests were postulated to be Arithmetic Comprehension, Arithmetic Reasoning, Average Arithmetic, Paragraph Meaning, Average Reading, and Study Habits.

Results indicate that the effect of anxiety, as measured by the Test Anxiety Scale for Children, had little effect on the subject's learning functions as measured by the achievement test.

It would appear that test situations involving arithmetic are no more stressful or anxiety-arousing than more simplified mnemonic skills. The classroom activity involved in learning arithmetic does not seem to be more stressful or anxiety-arousing than the activity involved in learning to spell, or to read or to write. This makes one inquire whether there are different degrees of anxiety-arousing content inherent in specific learning activities. This study would suggest there is little relation between anxiety and differences in test content.

If the type of tests showed no differential effect on anxiety arousal, it would be interesting to know if intelligence could be a causative factor. Performance on certain intellectual tasks was very poor and disparity was wide among the various sub-tests. Many scores indicated real differences in the over-all achievement functioning. The wide differences in achievement functioning may be related to the inequality of the intelligence capacity of the children used in the study. This is not to imply that there would be more or less anxiety in the high or lower intelligent children, but this inequality of intelligence may have affected the gains in achievement

the children showed. If subjects had been equated in intelligence, perhaps more of a trend would have appeared in gains and losses in achievement. The fact that studies had shown the level of intelligence was not a convincing explanation for negative relationships between test anxiety scores on group achievement and intelligence tests; it might, nevertheless, be a determining factor in whether the subject gained, lost skills, or showed no change in his acquisition of these skills over a one-year school period.

Another possible explanation of the lack of significant findings might be that of motivation. Great differences in scores were evidenced by the achievement test within the battery sub-tests, and these might have existed because of poor motivation on the part of some of the students. The achievement test was a familiar test to this group, since similar tests had been given in the second, fourth, and sixth-grade at the beginning and end of these school years, and to some of the subjects, a lack of identification with the testing system may well be a variable entering into this analysis. A lack of interest in the achievement test or motivation to do well may fail

in its implication to test the real knowledge that the subject has at the end of the school year. Without ego-involvement, some may not care that they do well, thus affecting their performances and existing regardless of anxiety admitted on the TASC.

Those subjects of lower intellectual abilities may not have comprehended items fully and were therefore unable to answer accordingly; therefore, some of their responses on the achievement test may have been made in a random fashion.

The TASC score which indicates the subject is experiencing anxiety may not at all be interfering with his performance.

It would appear that the effect anxiety has on performance would depend more on the whole situation and social context. Whether the test would produce anxiety might be determined not by what and how he learned, but under what conditions he learned and how well he can relate with his teacher and peers. If the situation was threatening and if the individual was reacting on established patterns of the past, his anxiety might well interfere with his performance. The effect of anxiety on

performance depends more on the kind of social controls, pupil-teacher relations, and level of expectance than on particular subject content.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the relationship that existed between student performance on the Stanford Achievement Test and anxiety as measured by the Test Anxiety Scale for Children.

The student population of the three sixth grades in the Sam Houston Elementary School, Denton, Texas, was used in this study. Seventy-one students participated in the investigation. Each was administered the achievement test in October of 1961 and again in May of 1962, at which time the Test Anxiety Scale for Children was also administered.

The assumption was that there would be a significant relationship between the mean achievement test scores and performance on the anxiety scale.

Product-moment coefficients of correlation were computed and their degree of significance obtained through the use of Fisher's t. The level of significance was set at .05.

Of all the sub-tests in the Stanford Achievement Test, Intermediate Battery for grades five and six only one, Spelling, fell within the above test of significance to a degree in which it was felt related to the TASC score. This score was significant at the .01 level of confidence.

Conclusions

Two hypotheses were investigated. The first hypothesis postulated that there would be a significant over-all relation between the achievement test scores and the anxiety scores. It was predicted that there would be significant differences among the relationships of the various sub-test scores on the achievement test and the anxiety score. These differences were felt to reflect characteristics of the separate tests. The high anxious children were predicted to perform better than low anxious children in certain learning areas, such as Spelling, Social Studies, Science, and Word Meaning. The second hypothesis dealt with those tests that the high anxious children were expected to perform less efficiently than their low anxious classmates. These were tests of high mental processes and postulated to be Arithmetic Comprehension, Arithmetic Reasoning,

Average Arithmetic, Paragraph Meaning, Average Reading, and Study Habits.

The results revealed that the anxiety score was not a significant factor in evaluating the achievement level of the children used in this study. Test anxiety as measured by the Sarason Test Anxiety Scale for Children did not interfere with the intellectual performances of the subjects nor did it serve to affect an arousal of interest or motivation of achievement. There was no confirmation of the postulated expectations and no significant relation was found.

The information obtained during this study indicates that intelligence and not test anxiety is the causative agent in the subject's failure to show adequate achievement over a one school-year period. Anxiety neither lowered the performance on the achievement tests nor extended the development of achievement.

It is felt that the group lacked homogeneity in its intellectual level, thus indicating that the intelligence level is a plausible explanation of the lack of anxiety--achievement correlation as measured on an anxiety and achievement test situation. Of those children that showed gains in achievement during the year, four were over one

year advanced, and were at least one year beyond the expected norms. A total of forty-nine children made progress during the school year and nineteen children showed losses in their over-all achievement score. There were three children who showed no gains or losses during the year. The interaction of anxiety scores was not heavily weighed in favor of either losses or gains in achievement. Of those that gained, twenty-five were low-anxiety level and twenty-four were high-anxiety level. Of those that lost academic ground during the school year, nine were low anxiety and ten were high anxiety. Of the no-change group, two were low anxiety and one was high anxiety.

As mentioned, the scale effect and the interaction between anxiety and task were significant at below the .05 level of confidence with the exception of Spelling which was significant at the .01 level of confidence. The high-anxiety children did as well as the low-anxiety children on all the tasks and statistical procedures failed to demonstrate any significant differences in the problem-solving tasks. None of the sub-tests yielded an item content that could be detected as having more or less anxiety-arousing differences.

The general hypothesis that children who are anxious by this measure should have greater difficulties with tests than nonanxious subjects appeared to have no support. Performance of high anxious children were not "poorer" as measured by the standards of the achievement test employed in the study. The high anxious subject seemed to do as well as the nonanxious classmates on the achievement scale regardless of the anxiety level and regardless of which task--the simple, mnemonic, or more complex--was involved.

Recommendations

1. It would appear to be of value to have controlled for intelligence by perhaps matching subjects according to their scores on intelligence tests, achievement scores, and their anxiety scores. An interaction between anxiety, intelligence, and achievement might provide further evidence between anxiety and achievement. If a restricted range of intelligence were used, it might make it more likely that a significant correlation would emerge.

2. The present study and the results provoke the question as to whether one should infer that high anxious students are less bright even when there are significant negative correlations between anxiety and intelligence.

This seems to depend upon the interpretation placed on the anxiety scale. On the basis of this study, the achievement tasks did not arouse an anxiety response in the high anxiety students which could be said to have interfered with their performance.

3. The test of anxiety may be purely psychological, tension may be physiological and these events may be different.

4. Inferences are limited on the basis of a restricted sampling.

5. A sampling variation may account for the results.

6. The TASC scale may not be measuring anxiety defined as a source of drive. For in this respect, when one is anxious he is motivated to act. This was not suggested by the study.

7. Anxiety is deep-seated, the unconscious factors play an important part in the learning of a child, and learning is imbedded in the total organism. What this study has objectively measured in terms of anxiety as related with achievement has not explained why some high anxious as well as low anxious children strive for good achievement and reach success while others do not.

APPENDIX

Directions

The Test Anxiety Scale for Children consists of thirty questions which are read to the class with the following instructions:

I'm going to be asking you some questions-- questions different from the usual school questions, for these are about how you feel, and so have no right or wrong answers. First, I'll hand out the answer sheets and then I'll tell you more about the questions. Write your name at the top of the first page; both your first and your last names. Also, write a "B" if you're a boy or a "G" if you're a girl. As I said before, I am going to ask you some questions. No one will see your answers to these questions, except the person doing this study; not your teachers or your principal or your parents. These questions are different from other questions that you are asked in school. These questions are different because there are no right or wrong answers. You are to listen to each question and then put a circle around either "yes" or "no." These questions are about how you think and feel and, therefore, they have no right or wrong answers. People think and feel differently. The person sitting next to you might put a circle around "yes" and you put a circle around "no." For example, if I asked you this question: "Do you like to play ball?" some of you would put a circle around "yes" and some of you would put it around "no." Your answer depends on how you feel about school, and about a lot of other things. Remember, listen carefully to each question and answer it "yes" or "no" by deciding how you think and feel. If you don't understand a question, ask me about it. Now let's start by every putting their finger on Number 1. Here is the first question.

The teacher then administers the scale to each group of sixth-grade children and makes it explicit that she does not see the answer sheets. The questions are read to the class, and the children are never required to read them.

After question number 18, the word "test" is used and the teacher was instructed to make the following statement before continuing with the questions:

In the following questions the word "test" is used. What I mean by "test" is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the blackboard. Do you understand what I mean by "test"? It is any time the teacher asks you to do something to find out how much you know.

Test Anxiety Scale for Children

- Yes No 1. Do you worry when the teacher says that she is going to ask you questions to find how much you know?
- Yes No 2. Do you worry about being promoted; that is, passing from the sixth to the seventh grade at the end of the year?
- Yes No 3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
- Yes No 4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not you?

- Yes No 5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
- Yes No 6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
- Yes No 7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?
- Yes No 8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?
- Yes No 9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?
- Yes No 10. When the teacher is teaching you about reading, do you feel that other children in the class understand her better than you?
- Yes No 11. Do you think you worry more about school than other children?
- Yes No 12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?
- Yes No 13. If you are sick and miss school, do you worry that you will do more poorly in your school work than other children when you return to school?
- Yes No 14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?
- Yes No 15. When you are home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson?

- Yes No 16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
- Yes No 17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?
- Yes No 18. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?
- Yes No 19. Are you afraid of school tests?
- Yes No 20. Do you worry a lot before you take a test?
- Yes No 21. Do you worry a lot while you are taking a test?
- Yes No 22. After you have taken a test, do you worry about how well you did on the test?
- Yes No 23. Do you sometimes dream at night that you did poorly on a test you had in school that day?
- Yes No 24. When you are taking a test, does the hand you write with shake a little?
- Yes No 25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?
- Yes No 26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?
- Yes No 27. Do you wish a lot of times that you didn't worry so much about tests?
- Yes No 28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?

Yes No 29. While you are taking a test do you usually think you are doing poorly?

Yes No 30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?

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