A STUDY OF THE RELATIONSHIP OF SITUATIONAL ANXIETY TO VOCAL SOLO PERFORMANCES OF COLLEGE FRESHMEN VOICE STUDENTS

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By

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Background

Ever since Sigmund Freud's works on the psychological concept known as anxiety, there has been much effort directed toward its definition and many attempts have been made to develop a fuller understanding of its implications to life. Since the turn of the century it has evolved from a rather narrow psychosexual framework to more inclusive definitions. The following is a current representative one: anxiety is a

> . . . persisting distressful psychological state arising from an inner conflict. The distress may be experienced as a feeling of vague uneasiness or foreboding, a feeling of being on edge, or as any of a variety of other feelings, such as fear, anger, restlessness, irritability, depression, or other diffuse and nameless feelings (4, p. 170).

In addition to the concept described by this definition, more recent research has been successful in isolating a similar though slightly different type of anxiety, a non-persisting one, which recurs from time to time as the result of some external stimulus. This type has been referred to as situational (1) or state (3) anxiety to be distinguished from the more general trait anxiety. It also may be described by such general phrases as fear, anger, and depression.

While writers and researchers may have encountered difficulty in being more definitive, they have encountered

less difficulty in acknowledging the numerous and varied manifestations of anxiety in human behavior. Educators and psychologists have evidenced increased interest in the ramifications of situational anxiety on various forms of student behavior in academic settings. Specifically, recent attention has been given to the relationship of anxiety and examinations.

Mandler and Sarason (6) found that anxiety can be facilitating or debilitating to academic performance. Alpert and Haber (2) support this finding. In addition, however, they found that anxiety induced no change at all in some students' performance. The amount of anxiety and the difficulty of the task are two variables that have been found to be crucial in determining the direction of effect which anxiety has on performance (5, 7, 8). Novelty of task is another variable closely related to difficulty of task that has also been found to operate on the amount of anxiety in a situation (6). The amount of anxiety has also been found to vary with age. On the average, adolescents have a relatively high level of anxiety which tends to subside somewhat with maturity (3). In general, therefore, it may be said that "anxiety present in the testing situation is an important variable in test performance" (6, p. 172).

Schools of music across America use a type of performance examination known as the jury. The jury examination often represents a vulnerable situation in that all of the above mentioned variables are known to be salient to some students.

The jury examination is unique in that through it musicianship, skill and subject-matter are all assessed simultaneously. It is a crucial examination in that every music student is subjected to it once a semester in the form of a final examination. Surprisingly, no known attempts have been made to investigate anxiety relative to the jury examination. Therefore, there appeared to be a need to determine the relationship of anxiety to student performance within the vocal music jury examination.

Statement of Problem

This was a study of the relationship of situational anxiety to vocal solo performances of college freshmen voice students.

Statement of Purposes

The purposes of this study were as follows:

1. To determine the significance of the difference in the vocal performance mean scores of college freshmen voice students, as measured by a selected criterion, in private voice lessons and in the music jury examination.

2. To determine the significance of the difference in the anxiety mean scores of college freshmen voice students, as measured by a selected criterion, in private voice lessons and in the music jury examination.

3. To determine the relationship of the differences between vocal performance and anxiety scores of college

freshmen voice students in private voice lessons and in the music jury examination.

Hypotheses

Consistent with the purposes, five hypotheses and twenty-two sub-hypotheses were formulated. Eight student groups were involved in the hypotheses. They were the four groups described in step one of the Procedures for Collecting Data section plus four other combinations of the same groups.

1. The vocal performance mean scores will be significantly lower in the music jury examination than in the private voice lessons for the following groups of college freshmen voice students:

   a. Male voice students total
   b. Female voice students total
   c. Students of limited vocal performance experience total
   d. Students of moderate vocal performance experience total
   e. Male students of moderate vocal performance experience
   f. Male students of limited vocal performance experience
   g. Female students of limited vocal performance experience

2. The vocal performance mean score will be significantly higher in the music jury examination than in the

private voice lessons for female students of moderate vocal performance experience.

3. The anxiety mean scores will be significantly higher in the music jury examination than in the private voice lessons for all groups of students used in the study.

a. Male voice students total

b. Female voice students total

c. Students of limited vocal performance experience total

d. Students of moderate vocal performance experience total

e. Male students of moderate vocal performance experience

f. Male students of limited vocal performance experience

g. Female students of moderate vocal performance experience

h. Female students of limited vocal performance experience.

4. Differences in vocal performance scores of private voice lessons and the music jury examination will be significantly related in a positive direction with the differences in anxiety scores of private voice lessons and the music jury examination for female students of moderate vocal performance experience.

5. Differences in vocal performance scores of private voice lessons and the music jury examination will be

significantly related in a negative direction with the differences in anxiety scores of private voice lessons and the music jury examination for the following groups of students:

a. Male voice students total
b. Female voice students total
c. Students of limited vocal performance experience total
d. Students of moderate vocal performance experience total
e. Male students of moderate vocal performance experience
f. Male students of limited vocal performance experience
g. Female students of limited vocal performance experience.

The five research hypotheses along with the twenty-two sub-hypotheses were converted into null hypotheses for statistical treatment.

Definition of Terms

1. Freshmen voice students refers to any college freshmen student taking private voice lessons at North Texas State University.

2. Lesson performance refers to the presentation of a song by a student for his teacher during a regularly scheduled private voice lesson. The lesson performances will be videotaped.

3. Jury performance refers to the presentation of a song by a student during the examination in the presence of the resident jury. The jury performance will be videotaped.

4. Limited vocal experience refers to two or less previous vocal solos during either music jury examinations or contests.

5. Moderate vocal experience refers to three or more previous vocal solos during either music jury examinations or contests.

Limitations of the Study

The limitations were as follows:

1. The study may be limited by any vocal improvement or increased familiarity with the vocal selections that could have taken place between the two recordings.

2. The study may be limited by any variance in anxiety that could have occurred after the anxiety scale was completed each time.

3. The study may be limited by any disadvantages that could have existed as a result of administering the same anxiety scale to the same students three times.

Basic Assumptions

The basic assumptions were as follows:

1. It was assumed that each subject's relative vocal condition at the time of all recordings was normal.

2. It was assumed that each subject's level of anxiety was not affected by the administering of the anxiety scale

or by the recording of the performances. Item number four under Procedures for Collecting Data is delineation of an attempt to reduce the possibility of increased anxiety resulting from the recording procedure.

3. It was assumed that differences in the acoustical properties of the studio and the recital hall were not crucial to the audio quality of the recordings.

Values of the Study

Values of the study encompassed at least two realms: the theoretical and the practical. The theoretical value is delineated in point number one below. The practical values are contained in the remaining two points. The values of the study were

1. To provide further validation of a recent innovation in the study of anxiety--the measurement of cognitive change concomitant with anxiety as determined by the Anxiety Differential, a paper-pencil situational anxiety scale.

2. To determine the comparability of vocal quality in lesson and jury performances by college freshmen voice students.

3. To determine the comparability of anxiety in neutral, lesson, and jury situations by college freshmen voice students.

Procedures for Collecting Data

1. At the October, 1968, Music Orientation Meeting of North Texas State University School of Music a questionnaire (Appendix A) and an anxiety scale (Appendix B) were administered to all first semester freshmen voice students.

Students who were seventeen and eighteen years of age were assigned to four categories as follows: male students with moderate vocal experience, male students with limited vocal experience, female students with moderate vocal experience, and female students with limited vocal experience.

2. On September 30, 1968, a letter (Appendix C) was sent from Dr. Kenneth Cuthbert, Dean of the School of Music, to the voice faculty. This letter introduced the study to the faculty and requested their cooperation.

3. On October 14, 1968, a list of each teacher's students to be used in the study was mailed to the several teachers. Along with this was an instruction sheet (Appendix D) describing in detail the teachers' role in the study.

4. Between the dates of November 18, 1968, and January 9, 1969, each student's lesson performance was videotaped. The specific dates of these recordings were arranged in keeping with the student's regular lesson times. These videotaped performances involved recordings within the lessons of selections sung again during the jury examination. Eight minutes prior to each of these lessons a measurement of anxiety was derived by means of the Alexander and Husek Anxiety Differential, a short paper-pencil anxiety scale.

Between these same dates and prior to the lesson performances an initial recording was made of each student. These initial recordings were not used in the study at all. Their purpose was to expose the students to the recording

procedure in an attempt to reduce undue stress which might have resulted from the mere novelty of the experience.

5. During Dead Week, January 13 through 19, 1969, the music jury examinations were conducted. Each student's jury performance in the presence of the resident jury was videotaped as were the lesson performances. Similarly, a measure of anxiety by means of the Anxiety Differential was taken approximately eight minutes prior to each jury performance.

The physical materials and conditions relative to the recordings--cameras, tapes, microphones, and distance from the microphones--were held constant for the two recordings. The rooms where the recordings were made did vary. The lesson performances were videotaped in a studio whereas the jury performances were videotaped in the Recital Hall of the North Texas State University Music Building.

6. On January 25 and February 1 both videotaped performances of each student--the lesson performance and the jury performance--were played to the non-resident jury. The jury rated the performances using the Official Vocal Solo Adjudication Form of the National Interscholastic Music Activities Commission (Appendix E). Specific instructions to the non-resident jury may be found in Appendix F. Reliability of ratings were considered in keeping with the recommendations by Selltiz (3) as described in Appendix F.

Procedures for Treating Data

The data was statistically treated in the following manner:

1. A composite vocal performance score was derived for the lesson performance for each student by adding the subparts of the adjudication form. From these scores group means were derived for the four groups of students used in the study.

2. A composite anxiety score was derived for the lesson performance for each student by adding the individual subscores of the anxiety scale. From these scores group means were derived for the four groups of students used in the study.

3. Vocal performance scores and anxiety scores corresponding to the jury examination were derived as group means for the four groups of students used in the study.

4. Hypotheses one through three were tested using Fisher's *t*.

5. Hypotheses four and five were tested using the Spearman rank order correlation.

6. The .05 level of significance was used.

The Plan of the Study

It has been the purpose of this chapter to succinctly introduce and describe the study. Attention was first given to a brief resumé of the professional literature in an attempt to establish the need for the study. The basic purposes and resulting hypotheses were stated. Terms used in the study were defined and limitations and assumptions were delineated. A statement regarding the value of the study was included which was followed by a section concerning

the methods of collecting data. Finally, the procedures for treating the data were stated.

Chapter II presents a discussion of the professional literature relative to three variables. The first variable concerns the relationship of anxiety and task difficulty with other interacting variables. Next is the presentation of data relative to differences and similarities of state and trait anxiety. Studies concerned with the development and use of the Anxiety Differential comprise the third variable. The Anxiety Differential by Alexander and Husek was the index used in the study for the measurement of anxiety.

Chapter III involves a description of the subjects and instruments used in the study. A detailed chronological presentation of the procedures used in the collection of the data is also stated.

Chapter IV presents the data derived from the study along with the findings resulting from statistical treatment of the data. There is a section including data relative to the hypotheses and another section including additional data.

Chapter V begins with a summary of the findings. The second section comprises a presentation of the conclusions that appear justified by the findings. Implications that may be derived from the conclusions are also included. The final section of the chapter includes recommendations for further research.

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CHAPTER II

REVIEW OF RELATED LITERATURE

Although the first occurrence of the word "anxiety" in the English language was as early as 1525 (27, p. 378), it was not until the rise of twentieth century experimental psychology that it became an object of scientific consideration. More has been researched and written on the subject during the past two decades than ever before (33). One of the primary reasons for this was the development of the first widely used anxiety scale in the early 1950's.

The Manifest Anxiety Scale was developed by Janet Taylor (39, 40, 41) with the assistance of I. E. Farber (10). It consists of items selected from the Minnesota Multiphasic Personality Inventory. The items are short true-false statements which require subjects to recall feelings and experiences relative to anxiety. The scale evolved from studies pertaining to learning theory. The authors were attempting to measure Hull's D or drive in human subjects (33).

Extensive use of the scale plus different specific needs by other researchers quickly led to the development of other scales. Freeman (12) developed the Anxiety Scale in 1953. Bindig (4) devised a short form of Taylor's scale in 1956. Welsh (44) developed the Welsh Anxiety Index the

same year. Lykken (23) reported the use of an original but unnamed anxiety scale in 1957. Irwin G. Sarason (35) refers to his Autobiographical Survey in an article in 1958 in which are found two anxiety scales. Simultaneous to these and other developments was the formulation of another variety of anxiety scales which will be discussed later.

As data accumulated from studies utilizing these scales it became apparent that they were not all measuring the same thing (33). These data were often responsible for prompting other studies designed to refine and establish validity of the scales. The resulting proliferation of anxiety studies produced increasingly divergent data. Some of the most important studies are reviewed in the following paragraphs. They are reviewed in conjunction with the variables with which they are associated.

Studies Concerned with the Relationship of Anxiety and Task Difficulty with Other Interacting Variables

Many studies have shown a relationship between levels of anxiety and task difficulty. Montague (26) compared high and low anxiety groups in ability to learn lists of nonsense syllables which differed in association value and intralist similarity. A significant interaction was obtained with low anxious subjects superior to high anxious subjects on the most complex or difficult tasks. On the least complex task, high were superior to low anxious subjects.

The design of the study was such that a factorial analysis of variance could be used, with primary interest focused on the interaction between experimental lists and level of anxiety. For trials six through twenty-five with all lists, the interaction *F* was 3.66, with 2 and 114 *df*. For the last twenty trials, the interaction *F* was 4.13 with the same *df*. The *F* ratios required for .01 and .05 levels of significance with 2 and 100 *df*, are 4.82 and 3.09.

Taylor (39) also found this true in an earlier study involving conditioned eyelid responses. She used an early form of the *Manifest Anxiety Scale* which was then being developed.

Ramond (32) vindicates Montague's finding as does Spence, Farber, and McFann (37). Both studies dealt with verbal tasks with college freshmen. Standard memory drums were used. The first study involved the projection onto a screen of sets of two-syllable adjectives. Each set was comprised of three words which varied in the level of their associational value. The second study utilized a paired-associates learning task, two lists of nouns which varied in associational value.

In addition, however, Lucas (22) and Nicholson (28) found task-difficulty involving verbal learning material to interact with the kind of instructions given. Both studies revealed that low anxious subjects performed better than

high anxious subjects when the task either involved complex tasks or stress motivating instructions.

Kight and Sassenrath (20) found that subjects of high test anxiety who have high achievement motivation work faster and make fewer errors than those who score low on either variable when involved with highly structured tasks such as programed instruction. Van Buskirk (42) also revealed that in the learning of complex material under anxious but not ego-involving conditions, high anxious subjects out-performed low anxious subjects. His study utilized undergraduate psychology students involved in reasoning tasks of different levels of difficulty. The reasoning tasks were comprised of four sub-tests concerned with figure analogies and logical deductions. Wittrock and Husek (45) vindicate Buskirk's conclusion. Their study also involved undergraduate psychology students. Task difficulty was introduced in the form of a difficult passage from Buddhism. Scores were obtained regarding the amount of comprehension and retention of the information in the passage during stress. Kamin and Clark (19) found similar results among Canadian Air Force men in their reaction time to an avoidance-learning task. The study involved an analysis of the amount of reaction time from a simple reaction to an avoidance reaction in response to mild electrical shocks through finger-clip electrodes. The authors found that highly anxious subjects made more quickly the transition from a simple response to an appropriate avoidance response.

Mandler and Sarason (24) discovered that the existence of prior experience is an interacting variable with task difficulty and amount of anxiety. Items from the Kohs Block Design No. 13 were administered to undergraduate college students who were divided on the basis of prior experience with such items. The data revealed that increased experience tends to decrease variability in both the high and low anxious subjects and also tends to improve the high anxiety group's performance. An earlier study by the same authors (25) supports this finding. A first-trial superiority of the low-anxiety over the high-anxiety group was found to exist in performance of Kohs Block Design No. 13. As the learning process proceeded, however, the high-anxiety group tended to improve performance scores. Also, the variability of the high-anxiety group was significantly larger than that of the low anxiety group.

Dember, Nairne, and Miller (9) found anxiety and task difficulty to interact with sex. Two studies were conducted involving undergraduate Introductory Psychology students. The first study involved an intercorrelation of anxiety scores from the Achievement Anxiety Test with School and College Ability Test scores, midterm test scores, and grade point averages of male students. The second study involved a correlation of scores from the Achievement Anxiety Test with final semester grades of males and females.

Study number one produced a correlation of -.65 between the facilitating and debilitating scales of the Achievement Anxiety Test. The second study produced the same correlation for male students. Female students, however, registered a correlation of -.42. All correlations involved one tailed tests at the .01 level of confidence. The authors interpreted the data to mean that the particular scale used was not as useful for females as for males.

Carrier and Jewell (5) concur with Dember, Nairne, and Miller that there are sex differences in anxiety scores. However, their data revealed the Achievement Anxiety Test to be more sensitive for females than males.

Wadia and Newell (43) found that with sixth graders, low-anxiety males performed significantly better, .05 level of confidence, than high-anxiety males on a divergent performance task but that there was little difference between low and high-anxiety females on the same task.

Feldhusen, Denny, and Condon synthesize several studies with the following remark:

> Anxiety seems to facilitate learning simple intellectual skills and to inhibit learning complex intellectual skills. Further, there are predictable sex differences in that females are characterized by higher anxiety levels than are males (11, p. 40).

Again, however, the latter conclusion is not consistently substantiated as made evident from two studies by Alexander and Husek (1) and Husek and Alexander (16). Both studies revealed lower anxiety scores for females than for males.

Such contradicting evidence led the authors to conclude that ". . . sex and anxiety scores may often interact . . . the authors would reinforce their earlier recommendations that in experiments involving anxiety, male and female responses should be analyzed separately" (16, p. 317).

Pressey (31) found a large amount of variation among age groups concerning the objects or constructs about which they worried or felt anxious. Five thousand students ranging from the sixth grade through college seniors were asked to register their feelings toward ninety potential topics of stress. Compilation of the data revealed that the youngest students evidenced greatest stress toward physical dangers such as fire. The oldest students had little fear of physical dangers but considerable anxiety about social and career matters such as appearance and ability. The data also revealed that of the ninety items on the scale, anxiety about examinations ranked first among college freshmen.

Cattell (7, p. 366) supports Pressey's findings. He reports that anxiety levels vary with age. "Anxiety fluctuates in early childhood, rises most consistently in adolescence and declines considerably through adulthood until it rises again after 60 or 65."

Cattell and Scheier (6) also found that anxiety varies with occupations. They discovered that high anxiety is ordinarily prevalent in people such as artists and writers who are engaged in creative occupations. Marked exceptions

are observed, however. Supposedly creative occupations such as researchers in physics and biology were not found to be highly anxious.

By means of questionnaire data Cattell (7) also disclosed that anxiety seems to fluctuate from one national culture to another. Indians and French, for example, showed substantially higher anxiety than Americans.

Studies Concerned with the Relationship of Trait and State Anxiety

Psychologists have recognized two different varieties of anxiety. These have variously been referred to as trait and state, general and specific, and general and situational anxiety. The first of each pair of adjectives refers to a rather continuous and persisting psychological condition which pervades and is in essence an intregal part of one's total personality. The last term of each pair of adjectives refers to a periodic and fluctuating type of stress which is more predicated upon passing circumstances. Levitt makes the distinction as follows:

> When the psychologist says a person is anxious the statement may be interpreted in either of two ways. It may mean that the individual is anxious <u>at the moment</u>, or it may mean that he is an <u>anxious person</u>. The two interpretations are quite different. The former refers to an immediate and probably ephemeral state, whereas the latter is a constant condition without a time limitation (21, p. 13).

In response to the statement, "Mr. Smith is anxious," Spielberger similarly adds:

> This may be interpreted as meaning either that Smith is anxious now or that Smith is an anxious person. If the statement is meant to imply that Smith is anxious now, at this very moment, then the validity of the statement may be ascertained by making appropriate measurements to determine whether or not Smith is manifesting /experiencing/ a particular state with specifiable properties. On the other hand, if the statement is intended to signify that Smith is an anxious person, the same measurements should reveal that Smith's level of state anxiety is chronically higher than that of most other people, as would be the case if he were suffering from anxiety-neurosis (38, p. 12).

Cattell (7) agrees that this distinction should be made. The terms he uses are trait and state anxiety. Trait anxiety he has labeled as U. P. I. 24, (Universal Psychological Index). He suggest no separate number for state anxiety. The probable reason is that he views the two as being more different in degree than in kind. In fact, he states that the two are ". . . unmistakably the same species . . ." (7, p. 363).

He has made an attempt to delineate the "specifiable variables" of which Spielberger wrote. Approximately fourteen different variables were found to relate to both varieties of anxiety. These were such entities as rate of respiration, amount of hippuric acid in the urine, heart rate, saliva volume, susceptibility to annoyance and willingness to admit common faults. His general finding is that state anxiety loads more heavily on the physiological variables. As an explanation of his use of the term "load" Cattell states the following:

> Once a factor has been checked in several samples of people across several ranges of measurement, it provides a "loading pattern" . . . that shows the degree of influence of the underlying independent variable on each of the main manifestations in terms of correlation coefficients between the factor--anxiety in this case--and the variable (7, pp. 360-361).

The relationship of anxiety to the various physiological indices was also investigated by Harold Johnson (18). Johnson's study concerned the relationship of scores on a state anxiety scale to three physiological measures--heart rate, skin conductance and palmar sweating. His data concurred with Cattell's (7). They revealed that all four measures significantly indicated the existence of anxiety in undergraduate psychology students involved in a task-difficulty activity. This study is reviewed in more detail in the following sections of this chapter.

However, the dependability of physiological measures are not beyond question. Even though the establishment of correlations of scores from new anxiety scales with various physiological indices is thought by some to be the most objective indications of the validity of these instruments, this procedure appears not to be totally justified.

The following remarks by Grinker (14, p. 137) are germane to this issue.

> One of our greatest problems in . . . research is the timing of the measurement of variables [physiological variables]. . . . The adrenal medullary responses such as epinephrine or norepinephrine appear very quickly and have a very short half-life. Adrenal cortical steroids are

> elevated very slowly. . . . Heart rate, blood pressure, and respiration have different time factors. . . . It has not been resolved in . . . research whether these variables are simultaneously activated or whether one is a donor to another, or whether there is a series of chain reactions or compensatory cyclic systems which vary in speed and direction. The numbers which we use for each variable probably do not mean the same thing, and the number of variables involved creates many problems in data analysis, not the least of which is the "law of initial values."

Levitt concurs very strongly with Grinker's remarks. After reviewing the studies which utilized the four most common physiological indices--blood pressure, heart rate, respiration rate, and electrical skin resistance--he made the following conclusion:

> The results viewed as a whole are disappointing . . . Physiological measures are seldom found to be related either to each other, or to psychological indexes of anxiety, or to the intensity of stress. The best that we can surmise is that patterns of physiological reactivity to anxiety are idiosyncratic, a circumstance which renders them unsuitable for use at the current stage of research on anxiety as a construct.
>
> Furthermore, . . . Many of the measures are notoriously labile, rising and falling rapidly, subject to diurnal variations that are not entirely understood, and easily affected by conditions of the experiment other than the experimental treatment itself. Lability may actually be an alternate explanation for what is presumed to be individuality of response (21, pp. 56-57).

Levitt stated that of the types of anxiety measures available to researchers today, the psychological instruments are "most important" (21, p. 57). Even though his discussion includes both state and trait anxiety, he makes no distinction between them insofar as the applicability of the physiological

measures is concerned, notwithstanding Cattell's (7, p. 360) finding reported earlier.

Alpert and Haber (3) vindicate Levitt's conclusion regarding the importance of the psychological instruments. Just as Cattell found the physiological measures to be better indicators of state anxiety than of trait anxiety, so they found the state anxiety scales better than the trait scales as indicators of state anxiety. They quote Janet A. Taylor, author of the most widely used general or trait anxiety scale, as follows:

> Underlying the construction of the MAS /Manifest Anxiety Scale/ is a theoretical assumption that there is a relatively constant "level of internal anxiety or emotionality," and also "that the intensity of this anxiety could be ascertained by a paper-and-pencil test consisting of items describing what have been called overt or manifest symptoms of this state" (3, p. 208).

The authors take issue with this position by contending that if Taylor is correct in positing such a general anxiety state, then it should follow that a single measure of a set of manifest anxiety responses gathered from many situations would be an adequate predictor of the presence and effects of anxiety responses in any situation including pre-examination or pre-surgical situations as well as pre-meal or pre-golf situations. They report the following study which tends to support their contention.

Three hundred and seventy-nine students were administered six anxiety scales during neutral settings and

immediately prior to final examinations. The scales included the following three trait or general scales: the Taylor Manifest Anxiety Scale, the Welsh Anxiety Index, and the Freeman Anxiety Scale. The state or specific scales used were the Mandler-Sarason Test Anxiety Scale and the Debilitating and Facilitating forms of the Alpert-Haber Achievement Anxiety Test. The basic purpose was to determine the comparability of the trait and state anxiety instruments in measuring situational anxiety such as found in temporary examination setting.

The data revealed that correlations among the general anxiety scales ranged from .32 to .39; whereas, correlations between the specific scales ranged from .40 to .64. Correlations between the specific and general scales ranged from .24 to .38.

> The implications of the findings are reasonably clear. Specific anxiety scales and general anxiety scales measure, to a significant extent, something different. Furthermore, . . . the specific scales are better predictors of academic performance than are the general anxeity scales (3, p. 209).

Alpert and Haber further observed that

> Too often conclusions have been drawn on the basis of correlations with the MAS /Taylor Manifest Anxiety Scale/ regarding the presence or absence of anxiety or the effects attributable to anxiety without due consideration of the possible limitations of a general scale of this type as a sensitive indicator of anxiety in any limited, recurring type of situation (3, p. 208).

Dember, Nairne, and Miller (9) concur with Alpert and Haber as does Child (8).

A study of Nicholson (28) is particularly relevant to this idea. He conducted an experiment dealing with the influence of anxiety upon learning. Although the kind of anxiety involved in the study was situational--easy versus hard tasks--a general scale was used, the Manifest Anxiety Scale. Interestingly, the author himself makes the following point:

> A rather subtle assumption can easily creep into research using anxiety scales. Ss who score high on an anxiety scale are often regarded experimentally as always being anxious. It might be more correct to speak of them as being more anxiety-predisposed, or that they become more anxious in a greater variety of situations than low scorers (28, p. 305).

This is precisely the point referred to above by Alpert and Haber. It also is a condensed explanation for and justification of various situational anxiety scales for certain types of research.

Mandler and Sarason (24, 25) were among the first to contend for a distinction between the two types of anxiety. Their studies led to the development of the first state or situational anxiety instrument, the Test Anxiety Scale. Similar to Alpert and Haber's (3) instrument, this one was also devised for test-taking situations.

The first study involved the administration of a questionnaire pertaining to anxiety immediately prior and also during an examination. The questionnaire was an initial form of the Test Anxiety Scale and was composed of recall

and self-report items of the prototype, "Before taking a course examination, to what extent are you aware of an 'uneasy' feeling?" This item was followed by a ten point scale ranging from "am not aware of it at all" to "am very much aware of it" (25). Scores from the questionnaire were correlated with ratings by a trained psychologist on overt indications of anxiety such as perspiration, excessive movement, inappropriate laughter and exclamations, questioning of instructions, and hand movements. Dichotomization of both the ratings and the questionnaire scores into low and high anxiety groups produced a point correlation of .59 at the .001 level of confidence.

These data, plus a comparison of the scores with other variables including grades made on the examination, led the authors to conclude the existence of a transitory and fluctuating type of anxiety. They further found that this ". . . anxiety present in the testing situation is an important variable in test performance" (25, p. 172). These conclusions were confirmed in a similar study by the authors one year later (24). Another study (36) several years later with elementary school children further vindicated these findings. A revised version of the Test Anxiety Scale for children was used in that study.

Sarason along with Gordon (13) conducted still another study which was addressed very specifically to differences and similarities between state and trait anxiety. Three

hundred and eighty-nine undergraduates were administered two anxiety scales in succession during a single regular class session. The Test Anxiety Scale served as the instrument for state anxiety, and the Questionnaire on Adult Forms of Anxiety and Worry was used for a measure of trait anxiety. The data revealed a product-moment correlation between the two of +.468 which, according to the authors, ". . . with an N of 389 is quite significantly different from zero" (13, p. 320). They conclude by saying

> The over-all results of this study support the generalization that anxiety in a testing situation is significantly associated with anxiety in a variety of other situations. However, it should not be overlooked that the size of the correlation between "test anxiety" and "generalized anxiety" does not account for most of the variance (13, p. 321).

Irwin G. Sarason conducted two studies which were similar and which produced similar data to the last study.

The first one (35) involved sixty neurotic and psychotic patients of the West Haven, Connecticut, Veterans Administration Hospital. The patients were administered the Autobiographical Survey immediately following participation in a verbal conditioning activity. The Autobiographical Survey is a true-false inventory comprised of six different scales one of which is a general anxiety index and another a situational anxiety scale. The data revealed a .46 correlation between the two anxiety scales.

The second study (34) utilized 376 male and female fresh-

The true-false Test Anxiety scale used in the first study was also used here along with the Lack of Protection scale, a general anxiety index. Both instruments were administered during regular class sessions in Introductory Psychology. Correlations of .41 for men and .49 for women were found between these two scales.

It appears to be a warranted conclusion, therefore, to say that even though the two are somewhat related, "research findings suggest that it is meaningful to distinguish between anxiety as a transitory state and as a relatively stable personality trait . . ." (38, p. 16). Speilberger attempts to explain the relationship of these two entities with his "trait-state conception of anxiety" (38). This is not another theory of anxiety but a conceptual framework for viewing theory and research on anxiety phenomena. The essence of it can be seen in the following statement.

> A-trait is assumed to reflect residues of past experience that in some way determine individual differences in anxiety-proneness, i. e., in the disposition to see certain types of situations as dangerous and to respond to them with A-states (38, p. 18).

This theory seems not to be inconsistent with available research data and it concurs with Cattell's theory that the two kinds of anxiety are ". . .unmistakably the same species . . ." (7, p. 363).

Studies Concerned with the Development and Use of the Anxiety Differential

In 1962 Sheldon Alexander of Southern Illinois University and Theodore Husek of the University of California,

Los Angeles, published an article (1) which described initial attempts at the development of an entirely different situational anxiety scale. Their instrument is different from all others in three important ways. This is the only anxiety scale of any kind which (1) is not obvious to the subjects as being an anxiety scale; (2) obscures the way of determining what subjects might consider to be favorable or unfavorable answers which should reduce intentionally fraudulent responses; (3) is not bound by specificity of item content which would greatly limit the applicability of the instrument to different situations. The following paragraphs give a brief description of the instrument.

The scale is constructed on the format of a semantic differential (30). A regular semantic differential item involves a word or name and two opposing adjectives. The authors give the following as a common example, "PRESIDENT EISENHOWER: effective-ineffective" (1, p. 327). The Anxiety Differential contains such items but relies more heavily on novel pairings--that is, words which do not tend to be associated. An example from the scale is, "DREAMS: loose-tight" (1, p. 328).

These items were placed on a seven point continuum as follows:

DREAMS

loose_____:_____:_____:_____:_____:_____:_____tight

The instructions request that the subject place an X along the continuum at the point where he feels the term and its adjectives to be most nearly associated. For example, a check in either of the two extreme positions would indicate that the subject feels "DREAMS' to be "very closely associated" (1) with the adjective nearest the check. Moving toward the center of the scale, the next two positions on either end of the continuum indicates the term and the chosen adjective to be "quite closely related." Similarly the next positions toward the center would be "slightly related." The center position itself is checked when the subject feels both adjectives to be equally associated with the term or when he sees no relationship at all.

In each item one adjective represents stress and the other represents lack of stress. "Tight" is the adjective representing stress in the example above. The position of the adjective representing stress varies from left to right of the continuum throughout the items of the scale so as to eliminate the possibility of associating a particular kind of response to a particular end of the items. In each case the items are numbered from one to seven from the low or non stress adjective to the stress adjective. This facilitates scoring. A low number represents low anxiety and a high number, high anxiety. There are thirty-three items on the scale of which thirteen are filler items. Scores of the other twenty are totaled for a composite score for each complete sheet.

The authors explain that the reason for using novel pairings of terms and adjectives is to partially disguise the purpose of the scale thus reducing the likelihood of intentionally fraudulent responses. That is, if the subjects do not know what the scale is designed to measure or what particular items mean, it is assumed that attempts to falsify their responses are made more difficult. Evidently the attempt was at least partially effective in that as few as 8 per cent of 180 control subjects and 32 per cent of 237 experimental subjects were able to guess what the scale was designed to measure. Moreover, the scores of those who guessed the purpose of the scale were not significantly different from those who did not (1).

The scale is administered just prior or during, if possible, or immediately after the expected time of anxiety. Since it provides for the subjects to register their feelings or opinions, it is a self-report scale as are other state anxiety instruments. The crucial difference, however, is that the subjects are not aware of the meaning associated with what they report. Other state anxiety scales register responses of conscious feelings or opinions while the Anxiety Differential registers responses of often unconscious changes in cognition. This point will be elaborated below. The following pages are a review of the studies involving the development and use of the Anxiety Differential.

Insight can be gained from the following lines of the initial study already alluded to regarding the authors' rationale that a scale of this kind might actually measure anxiety:

> It was our basic assumption that the person who is anxious for a short period is in a different state and perceives things differently from when he is not anxious. Among the changes produced by anxiety states are changes in cognition, that is, changes in the meanings of various events, persons, objects, and ideas. Such changes could be used as indicators of anxiety if: (a) there were a consistent set of changes over most individuals, and (b) these changes could be measured (1, p. 326).

The authors then report that having decided upon a modified version of the semantic differential as the basic format to be used, the next task was to find a preliminary set of concepts and scales which might differentiate between anxious and non-anxious states. Sixty-eight such items were decided upon as a result of "a pilot study involving hypotheses concerning the nature of anxiety" (1, p. 327). These items were tested in the following two studies which were reported in the article.

Study number one involved 247 paid male volunteers who were predominantly college freshmen. These students were randomly assigned to a control group and an experimental group. The experimental group was shown a twelve minute color film of a surgical operation on the frontal sinus of a human patient. The control group was shown a quiet travelogue about Nova Scotia. All students were informed that

they were about to view films. They were not informed as to the nature of the films until they had completed a preliminary form of the Anxiety Differential including the sixty-eight items. After the films the subjects again filled out the Anxiety Differential items and the Nowlis-Green Adjective Checklist (29) which is designed to measure momentary moods.

The first objective was to determine which items had been sensitive indices of anxiety. Three scores were obtained for each subject for each test item: pretest score, post-test score, and a change score or difference between the first two. The use of Fisher's t with the pretest-post-test differences of both the control and experimental groups revealed that there were eighteen items which differed at the .05 level of confidence. Comparisons were also made between the two groups for the post-test scores only. Ten items were shown to be sensitive at the .05 level.

The authors then undertook the combining of items with filler items to form six different scales. The purpose was to obtain the ". . . optimum combinations of items that could then serve as an index of anxiety in future research" (1, p. 330). The six scales were also designed for different kinds of research. The first four were for designs involving pre-post measures. Scales five and six were for designs allowing only for post tests. The final result was the selection of twenty-eight items which appeared to be maximumly

sensitive indicators of anxiety. These items appeared in various combinations in the six scales with much overlapping of items between the scales.

In interpreting the results of the study the authors state the following:

> . . . we assume that anxiety or some very similar emotional condition was actually aroused in most subjects who viewed the surgical film. While there is no way to prove this assumption, there is some evidence which indicates it is a very reasonable one. In the preliminary screening of the movie by the Institute of Communications Research staff members, the introspective consensus was that anxiety had been aroused. The comments of the subjects after the experimental sessions tends to support this. [Several students found it necessary to leave the room during the showing of the experimental film because of the stress which it aroused.] The fact that a number of obvious anxiety-related items (e. g., ME: frightened--fearless, etc.) showed significant shifts as a result of the experimental treatment also supports the assumption that the state aroused was some form of anxiety (1, p. 334).

Another point which supports this assumption is the relatively high correlation found with the anxiety factor of the Nowlis-Green Adjective Checklist. The total score on each one of the six scales was obtained for each subject. These scores with the Adjective Checklist scores produced the following correlations: scale one, .52; scale two, .52; scale three, .50; scale four, .48; scale five, .62; and scale six, .63. All of these correlations were significant beyond the .001 level of confidence. Furthermore, a centroid factor analysis was performed which revealed the following: "The first factor (which was by far the largest one to emerge

from the factor analysis) . . . seems to be definable as an anxiety factor" (1, p. 333).

In the same article the authors report a second study which was similar to the first but which was designed to obtain additional data. This study dealt with (1) cross validation of items with another sample of subjects, (2) cross validation under other stimulus conditions, (3) sex differences, (4) and anonymous verses personal testing.

The design of the study was similar to the first except that a filmstrip of automobile accidents which included pictures of the victims was used for the experimental group while a filmstrip of baby pictures was used with the control group. An appropriate audio narrative recording accompanied both filmstrips.

The subjects included forty-one males and fifty-nine females for the experimental group and twentysix males and twenty-six females for the control group. Each subject completed the Anxiety Differential before and after the filmstrips were presented. The test was comprised of all items used in the six scales in study one plus nine additional items.

The authors discuss the results as follows:

> All six of the exploratory anxiety scales developed in Study I differentiated between anxiety and non-anxiety groups in Study II. In addition these scales, which had been developed for male subjects in the initial study, were successful for female subjects in the second experiment. The scales also demonstrated reasonable reliabilities on cross validation (1, p. 342).

Of the items used in the experiment, sixteen displayed significant changes for men, $P < .025$, one tail. For the women, similar changes were evident in fifteen items.

Internal consistency of the items was also tested by means of coefficient alpha. The six scales produced scores for males ranging from .52 to .80. Scores for females ranged from .42 to .85. The authors note that the lower scores are derived from the two which involve post-test scores only. The point made is that ". . . measures from a single testing generally . . . are more reliable than change scores" (1, p. 339).

Even though the first experiment employed only group testing, the second experiment involved individual testing and found there to be no significant difference in the sensitivity of the scale.

The article is concluded with a caution against generalizing too broadly on the findings. They emphasize that applicability of the Anxiety Differential under different kinds of anxiety conditions, such as moral anxiety or rejection anxiety cannot be assumed without additional research.

Additional research was undertaken immediately. One year later two studies (16) were reported by the same authors.

In these studies the authors reiterated the need of determining if the Anxiety Differential was sensitive to different stimulus situations. The point was emphasized that both of the previous studies used stimuli of a visual nature pertaining generally to bodily harm. Since the Anxiety

Differential is designed to measure cognitive change, it appeared important to determine if a different stimulus would elicit the same or different cognitive responses.

To obtain this information 112 male sophomore students in an engineering mechanics course at the University of Illinois were selected for the experimental group in study number one. Fifty-five male students in two mathematics classes were selected for the control group. Both groups were administered the Anxiety Differential immediately prior to entering their classes. The difference, however, was that the experimental group was about to enter class to take the final examination in the course while the control group was about to enter a regular class session far removed from a scheduled examination.

Study number two utilized 126 males and 111 females from an Introductory Psychology class at the University of Illinois as the experimental group. One hundred ten males and seventy females from another Introductory Psychology comprised the control group. Similar to study number one, the experimental group was administered the Anxiety Differential immediately prior to taking the final examination in the course while the control group completed the scale just prior to a regular class. The main purpose of study number two was determine the existence of any sex differences in response to the scale items.

The authors conclude:

> The results of Studies 1 and 2 indicate that the item combinations developed to measure bodily harm anxiety were also reasonably sensitive to pre-examination anxiety. The tests were able to differentiate significantly between the anxiety and control groups (16, p. 315).

To the question of whether or not the cognitive changes inducted by bodily harm anxiety were found to be the same as those induced by examination anxiety, the authors state, "The data indicated there was a sizable amount of commonality" (16, p. 315). However, there also was indication that some of the cognitive responses were not the same. A few items appeared to be less sensitive or inconsistently sensitive to the two kinds of stimuli described in the studies. The authors emphasized that these items totaled only five and that they would be the object of future research.

Means and standard deviations were computed for each of the item combinations used in previous studies. Main consideration, however, was given to four tests which were revisions of the six preliminary scales used earlier. By simply rearranging the key used to score the Anxiety Differential booklet of thirty-three items, a given item could in one test be a counted item while in another test serve as a filler item. This procedure enabled the authors to develop different scales for different situations. For example, those items which appeared maximumly sensitive to anxiety pertaining to examinations are scored as a unit and called

the Examination Anxiety Differential. This scale is composed of the four tests used in the present study. There is usually a large amount of commonality of items between the tests and scales.

By use of Alpha Coefficients the following scores were obtained for the four new scales. Male scores ranged from .58 to .68. Female scores ranged from .69 to .80. A total median coefficient of .68 was found. Regarding the sex differences the authors state that ". . . sex and anxiety scores may often interact . . . [we suggest, therefore] . . . that in experiments involving anxiety male and feamle responses should be analyzed separately" (16, p. 317).

Wittrock and Husek (45) report using the Anxiety Differential in another examination situation. Ninety-six experimental subjects and sixty-six control subjects were selected from two Educational Psychology courses at the University of California at Los Angeles. The study attempted to evaluate the effects of examination anxiety at the time of learning upon the learning and retention of the content of a complex passage of Buddhism. The passage was unrelated to the course and presumably to the development or reduction of anxiety.

On the day of the regularly scheduled mid-semester examination, and without warning, the experimental group was given the Anxiety Differential followed by the Buddhism passage. The subjects were told they would be given the

first part of the examination after they had completed the scale and the passage. The control group was given the same material on a regular class day for which no examination was scheduled. After completing the scale both groups were allowed twenty minutes to read the passage. Two weeks later, each group took an unannounced test on the content of the Buddhism passage. Thirty minutes were allowed for the examination.

The difference between the means of the two groups on the Anxiety Differential was significant at the .05 level in favor of the experimental group. A t test for the difference between means of the two groups on the retention of the passage material was statistically significant in favor of the experimental group, $p = .05$.

The next study which was reported by Alexander and McHose (2) attempted to determine if the Anxiety Differential could accurately measure ". . . long-term personality predispositions . . ." (2, p. 1). In other words, could an Anxiety Differential score obtained at a prior time be used to predict future performance on other tasks?

To answer this question, ninety-six subjects were selected on the following basis. The Anxiety Differential was administered to a large number of students just prior to their final examination in an Introductory Psychology course. On the basis of these scores twenty-four males and twenty-four females were selected from the highest quartile, and

twenty-four males and twenty-four females were selected from the lowest quartile. From two to six weeks after the administration of the scale the selected students were engaged in an experimental study involving serial learning tasks. Each student learned three lists of consonant-vowel-consonant trigrams of nonsense syllables. Each list contained ten such trigrams and each one differed in level of difficulty. After the lists were learned a record was made of the number of correct responses remembered for the three lists on a final presentation of the trigrams.

The authors were primarily interested in the possibility of an interaction between earlier anxiety scores and difficulty of task. They state

> The anxiety x difficulty interaction was significant or near-significant on all . . . trial blocks. . . . For both the High and Intermediate Difficulty lists, the low anxiety Ss do better than the high anxiety Ss. This pattern is reversed on the Low Difficulty list, where the high anxiety Ss perform better than the low anxiety Ss (2, p. 4).

The conclusion, therefore, is that the Alexander-Husek scale can be used as a measure of predispositional anxiety. " . . . it appears that the Anxiety Differential can be used to measure both situationally aroused anxiety and predispositional anxiety" (2, p. 5).

This conclusion was vindicated in the second experiment which was largely a replication of the first. This study by Hastings and Alexander (15) was concluded with the following statement, ". . . it can be noted that in the present study

and the Alexander and McHose (1964) study, score on the Anxiety Differential was found to relate to later performance . . ." (2, p. 6).

Carrier and Jewell (5) reported two other studies which were designed to ascertain the predictive qualities of Anxiety Differential scores. The studies utilized 137 and 151 subjects respectively, and the second one was a virtual replication of the first. The subjects were students from introductory psychology courses at Southern Illinois University. At approximately mid-quarter they were administered the Anxiety Differential immediately prior to an hourly examination. The Achievement Anxiety Test by Alpert and Haber was also administered in both studies. The Test Anxiety Scale by Mandler and Sarason was administered in the second study. Several weeks later, a final examination of 125 multiple-choice questions provided the measure of academic performance. Scores from each of the scales were treated as independent variables. By means of multiple-regression analysis an attempt was made to determine the significance of the contribution each scale made in accounting for variance in the criterion variable, the final examination grade.

The general finding derived from the data was that ". . . academic examination performance can be predicted from scores on self-report measures of anxiety" (5, p. 25). Specifically regarding the Anxiety Differential they state, ". . . the AD . . . scale appears to have some merit in

accounting for examination performance" (5, p. 26). However, it did not prove to be as sensitive a predictor as did the other two scales used. The authors reasoned that the Anxiety Differential could have been relatively insensitive in this study because it was administered just prior to an hourly examination several weeks prior to the final examination and not immediately prior to the final examination itself. Such an interpretation would allow for the scale as a measure of situational anxiety but would not allow for it as a measure of predisposition toward anxiety.

This conclusion is not consistent with the findings by Alexander and McHose (2) and by Hastings and Alexander (5). In attempting to understand the relative inconsistency of these data one might wonder about the nature of the hourly examinations with which the Anxiety Differential was used in the Carrier and Jewel study. The authors gave little information about these examinations.

One clarification should be made about the predispositional scale. Hastings and Alexander refer to it as a measure of "personality anxiety" (15, p. 1). This terminology can be confusing since the general anxiety scales also claim to measure personality anxiety. The implied distinction between the two is as follows.

General scales measure anxiety regarded to be an intrinsic part of one's personality. The Anxiety Differential, on the other hand, purports to measure one's predisposition

toward anxiety under certain conditions. In other words, it is the propensity toward anxiety and not the anxiety itself which the authors suggest is the personality related factor derived from the Anxiety Differential. Despite their effort to maintain this distinction, Alexander and McHose do make the following admission regarding their study. "We may be measuring some 'trans-situational' or general anxiety level" (2, p. 5).

Such occurrences of confused terminology suggests the possibility of actually confused concepts. In other words, are general and specific scales really different insofar as what they measure? Of the studies which utilized the Anxiety Differential, four are addressed to this question.

Husek, Shaefer, and Alexander (17) conducted four experiments which employed more than one state anxiety scale. All of the studies are similar and are reported as a unit. Differences between them involve such factors as particular subjects and numbers of subjects used as well as the times of the experiments.

Students from the University of California at Los Angeles ranging from 38 to 298 were used in the studies. The tests involved were the Anxiety Differential, the Facilitating and Debilitating scales of the Achievement Anxiety Test, the Taylor Manifest Anxiety Scale, and the Irwin Sarason Test Anxiety Test. Reliability of the Anxiety Differential was computed to be .68 by means of split-half coefficients.

Correlations with the Manifest Anxiety Scale in two of the studies produced an r of .15 and an r of .34. With the Test Anxiety Test the scores were found to be r = .29 and r = .37.* Correlations with the Facilitating and Debilitating scales of the Achievement Anxiety Test were -.02 and .18 respectively.**

The Anxiety Differential was found to be largely independent of the other scales.

> Although the correlations with these other measures of "anxiety" are high enough to suggest some "general" construct of anxiety, they are also low enough (considering the reliabilities of the different tests) to indicate a large amount of specificity. . . . in general, they /the several scales/ measure different things (17, p. 6).

The authors contend that one might well expect to find differences in comparing general to specific scales as did Alpert and Haber (3), for example. The reasons for the relatively low correlations of the Anxiety Differential to

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*"Neil Carrier of Southern Illinois University has recently administered both the AD and the Sarason Test to his undergraduates in an Introductory Psychology class. Carrier's data yield an r very similar to ours. His obtained r was .42 (N = 245)" (17, p. 14).

**"A very recent study by Neil Carrier of Southern Illinois University has yielded larger correlations between the AD and AAT+, and an r of +.43 between the AD and the AAT- scale. One possible explanation of the apparent inconsistency between our results and Carrier's relates to the sex composition of the two samples of subjects. In Study 4, two-thirds of our subjects were females. The sex distribution of Carrier's sample was almost the reverse. Approximately 68% of his subjects were males and 32% were females. A recent study by Dember, Nairne and Miller (1962) yielded data which led these investigators to conclude that the Alpert-Haber AAT was much less useful for females than for males" (17, p. 14).

the other situational scales, however, are not as apparent. Concerning this they state that a high correlation actually was not expected. They emphasize that it was because of the basic difference which they believed to exist between what their scale would measure and what the other situational scales did measure that initially prompted the development of the Anxiety Differential. It is their contention that the Anxiety Differential registers an objective measure of anxiety while the other situational scales are forced to rely on introspective accounts by the subjects of the anxiety they feel. To this the authors make the following analogy:

> . . . one might say that the difference between the AD and the other paper-and-pencil anxiety tests is similar to the difference between putting a thermometer in S's mouth and then reading his temperature, versus asking S what he judges his temperature to be (17, p. 7).

The nature of this analogy might well raise the question as to the comparability of the Anxiety Differential to the various physiological indices regarding its sensitivity in measuring situational anxiety. There are two known studies that have dealt with this matter.

The first study was referred to earlier. It was the initial study conducted by Alexander and Husek (1) which used the filmstrip of automobile accidents to arouse anxiety relative to bodily harm. In addition to the study as described, the authors also administered the Palmar Sweating Index before and after the filmstrip was presented. Even though scores from the Anxiety Differential as well as

introspective comments from the subjects indicated that anxiety had been aroused, the index did not confirm this. Correlations were obtained between the Anxiety Differential scores and Palmar Sweating Index scores "Ranging from .03 to .11, none of the correlations was even close to statistical or practical significance" (1, p. 337). Differences between the pretest and post-test Palmar Sweating scores were also examined. These scores were found to be non-significant. The authors conclude that since ". . . the majority of the subjects reported being disturbed by the filmstrip, it was concluded that in this instance palmar sweating was not a sensitive measure" (1, p. 337).

The second study involving physiological measures was conducted by Harold Johnson (18). He used four groups of fifteen female subjects in an avoidance learning situation involving different degrees of discrimination difficulty. The discrimination variable involved the ability of the subjects to differentiate between similar audio cues. The avoidance factor involved a mild electrical shock which some of the subjects could avoid if they correctly manipulated a small finger lever. The correct manipulation was predicted upon their ability to accurately discriminate between the audio cues.

The measures taken involved heart rate, galvanic skin response, palmar sweating, anxiety scores and introspective comments from the subjects. The basic purpose was to

determine the amount of physiological arousal, or situational anxiety, evidenced in subjects who were subjected to consistent negative reinforcement (consistent periodic shock) as compared to subjects who were required to make progressively difficult discriminations (consistent effort to avoid shock).

It was postulated that the requirement of making difficult decisions would be more stress inducing than would consistent negative reinforcement. This basic hypothesis was confirmed by all indices.

> It becomes clear from the results of all the physiological and the behavioral measures that the effects of increasingly difficult discriminatory problems result in higher levels of physiological arousal than do simple fixed reinforcement schedules (18, p. 122).

Of particular importance to the present issue is the fact that "all the measures confirmed this finding . . ." (18, p. 122). Later he states, "The experimental treatments had the same effect here /Anxiety Differential scores/ that they had on all the other measures used" (18, p. 123).

One additional point should be made. Although all the indices registered the same general results, the Palmar Sweating Index was found to be least sensitive (18, p. 121). In a very general way this finding might be interpreted to give partial credence to the conclusion by Alexander and Husek (1) that the Palmar Sweating Index was insensitive in their study.

Summary

It has been the purpose of this chapter to review the professional literature relative to three points.

The first point concerned the relationship of anxiety to task difficulty and other interacting variables. The findings revealed that anxiety and task difficulty are highly correlated. The relationship is not a simple one, however, as other variables such as age, sex, occupation, kind of instruction, ego involvement, and prior experience were also found to interact.

The second point concerned the distinction between two types of anxiety. The findings divulged that situational and general anxiety scales to a significant extent appear to measure different phenomena. The data revealed that correlations among the general anxiety scales ranged from .32 to .39; whereas, correlations between the various specific or situational scales ranged from .40 to .64. Correlations between the specific and general scales ranged from .24 to .38.

Situational anxiety was also found to manifest itself more through the physiological indices than was general anxiety.

The data generally suggest that two different types of anxiety indeed do exist rather than just one. It was also determined to be advantageous to psychological research to maintain the distinction between the two even though they are related and not mutually exclusive.

The third point concerned the development and use of a new state or situational anxiety index, the Anxiety Differential. Approximately twelve studies involving the development and/or use of the Anxiety Differential have been conducted. Most of the studies used undergraduate psychology students as subjects. Stimuli mostly involved course examinations; although, mild electrical shock and presentation of colored films of severe bodily injury were also used.

The validity of the instrument was tested by means of correlations with the anxiety factor of the Nowlis-Green Adjective Checklist. A correlation of .63 was found between the two scales. Other points relative to validity including the use of centroid factor analysis are discussed in the chapter. The internal consistency of the scale was tested by means of Alpha Coefficient which was computed to be .68.

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CHAPTER III

METHODS AND PROCEDURES OF THE STUDY

The purpose of this chapter is to give a description of the subjects and instruments used in the study and to present a chronological review of the procedures followed in the gathering of data.

Description of Subjects

College freshmen who were seventeen and eighteen years of age were used in the study. There were twenty-three males and thirty-four females all of whom were registered at North Texas State University for their first semester of undergraduate voice study.

Description of Instruments Used

Several instruments were necessary for the collection of data.

The Alexander and Husek Anxiety Differential (Appendix B) was used as the measure for anxiety. It is a short paper-pencil scale of thirty-three items designed to measure situational anxiety. The instrument is described in detail in Chapter II.

Ampex video tape recorders were used to record the vocal performances. The School of Music has two such recorders, the

Ampex 7,000 and the Ampex 5,100, which were used interchangeably as scheduling required. The two recorders differed only in size and accessory features, neither of which were pertinent to the study. A Neumann KM845 microphone and a Setchell Carlson twenty-one inch monitor were used for all recordings and presentations of the tapes respectively.

A panel of three adjudicators comprising the non-resident jury was used to derive vocal performance scores. As the adjudicators saw and heard the recordings, they registered their scores on copies of the Vocal Solo Adjudication Form (Appendix E) of the National Interscholastic Music Activities Commission of the Music Educator's National Conference.

The three individuals were Jack H. Coldiron, Associate Professor of Voice at Southwestern Baptist Theological Seminary, Fort Worth, Texas; Thomas T. Hayward, Chairman of the Voice Department at Southern Methodist University, Dallas, Texas; and Christine Palmer, Chairman of Voice Department at El Centro College, Dallas, Texas. Coldiron is a baritone with twelve years vocal teaching experience and twenty years of performance experience including performances with the San Antonio and Meadowbrook Symphony Orchestras. He is forty-two years of age. Hayward is a tenor with ten years vocal teaching experience and thirty years performance experience, fourteen of which he sang as leading tenor with the Metropolitan Opera Association of New York City. He is forty-seven years of age. Palmer is a soprano with twelve years vocal teaching

experience and twenty-five years performance experience, five of which she sang as leading soprano with the New York City Center Opera Company. She is also Chairman of the Voice Division of Texas Music Teachers Association. Palmer is forty years of age.

These three individuals were invited to serve as adjudicators after being recommended by at least two of the voice teachers at North Texas State University.

Procedures for Gathering Data

Collection of the data required all of the Fall Semester and the first two weeks of the Spring Semester at North Texas State University. The following paragraphs present a chronological review of the procedures.

On September 30, 1968, a personal letter (Appendix C) from Kenneth Cuthbert, Dean of the School of Music of North Texas State University, was sent to all of the voice faculty members. The purpose of the letter was to introduce the study and to request the cooperation of the faculty.

During the Music Orientation Meeting on October 2, a questionnaire (Appendix A) and the Anxiety Differential (Appendix B) were administered to all freshmen voice students. The questionnaire supplied necessary general information on the students, and the anxiety scale provided an indication of how the students would score on the scale in a neutral or allegedly non-stress situation.

Immediately following the meeting and on the basis of questionnaire information eighty-one freshmen who were seventeen or eighteen years of age and who were enrolled in their first semester of undergraduate voice study were retained. The twenty-four male students were divided into two groups: (1) male students of limited vocal experience and (2) male students of moderate vocal experience. Forty of the female students were divided into two groups: (1) female students of limited vocal experience and (2) female students of moderate vocal experience. Definition of these terms may be found in Chapter I. The other seventeen female students were eliminated by means of a table of random digits (2, pp. 137-138). The numbers assigned to the students corresponded to the alphabetical arrangement of their last names. As the experiment progressed seven students and one teacher were unavoidably eliminated. Two female students officially dropped from school; four female students and one teacher became too ill to continue in the study, and one male student was unable to perform for the resident jury for lack of an accompanist.

On October 23, a list of each teacher's students to be used in the study was mailed to the twenty voice teachers. Included with the list were proposed days and hours for video recording of the performances. There also was sent an instruction sheet (Appendix D) which explained in detail the

nature and extent of involvement of both the teachers and their students.

Between the dates of November 18, 1968, and December 18, 1968, each student was videotaped as he sang from memory his predetermined jury selection. These recordings were made in a voice studio during the students' regular lesson times with only the teacher, cameraman, and occasionally an accompanist present. They were made at the beginning of lessons, prior to instruction, and immediately following brief vocal exercises. These recordings were not used in the study but merely served to acquaint the students with the recording procedure. The students, however, were not aware that the recordings would not be used. They were not informed of the use of any of the recordings or even of the basic purpose of the study.

Between the dates of November 26, 1968, and January 9, 1969, the students were videotaped a second time as they sang the same selections under identical circumstances. Eight minutes prior to the lessons in which the recordings were made, however, they were asked to complete the Anxiety Differential. The purpose of the second administration of the scale was to derive an indication of the anxiety which the students experienced relative to their voice lessons.

The teachers were reminded of all recording dates by means of memoranda one week prior to the dates and again on the days of the recordings. They in turn reminded the students.

The students were further notified several days in advance by mail. Because of illnesses or insoluable conflicts some of the dates were later rescheduled nearer the end of the semester.

Due to the heavy recording schedule and the difficulty involved in transporting the equipment, all lesson recordings were made in a single studio where the equipment remained operational. The room was similar in size and furnishings to other voice studios. Following the recordings the teachers and students either completed the lessons in the studio or returned to their own studios at their discretion.

Between the dates of January 14 and 18 all the students sang their selections before the resident jury which was composed of the regular voice teachers of the School of Music. These performances comprised the final examination in applied voice. Approximately one-half of the semester grades were contingent upon the jury performances. Forty-nine of the students were required to perform before the jury as a result of their status as music majors. Eight students, either music minors or avocational voice students, who normally would not have been required to sing for the jury, were asked to do so by their teachers as a part of the study. They were informed of this requirement early in the semester.

Approximately eight minutes prior to the jury performance each student was administered the Anxiety Differential the third and final time. The three administrations provided a comparison of the amount of anxiety experienced by each

student in the three different situations. At the suggestion of Sheldon Alexander (1), one of the authors of the instrument, the visual appearance of the scale was altered from one administration to the next by changing the color of paper and the typewriter used. For the first administration white paper and regular type face were used. Yellow paper and italics type face and pink paper and script type face were used for the second and third administrations respectively. While this procedure did not completely disguise the scale, it was the author's rationale that it would reduce the number of cues available to the students which might enable them to remember their prior responses to particular items.

Since the School of Music requires that some students sing two selections while others sing only one, it was determined that the recorded performance should in each case be first.

The majority of students sang in the Recital Hall of the School of Music. Because of scheduling difficulties seven students performed for the jury in the large choral room. In each room the camera and recorder were mounted approximately twenty-five feet from the students. The use of a Canon Zoom lens, an adjustable lens attached to the camera, enabled the cameraman to obtain from various distances the same focus and profile as was obtained in the lesson recordings. The same microphone used in the lesson recordings was used in the jury recordings. The volume control and the

distance from the microphone, five feet, were identically maintained.

A separate spool and tape were used for each student in filming the lesson performances. On the same tapes and immediately following the recorded lesson performances the jury performances were also recorded. At the conclusion of the jury, therefore, there was a separate spool and tape for each student of the study which contained in succession recordings of both the lesson and jury performances.

On January 25 and February 1 the recordings were played to the non-resident jury which assembled at the North Texas State University School of Music. The jury members knew nothing of the purpose or nature of the study. They were not informed of the names of the students, the names of the students' teachers, or the circumstances under which the recordings were made. The information given to the members was restricted to that contained in the written instructions to them. (See Appendix F.)

Two tapes were played as samples at the beginning of both days. On January 25 tapes number fifty-five and fifty-nine were used. Tapes number twenty and twenty-four were played on February 1. Each pair of sample tapes was selected in an effort to present a contrast of performance ability and sex of the performers. Each sample recording was independently scored by jury members on sample adjudication forms. Immediately following the performances and the

completion of the adjudication forms the jury members compared scores and discussed the performances. Those scores found to be significantly divergent from the group consensus were altered accordingly by each member. This procedure was in keeping with the recommendation by Selltiz (3, p. 354) regarding the reliability of ratings.

The tapes were then played to the jury in the order of the alphabetical arrangement of the students last names. Each lesson recording included a number located just above each student's left shoulder which corresponded to the alphabetical arrangement. The score sheets were similarly numbered. Each adjudicator had two score sheets for each number. They were labeled A and B for the lesson and jury recordings respectively. The number visually evident in the lesson recordings and the numbers and letters on the score sheets enabled the adjudicators to easily determine at all times the particular recording being played. The score sheets were clearly labeled and arranged numerically in a separate notebook for each adjudicator.

Following the completion of all adjudicating, the jury members were asked what they thought was the purpose of the study. Their answers indicated they had no prior knowledge of the experiment.

The numerical scores of the seven sub-parts of each score sheet were then totaled. Similarly, the three separate

adjudication sheets were totaled to produce a composite jury score for each of the two performances by each student.

The numerical scores of the twenty sub-parts of the anxiety scales were also totaled. The three administrations of the scale resulted in there being three separate anxiety scores for each student. The two vocal scores and the three anxiety scores for all fifty-seven students were then posted on a work sheet in preparation for statistical treatment.

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CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The basic purposes of this study were to determine vocal performance scores and anxiety scores in voice lessons and in the final examination and then to determine the relationship of differences between the scores. Five hypotheses and twenty-two sub-hypotheses were formulated consistent with the purposes. The first part of this chapter presents the statistical data relative to the hypotheses. The last part of the chapter presents statistical data not required by the hypotheses. These additional data were deemed pertinent to the study.

Data Relative to the Hypotheses

Hypothesis number one stated that vocal performance mean scores from the music jury examination would be significantly lower than mean scores from the voice lessons for seven groups of students: (1) male students total, (2) female students total, (3) students of limited vocal performance experience total, (4) students of moderate vocal performance experience total, (5) male students of moderate vocal performance experience, (6) male students of limited vocal performance experience and (7) female students of limited vocal performance experience.

Although Table I discloses that the null hypotheses were rejected for all seven sub-hypotheses, the direction of effect was opposite to that postulated.

TABLE I

VARIANCES OF VOCAL PERFORMANCE SCORE MEANS FROM LESSONS AND THE JURY FOR ALL GROUPS OF STUDENTS

Student Groups	Lesson		Jury		df	t	Level
	Mean	S. D.	Mean	S. D.			
Males total	60.22	14.45	68.57	15.35	22	-3.69	.01
Females total	49.76	13.30	54.85	14.19	33	-3.66	.001
Limited vocal perf. exp. total	47.14	14.93	52.82	16.05	27	-3.42	.01
Moderate vocal perf. exp. total	60.59	10.98	67.69	12.43	28	-3.82	.001
Males of mod. vocal perf. exp.	63.71	9.52	72.14	12.63	13	-2.54	.05
Males of limited vocal perf. exp.	54.78	18.54	63.00	17.41	8	-2.88	.05
Females of mod. vocal perf. exp.	57.67	11.43	63.53	10.68	14	-3.11	.01
Females of limited vocal perf. exp.	43.53	11.18	48.00	12.79	18	-2.20	.05
All students total	53.98	14.70	60.39	16.14	56	-5.16	.001

Ratios of Fisher's t ranging from -2.20 to -3.82 indicate that at the .05 level of confidence each of the seven groups performed significantly better in the jury examination than in the voice lessons.

Hypothesis number two postulated that the vocal performance mean score from the music jury examination would be

significantly higher than the mean score from the voice lessons for female students of moderate vocal performance experience.

Fisher's *t* ratio of -3.11 presented in Table I justified the rejection of the null hypothesis. This group performed significantly better in the examination than in the lessons.

Hypothesis number three stated that anxiety mean scores from the music jury examination would be significantly higher than mean scores from the voice lessons for all groups of students.

TABLE II

VARIANCES OF SITUATIONAL ANXIETY SCORE MEANS FROM LESSONS AND THE JURY FOR ALL GROUPS OF STUDENTS

Student Groups	Lesson		Jury		df	t	Level
	Mean	S. D.	Mean	S. D.			
Males total	68.91	20.22	77.96	17.28	22	-2.65	.05
Females total	67.47	14.87	81.59	18.23	33	-5.77	.001
Limited vocal perf. exp. total	67.29	17.77	81.60	19.81	27	-5.29	.001
Moderate vocal perf. exp. total	68.79	16.69	78.69	15.80	28	-3.34	.01
Males of mod. vocal perf. exp.	67.64	19.36	77.57	15.40	13	-1.88	NS
Males of limited vocal perf. exp.	70.89	21.34	78.56	19.84	8	-2.33	.05
Females of mod. vocal perf. exp.	69.87	13.66	79.73	16.10	14	-3.17	.01
Females of limited vocal perf. exp.	65.58	15.51	83.05	19.63	18	-4.99	.001
All students total	68.05	17.25	80.12	17.94	56	-5.99	.001

Table II reveals Fisher's *t*-ratios ranging from -1.88 to -5.77. At the .05 level of confidence these ratios required that the null hypotheses be rejected for all groups except one. The null hypothesis was accepted for male students of moderate vocal performance experience. This group had a *t* of -1.88. There was a significant increase in anxiety from the lessons to the jury for all groups except for male students of moderate vocal performance experience.

Hypothesis number four postulated that differences in vocal performance scores from voice lessons and the final examination would be significantly related in a positive direction with differences in anxiety scores from voice lessons and the final examination for female students of moderate vocal performance experience.

Rank order correlation was used for this hypothesis. The data in Table III reveal that a *p* of .07 is too small to be significant. The null hypothesis was therefore accepted. There was very little consistency among the students of this group as to the direction of the correlation of vocal difference scores and anxiety difference scores.

Hypothesis number five stated that differences in vocal performance scores from voice lessons and the final examination would be significantly related in a negative direction with differences in anxiety scores from voice lessons and the final examination for the following seven

TABLE III

CORRELATION COEFFICIENTS OF VOCAL PERFORMANCE DIFFERENCE SCORES AND SITUATIONAL ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY

Student Groups	N	p	Level
Males total	23	-.01	NS
Females total	34	.01	NS
Limited vocal performance experience total	28	-.13	NS
Moderate vocal performance experience total	29	.13	NS
Males of moderate vocal performance experience	14	.20	NS
Males of limited vocal performance experience	9	-.31	NS
Females of moderate vocal performance experience	15	.07	NS
Females of limited vocal performance experience	19	.03	NS
All students total	57	-.02	NS

groups of students: (1) male students total, (2) female students total, (3) students of limited vocal performance experience total, (4) students of moderate vocal performance experience total, (5) male students of moderate vocal performance experience, (6) male students of limited vocal performance experience, and (7) female students of limited vocal performance experience.

Rank order correlation was also used for this hypothesis. Table III reveals that the ps range from -.31 to .20 none of which are large enough to be significant. Null hypotheses

were therefore accepted for all seven sub-hypotheses. There was very little consistency among the students of each group as to the direction of the correlation of vocal difference scores and anxiety difference scores.

The complete rank order correlations may be found in Appendix G.

Data in Addition to That Pertaining to the Hypotheses

The statistical data required by the hypotheses pertained only to variances and correlations within each group of students. It was deemed useful to include data relative to variances and correlations between the groups as well. Such is the purpose of this section of the chapter.

Data from six different variables were used in reference to the hypotheses. Those variables were (1) vocal-performance means from the lessons, (2) mean differences derived from lesson and jury vocal-performance means, (4) anxiety means from the lessons, (5) anxiety means from the jury and (6) mean differences derived from lesson and jury anxiety means.

Tables IV and V present additional data relative to two of the six variables. Here the several groups of students are compared rather than individually analyzed. Of the forty-eight t ratios calculated, only the ten found in these two tables were large enough to be significant. Five of the ten pertained to variable number one and the other five pertained to variable number two.

TABLE IV

VARIANCES OF VOCAL PERFORMANCE SCORE MEANS DERIVED FROM THE LESSONS FOR SELECTED GROUPS OF STUDENTS

Groups of Students Compared	Vocal Perf. Scores from Lessons		df	t	Level
	Mean	S. D.			
Males of limited vocal performance experience	54.78	18.54	26	2.17	.05
vs.					
Females of limited vocal performance experience	43.53	11.18			
Males of moderate vocal performance experience	63.71	9.52	31	4.47	.001
vs.					
Females of limited vocal performance experience	43.53	11.18			
Females of limited vocal performance experience	43.53	11.18	26	-3.20	.01
vs.					
Females of moderate vocal performance experience	57.67	11.43			
Males total	60.22	14.45	55	2.76	.01
vs.					
Females total	49.76	13.30			
Limited total	47.14	14.93	55	-3.81	.001
vs.					
Moderate total	60.59	10.98			

TABLE V

VARIANCES OF VOCAL PERFORMANCE SCORE MEANS DERIVED FROM THE JURY FOR SELECTED GROUPS OF STUDENTS

Groups of Students Compared	Vocal Perf. Scores from Jury		df	t	Level
	Mean	S. D.			
Males of limited vocal performance experience	63.00	17.42	26	2.73	.05
vs.					
Females of limited vocal performance experience	48.00	12.79			
Males of moderate vocal performance experience	72.14	12.63	31	5.04	.001
vs.					
Females of limited vocal performance experience	48.00	12.79			
Females of limited vocal performance experience	48.00	12.79	26	-3.31	.01
vs.					
Females of moderate vocal performance experience	63.53	10.68			
Males total	68.57	15.35	55	3.40	.01
vs.					
Females total	54.85	14.19			
Limited total	52.82	16.05	55	-3.85	.001
vs.					
Moderate total	67.69	12.43			

The tables divulge that the ten ts range in size from 2.17 to 5.04. It may also be observed that the pairs of student groups which evidenced significant ts on variable number one were the same pairs to evidence significant ts on variable number two. Moreover, each pair of student groups was significant at the same level of confidence on the two variables.

Tables I and II reveal that all students total improved in vocal performance and increased in situational anxiety from lessons to jury at the .001 levels of confidence. In an attempt to determine more specifically the nature of the relationship between the two variables, the students were divided into three groups on the basis of the amount of anxiety indicated during the jury. These three groups, each comprised of nineteen students, were labeled high, moderate, and low anxiety. High anxiety scores ranged from 118 down to 90. Moderate anxiety scores ranged from 88 down to 71, and low anxiety scores ranged from 70 down to 38. The three groups were compared on the basis of amount of vocal improvement from lessons to jury. Table VI presents the data.

The data divulges that as anxiety increased vocal performance improved. The relationship was not a symmetrical one, however. While there was approximately twenty points difference between the anxiety means of the three groups, there was much less uniformity in the vocal difference score means. Students of moderate anxiety evidenced only a slight

TABLE VI

A COMPARISON OF JURY ANXIETY SCORE MEANS AND VOCAL DIFFERENCE SCORE MEANS

Student Groups	Means of Situational Anxiety Scores Derived from the Jury	Means of Vocal Difference Scores Derived from Lessons and the Jury
High Anxiety	99.79	4.26
Moderate Anxiety	80.58	4.63
Low Anxiety	60.05	9.26

superiority in vocal improvement over the students of high anxiety. Students of low anxiety, however, evidenced exactly twice as much improvement in their vocal difference score mean as did students of moderate anxiety.

A further analysis revealed a great amount of uniformity between the three groups in the heterogeniety of the students comprising them. The high anxiety group was comprised of 8 males and 11 females of whom 9 were of moderate vocal performance experience and 10 were of limited vocal performance experience. The moderate anxiety group was comprised of exactly the same number of students in each of the four categories: 8 males, 11 females, 9 of moderate vocal performance experience, and 10 of limited vocal performance experience. The low anxiety group had a very similar distribution of students. There were 8 males and 11 females

of whom 11 were of moderate vocal performance experience and 8 were of limited vocal performance experience.

A comparison of Tables I and II provides additional data relative to the study.

Whereas all students of limited vocal performance experience improved in vocal scores at the .01 level and all students of moderate vocal performance experience improved at the .001 level, the reverse was true of these two groups regarding increases in anxiety between lessons and jury.

Male students total and female students total both improved in vocal performance scores between the two settings at the .01 level. Anxiety scores, however, increased at the .05 and .001 levels respectively for males and females.

Female students of moderate vocal performance experience evidenced both an improvement in vocal scores and an increase in anxiety scores at the .01 levels of confidence. Female students of limited vocal performance experience revealed quite different data. This group manifested an improvement in vocal scores at the .05 level although it divulged an increase in anxiety scores at the .001 level of confidence.

Male students of moderate vocal performance experience and male students of limited vocal performance experience both improved in vocal performance scores at the .05 level from lessons to jury. Male students of limited vocal performance experience also increased in anxiety scores at the .05 level. Male students of moderate vocal performance

experience, however, did not manifest a significant increase in anxiety.

It will be recalled that situational anxiety measures were made of all the students at the beginning of the study in addition to the measures taken at lessons and at the jury. The purpose of this initial administration of the anxiety scale was to derive scores in a neutral or supposedly non-stress situation which would make more intelligible the scores derived from lessons and the jury. The anxiety scores obtained from the three situations for the eight groups of students are presented in Table VII.

TABLE VII

PRESENTATION OF ANXIETY MEANS FROM NEUTRAL, LESSON, AND JURY SITUATIONS FOR ALL GROUPS OF STUDENTS

Student Groups	Neutral Anxiety Means	Lesson Anxiety Means	Jury Anxiety Means
Males total	60.52	68.91	77.96
Females total	63.76	67.47	81.59
Limited vocal performance experience total	63.93	67.29	81.60
Moderate vocal performance experience total	61.03	68.79	78.69
Males of moderate vocal performance experience	58.57	67.64	77.57
Males of limited vocal performance experience	63.56	70.89	78.56
Females of moderate vocal performance experience	63.33	69.87	79.73
Females of limited vocal performance experience	64.11	65.58	83.05
All students total	62.42	68.05	80.12

It may be observed that all groups experienced an increase in anxiety from neutral to lessons and from lessons to jury. More specifically, a greater increase was experienced from lessons to jury than from neutral to lessons.

Scores registered by female students of limited vocal performance experience are of particular interest. This group evidenced the highest anxiety mean in the neutral setting, the lowest mean in the lessons, and the highest mean in the jury of all groups of students.

There was a time lapse between lesson and jury recordings that ranged from seven to fifty-three calendar days. Additional data was calculated with the intent of determining the extent to which improvement in vocal scores may have been attributable to learning during the intervening time. Vocal scores from six students whose time lapse ranged from seven to ten days were compared to vocal scores of six other students whose time lapse ranged from forty-nine to fifty-three days. Six students were used in each of the two groups because there were only six whose lesson recordings were made after the Christmas holidays and immediately prior to the jury recordings. Tables VIII and IX present the data.

The students who had the shortest time lapse between lesson and jury recordings evidenced almost twice as much improvement in vocal scores as students who had the longest time lapse between the two recordings.

All raw data used in this study may be found in Appendix H.

TABLE VIII

PRESENTATION OF VOCAL PERFORMANCE SCORES FROM STUDENTS WHOSE LESSON AND JURY RECORDINGS WERE CONTIGUOUS IN TIME

Student Numbers	Group Identification	Intervening Days Between Recordings	Lesson Vocal Scores	Jury Vocal Scores	Difference Vocal Scores
4	FL	7	43	46	3
36	FL	8	76	87	11
50	FM	8	59	67	8
21	ML	10	44	50	6
47	FM	10	76	88	12
48	MM	10	78	93	15

TABLE IX

PRESENTATION OF VOCAL PERFORMANCE SCORES FROM STUDENTS WHOSE LESSON AND JURY RECORDINGS WERE REMOTE IN TIME

Student Numbers	Group Identification	Intervening Days Between Recordings	Lesson Vocal Scores	Jury Vocal Scores	Difference Vocal Scores
29	MM	49	57	61	4
23	FM	51	55	59	4
49	MM	51	60	60	0
56	ML	51	66	76	10
10	FL	52	32	33	1
20	ML	53	26	37	11

Summary

It has been the purpose of this chapter to present the data of the study. The data is summarized in the following points.

1. None of the sub-hypotheses of major hypothesis number one was confirmed. All seven groups of students sang significantly better in the music jury examination than in the private voice lessons.

2. Hypothesis number two was confirmed by the data. Female students of moderate vocal performance experience sang significantly better in the music jury examination than in private voice lessons.

3. Seven of the eight sub-hypotheses of major hypothesis number three were confirmed by the data. All except one of the student groups evidenced significantly greater anxiety in the jury examination than in the voice lessons. Male students of moderate vocal performance experience evidenced an increase in anxiety between the two situations but not to the extent of statistical significance.

4. The data did not confirm hypothesis number four. There was a non-significant correlation of the vocal and anxiety score differences for female students of moderate vocal performance experience.

5. None of the seven sub-hypotheses of major hypothesis number five was confirmed. There was a non-significant

correlation of the vocal and anxiety score differences for all seven groups of students.

6. While the data indicate there was a difference in the basic vocal performance ability of the students selected for the study, this difference did not appear crucial to the direction of change or amount of change in vocal performance scores from lessons to jury.

7. All students total improved in vocal performance scores and increased in anxiety scores at the .001 levels of confidence from lessons to jury.

8. All groups of students evidenced the lowest anxiety scores in the neutral situation, next highest anxiety scores in the lessons, and the highest anxiety scores in the jury.

9. Six students who had the shortest time lapse between lesson and jury recordings evidenced almost twice as much improvement in vocal scores as six other students who had the longest time lapse between the two recordings.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purposes of this chapter are to summarize the findings of this study, to draw conclusions based on these findings, and to make recommendations for further research.

Summary

The purposes of the study were as follows:

1. To determine the significance of the difference in the vocal performance mean scores of college freshmen voice students, as measured by a selected criterion, in private voice lessons and in the music jury examination.

2. To determine the significance of the difference in the anxiety mean scores of college freshmen voice students, as measured by a selected criterion, in private voice lessons and in the music jury examination.

3. To determine the relationship of the differences between vocal performance and anxiety scores of college freshmen voice students in private voice lessons and in the music jury examination.

Five hypotheses and twenty-two sub-hypotheses consistent with the above purposes were formulated. Following are

restatements of the hypotheses with a summary of findings for each.

1. The vocal performance mean scores will be significantly lower in the music jury examination than in the private voice lessons for the following groups of college freshmen voice students:

a. Male voice students total
b. Female voice students total
c. Students of limited vocal performance experience total
d. Students of moderate vocal performance experience total
e. Male students of moderate vocal performance experience
f. Male students of limited vocal performance experience
g. Female students of limited vocal performance experience

None of the sub-hypotheses were confirmed. All seven groups of students sang significantly better in the music jury examination than in the private voice lessons. Fisher's t ratios ranged from -2.20 to -3.82.

2. The vocal performance mean score will be significantly higher in the music jury examination than in the private voice lessons for female students of moderate vocal performance experience.

The data confirmed the hypothesis. The group of students sang significantly better in the music jury examination than in private voice lessons. Fisher's t ratio was -3.11.

3. The anxiety mean scores will be significantly higher in the music jury examination than in the private voice lessons for the following groups of students:

a. Male voice students total
b. Female voice students total
c. Students of limited vocal performance experience total
d. Students of moderate vocal performance experience total
e. Male students of moderate vocal performance experience
f. Male students of limited vocal performance experience
g. Female students of limited vocal performance experience
h. Female students of moderate vocal performance experience.

The data confirmed seven of the eight sub-hypotheses. All of the student groups evidenced significantly greater anxiety in the jury examination than in the voice lessons except for male students of moderate vocal performance experience. This group also evidenced an increase in anxiety between the two situations but not to the extent of statistical

significance. The significant *t*s ranged from -2.33 to -5.77. The *t* for male students of moderate vocal performance experience was -1.88.

4. Differences in vocal performance scores of private voice lessons and the music jury examination will be significantly related in a positive direction with the differences in anxiety scores of private voice lessons and the music jury examination for female students of moderate vocal performance experience.

Data derived from the use of rank order correlation did not confirm this hypothesis. There was a non-significant correlation of the vocal and anxiety score differences. The data produced a *p* of .07.

5. Differences in vocal performance scores of private voice lessons and the music jury examination will be significantly related in a negative direction with the differences in anxiety scores of private voice lessons and the music jury examination for the following groups of students:

a. Male voice students total
b. Female voice students total
c. Students of limited vocal performance experience total
d. Students of moderate vocal performance experience total
e. Male students of moderate vocal performance experience

f. Male students of limited vocal performance experience

g. Female students of limited vocal performance experience.

The data did not confirm any of the seven sub-hypotheses. All of the correlations were low and non-significant between the vocal and anxiety score differences of individual students within the groups as measured by rank order correlations. The ps ranged from .20 to -.31.

Conclusions

The findings of the study appeared to justify the following conclusions.

1. The college freshmen voice students tended to perform better in music jury examinations than in private voice lessons.

2. The college freshmen voice students who differed in basic vocal performance ability did not vary significantly in the amount of vocal improvement from lessons to jury.

3. The male college freshmen voice students were on the average better vocal performers than female college freshmen voice students.

4. The college freshmen voice students of moderate vocal performance experience were on the average better vocal performers than college freshmen voice students of limited vocal performance experience.

5. The college freshmen voice students whose private voice lessons and music jury examination were contiguous in time tended to evidence greater vocal improvement than students whose lessons and jury were remote in time.

6. The college freshmen voice students tended to experience greater situational anxiety in the music jury examination than in private voice lessons.

7. The college freshmen voice students tended to experience greater situational anxiety in private voice lessons than in certain neutral situations.

8. The female college freshmen voice students tended to manifest greater situational anxiety in certain neutral situations and in vocal music jury examinations than did male college freshmen voice students. The reverse, however, tended to be true of these two groups regarding situational anxiety in private voice lessons.

9. The female college freshmen voice students of limited vocal performance experience tended to manifest high situational anxiety in certain neutral situations and in vocal music jury examinations. The same students, however, tended to manifest low situational anxiety relative to private voice lessons.

10. The female college freshmen voice students of limited vocal performance experience tended to manifest greater situational anxiety in certain neutral situations and in vocal music jury examinations than did female college

freshmen voice students of moderate vocal performance experience. The reverse, however, tended to be true of these two groups regarding situational anxiety in private voice lessons.

11. The male college freshmen voice students of limited vocal performance experience tended to exhibit greater situational anxiety in certain neutral situations, in private voice lessons, and in the vocal music jury examination than did male college freshmen voice students of moderate vocal performance experience.

12. The college freshmen voice students tended to manifest an increase in situational anxiety and an improvement in vocal performance from private voice lessons to the music jury examination. Examination of individual scores, however, did not reveal a consistent correlation between the two.

13. College freshmen voice students who during the jury manifested anxiety ranging from a score of 118 down to a score of 90 manifested a small improvement in vocal performance from lessons to jury.

14. College freshmen voice students who during the jury manifested anxiety ranging from a score of 88 down to a score of 71 manifested a slight improvement in vocal performance over that manifested by the group with higher anxiety scores.

15. College freshmen voice students who during the jury manifested anxiety ranging from a score of 70 down to a score of 38 manifested exactly twice as much improvement in

vocal performance as did the group which evidenced anxiety scores ranging from 88 down to 71.

Implications

The conclusions of the study appeared to suggest the following implications.

1. The fact that college freshmen voice students performed better in the music jury examination than in private voice lessons may have resulted from the difference in anxiety between the two situations.

2. The fact that college freshmen voice students performed better in the music jury examination than in private voice lessons may have resulted from an increased familiarity with the vocal selections that could have occurred between the two situations.

3. The fact that college freshmen voice students performed better in the music jury examination than in the private voice lessons may have resulted from improvement in vocal performance skills that could have occurred between the two situations.

4. The fact that college freshmen voice students who differed in basic vocal performance ability did not vary significantly in the amount of vocal improvement from lessons to jury may have indicated that basic vocal performance ability was not a contributing variable to the level of vocal improvement between the two situations.

5. The fact that male college freshmen voice students were on the average better vocal performers than female college freshmen voice students may have indicated that male college freshmen who study voice on the collegiate level are indeed better vocal performers on the average than female students.

6. The fact that male college freshmen voice students were on the average better vocal performers than female college freshmen voice students may only have reflected the characteristics of the particular students used in this study.

7. The fact that college freshmen voice students of moderate vocal performance experience were on the average better vocal performers than college freshmen voice students of limited vocal performance experience may have indicated that vocal performance ability is highly correlated with vocal performance experience.

8. The fact that college freshmen voice students whose private voice lessons and music jury examinations were contiguous in time tended to evidence greater vocal improvement than students whose lessons and jury examinations were remote in time may only have indicated characteristics of the particular students used in this study.

9. The fact that college freshmen voice students tended to experience greater situational anxiety in the music jury examination than in private voice lessons may have indicated

that performance on the jury examination is a more anxiety inducing experience than performance in a lesson.

10. The fact that college freshmen voice students tended to experience greater situational anxiety in private voice lessons than in certain neutral situations may have indicated that performance in a private voice lesson is a more anxiety inducing experience than being present in the particular neutral situation described in this study.

11. The fact that female college freshmen voice students tended to manifest greater situational anxiety in certain neutral situations and in the vocal music jury examination than did male college freshmen voice students may have indicated sex differences regarding situational anxiety. The fact that the reverse was true for private voice lessons, however, may have indicated differences between the two groups regarding the amount of importance which they attached to the lesson performances. Since the data indicated that the male students were better vocal performers than the female students, it could have been that male students felt a greater need to perform well.

12. The fact that female college freshmen voice students of limited vocal performance experience tended to manifest high situational anxiety in certain neutral situations and in the vocal music jury examination may have been caused by the novelty of both situations to those particular students. Similarly, the fact that they manifested low

situational anxiety during the voice lessons may have indicated the lack of novelty of the situation. All students had several regular voice lessons prior to the ones in which recordings were made for the study.

13. The fact that female college freshmen voice students of limited vocal performance experience tended to manifest greater situational anxiety in certain neutral situations and in vocal music jury examinations than did female students of moderate vocal performance experience may have indicated differences between the two groups in prior experience relative to the activities of the two situations. However, the fact that the female students of moderate vocal performance experience manifested greater anxiety in the voice lessons than did the female students of limited vocal performance experience may have indicated differences between the two groups regarding the amount of importance which they attached to the lesson performances. Students of moderate vocal performance experience may have felt a greater need to perform well.

14. The fact that male college freshmen voice students of limited vocal performance experience tended to exhibit greater situational anxiety in certain neutral situations, in private voice lessons, and in the vocal music jury examination than did male college freshmen voice students of moderate vocal performance experience may have indicated differences between the two groups in the amount of prior experience with the activities relative to the situation.

15. The fact that examination of individual scores did not reveal a consistent correlation between the increase in situational anxiety and the improvement of vocal performance from private voice lessons to the music jury examination may have indicated that the students were not divided into groups for this study along the same variables which coincided with the increase in anxiety and improvement in vocal performance which actually took place.

16. The fact that there tended to be a difference in the amount of improvement in vocal performance which varied with the amount of anxiety manifested in the jury may have indicated that low anxiety tended to improve vocal performance in the jury while moderate and high anxiety tended not to improve vocal performance as much.

17. The fact that there tended to be a difference in the amount of improvement in vocal performance which varied with the amount of anxiety manifested in the jury may have indicated that some other variable or variables caused both anxiety and vocal performance to fluctuate as they did.

Recommendations for Further Research

The findings and conclusions of the study suggest the need for the following additional research.

1. Since this study provides the only known data relative to situational anxiety of college freshmen voice students in lesson and jury situations, the study should be

replicated in order to determine how representative the subjects of this study were to the total population on the several variables.

2. A similar study should be conducted with college senior voice students in order to allow a comparison of freshmen and seniors on the several variables. The professional literature suggests the possibility of significant differences between the two groups. Determination of such data could have valuable implications to the procedures of evaluation employed by music schools across the nation.

3. Similar studies should be conducted with college freshmen and senior instrumental music students in order to allow a comparison of vocal and instrumental students on several variables. The physiological changes concomitant with situational anxiety could possibly affect a vocalist's performance differently than it would an instrumentalist's performance since the vocalist's instrument is an inseparable part of his physique.

4. Research designed to identify and measure interacting variables with anxiety upon vocal solo performance should be initiated. Knowledge of this nature conceivably could permit the prediction of relative quality of vocal solo performances of certain students under certain stress conditions such as jury examinations or other public solo performances.

5. Similar research should provide for the students to register subjective predictions before the jury of comparisons of their lesson and jury performances. Subjective comparisons of the two performances could also be made after the jury. These predictions could then be compared to the actual data. Comments from the students involved in this study make it tenable to expect that there might be a significant difference between student evaluations and student performances. Such knowledge could be valuable to the preparations made by students and teachers for jury performances.

6. Research should be undertaken to determine the reason for the eratic anxiety scores between the neutral, lesson, and jury situations of female students of limited vocal performance experience.

7. Research should be initiated that would supply insight into the data that students whose lesson and jury recordings were contiguous in time tended to evidence more vocal improvement than students whose lesson and jury recordings were remote in time.

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

(Print Only)

Name_____ Male_____ Female_____

Date of Birth_____ _____ _____
Month Day Year

Fresh_____ Soph_____ Jr_____ Sr_____ 1st Sem.___ 2nd Sem._

(Check One) Voice Major_____ Voice Concentration_____

Voice Secondary___ Music Minor___ Just Taking Lessons____

School Address_____ Telephone No._____

Voice Teacher _____

Day (s) and Hour (s) of Lesson (s)_____

1. How many years and/or months of private vocal study have you had if any? (Do not count present semester.)

   _____Years _____Months

2. For how many music jury examinations have you performed a vocal solo if any?

   _____

3. For how many contests of any kind have you performed a vocal solo if any?

   _____

4. Approximately how many public vocal solos (school, church, community, etc.) did you sing during the past four years if any?

   Last Year _____ Two Years Ago_____

   Three Years Ago_____ Four Years Ago_____

APPENDIX B

ANXIETY DIFFERENTIAL

Name (print)_____
Record No._____
Section No.___ Sex: M F

On each of the following pages there will be a number of persons or things in the middle of the page. Under each of these there is a pair of adjectives. Here is an example.

MONEY

good____:____:____:____:____:____:____bad

Each pair of adjectives form a scale. By making a check-mark along the scale you can indicate what you associate with the particular kind of person or thing that is listed right above the scale. For example, if you feel that the thing or person named right above the scale is very closely associated with one end of the scale, you would place a check-mark as follows:

MONEY

good✓:__:__:__:__:__:__bad

OR

MONEY

good__:__:__:__:__:__:✓bad

If you feel that the person or thing is quite closely related to one or the other end of the scale, you would place your check as follows:

MONEY

good__:✓:__:__:__:__:__bad

OR

MONEY

good__:__:__:__:__:✓:__bad

If the thing or person seems only slightly related to one side as opposed to the other, you might check as follows:

MONEY

good__:__:✓:__:__:__:__bad

OR

MONEY

good__:__:__:__:✓:__:__bad

If you considered both sides equally associated you would check the middle space on the scale.

MONEY

good____:____:____:✓:____:____:____bad

REMEMBER: Never put more than one check-mark on any scale. And also be sure to check every item. If you feel that a pair of adjectives does not apply, or if you are undecided, place the check-mark in the center space. Do not leave the line blank.

Do not spend more than a few seconds marking each scale. Your first impression is what we would like to learn about.

--NOW TURN THE PAGE AND BEGIN WORKING--

DREAMS

loose____:____:____:____:____:____:____tight

LITTLE BOYS

safe____:____:____:____:____:____:____dangerous

FINGERS

straight____:_ __:____:____:____:____:____twisted

SCREW

strong____:____:____:____:____:____:____weak

ME

helpless____:____:____:____:____:____:____secure

BREATHING

tight____:____:____:____:____:____:____loose

DREAMS

near____:____:____:____:____:____:____far

HANDS

wet____:____:____:____:____:____:____dry

ME

frightened____:____:____:____:____:____:____fearless

TODAY

straight____:____:____:____:____:____:____twisted

MY MIND

loose____:____:____:____:____:____:____tight

TROUBLE

here____:____:____:____:____:____:____there

BREATHING

hot____:____:____:____:____:____:____cold

FINGERS

tight____:____:____:____:____:____:____loose

ME

dry____:____:____:____:____:____:____wet

SCREW

nice____:____:____:____:____:____:____awful

FACE

stiff____:____:____:____:____:____:____relaxed

MOVIES

loose____:____:____:____:____:____:____tight

HANDS

good____:____:____:____:____:____:____bad

ME

calm____:____:____:____:____:____:____jittery

EYES

large____:____:____:____:____:____:____small

BREATHING

careful____:____:____:____:____:____:____carefree

HANDS

tight____:____:____:____:____:____:____loose

MOVIES

cold____:____:____:____:____:____:____hot

SCREW

loose____:____:____:____:____:____:____tight

FINGERS

stiff____:____:____:____:____:____:____relaxed

GERMS

deep____:____:____:____:____:____:____shallow

THE REAL ME

hard____:____:____:____:____:____:____soft

TODAY

loose____:____:____:____:____:____:____tight

ME

carefree____:____:____:____:____:____:____worried

ANXIETY

clear____:____:____:____:____:____:____hazy

MY FRIEND'S PROBLEMS

small____:____:____:____:____:____:____large

FEET

straight____:____:____:____:____:____:____twisted

Scoring Key to the Anxiety Differential

Item Number	Item
3	FINGERS: straight-twisted*
4	SCREW: strong-weak
5	ME: helpless-secure
6	BREATHING: tight-loose
8	HANDS: wet-dry
9	ME: frightened-fearless
10	TODAY: straight-twisted
11	MY MIND: tight-loose
14	FINGERS: tight-loose
15	ME: dry-wet
17	FACE: stiff-relaxed
19	HANDS: good-bad
20	ME: calm-jittery
22	BREATHING: careful-carefree
23	HANDS: tight-loose
25	SCREW: loose-tight
26	FINGERS: stiff-relaxed
29	TODAY: loose-tight
30	ME: carefree-worried
33	FEET: straight-twisted

*The anxious side of each item is underlined.

APPENDIX C

LETTER

NORTH TEXAS STATE UNIVERSITY
DENTON, TEXAS

SCHOOL OF MUSIC

September 30, 1968

Dr. Steven Farish
North Texas State University
School of Music
Denton, Texas

Dear Dr. Farish:

Your cooperation is requested in connection with a research project currently in progress by one of our doctoral candidates, Mr. Robert Spencer. The study is designed to reveal information concerning the relationship of public vocal solo performances and anxiety.

In a few days you will receive a list of your freshmen voice students who have been selected for the study. You will also receive an instruction sheet which will specify your functions within the study as the students' teacher. Your time will not be presumed upon. The major part of your involvement will be as follows. For each student approximately ten minutes of three different lessons will be needed during the semester. These sessions will involve video filming within the lessons and therefore will not subtract from your students' allotted time.

Mr. Spencer and I express appreciation for the cooperation we know you will give to this effort.

Sincerely yours,

Kenneth N. Cuthbert
Dean, School of Music

KC/lw

APPENDIX D

INSTRUCTIONS TO PARTICIPATING FACULTY

INSTRUCTIONS TO PARTICIPATING FACULTY

1. It is necessary that all of your students on the adjoining list be required to perform at least one selection on jury at the end of this semester even though they may not be either a vocal major, concentration, or secondary.

2. It is necessary that the first selection (if more than one) which each student will use on jury be chosen and memorized by November 15.

3. It is necessary that permission be given to videotape performances of the jury selection at the beginning of your students' regular lessons on the two dates indicated to the right of each name on the adjoining page. Because of the difficulty of transporting and setting up the video recording equipment, it will be necessary that the first few minutes or all (if you wish) of the students' two lessons be taught in MH 328. The recording procedure will take no longer than it takes each student to sing his selection. No instruction should be given in each lesson prior to the recording; although, a brief vocal "warm-up" may be desirable. I will remind you and the students one week prior to each date.

4. It is necessary that permission be given to videotape the students' jury performances. The recording process should in no way hinder the performances. The camera will be located half the length of the recital hall away from the student. There will be no special lights or other materials used except a small recording microphone inconspicuously located several feet from the student.

5. It is requested that you not discuss with your students any information you may have concerning the purpose or design of the study except to inform them that the performances will be videotaped in connection with a research project currently in progress. You may also tell them that while these recordings cannot be immediately played back for their viewing, they will be available during the spring semester. I shall be happy to schedule a viewing time should you and/or your students wish to see and hear the recordings.

Allow me to suggest that these instructions be retained for future reference and that the dates referred to be placed on your calendar. Your cooperation will be greatly appreciated.

APPENDIX E

VOCAL SOLO ADJUDICATION FORM

Vocal Solo

64

RATING

Use no pins or ribbons signs to final rating

Order or time of appearance_____ Event No._____ Class_____ Date_____ 19___

Name _____ Voice Classification_____

School_____

City_____ State_____ District_____

Selection _____

Adjudicator will grade principal items, A, B, C, D, or E, or numerals, in the respective squares. Comments must deal with fundamental principles and be constructive. Minor details may be marked on music furnished to adjudicator.

TONE (beauty, control)_____

INTONATION_____

DICTION (clarity of consonants, naturalness, purity of vowels) _____

TECHNIQUE (accuracy of notes, breathing, posture, rhythm)_____

INTERPRETATION (expression, phrasing, style, tempo)_____

MUSICAL EFFECT (artistry, fluency, vitality)_____

OTHER FACTORS (choice of music, stage presence and appearance)_____

*May be continued on other side.

Signature of Adjudicator_____

APPENDIX F

WRITTEN INSTRUCTIONS TO THE NON-RESIDENT JURY

WRITTEN INSTRUCTIONS TO THE NON-RESIDENT JURY

You are about to hear and see a series of audio-visual tape recordings of vocal solos by first semester freshmen college students ranging in age from seventeen to eighteen years. The recordings are in sets of two. That is, each student will sing his selection two different times. You are to rate the two performances using a separate score sheet for each. Your score sheets are successively labeled in the order in which they are to be used. For example, your first four score sheets are: 1A, 1B, 2A and 2B. A should be used for the first performance of each student; B should be used for the second performance of each student.

Please fill out the score sheets completely; leave no category blank. Your ratings should be made entirely on the basis of the audio-visual considerations apparent from the recordings. Please use the numerical rating system of one through five - one for the lowest rating and five for the highest.

The use of your score sheets will be confined entirely to the scope of this study. In no way will they be considered in determining grades nor will the students ever know your ratings. Neither will your fellow jurors see your ratings except in the limited circumstance as described below.

While obviously your scores should accurately indicate differences in quality of the performances of one student as compared to another student, it is especially important to this study that your scores accurately indicate differences in quality between the performances of each student. In other words, your scores should indicate the extent to which there is a difference between the first performance and the second performance of each student. Please be alert; such differences, if any, will quite often be very slight. There will be a ten minute rest period each hour.

You will now hear two sets of sample recordings--two students singing their selections two times each. Please use the sample score sheets at the beginning of your notebook. Following each of these sample groups, time will be allotted for you to compare scores and to discuss the performances. Following the discussion you may independently alter your scores to make them more consistent with the overall jury consensus if your scores are extremely different from that consensus. This is done to assure reasonable comparability of scores.

Here is sample performance labeled 1A (sample).

APPENDIX G

TABLES OF RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY

TABLE X

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR MALE STUDENTS TOTAL

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
12	22.00	3.00
20	11.00	17.50
21	15.00	21.50
22	3.00	16.00
31	13.50	11.00
44	8.00	9.50
52	10.00	14.50
54	18.50	6.50
56	12.00	21.50
3	9.00	13.00
8	21.00	8.00
15	5.50	4.50
18	17.00	17.50
19	4.00	14.50
28	1.00	2.00
29	16.00	1.00
32	13.50	23.00
34	20.00	9.50
43	7.00	4.50
49	18.50	6.50
51	2.00	12.00
57	23.00	20.00
59	5.50	19.00

Rank Order Coefficient of Correlation = -.00889

TABLE XI

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR FEMALE STUDENTS TOTAL

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
1	9.00	4.50
2	6.00	7.50
4	21.50	6.00
9	27.00	28.50
10	24.50	17.00
11	9.00	23.00
17	33.00	10.00
26	18.50	24.00
27	14.50	2.00
36	9.00	28.50
41	33.00	19.00
42	30.00	9.00
43	3.00	3.00
45	14.50	33.00
46	33.00	19.00
53	6.00	25.00
55	14.50	21.50
61	27.00	1.00
62	4.00	15.00
5	12.00	13.00
6	21.50	15.00
14	29.00	32.00
16	27.00	21.50
23	20.00	4.50
24	18.50	34.00
30	1.00	11.50
33	17.00	19.00
35	11.00	30.00
37	23.00	26.50
38	24.50	15.00
39	2.00	11.50
40	31.00	7.50
47	6.00	26.50
50	14.50	31.00

Rank Order Coefficient of Correlation = .01130

TABLE XII

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR STUDENTS OF LIMITED VOCAL PERFORMANCE EXPERIENCE TOTAL

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
12	25.00	7.00
20	9.50	25.00
21	17.50	26.50
22	1.00	20.50
31	16.00	13.50
44	4.00	12.00
52	6.00	18.50
54	22.00	10.00
56	12.00	26.50
1	9.50	4.00
2	6.00	6.00
4	19.00	5.00
9	22.00	23.50
10	20.00	13.50
11	9.50	18.50
17	27.00	9.00
26	17.50	20.50
27	14.00	2.00
36	9.50	23.50
41	27.00	15.50
42	24.00	8.00
43	2.00	3.00
45	14.00	28.00
46	27.00	15.50
53	6.00	22.00
55	14.00	17.00
61	22.00	1.00
62	3.00	11.00

Rank Order of Coefficient of Correlation = -.12712

TABLE XIII

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR STUDENTS OF MODERATE VOCAL PERFORMANCE EXPERIENCE TOTAL

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
3	9.00	18.00
8	27.00	10.50
15	6.50	5.50
18	20.50	22.50
19	3.00	19.00
28	1.00	3.00
29	17.50	1.00
32	14.50	29.00
34	26.00	14.00
48	8.00	5.50
49	23.50	8.00
51	2.00	15.00
57	29.00	26.00
59	6.50	24.00
5	12.00	10.50
6	19.00	12.50
14	25.00	27.00
16	23.50	17.00
23	17.50	2.00
24	16.00	28.00
30	4.00	8.00
33	14.50	16.00
35	11.00	22.50
37	20.50	20.50
38	22.00	12.50
39	5.00	8.00
40	28.00	4.00
47	10.00	20.50
50	13.00	25.00

Rank Order Coefficient of Correlation = .13041

TABLE XIV

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR MALE STUDENTS OF MODERATE VOCAL PERFORMANCE EXPERIENCE

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
3	7.00	9.00
8	13.00	6.00
15	4.50	3.50
18	10.00	11.00
19	3.00	10.00
28	1.00	2.00
29	9.00	1.00
32	8.00	14.00
34	12.00	7.00
48	6.00	3.50
49	11.00	5.00
51	2.00	8.00
57	14.00	13.00
59	4.50	12.00
Rank Order Coefficient of Correlation = .19670		

TABLE XV

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR MALE STUDENTS OF LIMITED VOCAL PERFORMANCE EXPERIENCE

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
12	9.00	1.00
20	4.00	7.00
21	7.00	8.50
22	1.00	6.00
31	6.00	4.00
44	2.00	3.00
52	3.00	5.00
54	8.00	2.00
56	5.00	8.50
Rank Order Coefficient of Correlation = -.31250		

TABLE XVI

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR FEMALE STUDENTS OF LIMITED VOCAL PERFORMANCE EXPERIENCE

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
1	6.00	4.00
2	3.50	6.00
4	12.00	5.00
9	14.50	17.50
10	13.00	10.00
11	6.00	14.00
17	18.00	8.00
26	11.00	15.00
27	9.00	2.00
36	6.00	17.50
41	18.00	11.50
42	16.00	7.00
43	1.00	3.00
45	9.00	19.00
46	18.00	11.50
53	3.50	16.00
55	9.00	13.00
61	14.50	1.00
62	2.00	9.00

Rank Order Coefficient of Correlation = .02500

TABLE XVII

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR FEMALE STUDENTS OF MODERATE VOCAL PERFORMANCE EXPERIENCE

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
5	5.00	5.00
6	10.00	6.50
14	14.00	14.00
16	13.00	9.00
23	9.00	1.00
24	8.00	15.00
30	1.00	3.50
33	7.00	8.00
35	4.00	12.00
37	11.00	10.50
38	12.00	6.50
39	2.00	3.50
40	15.00	2.00
47	3.00	10.50
50	6.00	13.00

Rank Order Coefficient of Correlation = .07232

TABLE XVIII

RANK ORDER CORRELATIONS OF VOCAL AND ANXIETY DIFFERENCE SCORES DERIVED FROM LESSONS AND THE JURY FOR ALL STUDENTS TOTAL

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
12	52.50	11.00
20	19.50	47.00
21	33.00	53.00
22	3.00	39.50
31	30.00	27.50
44	12.00	25.50
52	15.50	37.00
54	45.00	17.50
56	22.50	53.00
3	13.00	35.00
8	50.50	20.50
15	8.50	13.50
18	39.50	47.00
19	4.00	37.00
28	1.00	7.50
29	35.50	1.50
32	30.00	57.00
34	49.00	25.50
48	10.50	13.50
49	45.00	17.50
51	2.00	29.00
57	57.00	51.00
59	8.50	49.00
1	19.50	5.50
2	15.50	9.50
4	37.50	7.50
9	45.00	44.50
10	41.50	27.50
11	19.50	37.00
17	55.00	15.00
26	33.00	39.50
27	26.50	3.00
36	19.50	44.50
41	55.00	31.00
42	50.50	12.00
43	7.00	4.00
45	26.50	55.00
46	55.00	31.00

TABLE XVIII--Continued

Student Numbers	Rank of Vocal Difference Scores	Rank of Anxiety Difference Scores
53	15.50	41.00
55	26.50	33.50
61	45.00	1.50
62	10.50	23.00
5	24.00	20.50
6	37.50	23.00
14	48.00	53.00
16	45.00	33.50
23	35.50	5.50
24	33.00	56.00
30	5.00	17.50
33	30.00	31.00
35	22.50	47.00
37	39.50	42.50
38	41.50	23.00
39	6.00	17.50
40	52.50	9.50
47	15.50	42.50
50	26.50	50.00

Rank Order Coefficient of Correlation = -.02377

APPENDIX H

RAW DATA

APPENDIX H

TABLE XIX

RAW DATA

Student Numbers	Group Identification	Intervening Days Between Recordings	Vocal Lesson Scores	Vocal Jury Scores	Vocal Difference Scores	Anxiety Neutral Scores	Anxiety Lesson Scores	Anxiety Jury Scores	Anxiety Difference Scores
1	FL	42	48	59	11	44	31	64	33
2	FL	37	35	47	12	53	33	71	28
3	MM	42	64	77	13	86	90	98	8
4	FL	7	43	46	3	88	86	118	32
5	FM	36	49	58	9	64	53	69	16
6	FM	36	67	70	3	82	75	90	15
8	MM	42	60	55	- 5	65	77	93	16
9	FL	30	42	42	0	79	82	84	2
10	FL	52	32	33	1	83	87	100	13
11	FL	39	44	55	11	62	63	70	7
12	ML	37	75	67	- 8	31	62	85	23
14	FM	28	63	60	- 3	77	87	82	- 5
15	MM	36	58	74	16	42	51	70	19
16	FM	29	52	52	0	36	66	75	9
17	FL	41	56	45	-11	94	84	102	18
18	MM	44	72	74	2	64	61	61	0
19	MM	43	53	74	21	70	87	94	7
20	ML	53	26	37	11	78	101	101	0
21	ML	10	44	50	6	74	98	93	- 5
22	ML	41	34	56	22	87	90	95	5
23	FM	51	55	59	4	60	61	94	33
24	FM	31	68	74	6	44	54	44	-10

TABLE XIX--Continued

Student Numbers	Group Identification	Intervening Days Between Recordings	Vocal Lesson Scores	Vocal Jury Scores	Vocal Difference Scores	Anxiety Neutral Scores	Anxiety Lesson Scores	Anxiety Jury Scores	Anxiety Difference Scores
26	FL	42	42	48	6	41	52	57	5
27	FL	29	38	46	8	61	61	102	41
28	MM	36	57	84	27	35	36	68	32
29	MM	49	57	61	4	44	35	78	43
30	FM	42	56	75	19	42	49	66	17
31	ML	45	83	90	7	54	37	50	13
32	MM	36	65	72	7	78	95	52	-43
33	FM	33	52	59	7	78	98	108	10
34	MM	29	69	65	- 4	66	90	104	14
35	FM	34	49	59	10	51	64	64	0
36	FL	8	76	87	11	75	48	50	2
37	FM	40	58	60	2	78	88	91	3
38	FM	36	42	43	1	71	68	83	15
39	FM	45	38	56	18	59	70	87	17
40	FM	49	81	73	- 8	75	73	101	28
41	FL	36	45	34	-11	47	58	68	10
42	FL	42	56	51	- 5	56	57	97	20
43	FL	43	29	46	17	87	68	105	37
44	ML	29	64	78	14	65	72	86	14
45	FL	36	35	43	8	50	69	62	- 7
46	FL	43	40	29	-11	54	69	79	10
47	FM	10	76	88	12	68	60	63	3
48	MM	10	78	93	15	46	51	70	19
49	MM	51	60	60	0	40	64	81	17
50	FM	8	59	67	8	65	82	79	- 3
51	MM	44	46	69	23	73	72	84	12
52	ML	42	62	74	12	62	73	80	7

TABLE XIX--Continued

udent mbers	Group Identification	Intervening Days Between Recordings	Vocal Lesson Scores	Vocal Jury Scores	Vocal Difference Scores	Anxiety Neutral Scores	Anxiety Lesson Scores	Anxiety Jury Scores	Anxiety Difference Scores
53	FL	35	58	70	12	61	68	72	4
54	ML	43	39	39	0	68	62	79	17
55	FL	42	36	44	8	53	66	75	9
56	ML	51	66	76	10	53	43	38	- 5
57	MM	43	71	54	-17	53	82	78	- 4
59	MM	40	82	98	16	58	56	55	- 1
61	FL	45	42	42	0	64	73	116	43
62	FL	45	30	45	15	66	71	86	15

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