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CLASSROOM BEHAVIOR AND STUDENT SCHOOL
ANXIETY LEVELS.**

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THE RELATIONSHIP BETWEEN TEACHER CLASSROOM BEHAVIOR
AND STUDENT SCHOOL ANXIETY LEVELS

by
Barry Joseph Zimmerman

A Dissertation Submitted to the Faculty of the
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THE UNIVERSITY OF ARIZONA

GRADUATE COLLEGE

I hereby recommend that this dissertation prepared under my
direction by Barry Joseph Zimmerman
entitled THE RELATIONSHIP BETWEEN TEACHER CLASSROOM BEHAVIOR
AND STUDENT SCHOOL ANXIETY LEVELS
be accepted as fulfilling the dissertation requirement of the
degree of Doctor of Philosophy

Robert E. Kramer
Dissertation Director

8-27-68
Date

After inspection of the final copy of the dissertation, the
following members of the Final Examination Committee concur in
its approval and recommend its acceptance:*

<u>David E. McCann</u>	<u>8-31-68</u>
<u>Leroy C. Conner</u>	<u>9-6-68</u>
<u>John K. Bergman</u>	<u>9-9-68</u>
<u>Richard D. Steen</u>	<u>9/11/68</u>
<u>Marvin B. Stokes</u>	<u>9/26/68</u>

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ABSTRACT

This study sought to determine the relationship between teacher classroom verbal behavior as interpreted from a reinforcement theoretical model and student school anxiety levels by investigating the following questions:

1. What is the relationship between teacher use of generalized verbal reinforcement and student levels of school anxiety?
2. What is the relationship between teacher use of specific verbal reinforcement and student levels of school anxiety?
3. What is the relationship between changes in teacher use of generalized verbal reinforcement and student levels of school anxiety?
4. What is the relationship between changes in teacher use of specific verbal reinforcement and student levels of school anxiety?

The data were gathered from 443 students and 17 teachers in grades three through six in Tucson School District #1 in Tucson, Arizona. The teachers were volunteers from three randomly selected elementary schools from the total population of elementary schools in the school district.

This study employed a pretest-posttest research design with Flanders' Interaction Analysis model used to analyze the independent variable of school anxiety and the School Anxiety Questionnaire used to measure the dependent variable of student school anxiety.

The statistical analysis for the study revealed:

1. The observers who participated in the study were able to use Flanders' model with reliability.
2. The School Anxiety Questionnaire was reasonably reliable and valid with respect to the tested sample.
3. The third grade part of the sample was not representative of the population upon which the achievement test was normed.
4. The results suggested with respect to questions one and two that there was a statistically significant inverse relationship between teacher uses of generalized and specific verbal reinforcement and student levels of school anxiety.
5. Since the data could not meet the assumption inherent in the research design of significant changes in teacher behavior from the pretesting to the posttesting, questions three and four could not be tested.

CHAPTER I

INTRODUCTION

This chapter includes the introduction to the problem, the statement of the problem, the theoretical hypotheses, the definition of terms, and the significance of the problem.

Introduction to the Problem

The influence of anxiety in contemporary life is becoming increasingly recognized, and manifestations of current concern with anxiety phenomena are reflected in the arts, science, and religion as well as in many other aspects of society (Spielberger, 1966b, p. 3). Over sixty years of research has indicated that anxiety levels can be manipulated according to conditioning principles (Wolpe, 1966, pp. 179-180). The literature is replete with studies indicating the pervasive debilitating effect of anxiety upon human functioning (e.g., Ruebush, 1963). Of particular interest to the educator are recent findings by Spielberger (1966a), Sarason (1966), and Schelkun and Dunn (1967) which have tended to establish that high anxiety has a deleterious effect on academic achievement. Since the anxiety response has been shown to be a conditionable behavior which has the propensity to inhibit academic test

performance, an analysis of the forces which foster school anxiety assumes importance.

The central role that the teacher plays in the classroom environment has long been assumed. In the past, researchers have lacked an objective means by which to describe teacher behavior quantitatively, and without being able to describe teacher behavior, no analysis of the effects of this behavior could be undertaken (Amidon and Hough, 1967, p. 2). Recently Flanders (1960a) developed a model to analyze teacher-student verbal behavior quantitatively with some degree of reliability. This model, termed Interaction Analysis, has made the study of the effects of the various patterns of teacher behavior possible. With respect to this model, there is evidence that certain patterns of teacher behavior which Hough (1967) characterized as reinforcing tended to facilitate student achievement and attitudinal development (Flanders, 1964) and teacher behavior characterized as punishing tended to inhibit student achievement (Soar, 1967). Since teacher behavior can be analyzed according to its reinforcing properties, a study of the effects of these reinforcing responses becomes important.

It is theorized that since teacher behavior exerts a reinforcing effect upon student behavior and since the anxiety response can be manipulated according to conditioning principles, an investigation of the relationship

between teacher behavior, as analyzed according to its reinforcing properties, and student anxiety levels is in order.

Statement of the Problem

It is the purpose of this study to explore the following question: At the elementary school level, what is the relationship between teacher classroom behavior and student school anxiety levels?

Theoretical Hypotheses

From the problem of the relationship between teacher classroom behavior and student school anxiety levels as analyzed on the basis of the previously discussed reinforcement paradigm, four hypotheses have been derived to direct this study.

1. There will be an inverse relationship between levels of teacher use of generalized verbal reinforcement and levels of student school anxiety.
2. There will be an inverse relationship between levels of teacher use of specific verbal reinforcement and levels of student school anxiety.
3. There will be an inverse relationship between changes in teacher use of generalized verbal reinforcement and changes in student school anxiety levels.

4. There will be an inverse relationship between changes in teacher use of specific verbal reinforcement and changes in student school anxiety levels.

Definition of Terms

With respect to the terminology employed in the description of the reinforcement paradigm upon which this study is predicated and the theoretical hypotheses which are directing this study, the following definitions will be used:

1. Anxiety is an unpleasant emotional state in which a present and continuing strong desire or drive seems likely to miss its goal (English and English, 1958, p. 35).
2. School anxiety is that anxiety connected with failure, report cards, achievement, recitation, and testing in school situations (Dunn, 1968, p. 206).
3. Generalized verbal reinforcement refers to a ratio which is obtained by dividing teacher statements denoting acceptance of student feeling, praise and encouragement, and acceptance of student ideas by teacher statements denoting direction of students, criticism of students, and justification of authority.

4. Specific verbal reinforcement refers to a ratio of teacher praise and encouragement statements divided by teacher statements denoting criticism of students or justification of authority.
5. A positive reinforcer is a stimulus which when added to a situation strengthens the probability of a response (Skinner, 1953, p. 73).
6. A negative reinforcer is a stimulus which when removed from a situation strengthens the probability of a response (Skinner, 1953, p. 73).
7. Punishment occurs when a negative reinforcer is presented or when a positive reinforcer is removed (Skinner, 1953, p. 73).

Significance of the Problem

The loss to society of the full contribution of potentially able students through underachievement and/or academic failure constitutes an important mental health problem in education (Spielberger, 1966a, pp. 380-381). Because of the inverse relationship between academic achievement and anxiety, the discovery of a functional relationship between teacher classroom behavior and student school anxiety would permit teachers to directly modify their behavior in order to minimize anxiety arousal and thereby maintain optimum learning efficiency. By increasing the learning, the teacher would insure greater student

academic success which in turn would enhance the student's ability to participate in and contribute to society.

Summary

This study was concerned with the investigation of student school anxiety as a function of teacher classroom behavior as interpreted from a reinforcement model. It was suggested that a teacher's reinforcing ability would be inversely related to student school anxiety levels.

The definitions of the most significant terms to be used in this study were listed.

The educational significance of alleviating the debilitating effect of student school anxiety was discussed.

CHAPTER II

REVIEW OF THE LITERATURE ON ANXIETY

This review of the literature on anxiety is limited to studies which support the theoretical framework upon which this study is predicated and which employ human subjects.

This resume includes a description of (1) the major theories directing children's anxiety research, (2) the causes of anxiety, (3) the behavioral correlates of anxiety, and (4) the instruments designed to measure anxiety.

Theories of Anxiety

The factor analytic studies of Cattell and Scheier (1958, 1961) have identified two distinct anxiety factors which they have labeled as state anxiety and trait anxiety on the basis of the procedures by which these factors were isolated and the variables which loaded on them. The state anxiety factor was interpreted as a pattern of variables which fluctuated according to the environmental conditions. That is to say, state anxiety was more focused on a specific class of situations, and thus appeared less chronic and less internally determined. Trait anxiety appeared to be a more chronic, internally derived condition of affect, and therefore it was not as closely related to specific

environmental conditions. Accordingly, individuals with trait anxiety appeared to be anxious in many different circumstances (Phillips, 1966).

These two anxiety factors have served as reference points in the discussion of the major theories of anxiety. Three major theories have directed children's anxiety research to date: the Hullian learning theory approach, the psychoanalytic approach, and the cognitive approach.

According to the Hullian learning theory approach, anxiety was viewed as an emotionally based drive. Hull (1943) originally posited that excitatory potential (E) which determines the strength of a particular response (R) was a multiplicative function of the drive level (D) and habit strength (H). Thus, $R = f(E) = f(D \times H)$. It was further hypothesized that the drive level was a function of the magnitude of the hypothetical mechanism (r_e) which was a persistent emotional response elicited by aversive stimuli. Individuals were theorized to differ in the magnitude of their r_e and hence in their drive level.

It was therefore suggested (Spence and Spence, 1966) that highly anxious individuals would exhibit higher levels of performance when the dominant response in the person's behavioral repertoire was correct, which was the case in simple learning experiments. However, on complex learning tasks where many responses were paired with a single stimulus, the probability of the dominant response

being correct was more remote. In this case, the high anxiety level would in turn create a high drive level which would multiplicatively increase the probability of eliciting the already dominant incorrect response to an even higher level with respect to other responses conditioned to that particular stimulus. Thus, anxiety would facilitate performance in simple learning situations and inhibit learning on complex tasks.

This was the view of the Iowa Group (Spence and Spence, 1966; Castaneda, McCandless, and Palermo, 1956a). Because the central intervening variable drive (D) mediated all responses and fluctuated as a direct function of aversive stimulation, this theoretical model was oriented toward the trait conception of anxiety. Accordingly, Taylor (1953) developed the Manifest Anxiety Scale (MAS) from the Minnesota-Multiphasic Inventory to measure trait anxiety. Castaneda et al. (1956a) created the Children's Manifest Anxiety Scale by modifying the MAS to make it suitable for children.

The psychoanalytic approach viewed anxiety as a consequence of intra-psychic conflict. Freud (1936) suggested anxiety first occurs in the fetus during the birth process. This first anxiety reaction was an automatic response to the most helpless state the individual would ever experience. During the days following birth, the helpless condition of the neonate was perpetuated by

his continued inability to deal with painful stimuli. As the child matured, an important transition occurred: the anxiety reaction no longer occurred as a response to unpleasant environmental stimuli, but it anticipated noxious stimulation. This transition seemed to come through some sort of learning or conditioning process (Sarason et al., 1960).

After anxiety assumed its signalling function, the ego learned to react to this danger signal by creating defenses. In essence, this entailed the repression of anxiety into the subconscious (Ruebush, 1963). The defenses might be flexible or rigid depending upon constitutional and environmental factors. Rigid defenses would be maladaptive and therefore would inhibit performance.

Thus, the psychoanalytic approach viewed anxiety as being linked with noxious environmental stimuli, and this association was repressed into the subconscious where it operated as a generalized defense mechanism which tended to affect many other responses.

The Yale Group (Sarason et al., 1960) were oriented to this theoretical framework. Accordingly, they developed two scales: the General Anxiety Scale for Children (GASC) to measure trait anxiety and the Test Anxiety Scale for Children (TASC) to measure state anxiety precipitated by the specific situation of testing (Sarason et al., 1960).

The cognitive approach to the study of anxiety was based on the intervening variable of threat. Threat was produced when cues were interpreted by the individual as warnings of anticipated harm. These cues were evaluated by the cognitive process of conscious appraisal. Appraisal of the immediate situation was interpreted on the basis of past experience. The stimuli eliciting threat reactions were considered distractors, e.g., loud noises, threatening instructions, electric shock, traumatic incidents (Lazarus and Opton, 1966). Because these distractors had a disrupting influence on cognitive functioning, they inhibited performance.

The Michigan group (Bergan, 1968; Dunn, 1968) adopted this point of view. Due to the emphasis of the cognitive approach on the stimuli which elicited the threat reaction, the Michigan group focused their attention on state anxiety. The School Anxiety Questionnaire (SAQ) measured five specific types of anxiety connected with school: recitation anxiety, report card anxiety, test anxiety, failure anxiety, and achievement anxiety.

In summary, it may be noted that although these theories differ substantially in their explanation of the internal processes mediating the anxiety response, all theories appear to agree that anxiety was initially associated with a stimulus through some form of conditioning (Kessen and Mandler, 1961).

Causes of Anxiety

The etiology of anxiety has been subject to extensive psychological experimentation. The conception of anxiety as a conditioned emotional response had its inception in the laboratory.

Watson and Rayner (1920) established a conditioned emotional response to rat in an eleven-month-old child by pairing the presentation of the animal with a sudden loud noise. Transfer or generalization of the fear to other furry objects and the stability of the fear over time were noted. Mary Cover Jones (1924) deconditioned a child whose initial fear of a white rat had extended to a rabbit, a fur coat, a feather, cotton, and so forth. Using the classical conditioning paradigm, she paired the negative stimulus, a rabbit, which was presented at a distance with the positive stimulus, food. The rabbit was gradually moved closer towards the child while he was eating under the assumption that the fear and eating responses were incompatible. Due to the distance connected with the negative stimulus, the positive stimulus predominated and the anxiety response was not elicited. The animal was brought closer until the child could touch the animal while eating without eliciting the anxiety response. When the food stimulus was eventually removed, the child was no longer fearful of the animal.

These studies provided evidence that the anxiety response could be produced and eliminated through the application of conditioning principles.

Lazarus conducted a study which revealed the central role that defense mechanisms or response sets played in the determination of anxiety responses. Lazarus et al. (1965) conducted a study in which a film portraying various work shop accidents was shown to three groups of subjects. Each group received different pre-film orientation passages. The denial passage emphasized that the people in the film were actors, and the accidents did not really occur. The intellectualization orientation encouraged the subjects to analyze the psychodynamics of the work shop situation, e.g., the manner in which the foreman tried to induce the workers to use safety devices. The third orientation, the control, was a brief description of the film's contents. The results indicated that both the denial and intellectualization orientations were successful over the control condition in reducing skin conductance and heart-rate levels. Thus defense mechanisms appeared to play a predominant role in the determination of the anxiety response.

Mandler and Watson (1966) suggested that anxiety arose from the blocking or interruption of organized sequences of behavior providing there were no alternative response patterns in the individual's repertoire. He

conducted the following experiment to demonstrate his hypothesis. The subjects learned verbal sequences as each word was presented serially at three second intervals. After the subjects had mastered the sequence of hearing a word, saying the next and so forth, they were interrupted, i.e., they heard a word other than the one they anticipated. Thus the sequence of saying a word and hearing it was interrupted. Mandler found that when the sequences had been overlearned or if the sequence was easily learned, the interruption produced greater anxiety as measured by the galvanic skin response (GSR) than when the subject merely learned the word sequences to the mastery level or if the sequences were difficult to master. The results were interpreted as evidence that verbal response sequences followed Mandler's hypothesis in that individuals with easily-learned or over-learned response patterns have decreased access to alternative response patterns in their repertoire.

Stotland and Blumenthal (1964) conducted a study to determine whether individual control of noxious stimuli had an effect upon the level of anxiety elicited. Two groups of subjects were told that they were about to take an intelligence test composed of several subtests. One group was informed that they could take the subtests in any order they preferred; whereas, the second group was informed that they must take the subtests in a prescribed order. The

group which was given the prerogative of taking the tests in any order showed no increase in GSR during the instruction period, but the group which did not have a choice did exhibit a significant increase in GSR. This study was interpreted as demonstrating that if the subject had some control over the initiation and termination of potentially stressful stimuli, or even if the subject expected to have such control, there would probably be less anxiety elicited. Stotland and Blumenthal's experiment may be interpreted in line with Mandler's hypothesis in that control responses, even if these responses represent the control of unpleasant potentially interrupting events, constituted an alternative sequence of behaviors available to the individual.

Sem-Jacobson (1963) has shown electrical stimulation of brain sites where such stimulation was found pleasant by the patient could be used to counteract pain from terminal cancer. After reviewing this study and numerous animal studies in the same area, Bovard (1961) concluded that activity of the reinforcing sections of the brain was incompatible with the activity of the brain system mediating the response to pain. Bovard thus suggested that reinforcing social stimuli, such as affect and social approval, tended to inhibit the response to threat. Kessen and Mandler (1961) suggested that this phenomenon occurred because positive reinforcement elicited well-organized patterns of responses, e.g., consumatory behaviors, and in

accordance with Mandler's previously mentioned hypothesis, these organized responses tended to inhibit the distress response. The authors cited the example of sucking behavior in the neonate which despite its nonnutritive value eliminated the child's distress response. That is to say that sucking behaviors functioned as an alternative response pattern which was available to the neonate during periods of distress.

The previously cited studies have offered evidence that interruption was anxiety-provoking if there were no alternative response patterns available in the individual's behavioral repertoire, and that positive reinforcement elicited well-organized patterns of responses which inhibited the stress response.

Behavioral Correlates of Anxiety

Sarason, Hill, and Zimbardo (1964) conducted a four year study to ascertain the relationship between test anxiety and performance on intelligence tests. The sample consisted of 713 children which were selected from two consecutive first grade classes and were followed during the first four grades of elementary school. The Test Anxiety Scale for Children (TASC), the Lie Scale for Children (LSC), and the Defensiveness Scale for Children (DSC) were administered during the first and third grades; whereas, the Lorge-Thorndike Intelligence Test was given

during all four grades. Three major conclusions were drawn from the results. First, there was a negative correlation between TASC and intelligence test scores which tended to be small during the first year of school but increased significantly in the negative direction over time.

Secondly, these correlations became more marked when measures designed to correct for sources of distortion of self-report, i.e., LSC and DSC, were employed. Finally, the strength of the negative correlation between the TASC and intelligence test scores was consistently strengthened when the TASC scores which were obtained in the third grade were used in preference to those of the first grade. In this case, the correlation ranged from $-.17$ ($p < .05$) in the first grade to $-.34$ ($p < .001$) in the fourth grade. These results were interpreted as being indicative of a significant relationship between test anxiety and measured intelligence. The Sarason et al. (1964) study offered evidence of a negative relationship between intelligence and anxiety without establishing which variable was etiologically significant.

Waite et al. (1958) conducted an experiment to isolate the effect of anxiety with the intelligence variable controlled by the experimental design. The sample consisted of children in grades two through five who were in the upper and lower quartile on both the General Anxiety Scale for Children (GASC) and the TASC. Intelligence was

measured by the Otis Beta Group Test.. High anxious children were then matched on grade level, sex, and intelligence. The task involved paired associate learning in which the subjects were required to associate a given geometric figure with a given number. The results indicated that the low anxious group learned more rapidly than the high anxious group. The authors concluded that even when intelligence was controlled by matching, there remained differences in the learning rate which were accounted for by the anxiety level.

The relationship between school anxiety and achievement was investigated by Schelkun and Dunn (1967). They administered a 160 item version of the School Anxiety Questionnaire and the California Achievement Test to 56 University Elementary School children in grades four through six. Their results yielded a correlation of $-.47$ between measured achievement and school anxiety, and when the effect of age was permitted to operate, the correlations ranged as high as $-.64$. The Spearman-Brown reliability coefficients were on the order of $.90$ to $.96$.

Dunn (1968) refined the School Anxiety Questionnaire (SAQ) and retained 105 items designed to measure five types of situation-specific school anxiety: test anxiety, recitation anxiety, report card anxiety, failure anxiety, and achievement anxiety. This version of the SAQ was then administered to 350 children in the third through the sixth

grades. The Iowa Test of Basic Skills was given approximately two weeks prior to the SAQ. Correlations of each subtest with the Iowa Test of Basic Skills were on the order of $-.30$ to $-.40$. The reliability coefficients using Tyron's approximation of the Spearman-Brown formula ranged from $.85$ to $.87$. Both of the reliability and the validity coefficients could have been increased considerably by combining the subtests. The two aforementioned studies provided evidence that school anxiety was negatively related to achievement test scores.

Castaneda, Palermo, and McCandless (1956b) conducted a study to ascertain the relationship between anxiety and problem solving on tasks of varying degrees of difficulty. The sample was divided into high and low anxious fifth graders on the basis of their scores on the CMAS. They were then given arithmetic and reading tests which were considered by the experimenter to be a complex task and a spelling test which was considered to be a simple task. The authors reported a statistically significant interaction between anxiety levels and task complexity. The interaction indicated high anxious children tended to perform better on easy tasks but poorer on difficult tasks. However, only the performance on the complex tasks was statistically significant. Thus manifest anxiety was shown to be negatively related to complex problem solving.

Keys and Whiteside (1930) found that sixth through eighth grade children who were categorized as conspicuously nervous and emotional by their scores on the Woodworth-Cody Questionnaire and by their teacher's recommendations tended to average more than one year retarded in age-grade standing, nearly two years lower in mental and educational age, and eighteen points lower in intelligence when compared to more stable children. This study offered evidence that anxiety was inversely related to success in school.

Silverman (1954) devised an experiment to ascertain the effect of anxiety upon incidental learning. The subjects were instructed to move a level whenever a line of appropriate length appeared on a screen before them. Throughout the performance of the task, a muted voice in the background repeated twenty two-syllable words. However, the experimenter did not focus any attention on the voice and thus did not offer the impression that the voice had anything to do with the experiment. The subjects were divided into two groups. The experimental group was continuously threatened with the possibility of an electric shock, while the control group performed without threat. Silverman found the unstressed group was able to recall twice as many words as the threatened group. It was concluded that anxiety was negatively related to incidental learning.

Smock (1958) conducted a study to ascertain the effect of manifest anxiety upon perceptual rigidity and closure. The Children's Manifest Anxiety Scale was administered to 118 fifth grade children of both sexes. The twenty most anxious subjects were compared with the twenty least anxious subjects. Perceptual closure speed was measured by the Street Gestalt Closure Test, and perceptual rigidity was measured by a transition task which involved the presentation of a card with a stimulus on it, e.g., a cat, and slowly the stimulus was transformed through the successive presentation of additional cards to another stimulus, e.g., a dog. The data indicated that high anxiety was associated with greater perceptual rigidity and decreased speed of closure under conditions of complex stimuli. The authors concluded that manifest anxiety reduced the individual's responsiveness to environmental cues due to "perceptual constriction."

Reid, King, and Wickwire (1959) investigated the relationship between creativity and manifest anxiety. The sample consisted of 48 subjects who were selected on the basis of sex, family status, and peer nomination for creative ability from a total of 350 seventh grade children. Nominations for creative ability were obtained from peers by asking each child to recommend three classmates with good imagination, new ideas, and new ways of doing things. The subjects were given the McCandless Anxiety

Scale to ascertain anxiety levels. The design controlled on sex and on family status as measured by Warner's Index. The results indicated that creative children exhibited significantly less anxiety than did the non-creative children.

Sarason et al. (1958b) conducted a descriptive study of the interaction of high anxious (HA) and low anxious (LA) boys with their teacher to ascertain degrees of dependency exhibited by each anxiety group.

Among the high anxious boys, there were six cases who tended to ask an unusual number of questions of the teacher, suggestive either of dependency or attention-getting. There were three such cases among the LA boys. There were four HA boys whose behavior changed markedly when the teacher was near them in that they would then make a display of concentrated study--or in some way acted as if hoping to avoid the teacher's attention; in three of these cases, the description seemed to suggest that the child feared the possibility of censure by the teacher (one of these cases was explicitly described as "scared"). There were no such cases among the LA boys. There were therefore ten HA and three LA boys whose overt behavior in relation to the teacher suggested insecurity (Sarason et al., 1960, p. 247).

Sarason et al. (1960) concluded that insecurity inherent in the behavior of the high anxious child was concerned with getting approval and direction from the teacher. That is, the stability of the HA seemed to be a function of the strong need to maintain the approval or avoid the disapproval of individuals occupying the role of parent-surrogate. Thus the HA child was inordinately dependent on

others for feelings of personal security. This dependence on the approval of others led to a way of relating to authority figures which inhibited spontaneity, flexibility, and creativity.

Phillips, Hindsman, and Jennings (1960) conducted a study of the relationship between anxiety and self-concept. The sample consisted of 709 seventh graders. Anxiety was measured by the Castaneda McCandless Anxiety Scale, and the self-concept was measured by eight scales derived from the Texas Cooperative Youth Studies Scale and the Brown-Holtzman Survey of Study Habits and Attitudes. Four of these scales were used as measures of the manner individuals perceive themselves (social inadequacy, lack of personal adjustment, family tension, school inadequacy). The remaining four scales were selected as measures of the manner in which individuals perceive others (criticism of youth, low teacher evaluation, criticism of education, and negative orientation to society). The results suggested anxious subjects expressed more self- and other-dissatisfaction than the less anxious subjects; the more anxious subjects exhibited greater self-dissatisfaction than other-dissatisfaction. It was concluded that anxiety was inversely related to the self-concept.

McCandless, Castaneda, and Palermo (1956) conducted a study to ascertain the relationship between anxiety and social acceptability. The sample consisting of 387 fourth,

fifth, and sixth graders was given the CMAS to ascertain manifest anxiety levels. The teacher administered a rank and rate sociometric scale. The rank technique involved giving each boy a list of male classmates and each girl a list of female classmates to rank according to their degree of friendship with each classmate. The rate technique involved giving the boys and girls a list of their classmates of the same sex. Next to each name was a five point scale varying from "best friend" to "is not my friend." The rank and rate methods of collecting sociometric data did not produce significantly different results and thus the data were combined. The authors reported an average negative correlation between anxiety and social status of $-.32$ ($p < .001$). The median test-retest reliability coefficient for rate and rank sociometric methods were $.92$ and $.95$ respectively. The authors concluded that anxiety was negatively related to peer acceptance.

Kitano (1960) devised a study to measure the relationship between anxiety and clinical maladjustment in children. The sample consisted of 124 problem boys in special adjustment classes and 153 boys from regular classrooms with both groups consisting of fourth through sixth graders. The CMAS was administered to measure anxiety and the Modified California Inventory was administered to measure rigidity, i.e., intolerance of ambiguity. The reliability of the CMAS was $.86$ and $.75$ respectively.

There were no significant differences between the adjustment classes on the Lie Scale and in sociometric status, and thus these factors were eliminated as etiological factors. Intelligence was eliminated as a causative factor due to its low correlation with manifest anxiety in this study. The findings indicated significant differences in rigidity and anxiety between the regular and the adjustment classes. The study therefore suggested that anxiety was one of the factors differentiating normal students from the clinically maladjusted students.

These studies offered extensive evidence of the pervasive debilitating effect of anxiety upon intelligence, achievement, complex problem solving, academic success in school, incidental learning, perception, creativity, independence, the self-concept, social acceptability, and adjustment.

Measures of Anxiety

Physiological Measures of Anxiety

The physiological measures which have been employed in anxiety research to date have attempted to assess electrical resistance of the skin (GSR), systolic and diastolic blood pressure, heart rate, respiratory movements, and electroencephalogram patterns.

Summarizing research studies employing physiological measures of anxiety, Ruebush (1963) concluded, "While most

theories of anxiety assume the necessity of physiological involvement--autonomic, adreno-sympathetic, or reticular activation--in the child's experience of anxiety, little evidence concerning this assumption is available [pp. 491-492]."

Lacey (1959) observed that while heart rate and skin conductance both usually rise under stressful conditions, the correlation between these variables, which supposedly indicate the same state, was low. After summarizing the psychophysiology of stress and emotion, Lazarus and Opton (1966) found little agreement between reactions of different end organs of the autonomic nervous system. Krause (1961), Martin (1961), and Levitt (1967) concluded that since the different kinds of physiological stress indicators disagreed, these indicators were inadequate measures of the stress response.

Psychological Measures of Anxiety

Four psychological measures of anxiety have been generally used with children: the Children's Manifest Anxiety Scale, the General Anxiety Scale for Children, the Test Anxiety Scale for Children, and the School Anxiety Questionnaire.

The Children's Manifest Anxiety Scale (CMAS) was adopted for groups of children by the Iowa Group (Castaneda et al., 1956a) from the Manifest Anxiety Scale (MAS) which

in turn was developed by Taylor (1953) from the Minnesota Multi-phasic Inventory (MMPI). The CMAS consisted of 42 items which were selected on an a priori basis by a group of clinical psychologists as being indicative of manifest anxiety as defined by Cameron (1947), i.e., a diffuse, chronic condition of psychological and somatic tension, restless, distractability, irritability, and fatigue. In addition to the items measuring manifest anxiety, the CMAS has a Lie Scale composed of 11 items which were selected for the scale in the same a priori manner from the MMPI as being indicative of the child's tendency to censor his responses. The items were scored on a "yes" or "no" basis, and the index of anxiety was obtained by summing the items answered "yes."

On the basis of a sample of 361 children from the fourth through the sixth grades. Castaneda et al. (1956b) found that one-week test-retest reliability coefficients averaged .90 for the CMAS and .70 for the Lie Scale.

Since each of the theories of anxiety have postulated that anxiety exerted a debilitating effect upon complex learning, the various instruments designed to measure anxiety in the school setting have traditionally been validated against the criterion of achievement test scores (e.g., Bergan, 1968; Sarason et al., 1960). McCandless and Castaneda (1956) conducted a study of the relationship between manifest anxiety as measured by the

CMAS and school achievement as measured by the Iowa Every Pupil Test. The sample consisted of 355 fourth, fifth, and sixth graders. The authors reported validity coefficients of $-.28$.

The General Anxiety Scale for Children (GASC) was developed by the Yale Group (Sarason et al., 1960) as a measure of the psychoanalytic conception of general anxiety. The GASC was composed of 34 items designed to measure anxiety according to the three criteria suggested by Freud, i.e., it was unpleasant, there were physiological concomitants, and it was a conscious experience. The GASC contained a Lie Scale consisting of 11 items. Unlike the items of the CMAS Lie Scale which measured the tendency to lie generally, the GASC Lie Scale attempted to measure lying connected with anxiety and anxiety-related experiences. The items were scored on a "yes" or "no" basis.

Based on a sample of 320 children in grades three through six, Sarason et al. (1960) found three-month test-retest reliability coefficients of $.72$ on the GASC.

Sarason et al. (1960) conducted a study of the relationship between general anxiety as measured by the GASC and school achievement which was measured by the Stanford Achievement Test. The results for the sample of 1909 first through sixth graders indicated a $-.07$ correlation coefficient and when the tests with high lie scores were thrown out, the correlation coefficient increased to

-.12 thus offering evidence of the validity of the Lie Scale.

The Test Anxiety Scale for Children (TASC) was developed by the Yale Group (Sarason et al., 1958a) to measure anxiety precipitated by the specific situation of testing or evaluation. The 30-item scale was oriented to the aforementioned psychoanalytic definition of anxiety (Freud, 1936). The TASC contains a 14-item Defensiveness Scale which was composed of the 11-item Lie Scale of the GASC plus three items designed to ascertain negative response set. The entire scale was scored on a "yes" or "no" basis.

From a sample of 600 second through fifth grade children, Sarason et al. (1958a) reported a two-month test-retest reliability coefficient for the TASC averaging .71 and the split-half reliability coefficient of .70, or .82 when corrected for attenuation according to the Spearman-Brown formula. Ruebush (1963) reported split-half reliability coefficient of .82 for the defensiveness scale of the TASC.

In the previously cited study, Sarason et al. (1958a) found validity coefficients for the TASC on the order of -.25 based on Stanford Achievement Test results.

The School Anxiety Questionnaire (SAQ) was a 105-item scale developed by the Michigan Group (Dunn, 1968; Bergan, 1968) to measure five specific types of school

anxiety from a cognitive theoretical framework. The scale attempted to quantify school anxiety connected with the specific situations of recitation, report cards, testing, failure, and achievement. There was also a 44-item response bias eliminator subscale included in the SAQ. Responses were marked on a five-point scale with choices ranging from "not much" to "a lot."

In a previously mentioned investigation, Schelkun and Dunn (1967) reported split-half reliability coefficients for the SAQ of .90 to .92. Validity coefficients of -.64 were found to exist based on scores from the California Achievement Test.

This study provided evidence of the validity of the Response Bias Adjustment Subscale of the SAQ in that the validity coefficients were raised from -.32 based on raw scores to -.64 on the basis of scores corrected for response bias. In Dunn's (1968) aforementioned investigation which validated the SAQ against the Iowa Test of Basic Skills, the children in the sample received a raw score and an adjusted score for the subscales of report card anxiety, failure anxiety, and test anxiety. The sign test revealed that the adjusted score correlation coefficients were better predictors ($p < .003$) of achievement than were the raw score coefficients.

Criticisms of the reviewed psychological measures of anxiety have centered on the inherent methodological

problem of response sets involved in questionnaire research (Ruebush, 1963). The studies of Hand (1964), Bendig (1962), and Rosenwald (1961) have offered extensive evidence attesting to the fact that the response sets of acquiescence, social desirability, and defensiveness do exist as separate constructs. The existence of such multiple response sets which differentially affect individual scores on anxiety questionnaires poses a serious validity problem for anxiety research (Rosenwald, 1961).

There was evidence that the format of anxiety scales did affect the degree of response set elicited. Edwards (1957) and Fordyce (1956) have found many yes-no type of anxiety scales correlated very highly and negatively with measures of defensiveness, test-taking attitudes, and social desirability. Levitt (1967) has accordingly suggested that the format of this type of scale may inherently foster greater defensiveness.

Efforts designed to eliminate the confounding effect of response sets in anxiety research have involved the use of defensiveness scales (e.g., the TASC) and lie scales (e.g., the CMAS). Sarason et al. (1958a) was able to slightly improve the validity coefficients of the GASC scores by throwing out the results of individuals who scored high on the Lie Scale.

Another technique designed to remove response bias was based on a special scoring procedure which

differentially weighted the items of the response set scale according to their correlation with a criterion. Guilford (1954) has commented on the effectiveness of this procedure.

The experience of weighting test items according to their validity . . . point definitely to the inference that such weighting is not worth the trouble (p. 448).

Further, Bergan (1968) has cogently argued that these efforts to eliminate specific response sets have been unsuccessful because the removal of one particular response set does not extract all response bias from the scale, but rather, it removed only that bias associated with the specific response set in question. In addition, Quinn and Lichtenstein (1965) have found that items designed to eliminate one type of response set often cause other response sets to come to the fore.

In summary, there was evidence of the existence of separate response sets which tended to confound the results of anxiety questionnaires. These response sets may be in part a function of the questionnaire's format. Effort designed to eliminate response sets have involved removing the results of individuals who scored high on a response set scale, and the item weighting procedure which attempted to eliminate the effect of specific response set from the anxiety scale.

Summary

The Hullian learning model, the psychoanalytic model, and the cognitive model were cited as the major theories directing children's anxiety research. It was noted that although these theories differed in the explanation of the processes mediating the anxiety response, each of the theories appeared to agree that anxiety was initially associated with a stimulus through some form of conditioning.

The studies of Watson and Rayner (1920) and Jones (1924) provided evidence that the anxiety response could be produced and eliminated through the application of conditioning principles. The Lazarus et al. (1965) study offered data indicating the central role that defense mechanisms played in determining the anxiety reaction. The investigations of Mandler suggested that interruption was anxiety-provoking if there were no alternative response patterns available in the individual's behavioral repertoire, and that positive reinforcement elicited well-organized sequences of responses which inhibited the stress response.

There was cited extensive evidence of the pervasive debilitating effect of anxiety upon intelligence, achievement, complex problem solving, academic success in school, incidental learning, perception, creativity, independence, the self-concept, social acceptability, and adjustment.

The major physiological and psychological measures of anxiety were discussed. It was suggested that since the physiological measures had low intercorrelations, they were inadequate indicators of the anxiety response. However, it was pointed out that multiple response sets tended to confound the results of the psychological measures. Efforts designed to eliminate single response sets have met with only limited success.

CHAPTER III

REVIEW OF THE LITERATURE ON TEACHER BEHAVIOR

This review of the literature on teacher behavior is limited to studies which support the theoretical framework upon which this study is predicated and which use verbal measures as criteria for quantitative analysis.

This resume includes a description of (1) teacher verbal behavior interpreted from a reinforcement learning theory model, (2) the differential effects of verbal praise and punishment, (3) the concomitant vicarious effect of direct reinforcement, (4) the relationship between teacher verbal behavior as analyzed by Flanders' model and student attitude and achievement, (5) the reliability and sensitivity of Flanders' model, and (6) the relationship between highly reinforcing and highly punishing teacher behavior and student socio-personal anxiety.

Hough (1967) has suggested that teacher-pupil classroom interaction could be interpreted from a reinforcement learning theory model.

Teacher behavior does influence student learning in many ways. Some teacher behaviors are stimuli which elicit responses from students, while other teacher behaviors are on occasion aversive stimuli which evoke respondent types of behaviors in students (p. 376).

Rowley and Stone (1964) conducted a study to demonstrate the reinforcing properties of the verbal stimuli of praise. The sample of 96 fourth grade children was divided into two groups. The experimental group was reinforced by the verbalization "good," while the control group was given no reinforcement. The task involved getting the child to use the first person pronoun appropriately. The results indicated significantly higher levels of performance for the verbally reinforced group. The authors concluded that the investigation provided evidence of the effectiveness of verbal approval as a social reinforcer.

Due to the group-oriented organization of the conventional classroom, the effects of verbal reinforcement in this setting extend beyond those individuals directly receiving such reinforcement. Kelley (1966) conducted a study to ascertain the effects of direct and vicarious positive and negative reinforcement on an operant learning task. The sample of 120 children was tested in pairs, with one member of each pair serving as the model while the other member was implicitly designated as the observer. One-third of the models performed the learning task under conditions of verbal reinforcement (praise); one-third of the models worked under conditions of negative verbal reinforcement (criticism); the remaining one-third of the models performed without reinforcement. After observing

the models perform the task, the observers worked at the task without direct reinforcement. The results indicated that the operant rates of the directly reinforced groups correlated with those of the vicariously reinforced group.

With reference to reported research on the effects of praise and blame on the performance of school children, Kennedy and Willcott (1964) concluded, "Blame has been generally found to have a debilitating effect on performance of school children. Praise has been found generally to have a facilitating effect on the performance of school children [p. 331]."

The previously mentioned studies suggested that positive verbal reinforcement in the form of praise tended to facilitate learning while negative verbal reinforcement in the form of criticism tended to inhibit learning, whether this reinforcement was experienced directly or vicariously.

Flanders (1960a) has developed a technique called Interaction Analysis which categorizes and quantifies the various statements of both the teacher and the student. This model was composed of ten categories which were assumed to be all-inclusive and mutually exclusive. The first seven categories were concerned with teacher talk and were further subdivided into direct teacher influence and indirect teacher influence. The indirect teacher influence categories dealt with the teacher's verbal acceptance of student feelings, the use of praise, the acceptance of

student ideas, and the asking of questions. The direct categories dealt with the teacher's lecturing, giving directions, criticizing, and justifying his authority. Two categories were concerned with teacher-initiated and student-initiated student talk. The remaining category was concerned with silence and confusion. The model will be discussed in greater depth in Chapter IV.

Hough (1967) in a discussion of classroom interaction from a reinforcement model suggested:

Positive reinforcers may be seen in the classroom in the form of rewards, praise, encouragement, acceptance and clarification of ideas, i.e., feedback. Each of these forms of reinforcement will by definition increase the probability that the behaviors for which they are reinforcers will be elicited in the future (p. 378).

. . . criticism, sarcasm, justification of authority should be avoided, since such behavior represents aversive stimulation and as such, could interfere with verbal learning (p. 386).

Amidon and Giammatteo (1967) carried out a research project designed to compare the verbal patterns of superior elementary teachers with those of an average group of elementary teachers. From a sample of 153 teachers, 33 were selected to comprise the superior group on the basis of their supervisors and administrators recommendations. The remaining 120 teachers served as the control group. The results revealed that the superior teachers were more accepting of student-initiated ideas, tended to encourage these ideas more, and also made more of an effort to build

on these ideas than did the average group of teachers. In addition, superior teachers dominated their classrooms less, used indirect verbal behavior more, and used direction-giving and criticism less than the normative group of teachers.

Flanders (1964) carried out an investigation of the relationship between teacher influence and student achievement and attitudes. The sample consisted of 15 seventh grade social studies teachers and 16 eighth grade teachers. Employing a research design which controlled the intelligence factor, the author found students of indirect teachers had significantly higher achievement and attitudinal gains ($p < .01$) than the students of direct teachers. Indirect teachers were characterized by high praise, low criticism, and high use of student ideas; whereas, direct teachers were found to be just the opposite.

Amidon and Flanders (1961) conducted a study of achievement of 140 dependent-prone eighth grade children. The students listened to a tape recording of a discussion of geometric concepts, and then the students were separated into two groups. One group received a short training session on the concepts presented by the teacher playing a direct influence role; whereas the second group received a training session led by the teacher playing an indirect role. The teacher playing the indirect role gave fewer

directions, less criticism, less lecturing, more praise, and asked more questions while playing the direct role. On a post-test designed to measure geometric achievement, it was found that the students of indirect teachers significantly out-performed ($p < .01$) the students of direct teachers. The results of this study are especially revealing when compared with the findings of Flanders (1960b) employing the same experimental design. In that investigation involving 560 subjects of all levels of dependent-proneness, no significant differences among the treatment groups were discovered. Flanders accordingly concluded that high dependent-prone students were more sensitive to teacher behavioral influence than are middle or low dependent-prone students.

Soar (1967) conducted a study of teacher behavior as it related to reading achievement and classroom stress. The sample consisted of 56 elementary classrooms, grades three through six. The teacher's behavior was coded according to Flanders' Interaction model, and the students were administered the Iowa Test of Basic Skills, and their hostile responses were recorded. Indirect teacher behavior was defined as frequent praising or encouraging student ideas; whereas, direct teacher behavior was designated as frequent criticism of students, justifying teacher authority, or giving directions. The author concluded:

Indirect teaching produced greater growth than direct, classrooms in which there was greater expression of hostility produced less learning than those with a warmer emotional climate, and the combination of indirect teaching and low hostility produced the greatest gain of all (p. 247).

Kirk (1967) carried out an investigation of the effects of training in Interaction Analysis upon the teacher behaviors of elementary school teachers in grades four through six. The sample of 30 students was randomly assigned to the experimental and control groups. Each teacher was observed for approximately 42 minutes during the pre-testing and seven weeks later, 42 minutes during the post-testing. The author concluded that the i/d ratio was the most accurate of the ratios employed. Flanders' model detected increasing indirectiveness in the verbal patterns of both groups of teachers, with the experimental group significantly outperforming the control.

Flanders (1966) suggested that on the basis of his experience in the training of observers that a Scott inter-observer reliability coefficient of .85 could be achieved and maintained using his model. Furst and Amidon (1967) obtained a Scott inter-observer reliability coefficient of .99 during training conditions. A subsequent classroom reliability coefficient check between two observers revealed a Scott reliability coefficient of .90.

Flanders (1951) conducted a laboratory experiment of socio-personal anxiety as a factor in learning

situations. Employing a sample of seven subjects, he measured student behavior by recording all verbal statements made by the students. Second, the student was taught to operate a hidden lever designated to measure perceived feelings associated with the learning task. Third, the student's pulse and palmar skin resistance were measured. Two teachers were trained to interact according to Withall's (1949) definition of teacher-centered (TC) role, i.e., acceptant, problem-oriented, evaluative or critical by way of public criteria, and student supportive; and learner-centered (LC) role, i.e., directive, demanding, deprecating by the use of private criteria, and teacher supporting. Experimental control of teacher behavior was maintained by (1) the teacher's training and intent to behave according to a prescribed role, (2) the teacher's verbal statements as coded according to Withall's system, and (3) the student's perception of the teacher's behavior as measured by the Q sort. The results of the Q sort indicated that the LC and the TC roles were consistent and opposite in meaning. In all seven cases, it was found that there were more negative lever movements during the TC periods. The results of the physiological measures of socio-personal anxiety were interpreted as offering some descriptive evidence that teacher behavior affects student levels of anxiety.

Summary

In this review, it was suggested that teacher verbal behavior could be interpreted from a reinforcement learning theory model. There was evidence which indicated that praise statements functioned as positive reinforcers, i.e., they had a facilitating effect upon student performance, and criticism statements functioned as punishment, i.e., they had an inhibiting effect upon student performance. Information was presented which suggested verbal behavior exerted a vicarious influence as well as a direct influence on behavior. Studies were cited which indicated that in considering Flanders' Interaction Analysis model on the basis of student attitude and achievement scores, the indirect teacher influence categories of teacher acceptance of student feelings, teacher praise, and teacher acceptance of student ideas were positively reinforcing, and the direct teacher influence categories of teacher directing and teacher criticism and justification of authority were punishing. Results from other studies employing Flanders' Interaction Analysis model suggested that the model had been used with high levels of reliability, and that it was sensitive to changes in teacher behavior. Finally, descriptive evidence was cited that teacher behavior characterized as indirect and thus reinforcing, elicited less socio-personal anxiety than did teacher behavior characterized as direct or punishing.

CHAPTER IV

RESEARCH DESIGN

This chapter includes a description of (1) the instruments involved in the collection of the data, (2) the assumptions, (3) the sample, (4) the data collection procedures, (5) the operational hypotheses, (6) the type of data and the statistical analysis, and (7) the research setting.

Data Collection Instruments

Anxiety

Due to the appropriateness of the item content and the effectiveness of the special scoring procedure designed to eliminate the confounding effects of response bias (Schelkun and Dunn, 1967), the School Anxiety Questionnaire (SAQ) was selected to measure the dependent variable of school anxiety in this study (see Appendix A). The SAQ was a 105-item multiple choice questionnaire designed to measure the following five types of situation-specific school anxiety: failure anxiety, achievement anxiety, report card anxiety, test anxiety, and recitation anxiety. There was also a 44-item Response Bias Adjustment Subscale included in the SAQ.

The instrument was group-administered to the children in their regular classroom with the teacher being absent. The SAQ was divided into alternative forms and were given in two 45-minute sessions not less than three nor more than five days apart. The students were given a pencil, a question booklet, and an IBM Mark Sense Sheet. Part of the instructions and all the test items were read by a tape recorder to eliminate reading difficulties. The remaining part of the instructions were given by the test administrator. The items were spaced approximately five seconds apart. The child responded on the basis of a five point scale which varied from "frequently" to "seldom" and "a lot" to "not much." The student responses on the IBM Mark Sense Sheet were then read by an optical page scanner which automatically punched the IBM data cards. The cards were subsequently fed into the computer to be scored. In the case of missing data, the modal response for the form was supplied in accordance with the authors' directions.

The Response Bias Adjustment Subscale was developed from a theoretical model posited by Bergan (1968). This model suggested that response bias occurred as a result of an individual's characteristic manner of responding to a questionnaire regardless of the content of the item. The amount and direction of response bias varied across individuals. However, it was usually assumed to be stable within individuals.

The SAQ attempted to eliminate two types of response bias, additive bias and multiplicative bias. Additive bias was theorized to influence a person's item responses and consequently his response mean by adding a constant to or subtracting a constant from each item's true score. For instance, some subjects tended to consistently rate themselves higher than their true score. Multiplicative bias was theorized to affect an individual's response variability. That is to say, variability bias influenced an individual's raw score by combining multiplicatively with his true score. For example, some individuals tended to use more extreme choices than others (Bergan, 1968).

The following equation presents the manner in which additive and multiplicative bias are assumed to affect an individual's response to a questionnaire item.

$$X_i = T_i \times M_b + A_b + E$$

X_i represents the individual's response to the item, T_i is his true score on the item, M_b , multiplicative bias, A_b , additive bias, and E , random error.

A Procedure for Removing Bias

An individual's true score for an item may be expressed as:

$$T = \frac{X_i - A_b - E}{M_b}$$

and the mean of his true score ($\bar{T}$) over a series of items as:

$$\bar{T} = \sum \left[\frac{X_i - A_b}{M_b} \right] \div N$$

where N is the number of items in the series.

The last equation presents a framework for removing bias from questionnaire scales providing that values can be determined for A_b and M_b . These values can be obtained by producing conditions under which for all persons true score mean can be assumed to be equal and true score standard deviations can be assumed to be equal. If under such conditions raw score means and standard deviations are not equal, response bias is present. The constants which must be applied to an individual's raw score mean and standard deviation to equate then with the true score means and standard deviations of other individual's scores can be taken as the values of A_b and M_b for that person. If each person's distribution of true scores is converted to a distribution of z scores, the values representing A_b and M_b for each individual are his raw score mean and standard deviation (Bergan, 1968, p. 211).

These conditions where all persons' true score means and true score standard deviations could be assumed to be equal were produced in the School Anxiety Questionnaire through the inclusion of the Response Bias Adjustment Subscale which was composed of heterogeneous items. Heterogeneous items were defined as items having been designed to provide the subjects with a wide variety of situations capable of eliciting anxiety, having high reliabilities, and having low intercorrelations indicating a lack of individual consistency in responding. Anxiety was assumed to be a phenomenon common to everybody although there were assumed to be differences in the types of situations which elicited anxiety reactions. Since the

questionnaire items covered a wide range of situations, differing levels of anxiety should have been elicited according to the type of situation. Under this condition of heterogeneous items where randomization was permitted to operate, individual differences tended to cancel out around the true mean. The means and standard deviations for all subjects on the RBAS should therefore have been equal. If they were not, it was assumed that response bias was present (Bergan, 1968).

Each of the other five subscales of the SAQ was composed of homogeneous items. Homogeneous items were defined as items having been designed to provide the subjects with a restricted range of anxiety-provoking situations, having high reliabilities, and having high inter-correlations indicating individual consistency in responding. Under these circumstances, one would not expect individual differences, in that homogeneous items did not provide a wide variety of anxiety-eliciting situations. A raw score on a subscale of this type would not only reflect response bias, but in addition, the true score. By subtracting an individual's RBAS mean from each item score on the other five subscales and subsequently dividing by the standard deviation of the RBAS, both multiplicative and additive bias would be negated without affecting "true" individual variation of the scales. The result of this procedure was a set of standard scores

computed across items for a given individual rather than across test scores for a given population (Bergan, 1968).

There have been numerous studies providing evidence of the validity and reliability of the SAQ. In a previously cited study, Schelkun and Dunn (1967) administered a 160-item version of the SAQ and the California Achievement Test to a sample of 56 students in grades four through six. They obtained a validity coefficient of $-.64$. This study offered evidence of the validity of the Response Bias Adjustment Subscale scoring technique. It was reported that concurrent validity coefficients based on raw scores were raised from $-.32$ to $-.64$ based on scores corrected for response bias.

The Spearman-Brown reliability coefficients for this study were on the order of $.90$ to $.96$.

Teacher Behavior

Flanders' Interaction Analysis model was selected to measure the independent variable of teacher classroom behavior in this study because of its demonstrated reliability (Furst and Amidon, 1967), sensitivity to changes in teacher behavior (Kirk, 1967), and interpretation from a reinforcement theoretical framework (Hough, 1967).

The model was designed to describe quantitatively the verbal behavior of the teacher and the student. It was designed as an all-inclusive system which was composed of

ten mutually exclusive categories. The first seven categories were concerned with teacher talk. The teacher talk categories were further subdivided into direct influence and indirect influence groups. The next two categories encompassed student-initiated and teacher-initiated student talk. The remaining category was reserved for silence and confusion.

This study dealt with the indirect categories: (1) accepts feeling, (2) praises or encourages, and (3) accepts or uses ideas of students; and the direct teacher influence categories: (6) giving directions, and (7) criticizing or justifying authority.

The i/d ratio (Flanders, 1966) was obtained by dividing the total responses in the indirect categories one, two, and three by the total responses in the direct categories six and seven. The P/C ratio was obtained by dividing the responses in category two by those responses in category seven.

Figure 1 lists and describes the categories of Flanders' Interaction Analysis model.

Interaction Analysis data are collected in the following manner. The observer seats himself in the classroom at a vantage point where he can best observe the visual and auditory interaction with the minimal distraction to the teacher and students. The observer records at approximately three second intervals the number of the

TEACHER TALK	INDIRECT INFLUENCE	<p>1. * ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.</p> <p>2. * PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying, "um hm?" or "go on" are included.</p> <p>3. * ACCEPTS OR USES IDEAS OF STUDENT: clarifying, building, or developing ideas suggested by a student. As a teacher brings more of his own ideas into play, shift to category five.</p> <p>4. * ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.</p>
	DIRECT INFLUENCE	<p>5. * LECTURING: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.</p> <p>6. * GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.</p> <p>7. * CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.</p>
STUDENT TALK		<p>8. * STUDENT TALK--RESPONSE: a student makes a predictable response to teacher. Teacher initiates the contact or solicits student statement and sets limits to what the student says.</p> <p>9. * STUDENT--INITIATION: talk by students which they initiate. Unpredictable statements in response to teacher. Shift from 8 to 9 as student introduces own ideas.</p>

Fig. 1. Categories for Flanders' Interaction Analysis.

10. * SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.
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*There is no scale implied by these numbers (Flanders, 1966, p. 7).

Fig. 1.--Continued

category from Flanders' model which is indicative of the kind of activity which occurred during the preceding interval. These numbers are listed in vertical columns on the recording forms along with notes of the communication pattern, the subject matter, and the class formation. Any further information which is considered pertinent to making an adequate interpretation of the classroom interaction is recorded.

At the end of the recording period, the vertical columns are punched into IBM data cards and fed into the computer. The computer then transforms the numbers into overlapping pairs and places the two number relationship into a 10 x 10 matrix (see Appendix B) with the first number referenced to the rows of the matrix and the second number referenced to the columns of the matrix. From such a transitional matrix, it is possible to determine the frequency of the various behavioral acts which preceded whatever behavior was in question. In this study, the transitional matrix was used as a framework by which to quantitatively compare the verbal behavior of participating teachers.

The training of the observers first entails a thorough memorization of the categories of Flanders' model. The group sessions are then held in which the observers categorize teacher-student verbal behavior from audio tape recordings. All observers must achieve a Scott reliability

coefficient (Flanders, 1966) of at least .80 or be dropped from the team. During the collection of the Interaction Analysis data, periodic reliability checks are conducted in order to determine whether the observers are still maintaining the reliability coefficients obtained during the training sessions.

There have been numerous studies providing some indirect evidence of the validity and numerous studies offering direct evidence of the reliability of Flanders' Interaction Analysis model. In a previously cited study, Amidon and Giammatteo (1967) found on the basis of a sample of 153 elementary school teachers that teachers identified by their supervisors as being superior could be differentiated from regular teachers based on their verbal classroom behavior as analyzed by Flanders' model.

Flanders (1966) suggested that an inter-observer Scott reliability coefficient of .85 could be obtained through proper training procedures.

Assumptions

Considering the characteristics of the instruments and the nature of the problem, the following assumptions were made in connection with this study:

1. Anxiety is an experience common to all people.

2. There are individual differences among persons in the kinds of situations which will elicit anxiety reactions.
3. Anxiety is a response elicited by stress situations.
4. An individual has a specific potential for anxiety arousal for each type of situation he encounters.
5. Measures of an individual's recollection of anxiety in a given situation in the past are representative of that person's reactions in similar circumstances in the future.
6. The relationship between anxiety reactions and their eliciting stimuli and modes of coping with that reaction are in part learned.
7. A teacher's verbal classroom behavior is consistent with his nonverbal classroom behavior.
8. Four randomly selected hours of a teacher's behavior is representative of that teacher's total classroom behavior.
9. Significant changes in the independent variable of teacher behavior would occur between the pre-testing period and the post-testing period.

Sample

From three randomly selected schools from a total population of elementary schools in Tucson School District

#1 in Tucson, Arizona, nineteen volunteer teachers instructing in grades three through six were initially selected to be subjects in this study. However, two teachers were subsequently dropped from the sample when it was learned that they had a practice teacher in their classroom throughout the treatment period. This action was based on the fact that no student teacher interaction analysis data was collected, and therefore it was not possible to separate the effects of the behavior of the participating teacher from that of the student teacher. The sample included teachers of both sexes with a range of teaching experience from two to thirty years.

The students of the selected teachers in the sample initially numbered 497. However, due to absences on days of testing, and transfers to other schools, the final sample from which the data was analyzed was comprised of 443 students. The heterogeneous classes were predominately from the middle class socio-economic group.

Data Collection Procedures

This section describes the time sequence which was followed in the collection of the data.

The pretesting was conducted during February, 1968. The Interaction Analysis data were collected during the first two weeks of the month with each teacher being observed for approximately four hours or five thousand

tallies. During the following two weeks, the School Anxiety Questionnaire was administered to the students of the selected teachers.

The posttesting occurred during the last week in April, 1968 and the first three weeks in May, 1968. Again the Interaction Analysis data were collected prior to the School Anxiety Questionnaire data. Each teacher was again observed for approximately four hours or five thousand tallies.

Operational Hypotheses

With the selection of the instruments and the definition of the population involved in this study, the theoretical hypotheses may be restated in operational terms.

Hypothesis One

There will be an inverse relationship between teacher use of generalized verbal reinforcement and student school anxiety levels.

Restated operationally, hypothesis one becomes:

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between volunteer teachers' i/d ratio derived from Flanders' Interaction Analysis model and their classes' school anxiety mean as measured by the School Anxiety Questionnaire.

Hypothesis Two

There will be an inverse relationship between teacher use of specific verbal reinforcement and student school anxiety levels.

Restated operationally, Hypothesis Two becomes:

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between volunteer teachers' P/C ratio derived from Flanders' Interaction Analysis model and their classes' school anxiety mean as measured by the School Anxiety Questionnaire.

Hypothesis Three

There will be an inverse relationship between changes in teacher use of generalized verbal reinforcement and changes in student school anxiety levels.

Restated operationally, Hypothesis Three becomes:

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between teachers' gain in their i/d ratio derived from Flanders' Interaction Analysis model from the pretesting to the posttesting and their classes' mean gain in school anxiety as measured by the School Anxiety Questionnaire from the pretesting to the posttesting.

Hypothesis Four

There will be an inverse relationship between changes in teacher use of specific verbal reinforcement and changes in student school anxiety levels.

Restated operationally, Hypothesis Four becomes:

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between teachers' gains in their P/C ratio derived from Flanders' Interaction Analysis model from the pretesting to the posttesting and their classes' mean in school anxiety as measured by the School Anxiety Questionnaire from the pretesting to the posttesting.

Type of Data and Statistical Analysis

In testing the significance of the operational hypotheses, the teacher verbal behavior was specified as the independent variable, and student school anxiety was considered the dependent variable.

The output of the School Anxiety Questionnaire consisted of interval data. Although Flanders' Interaction Analysis model normally yielded nominal data, it was transformed to interval data in this study when the model was interpreted from the proposed reinforcement theoretical framework. The conversion of the data type was accomplished in the following manner. Categories one, two, and

three were suggested to be reinforcing on the basis of the reviewed literature. Categories six and seven were similarly suggested to be punishing. In order to determine the net reinforcing value of these antithetical teacher responses, the responses in the punishing categories were divided into the responses in the reinforcing categories which resulted in a ratio. Two different ratios were involved in the hypotheses. The i/d ratio was developed to assess the net generalized reinforcement properties of the teachers' verbal behavior, and the P/C ratio was designed to measure the net specific reinforcement properties of the teachers' verbal behavior.

Since the SAQ did not yield a total school anxiety score but rather five individual subscale scores, the subscales were combined to obtain a total school anxiety score.

The design of the study involved correlating the measures of teacher net reinforcing behaviors, i.e., the i/d ratio and the P/C ratio, with the school anxiety means of the participating teachers' classes. This information would have provided evidence for confirming or not confirming Hypotheses One and Two. In this study, Hypotheses One and Two were tested by subjecting the pretest data to this statistical analysis. This analysis was also applied to the posttest data which constituted an independent

replication of the previously mentioned analysis based on the pretest data.

Gain scores were determined for the independent variable of teacher behavior by subtracting pretest i/d ratios from the posttest i/d ratios and by subtracting the pretest P/C ratios from the posttest P/C ratios. Similarly, gain scores were determined for the dependent variable of school anxiety by subtracting the pretest SAQ scores from the posttest SAQ scores. The gain scores were then correlated to ascertain the relationship between changes in the independent and dependent variable. The gain scores would then be tested for reliability to establish that the results were not spurious. The information accruing from this statistical analysis would either confirm or not confirm Hypotheses Three and Four.

Research Setting

The quantification of the independent variable of teacher behavior presented itself as an extremely time-consuming and hence expensive aspect of this study. The opportunity to carry out this study arose when The University of Arizona and Tucson School District #1 received support to analyze teacher classroom behavior in conjunction with the Cooperative Counselor Training Program which was conducted during the Spring semester of 1968.

The Cooperative Counselor Training Program (CCTP) was designed to train elementary school teachers in child study techniques and classroom management procedures. The program was composed of fifteen seminar sessions which were oriented toward replacing authoritarian teacher classroom behaviors with equalitarian-democratic behaviors. A pre-test posttest design was used to measure changes in teacher behavior resulting from the CCPT. For a detailed description of the CCPT, see Appendix C.

It was important to state with respect to Hypotheses Three and Four that this study was not attempting to assess the effectiveness of the CCTP in changing the dependent variable of teacher behavior. For purposes of this study, teacher behavior was considered the independent variable and Hypotheses Three and Four merely stated that given statistically significant gains in the independent variable of teacher behavior during the period between the pre-testing and the posttesting that corresponding inverse gains would be observed in this study's dependent variable of student school anxiety.

Summary

Flanders' Interaction Analysis model was selected to measure the independent variable of teacher classroom behavior, and the School Anxiety Questionnaire was chosen to assess the dependent variable of student school anxiety.

Both instruments were described in detail, and the theoretical rationale for the Response Bias Adjustment Subscale was recounted. The assumptions underlying the study were listed. The sample of elementary school teachers and students, and the data collection procedures were depicted. The theoretical hypotheses initially posited in Chapter I were restated in operational terms. The data preparation and the statistical analysis procedures were delineated. The opportunity to carry out this investigation arose when the study was incorporated into the research design for the Cooperative Counselor Training Project.

CHAPTER V

ANALYSIS OF THE DATA

This chapter presents the reliability and validity coefficients of the instruments employed in this study for the tested sample. In addition, the sample is tested for normality, and the appropriate correlational statistic is selected and explained. An assumption underlying Hypotheses Three and Four is tested. The hypotheses are recounted and further transformed to symbolic form in order to be amenable to statistical analysis. Then the results from the statistical analysis are listed and discussed. Finally, a post hoc statistical analysis is conducted to ascertain the relationship between gains in each of the respective categories involved in the hypotheses and gains in student school anxiety class means.

Reliability and Validity of Instruments

Flanders' Interaction Analysis Model

During the training of the eight observers that were used in this study, an inter-observer Scott reliability coefficient (Flanders, 1966) of .83 was attained using Flanders' Interaction Analysis model. Subsequent

reliability checks indicated that this level of reliability was maintained throughout the testing period.

School Anxiety Questionnaire

The Kuder-Richardson reliability coefficient (Garrett, 1966, p. 341) for the School Anxiety Questionnaire was .88.

The validity of the School Anxiety Questionnaire for this sample was tested in the following manner. Achievement test scores for the sample were obtained from the records of Tucson School District #1. During October 1967, the Metropolitan Achievement Test Form A was given to the third and fourth grades; the Stanford Achievement Test Intermediate I Battery was given to the fifth grade; the Metropolitan Achievement Test Intermediate Battery was given to the sixth grade part of the sample. In each grade the reading and arithmetic subtests were given, and Tucson District #1 stored the achievement scores in raw score form.

For purposes of this study, each raw score was transformed to a standard T score by means of the test publishers' conversion tables which were listed in each respective manual. The standard scores for the various subtests were averaged.

On the basis of these achievement test scores, the School Anxiety Questionnaire was validated for this sample. Table 1 shows the results of this validation procedure.

Table 1
School Anxiety Questionnaire Validity Coefficients

	Grade 3	Grade 4	Grade 5	Grade 6	Total
Validity Coef.	-.236	-.450**	-.476**	-.447**	-.403**
Subjects	112	116	108	107	443

**p < .01.

The low validity coefficient for the third grade part of the sample pointed out the need for further analysis of this part of the sample. Accordingly, the means and standard deviations for each respective grade in the sample were ascertained to test the data for normality. The statistical significance of the standard deviation was tested against the chi-square hypothetical distribution according to a formula proposed by Hays (1963, p. 344). The results are presented in Table 2.

Table 2
Reading and Mathematics Achievement as Indices
of Sample Normality

	Grade 3	Grade 4	Grade 5	Grade 6	Total
Mean	37.367	51.809	47.517	48.861	46.436
Standard Dev.	6.451**	7.919	10.106	8.993	10.045

**p < .01.

It might be noted that the third and fourth grade raw scores were converted to standard scores from the same conversion tables. This accounts for the unusually low mean for the third grade part of the sample. The third grade students had a standard deviation which deviated from the test publisher's norms at a high level of statistical significance. These results suggested that the third grade part of the sample was not representative of the population upon which the test was normed.

The low validity coefficient for the third grade can be traced to the statistically significant deficit in normal variability in the third grade part of the sample. Garrett (1966) has commented on the effect of a curtailment in range upon correlation coefficients.

The size of a correlation coefficient will vary with the heterogeneity, i.e., the degree of scatter, in the group; the more restricted the spread of test scores, the lower the correlation (p. 171).

The Correlational Statistic

The nonrepresentative third grade sample restricts the statistical analysis for this study to nonparametric techniques because parametric techniques derive their validity from the assumptions of homogeneous variances and a bivariate normal distribution (Hays, 1963, p. 616). The results of the preliminary statistical analysis for this study and Garrett's previously cited comment have suggested

the critical nature of the assumption of homogeneous variances to a parametric correlational statistic. Since the third grade part of the sample in this study clearly violates both of the previously cited assumptions underlying the use of parametric statistics, the nonparametric Spearman rank correlation coefficient (Hays, 1963, p. 644) was selected since by definition it made no assumptions with respect to the underlying distribution.

The Spearman correlational statistic is based on the ranks of the raw scores instead of the raw scores themselves. Thus, the data were prepared for statistical analysis by ranking both the independent variable of teacher reinforcing behaviors, i.e., i/d ratio and P/C ratio, and the dependent variable of school anxiety, i.e., class SAQ mean, from high to low.

Test of Assumption

Hypotheses Three and Four were predicated upon the assumption that the Cooperative Counselor Training Program would cause statistically significant changes in the independent variable of teacher classroom behavior. In order to test this assumption, a correlated t test was employed to ascertain whether changes did in fact occur from the pretesting to the posttesting. The parametric t test was selected to measure the significance of changes in spite of the nonrepresentative third grade part of the sample due to

the "robust" nature of the test, i.e., the test does not depend heavily on the underlying assumptions (Hays, 1963, p. 381). Studies by Box (1953, 1954) have revealed that even under circumstances of wide departure from homogeneous variances, the t statistic yielded consistent and accurate results, especially when the number of cases in the various samples can be made equal.

The significance of changes in the independent variable of teacher behavior from the pretesting to the posttesting is presented in Table 3.

Table 3
The Correlation Between Changes in Teacher
Behavior from the Pretesting to
Posttesting

	i/d Ratio	P/C Ratio
Correlated t test	.612	.640
Std. Error of Difference	.8774	9.5942

*p < .05

**p < .01

The results of this analysis suggested that the independent variables of generalized and specific reinforcement, i.e., the i/d and P/C ratio, did not make

statistically significant changes from the pretesting to the posttesting.

Symbolic Hypotheses

This section presents evidence that tends to support or not support the theoretical hypotheses.

The general format for each hypothesis in this section includes the theoretical hypothesis, the operational hypothesis, the symbolic hypothesis, the statistical results, and a discussion of the results.

Hypothesis One

The theoretical hypothesis is

There will be an inverse relationship between teacher use of generalized verbal reinforcement and student school anxiety levels.

The operational hypothesis is

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between volunteer teachers ranked on the basis of their i/d ratio derived from Flanders' Interaction Analysis model and the classes when ranked on the basis of the school anxiety mean as measured by the School Anxiety Questionnaire.

The symbolic hypothesis is

$H_{\text{null}}: \rho_i = 0.0$

$H_{\text{directional}}: \rho_i < 0.0$

where ρ_i = the Spearman rank correlation coefficient between teachers ranked on the basis of their i/d ratio and their classes' mean anxiety level.

The data concerning this hypothesis were analyzed using the Spearman rank correlation coefficient with the α level specified at .05 (one-tailed). The hypothesis was to be tested on the basis of the pretest data. Table 4 presents the teachers' i/d ratio, the ranking of the i/d ratio, and the teachers' classes' mean school anxiety level with its ranking.

The statistical analysis provides evidence for accepting the directional hypothesis that there is a significant inverse relationship between a teacher's generalized reinforcing behaviors as indicated by his i/d ratio and his class's mean school anxiety level.

The design of this study afforded the opportunity to replicate the testing of Hypothesis One on the posttest data. Table 5 presents the results of this statistical analysis.

The statistical analysis for Hypothesis One on the posttest data revealed an even more significant inverse relationship between a teacher's generalized reinforcing verbal behaviors as indicated by his i/d ratio and his class's mean school anxiety level.

Table 4

The Correlation Between Pretest i/d Ratios
and School Anxiety Means

Teacher	i/d Ratio	i/d Ranking	Classroom SAQ Mean	SAQ Ranking
A	.3306	15	256.593	4
B	.3768	14	260.887	1
C	1.0195	8	256.927	3
D	.9252	9	255.676	5
E	1.0546	6	259.900	2
F	.7141	11	255.203	6
G	1.1778	4	249.562	15
H	1.1031	5	251.888	13
I	1.0281	7	254.674	7
J	.9167	10	252.015	12
K	.2027	17	254.028	9
L	.4829	13	251.793	14
M	1.3130	3	246.644	16
N	3.4309	1	253.927	11
O	2.2065	2	246.091	17
P	.4842	12	254.400	8
Q	.2458	16	254.006	10

$$\rho_i = -.4326* \quad 15 \text{ df} \quad (p < .05)$$

*p < .05.

Table 5
The Correlation Between Posttest i/d Ratios
and School Anxiety Means

Teacher	i/d Ratio	i/d Ranking	Classroom SAQ Mean	SAQ Ranking
A	1.5105	5	253.914	8
B	.4283	15	260.242	1
C	.9535	8	257.516	3
D	.5495	14	254.100	7
E	.9320	9	256.022	5
F	1.0004	7	251.084	15
G	1.6949	3	252.022	12
H	1.6065	4	251.393	14
I	.8087	12	257.533	2
J	.8975	10	251.483	13
K	.3324	17	254.993	6
L	1.0823	6	253.574	10
M	.8629	11	248.507	17
N	5.0000	2	253.035	11
O	6.4583	1	249.012	16
P	.4216	16	256.542	4
Q	.5547	13	253.678	9

$$\rho_i = -.5785* \quad 15 \text{ df} \quad (p < .02)$$

*p < .05.

Hypothesis Two

The theoretical hypothesis is

There will be an inverse relationship between teacher use of specific verbal reinforcement and student school anxiety levels.

The operational definition is

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between volunteer teachers ranked on the basis of their P/C ratio derived from Flanders' Interaction Analysis model and their classes when ranked on the basis of the school anxiety mean as measured by the School Anxiety Questionnaire.

The symbolic hypothesis is

$$H_{\text{null}}: \rho_p = 0.0$$

$$H_{\text{directional}}: \rho_p < 0.0$$

where ρ_p = Spearman rank correlation coefficient between teachers ranked on the basis of the P/C ratio and their class's mean school anxiety level.

The data concerning this hypothesis were analyzed using the Spearman rank correlation coefficient with the α level specified at .05 (one-tailed). The hypothesis was to be determined from the pretest data. Table 6 presents the teachers' P/C ratio, the ranking of the P/C ratio, and the teachers' classes' mean school anxiety level with its ranking.

Table 6
The Correlation Between Pretest P/C Ratios
and School Anxiety Means

Teacher	P/C Ratio	P/C Ranking	Classroom SAQ Mean	SAQ Ranking
A	.4286	13	256.593	4
B	.9444	9	260.887	1
C	.2979	16	256.927	3
D	.3585	15	255.676	5
E	.7843	11	259.900	2
F	1.7167	8	255.203	6
G	3.1111	7	249.562	15
H	9.6364	2	251.888	13
I	3.8462	3	254.674	7
J	.6154	12	252.015	12
K	.8276	10	254.028	9
L	3.6842	4	251.793	14
M	3.4583	5	246.644	16
N	11.5555	1	253.927	11
O	3.3030	6	246.091	17
P	.3650	14	254.400	8
Q	.2626	17	254.006	10

$\rho_p = -.5050^* \quad 15 \text{ df} \quad (p < .03)$

$*p < .05.$

The statistical analysis provides evidence for accepting the directional hypothesis that there is a significant inverse relationship between a teacher's specific verbal reinforcement as indicated by his P/C ratio and his class's mean school anxiety level.

The design of this study afforded the opportunity to replicate the testing of Hypothesis Two on the posttest data. Table 7 presents the results of this statistical analysis.

The statistical analysis for Hypothesis Two which was based on the posttest data revealed an even more significant inverse relationship between a teacher's specific reinforcing verbal behaviors as indicated by his P/C ratio and his class's mean school anxiety level.

Hypothesis Three

The theoretical hypothesis is

There will be an inverse relationship between changes in teacher use of generalized verbal reinforcement and changes in student school anxiety levels.

The operational hypothesis is

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between teachers ranked on the basis of gains in their i/d ratio derived from Flanders' Interaction Analysis model from the pretesting to the

Table 7

The Correlation Between Posttest P/C Ratios
and School Anxiety Means

Teacher	P/C Ratio	P/C Ranking	Classroom SAQ Mean	SAQ Ranking
A	4.0000	9	253.914	8
B	1.1481	13	260.242	1
C	.4500	15	257.516	3
D	.3654	16	254.100	7
E	1.4255	10	256.022	5
F	12.8333	4	251.084	15
G	33.0000	1	252.022	12
H	12.7857	5	251.393	14
I	12.1111	6	257.533	2
J	1.3077	11	251.483	13
K	.3000	17	254.993	6
L	19.5000	3	253.574	10
M	10.5000	8	248.507	17
N	26.0000	2	253.035	11
O	12.0000	7	249.012	16
P	1.2500	12	256.642	4
Q	.7875	14	253.687	9

$$\rho_p = -.5699* \quad 15 \text{ df} \quad (p < .02)$$

*p < .05.

posttesting and classrooms when ranked on the basis of gains in the school anxiety mean as measured by the School Anxiety Questionnaire from the pretesting to the posttesting.

The symbolic hypothesis is

$$H_{\text{null}}: \rho_{ig} = 0.0$$

$$H_{\text{directional}}: \rho_{ig} < 0.0$$

where ρ_{ig} = the Spearman rank correlation coefficient between teachers ranked on the basis of raw gains in their i/d ratio and gains in their classes' mean school anxiety level.

The data concerning this hypothesis were analyzed using the Spearman rank correlation coefficient with the α level specified at .05 (one-tailed). Table 8 presents the teachers' gains, the ranking of the i/d ratio, the classes' mean gain in school anxiety, and the ranking of the gain in school anxiety.

Hypothesis Three was predicated upon the validity of Assumption Nine which stipulated: Significant changes in the independent variable of teacher behavior would occur between the pretesting period and the posttesting period. During the preliminary analysis of the data, this assumption was tested with the correlated t test. The results of this analysis suggested that the independent variable of teacher behavior did not make statistically significant changes from the pretesting to the posttesting. Since the

Table 8

The Correlation Between Gains in i/d Ratios and
Gains in School Anxiety Means

Teacher	i/d Gains	i/d Gain Rank	SAQ Gains	SAQ Gain Rank
A	1.1799	3	-2.679	5
B	.0515	10	-.645	12
C	-.0660	13	.589	8
D	-.3757	16	-1.576	14
E	-.1226	14	-3.878	16
F	.2863	8	-4.119	17
G	.5171	5	2.460	3
H	.5034	6	-.495	10
I	-.2194	15	2.859	2
J	-.0192	11	-.532	11
K	.1297	9	.965	7
L	.5994	4	1.781	6
M	-.4501	17	1.863	5
N	1.5691	2	-.892	13
O	4.2518	1	3.079	1
P	-.0262	12	2.242	4
Q	.3089	7	-.319	9

$$\rho_{ig} = .027 \quad 15 \text{ df}$$

*p < .05.

data upon which Hypothesis Three was to be tested could not meet the assumptions inherent in this research design, Hypothesis Three could not be tested.

Hypothesis Four

The theoretical hypothesis is

There will be an inverse relationship between changes in teacher use of specific verbal reinforcement and changes in student school anxiety levels.

The operational hypothesis is

In the elementary grades three through six in Tucson School District #1, there will be a significant negative correlation between teachers ranked on the basis of changes in their P/C ratio derived from Flanders' Interaction Analysis model from the pretesting to the posttesting, and their classes when ranked on the basis of gains in the school anxiety mean as measured by the School Anxiety Questionnaire from the pretesting to the posttesting.

The symbolic hypothesis is

$$\rho_{\text{null}}: \rho_{\text{pg}} = 0.0$$

$$\rho_{\text{directional}}: \rho_{\text{pg}} < 0.0$$

where ρ_{pg} = the Spearman rank correlation coefficient between teachers ranked on the basis of gains in their P/C ratio and gains in their classes' mean school anxiety level.

The data concerning this hypothesis were analyzed using the Spearman rank correlation coefficient with the α level specified at .05 (one-tailed). Table 9 presents the teachers' P/C ratios, the ranking of the P/C ratio, the classes' school anxiety mean, and the ranking of this school anxiety mean.

Table 9
The Correlation Between Gains in P/C Ratios and
Gains in School Anxiety Means

Teacher	i/d Gains	i/d Gain Rank	SAQ Gains	SAQ Gain Rank
A	3.5714	8	-2.679	5
B	.2037	14	-.645	12
C	.1521	15	.589	8
D	.0069	16	-1.576	14
E	.6412	12	-3.878	16
F	11.1166	4	-4.119	17
G	29.8889	1	2.460	3
H	3.1523	9	.495	10
I	8.2649	6	2.859	2
J	.6923	11	-.532	11
K	-.5276	17	.965	7
L	15.8158	2	1.781	6
M	7.0417	7	1.863	5
N	14.4445	3	-.892	13
O	8.6970	5	3.079	1
P	.8850	10	2.242	4
Q	.5249	13	-.319	9

$$\rho_{pg} = .279 \quad 15 \text{ df}$$

*p < .05.

Hypothesis Four was predicated upon the validity of Assumption Nine which stipulated: Significant changes in the independent variable of teacher behavior would occur between the pretesting period and the posttesting period. During the preliminary analysis of the data, this assumption was tested with the correlated t test. The results of this analysis suggested that the independent variable of teacher behavior did not make a statistically significant change from the pretesting to the posttesting. Since the data upon which Hypothesis Four was to be tested could not meet the assumptions inherent in this research design, Hypothesis Four could not be tested.

Further Statistical Analysis

The preliminary statistical analysis revealed that the gains in the i/d ratio and the P/C ratio occurring between the pretesting and the posttesting were not statistically significant. However, it was possible that gains did occur in certain categories and not in others. Under these circumstances, such gains in a particular category could have been masked by no gains or negative gains in the other categories involved in the hypotheses.

In order to test the validity of this assertion, a post hoc analysis was conducted to analyze each of the categories of Flanders' Interaction Analysis model which were involved in the hypotheses for this study to ascertain

whether significant gains did in fact occur from the pre-testing to the posttesting. A one-tailed correlated t test was employed to analyze the data with the α level specified at .05. Then the teachers were ranked on the basis of their gain score each particular category and on the basis of their classes' school anxiety mean. The Spearman rank correlation coefficient was employed to assess the direction and the amount of this relationship. The results are presented in Table 10.

Table 10

The Significance of Categorical Gains in Teacher
Behavior and the Relationship Between
Categorical Gains and Gains in
Student School Anxiety

Categories	1	2	3	6	7
t test	1.73*	.72	-1.33	-.15	-1.62
Correlation	-.02	.30	-.13	-.10	-.01

* $p < .05$.

The results presented in Table 10 indicated that the gains occurring from the pretesting to the posttesting for categories two, three, six, and seven were not statistically significant; nor was each category's respective correlation with school anxiety statistically significant.

On the other hand, the pretest to posttest gain for category one was statistically significant. The Spearman rank correlation coefficient for teachers ranked on the basis of the gain scores in category one and for each teacher's class ranked on the basis of its school anxiety mean was not statistically significant.

Since the data were not amenable to parametric statistical analysis, there was no statistical method of assessing the effect of category one with the confounding effects of categories two, three, six, and seven removed from the dependent variable of school anxiety. Thus, in the post hoc statistical analysis, it was possible to subdivide the independent variable of teacher behavior into each respective category. However, because of the limitations of the data, it was not possible to isolate the influence of each respective category on the dependent variable of student school anxiety. Since the Spearman rank correlation coefficient was based on a confounded dependent variable, the absence of a statistically significant relationship between teachers ranked on their gains in category one and gains in their classes' school anxiety mean did not reflect upon the hypotheses of this study. It was therefore concluded that although category one made statistically significant gains from the pretesting to the posttesting, the statistical analysis was not sensitive

enough to overcome the confounding influence of the other categories.

Summary

This chapter presented the reliability and validity coefficients of the instruments employed in this study for the tested sample. The results of this analysis revealed a statistically significant low School Anxiety Questionnaire validity coefficient for the third grade part of the sample. As a consequence, the respective grades in the sample were tested for normality, and it was found that the third grade sample was not representative of the population upon which the achievement test was normed.

As a result of the unrepresentative third grade part of the sample, the nonparametric Spearman rank correlation statistic was employed since by definition it made no assumptions concerning the normality of the underlying distribution.

Assumption Nine, which stipulated that significant changes in the independent variable of teacher behavior would occur during the period between the pretesting and posttesting, was tested for validity. The statistical analysis revealed that significant changes did not occur and the assumption was not met.

In Hypothesis One it was predicted that there would be an inverse relationship between teacher use of

generalized verbal reinforcement and student school anxiety levels. This hypothesis was accepted.

In Hypothesis Two it was predicted that there would be an inverse relationship between teacher use of specific verbal reinforcement and school anxiety levels. This hypothesis was accepted.

In Hypothesis Three it was predicted that there would be an inverse relationship between changes in teacher use of generalized verbal reinforcement and student school anxiety levels. This hypothesis was predicated upon Assumption Nine which previous statistical analysis had shown to be invalid. Therefore, Hypothesis Three could not be tested.

In Hypothesis Four it was predicted that there would be an inverse relationship between changes in teacher use of specific verbal reinforcement and student school anxiety levels. This hypothesis was also predicated upon Assumption Nine which previous statistical analysis had shown to be invalid. Thus, Hypothesis Four could not be tested.

The post hoc statistical analysis revealed that there was a significant gain in category one of Flanders' Interaction Analysis model. However, category one gain scores did not significantly correlate with gains in student school anxiety class means. This finding did not reflect upon the hypotheses involved in this study due to

the fact that limitations inherent in the data excluded the possibility of a sensitive statistical analysis.

CHAPTER VI

SUMMARY, LIMITATIONS, CONCLUSIONS, AND IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Summary

Overview

This study was an attempt to investigate the relationship between teacher classroom behavior as interpreted from a reinforcement theoretical model and student school anxiety levels.

The data were gathered from 443 students and 17 teachers in grades three through six in Tucson School District #1 in Tucson, Arizona.

Flanders' Interaction Analysis model was used to analyze quantitatively the independent variable of teacher classroom behavior, and the School Anxiety Questionnaire was employed to measure the dependent variable of student school anxiety.

It was hypothesized that there would be an inverse relationship between teacher use of specific and generalized verbal reinforcement and student school anxiety levels. It was further hypothesized that there would be an inverse relationship between changes in teacher use of specific

and generalized reinforcement and student school anxiety levels.

Results

The preliminary statistical analysis revealed:

1. The observers who participated in this study were able to use Flanders' Interaction Analysis model with a reasonable degree of reliability.
2. The School Anxiety Questionnaire was reasonably reliable and valid with respect to the tested sample.
3. The third grade part of the sample was not representative of the population upon which the achievement test was normed.
4. The assumption of the occurrence of significant changes in the independent variable of teacher behavior during the period between the pretesting and the posttesting was not valid.

The results provided evidence for accepting Hypothesis One in that there was a statistically significant relationship between teacher use of generalized reinforcement and student school anxiety levels. Hypothesis Two was similarly accepted since there was a statistically significant relationship between teacher use of specific reinforcement and student school anxiety levels. Hypothesis Three, which stated that there would be an inverse

relationship between changes in teacher use of generalized reinforcement and student school anxiety levels, and Hypothesis Four, which stated that there would be an inverse relationship between changes in teacher use of specific verbal reinforcement and student school anxiety levels, could not be tested due to the fact that the data could not meet the assumption inherent in the research design.

Limitations

This study has been one of the first field studies designed to investigate the relationship between teacher classroom behavior and student school anxiety. For this reason, and because of the relatively small sample of teachers, and certain limitations inherent in the data, this study should be described as being ex post facto in that there was not systematic manipulation of the independent variable of teacher behavior (Kerlinger, 1967, p. 360). As a result of these factors, certain limitations have to be considered when interpreting the results. Some of these are:

1. The ex post facto nature of the research design. Accordingly, the statistical results should not be interpreted in terms of cause and effect.
2. Generalization of results to other nonvolunteer teachers. Since the sample was drawn from a

population of volunteer teachers, the results might not be valid for nonvolunteer teachers.

3. Generalization of the results to other age groups. What has been found in this study with respect to school anxiety and teacher classroom behavior may not be true for children who are younger or older than those in this sample.
4. Generalization of the results to other geographical areas. The results of this study may not be applicable to other geographical areas.
5. The use of probability statistics. Because the statistical analysis was carried out with the use of a probability distribution, there is a certain probability of making a Type I or Type II error.
6. Operationalization of the theoretical concepts. In order to make valid inferences from the statistical test back to the theoretical hypothesis, the operational definitions must represent the theoretical concepts. Although the investigator feels that the operational definitions were appropriate, the reader may want to consider them when interpreting the results.

Conclusions

On the basis of the previously mentioned results, it was concluded that teacher classroom behavior as

interpreted from a reinforcement model was monotonically related to student school anxiety levels. This conclusion can be justified on the basis of the following reviewed literature.

Hays (1963, p. 643) commented on the interpretation of the Spearman rank correlation coefficient. He suggested that this statistic reflects the tendency toward monotonicity and the direction of that relationship between the variables.

Concerning the ex post facto nature of the research design, Kerlinger (1967) suggested that although ex post facto research designs cannot be legitimately interpreted in terms of cause and effect, the results can be interpreted as being indicative of a relationship between the variables in question.

Further, the independent replication of Hypotheses One and Two offered greater evidence to the notion that these correlations were valid and not spurious. Sidman (1960) suggested that although group data research designs seldom replicated findings as a regular course of action, such replication would indeed help establish the reliability of the results. With each successful replication, the possibility of chance diminishes.

Implications and Suggestions for Future Research

The results of this study suggested that there was a monotonic relationship between the independent variable of teacher classroom behavior as interpreted from a reinforcement model and student school anxiety levels. The implication of this finding seems to be that teachers should attempt to modify their behavior to make it more reinforcing. That is, they should attempt to increase the incidence of their verbal responses involving the acceptance of student feelings, praise and encouragement, and acceptance of ideas and decrease the frequency of their verbal responses denoting the giving of directions and criticism or justification of authority. Teachers would thus be more sensitive to the effects of their classroom verbal behavior and would modify it to minimize anxiety arousal thereby maintaining optimum learning efficiency.

In spite of the previously mentioned reservations which were made with respect to this study, this suggestion appeared justified, especially when considering Flanders' (1964) findings concerning the concomitant effects of teacher reinforcement upon student attitude and achievement.

However, before any large-scale efforts are made to change teacher behavior with the primary intention of lowering student school anxiety, an experimental study should be undertaken to verify these results. Such a study

would involve the direct manipulation of the independent variable of teacher behavior. Should this research effort prove fruitful, alternative hypotheses concerning other possible independent variables would be eliminated, and a cause and effect relationship between the variables could be established. Then researchers could direct their attention to the task of devising the most efficient method of changing teacher behavior to make it more reinforcing with the effect of lowering student levels of school anxiety.

Another future study might focus on the nature of the relationship between the independent variable of teacher behavior and the dependent variable of student school anxiety levels. Although it is often assumed that functional relationships between variables are linear, such a relationship might well be curvilinear; the nature of the relationship between teacher classroom behavior and student school anxiety levels would be of prime importance in the development of the most efficient method of alleviating student school anxiety.

APPENDIX A

SCHOOL ANXIETY QUESTIONNAIRE

University of Michigan

by

James Dunn

and

John R. Bergan

PREPARATION

Each SAQ kit should contain a check-out list. This sheet should be filled out the day before administration, in order to assure that all preparations have been properly carried out.

Teachers will be requested to avoid discussing the SAQ administration with their pupils, since clear-cut results depend on the pupils' spontaneous responses. It is to be preferred that the pupils' regular teacher be absent during administration of the SAQ, since the pupils' generalized school attitudes are being probed, and his answers to the "teacher" question are to refer to teachers in general, rather than to any particular person. Teacher explanation of what is to come is best limited to the information that "Some scientists at the University of Michigan are interested in having them answer some questions." It is particularly important that the word "test" not be associated with the SAQ. If the teacher requests a copy of the SAQ, the questions and instruction manuals are open for inspection after both forms have been administered; however, these forms should be retrieved by the administrators, since the instrument is still undergoing experimental alteration. Before dismissing the teacher, the examiner should arrange a messenger system to inform the teacher when she is needed.

Standardized placement of the tape recorder requires that it be placed at about administrator's chest level (1-2 feet above the teacher's desk) in front of the room

equidistant from the two front corners of the room. If this placement is not possible, the closest compromise should be attained. Should the tape recorder fail during administration, the test administrator should read the questions himself, timing presentation of questions to be delivered at intervals of approximately 15 seconds. Records should be kept of any change in procedure.

Before turning in results, the test administrator should enter his observations on the check-out sheet, and should turn this in with his answer sheets.

EXPLANATION OF THE PURPOSE OF THE QUESTIONNAIRE

(Set up tape recorder so that "Why we are here" is ready to run. Form A Tape Footage Number 000.)

(Set up tape recorder so that "Today we are going to answer" is ready to run. Form B Tape Footage Number 190.)

Some of us are trying to find out which things about school bother you the most.

You may not have been asked questions like these before. These questions have no right or wrong answers. They just ask you what you think of school; how you get along in school; and what you do in school. I will pass out the list of questions now, but do not start to read them until I tell you to begin.

(Pass Out: Form A on First Administration
Form B on Second Administration)

You will not have to read all these questions if you do not want to. A tape recorder will read them to you. If you miss a question or think you do not understand the tape recorder, you can find the question in your question book. You will have time at the end to go back and do any questions that you may have missed. Most people like to keep track of the questions in their question lists while the tape recorder is reading them the question.

Now look at the front page of your question lists. Read the first page along with the tape recorder. It will explain "Why We are Here."

(Play Tape Presentation: Why We are Here: Form A
Today You are Going to
Answer: Form B)

You will not have to write very much because all you have to do is mark your answers on answer sheets like these.

(Hold up Answer Sheet)

I will pass out pencils and answer sheets now. Please don't ask me any questions until I have finished. Please don't mark on any of the papers until I tell you to do so.

(Pass out Answer Sheets: Form A or Form B and pencils)

Notice the space in the middle of the sheet for your name. Please print your name--first and last--in this space, like this.

(Print "Terry Smith" in Sample on Blackboard)

Be sure your name is in the proper place. It should be up here like this.

(Point to Blackboard)

Now, since some names are the same for boys and girls, please indicate whether you are a boy or a girl. Circle the word "boy" if you are a boy. Circle the word "girl" if you are a girl.

Now, put your pencils down and do not write again until I tell you to do so.

Now, put your finger on the answer sheet where you will be answering question Number 1. Notice there are five spaces for each question. Look at the top of the page. Notice the numbers 5, 6, 7, 8, and 9.

(Write these numbers at the heads of the columns on the blackboard)

This column is for answer number 5 on all questions. This column is for answer number 6 on all questions. This

column is for answer number 7 on all questions. The same for answers 8 and 9.

-- The answers for all the questions about things that bother you will range from NOT MUCH to A LOT. Look at the top of page A-1. We will give you a chance for five different kinds of answers.

(Write on the blackboard: NOT MUCH MEDIUM A LOT)

Our machine doesn't understand words; so we have to use numbers for the answers.

(On blackboard write numbers 5, 6, 7, 8, 9 above the words already there--vocalizing as you do)

If you want to say you are NOT MUCH bothered by the thing we ask, fill in space number 5. If you want to say you are bothered A LOT by the thing we ask, fill in space number 9. If you want to say the answer is only MEDIUM, fill in space number 7. If you want to say you are bothered by that thing something between NOT MUCH and MEDIUM, fill in space number 6. If you want to say you are bothered by that thing something between MEDIUM and A LOT, fill in space number 8.

EXAMPLES

Now here are some examples of the kinds of questions I might ask.

Don't use your pencils yet, though. This is just practice, so follow me on your answer sheets with your finger. Pretend your finger is your pencil.

Suppose we are about to begin. The tape recorder will say: "Question number one." Please place your finger on the answer sheet space beside the spaces for question number one. Question one might say: "How much does it bother you when the teacher scolds the class?" Pick the answer that tells how you usually feel. Suppose it bothers you a lot to have the teacher scold the class. You would pick the answer A LOT, the answer by number 9. So you would mark it in the place for number 9.

(Fill in Space Number 9 on the blackboard)

Mark it with your finger; pretend your finger is a pencil.

Now you would be ready for question number two.
The tape recorder will say: "Question number two." Please
place your finger on the answer sheet beside the spaces for
question number 2. Question two might say: "How often do
you get nervous when someone calls you names?" If that
bothers you with some people, a medium amount, you might
want to answer "sometimes," so you would blacken space
number 7 for that answer.

(Do this on the blackboard)

Now you would be ready for question number 3.
Suppose the tape recorder should say: "Question number
three." Please place your finger on the answer sheet
beside the spaces for question number three. Question
three might say: "How much does it bother you when the
teacher gives out report cards?"

In some schools, teachers never give out report
cards. If you get a question like that, you should say how
you think you would react if your teacher did give out
report cards. If you think that would not bother you much,
then you would blacken in space number 5 for that question.

BEGIN

Now we are ready to begin. Do not mark on the
question lists. They are just to help you to keep track of
your place when the tape recorder asks the questions. You
will hear each question out loud and then you will have
time to answer. Follow along with the tape recorder when
it reads each question. Then, after the tape recorder says
the question, you pick the number that most nearly matches
the way you would like to answer. Then, blacken in the
space following that number on the answer sheet.

It is very important that you keep track of the
question we are on so that you can keep your place on the
answer sheet. We are most interested in your first thoughts
about a question, so you shouldn't take very long in
deciding on your answer. Are there any question up to now?

(Answer a few questions, if necessary, but try to discourage drawn-out hypothetical discussions)

Now, when we begin I will not be able to answer questions, so you have to do the best you can. If you think the tape recorder is going too fast for you, raise your hand. If I see any hands raised, that will be a signal for me to slow it down. If you break a pencil, hold the pencil in the air and I will give you another one. Once we start, though, I will not be able to answer any questions. If you don't understand a question or it doesn't make sense, just skip it and go on to the next one.

O.K. now pick your pencils up and we will begin.

(Turn on Tape Recorder: Question Number 1).

BREAK

(There will be a short break at the end of Question 27, Form A-1 and at the end of Question 26, Form B-1)

Now you may put your pencils down and rest for a minute if you would like to.

(Examiner may now answer a few questions if necessary, but should discourage any prolonged discussions or any radical change in classroom procedures, such as a mass exodus to the lavatory or drinking fountain.)

(Examiner erases old scale from blackboard and places new scale on board as he explains the scale.)

(Begin second set: A-2 Form A
B-2 Form B)

Now let's begin the second set. Be sure your question book is turned to page A-2 (B-2). Please pick up your pencils.

(If the room is noisy, it is important for the examiner to avoid raising his voice in competition. When examiner continues in the same voice level, the class can be expected to calm down.)

Look at the top of the question page. Notice that the numbers now match different words.

(Examiner adds new words on blackboard--SELDOM or NOT MUCH)

Number 5 means that you are bothered SELDOM (OR NOT MUCH). Answer 9 now means you are bothered FREQUENTLY (OR A LOT). Answer number 7 now means you are only bothered SOMETIMES (OR MEDIUM). Answer number 8 now means you are bothered in between SOMETIMES and A LOT. Answer number 6 now means you are bothered in between SELDOM and SOMETIMES.

(Examiner turns on tape recorder: A-2 B-2)

FINISH

Form A: We need our pencils and question lists for other classes. May we have the answer sheets too, please.

Form B: You may keep the pencils as a souvenir to remind you that you have helped us to find ways of helping school children. May we have our question lists and the answer sheets now, please.

Thank you all.

A-1

1. How nervous do you get when you think about having to go to school?
2. How much does it bother you when the teacher says the class is going to have a test?
3. How nervous do you get when you think about report cards?
4. How much does it bother you when other kids ask what the teacher put on your report card?
5. How nervous do you get when you are taking a test and others work faster than you?
6. How nervous do you get when you think about making friends with someone you don't know?

7. How much does it bother you when the teacher says there is going to be a written test?
8. How nervous do you feel when the teacher asks you to tell the class about a trip?
9. How much does it bother you when you don't know what grade you got on a test?
10. How much does it bother you when your grade on a test is lower than you thought it should be?
11. How much do you worry about being lazy in school?
12. How nervous do you feel when you are waiting for the teacher to start a test?
13. How much does it bother you when your teacher corrects your paper?
14. How much does it bother you when someone brags about his grade and then asks to see yours?
15. How nervous do you get when everyone in class is waiting for you to answer a question and you forget what you are going to say?
16. How much does it bother you when you think you might have a substitute teacher that day?
17. How nervous do you get when you think you might do poorly on a test?
18. How much does it bother you when you think you know the answer to a question and you find out you are wrong?
19. How nervous do you get when you know your school work isn't as good as it could be?
20. How nervous do you get when the teacher sends you to the office?
21. How much does it bother you when the teacher lets the kids get away with too much?
22. How nervous do you get when the teacher hands out tests?

23. How much do you worry about doing well in school?
24. How nervous do you get when you think that the teacher might not like your school work?
25. How worried do you get when time is running out and you haven't finished your test?
26. How much does it bother you when other children bump into you in the hall?
27. How nervous do you get when you watch the teacher give out the test questions?

A-2

1. How often does it bother you when the teacher puts papers on the bulletin board and everyone can see the grade you got?
2. How often do you get nervous when you seem to be making too many mistakes in school?
3. How often does it bother you when your class is taking a test and someone near you just quits and gives up?
4. How much does it bother you when the teacher gives the class free time?
5. How nervous do you get when you have to read out loud in the class?
6. How often do you worry that someone at school might pick a fight with you?
7. How much does it bother you when you find out that your friends get better grades than you?
8. How nervous do you get when trying to do your school work just right?
9. How often do you worry that the teacher has so many rules you won't be able to remember them all?
10. How nervous do you get when you have to stand up and talk in class?

11. How often do you worry that your pencil might break while you are taking a test?
12. How often do you worry that a substitute teacher might give you work you can't do?
13. How much does it bother you when other people watch you try to do something?
14. How much does it bother you when people choose sides and you aren't chosen right away?
15. How nervous do you get while you are taking a test?
16. How often do you worry that the teacher might tell your parents how you behave in school?
17. How often do you think what it might be like if you didn't pass at the end of the year?
18. How much does it bother you when you lose your place on a test?
19. How nervous do you get when the teacher says nice things about you in front of the class?
20. How often do you wish you didn't worry so much about tests?
21. How often do you worry that your parents won't like your report card?
22. How much does it bother you when you think about the kind of marks you would like to get?
23. How nervous do you get when you don't understand what the teacher wants you to do?
24. How often would you rather watch a school play than act in it?
25. How nervous do you get when you have to make a speech in class?
26. How much does it bother you when you think about having to show your report card to your parents?

B-1

1. How nervous do you get when you do not understand what the teacher is talking about?
2. How nervous do you get when the teacher puts something on a test that he or she has not talked about?
3. How much does it bother you when the teacher gets very strict with the class?
4. How nervous do you get when the teacher gives the class a surprise test?
5. How much does it bother you when the teacher writes something in her record book after you answer a question in class?
6. How much do you worry that you might fail in some of your school work?
7. How nervous do you get when you are taking a test and see a question that you do not understand?
8. How much does it bother you when other kids get chosen ahead of you?
9. How nervous do you get while you are waiting to find out how well you did on a test?
10. How much do you wish that the teacher would never hand out report cards?
11. How much do you worry that you might fail?
12. How nervous do you get when you can't do all the questions on a test?
13. How much does it bother you when you have to do things for the teacher?
14. How much does it bother you when you guess that the teacher might give the class a test?
15. How nervous do you get when you think that your regular teacher might not be in school?

16. How much does it bother you when the teacher looks over your shoulder?
17. How much does it bother you when everyone but you seems to understand the assignment?
18. How much would you rather watch a game than play in it?
19. How nervous do you get when you know everyone is watching you?
20. How much does it bother you when you know report cards will be coming out soon?
21. How nervous do you get when everything you do in school seems to go wrong?
22. How much does it bother you when the teacher is not clear about what she wants you to do?
23. How often do you worry about having to be absent from school?
24. How often do you worry about doing poorly when the teacher says there is going to be a test?
25. How nervous do you feel when you start to look at your report card?
26. How nervous do you get when you come back to school after you have been absent for a while?

B-2

1. How much does it bother you when the teacher collects papers before you have finished?
2. How often do you worry about being too lazy in school?
3. How nervous do you get when you study for a test?
4. How much does it bother you when the teacher collects papers but doesn't tell you what grade you got?

5. How nervous do you get when you think that you might make a mistake on your school work?
6. How much does it bother you when there is not enough time for you to finish your school work?
7. How much does it bother you when the teacher doesn't make the other kids behave in class?
8. How nervous do you get when you know you are going to have a test?
9. How often do you wish your school never gave out report cards?
10. How often do you think about how smart your classmates are?
11. How nervous do you get when the class doesn't have anything to do?
12. How nervous do you get when you forget an answer to a question on a test?
13. How much does it bother you when the teacher tells you that you are going to have a test tomorrow?
14. How often do you wish that the teacher would not mark your papers so often?
15. How nervous do you feel when your parents ask you about your grades?
16. How often do you worry that your teacher might grade your class work?
17. How much does it bother you when you think that you are going to be late for school?
18. How nervous do you get when you are taking a test and the others are further ahead than you are?
19. How often do you worry about what your parents think when they get the teacher's report of your work?
20. How much do you worry that the teacher might give you a bad report card?

21. How much does it bother you when you think someone deliberately hurt your feelings?
22. How much does it bother you when you try to make friends with someone and they do not want to?
23. How nervous do you get when you have to recite in front of the class?
24. How nervous do you get when the teacher is about to give out report cards?
25. How often do you worry that the teacher might put something on a test that you do not know?
26. How nervous do you get when you do not know how to do something in your school work?

APPENDIX B

THE SAMPLE MATRIX

Category	1	2	3	4	5	6	7	8	9	10	TOTAL
1	-	-	-	1	-	-	-	-	-	-	1
2	1	-	-	6	5	-	-	-	-	-	12
3	-	-	8	17	4	1	-	-	2	-	32
4	-	-	-	14	3	-	1	38	48	-	104
5	-	1	-	26	62	8	5	-	1	2	105
6	-	-	-	5	5	13	-	1	-	3	27
7	-	1	-	2	4	-	3	1	-	2	13
8	-	5	9	15	6	-	3	4	2	-	44
9	-	4	14	17	13	2	1	-	13	2	66
10	-	1	1	1	3	3	-	-	-	8	17
TOTAL	1	12	32	104	105	27	13	44	66	17	421
% GT	0.2	2.9	7.6	24.8	25.0	6.4	3.1	10.5	15.7	4.0	(100)
% TT	0.3	4.1	10.9	35.4	35.7	9.2	4.4	Teacher T = 294 Student T = 110		(69.8%) (26.2%)	

APPENDIX C

COOPERATIVE COUNSELOR TRAINING PROGRAM

(The University of Arizona and Tucson Public School #1)

Tucson, Arizona

In anticipation of future needs for trained elementary school counselors, The Department of Pupil Personnel Services, Tucson Public School District #1, in cooperation with the Counseling and Guidance Department of the College of Education (The University of Arizona) developed a program to begin to meet these needs. The initial experience in this program for the teacher trainees consists of a series of seminar sessions (one semester-- fifteen sessions) devoted to child study techniques and classroom management procedures. The study sessions were so designed as to provide the participating teachers with a knowledge of counseling and guidance techniques applicable to the classroom setting.

Following the initial groups exposure to this program (Fall semester 1967) increased interest and enthusiasm among school district teachers not involved became quite evident. In response to this interest and enthusiasm, an additional group of teacher volunteers was organized to

become involved in a repeat of the seminar sessions during the second semester of the school year 1967-68.

Through mutual discussions involving teacher volunteers, district personnel and university personnel concern was expressed over evaluation procedures suitable for measuring the possible carry-over value, of such an experience, back to the classroom as the teacher attempts these learned techniques. Through this mutual decision process the EPIC Evaluation Center was contacted for assistance relative to this concern.

Following this request, many discussion sessions were held involving EPIC personnel and program personnel for the purpose of developing a systematic approach to the evaluation of the program. After the initial program description phase, the variables inherent in this program were identified and described.

Type II Variables: Descriptive

Instructional

The instructional variable of prime importance in this program is that of method. The rationale for the development of this initial experience for trainees was formulated from a number of theoretical assumptions focusing on teacher methods as they related to classroom management procedures. These assumptions were as follows:

- (1) Classrooms which operate on a basis of mutual respect depend on a teacher attitude approaching the equalitarian-democratic idea.
- (2) Children are more likely to exhibit achieving behavior in a classroom atmosphere which is oriented toward recognizing children's success rather than failure.
- (3) Teachers who operate from a theoretical position of "causalistic" behavior tend to be more judgmental and unempathetic to child behavior. Teachers who are equipped to understand the concept of "purposive" behavior will tend to be less judgmental and exhibit more empathy with children.
- (4) Student misbehavior often results from an autocratic classroom management system thus the resulting escalating interaction between children and adults.

Institutional

The institutional variables of concern in this program are the teachers and the student.

Nineteen teachers representing three elementary schools (Brown, Corbett, and Whitmore) in District #1 Tucson, Arizona volunteered for the evaluation phase of the initial planned experience in the program. These nineteen teachers were a part of the total enrollment in the seminar

program. These teachers represent grade levels three through six. No special criteria for selection of such a teacher sample was used beyond that of teacher consent to participate.

The student variable is defined as those students enrolled in the classes of the teacher volunteers. Such student sample is included in the program for evaluation on the basis of teacher participation. Student count at the initiation of the program was 429, representing grades three through six.

Type III Variables: Objectives

The following objectives of this program were determined in light of the basic theoretical assumptions that served as a format for the development of the extensive seminar study sessions devoted to child study techniques and classroom management procedures:

- (1) Demonstrate greater intrinsic control of the class. Intrinsic control is defined as the teacher acceptance and use of student ideas.
- (2) Provide a more encouraging type of atmosphere in the classroom. An encouraging type of atmosphere in the classroom is defined as the amount of praise and encouragement of student action on behavior.
- (3) Demonstrate increased understanding of purposive behavior. Increased understanding of purposive

behavior is defined as the use, in a non-threatening manner, of responses indicating acceptance and clarification of the feeling tone of students.

- (4) Demonstrate less autocratic classroom control and place greater emphasis on student responsibility for behavior. Less autocratic classroom control is defined as a decrease in the critical statements on statements justifying teacher authority intended to change student behavior.

Procedures for Evaluation

The evaluation procedures for this program will be related to the anticipated change in teacher-student verbal interaction as a result of the teacher exposure to the seminar experience, and the resultant student attitude change.

At the beginning of the semester of seminar sessions the teachers volunteering for the evaluation process will be observed, by trained observers, for approximately four hours using Flanders' Interaction Analysis System. The observers will be trained by the EPIC Evaluation Center. At the end of the semester of seminar sessions the teachers will be observed again for approximately four hours using the same observation system. Comparisons will be made between the initial and final teacher observation periods

to determine significant changes in the teacher's use of categories related to the stated objectives.

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