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AN APPLICATION OF OBSERVATION AND SELF-REPORT METHODS TO THE MEASUREMENT OF MUSIC PERFORMANCE ANXIETY

By

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ABSTRACT

AN APPLICATION OF OBSERVATION AND
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The problem of the study was to measure varying amounts of student performance anxiety using methods available to the average music teacher. Three different measures were used: 1) a behavioral checklist, 2) the IPAT Anxiety Scale Questionnaire (ASQ), and 3) a structured interview.

Twenty high school music students were used as subjects. They were observed during their auditions with the behavioral checklist used to record data. At a later time, each subject completed the ASQ, and then was privately interviewed.

Significant correlations were found between admission of anxiety in the interview and a high score on the overt section of the ASQ, a high score on the behavioral checklist and a high score on the ASQ total; and between a high score on the checklist and a high score on the overt section of the ASQ.

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The researcher is grateful for Dr. Alvin Wardle's permission to include a detailed description of his study in her thesis.

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Performance anxiety in music is a very common problem but not often dealt with successfully. Students and performers spend hours training and trying to perfect their technique, but usually no time or very little time is given to preparing for the bout with nerves the individual is likely to experience. Student performers are faced with auditions, recitals, and other anxiety-provoking situations, but once they are on the stage their teachers have no way of helping or controlling them. It was noted by one experienced pianist that long-standing professionals are as unenlightened as students about how to handle performance anxiety (Dopmann, 1978). Even famous and successful performers suffer from this dreaded malady known through the ages as "stage fright." Debbie Boone, who skyrocketed to fame after she recorded "You Light Up My Life," admits that she suffers from stage fright. "I hate my nervousness," she says, "because it destroys the things that I try to do--my voice quivers, my face begins to twitch, and I can't sing the way I want to sing, or look the way I want to look" (People, etc., 1980). In an interview with three of opera's most acclaimed singers--Luciano Pavarotti, Joan Sutherland, and Marilyn Horne--NBC Today Show host Gene Shallit asked if they ever experience performance anxiety. All of them answered in the affirmative. In referring to the performance before them that evening (March 23, 1981)

at the Lincoln Center, one of the singers mentioned that there would undoubtedly be some fast pulses that night!

Some performers contend that a certain amount of "nervousness" is necessary to motivate them to do their best. However, while a feeling of excitement may contribute to an artistic performance, performance anxiety as it is defined in this study can interfere with the artistic execution of a performance. This type of anxiety causes a person to lose control, and control is vital to a musician. Most devastating, is the loss of memory during a performance; to many, that is the most serious consequence of performance anxiety.

Little research has been done on performance anxiety in music, in comparison to the breadth of the problem. Psychology has defined anxiety in the broad sense of the word, and has attempted to diagnose its causes. For many years, psychologists and psychiatrists were preoccupied with psychoanalysis--tracing causes back to early childhood experiences. In more recent years, psychologists have turned to behavioral orientation to explain anxiety. The concern is not with the cause but with treating the problem through a learned response to it. For example, systematic desensitization, a procedure developed by Joseph Wolpe, is based on the principle that "if a response antagonistic to anxiety can be made to occur in the presence of anxiety-evoking stimuli, it will weaken the bond between these stimuli and the anxiety responses" (Wolpe

and Lazarus, 1966, p. 13). One such response, relaxation, is most often used to inhibit the anxiety response.

Purpose of the Study

The purpose of this study was to focus on the behavioral aspect of performance anxiety and attempt to measure it. Using various types of measurement, the problem of performance anxiety can be examined at close range and correlations can be drawn which lead to a greater understanding of what has been and is a mysterious evil to the musician.

The Problem and Subproblems

The problem of this study was to measure varying amounts of student performance anxiety using materials available to the average music teacher. (Various instruments which measure physiological response to performance anxiety may have their place, but they are not readily available to most teachers and researchers, and were not included in this study.) Consideration of this problem suggested the following subproblems:

1. A variety of methods of measurement were analyzed to determine what are some of the best tools available to the average music teacher for measuring performance anxiety.

2. The level of training required to administer these tools was determined.

3. The practicality of measuring student performance anxiety with these tools was assessed:

    a) to attempt to find some of the best tools for measuring performance anxiety;

b) to determine the level of training required to administer these tools; and

c) to ascertain the practicality of measuring student performance anxiety with readily available tools.

Definitions

The following terms are defined for the purposes of this study:

Anxiety: 1) a feeling of mingled dread and apprehension about the future without specific cause for the fear. 2) a chronic fear of mild degree. 3) strong, overwhelming fear (Chaplin, 1968).

Behavioral: pertaining to observable characteristics.

Insight: in psychotherapy, the illumination, or bringing to awareness, of motives, relationships, feelings, impulses, etc. that previously had been poorly understood or of which the subject was totally unaware (Chaplin, 1968).

Music performance anxiety: "stage fright," fear associated with performing which causes the musician to lose some degree of self-control.

Systematic desensitization: a technique developed by Joseph Wolpe in which the patient is taught deep muscle relaxation, and then is asked to imagine a graded series of scenes relevant to the fear. Progress is halted when the patient experiences anxiety and then is resumed when he or she is sufficiently relaxed. The goal is to weaken the anxiety responses.

Assumptions

This study made the following two assumptions:

1. Music performance anxiety can be measured by observation and self-report.

2. The average music teacher is qualified or can become qualified to use the measurement tools which were applied in this study.

Limitations

This study was limited to a sample of 20 high school student volunteers enrolled in Michigan State University Summer (1978) Youth Music.

This study did not attempt to find cures for music performance anxiety.

Need for the Study

Most musicians would agree that performance anxiety is a very real problem. On numerous occasions, the author has observed music students with shaky and sweaty hands and other nervous symptoms which make it difficult for them to play their instruments. Singers are often short of breath and sometimes have an uncontrollable vibrato when confronted with performance anxiety. In interviewing performers of various ages and accomplishment, the author has found that nearly all of them experience performance anxiety to some degree. The more experienced performers have usually found ways to control it or hide it but they are still bothered by it. As Sylvia Appel (1976) put it, "Failure to overcome the performance anxiety problem may

contribute to inefficient use of acquired musical skills and negative performing experiences, sufficiently negative to discourage students from further study of music" (p. 14).

Because this problem is so widespread, and because musical performance should be a pleasurable and growing experience, it must be dealt with rather than ignored. The first step in dealing with the problem of performance anxiety is to find effective and practical ways to measure it. Many physiological methods for measuring anxiety have been used with success, but these are not available to the average music teacher. This study provides several options readily available for measuring performance anxiety, thus making it practical to deal with this problem. These tools include pencil and paper methods of self-report and observational methods.

Organization of the Study

In the next chapter, literature will be reviewed that relates to the topic of performance anxiety and its measurement. In chapter three the procedure of the study is laid out. The results of this study are seen in chapter four, and the last chapter consists of a summary of the study, conclusions, and recommendations for further research.

Review of Literature

Performance anxiety can best be measured when several variables are examined. Alvin Wardle did this in his dissertation, Behavior Modification by Reciprocal Inhibition of Instrumental Music Performance Anxiety (1975). In his study, four different dependent measures were used: 1) heart rate as measured by a physiograph, 2) the Watkins-Farnum Performance Scale, 3) behavioral observation, and 4) performance ratings by judges. The independent variables of the study were: 1) systematic desensitization procedures, and 2) insight-relaxation procedures.

The purpose of the study was to determine the effect of behavior modification by reciprocal inhibition of anxiety responses in instrumental music performance behavior. Reciprocal inhibition is a form of behavior therapy in which conditioning of a positive response is used to eliminate an incompatible response that is undesirable. Wardle, who completed his study in 1969, had found that experimental research on the subject of anxiety reduction in musical performance was virtually nonexistent. His primary attention was on the measurement of physiological signs during music performance, application of behavioral and psychoanalytic techniques to music performance anxiety problems, and evaluation of the procedures in the reduction of anxiety responses.

Wardle's study showed three things:

> 1. Physiological and behavioral responses related to performance [anxiety] are measurable.
> 2. The principles of reciprocal inhibition are applicable to [music performance] anxiety reduction.
> 3. Behavioral and physiological anxiety reduction is not detrimental in performance and may be helpful to improved performance (p. 191).

Wardle based his behavioral techniques of systematic desensitization on the work of Joseph Wolpe. Wolpe's work in behavioral therapy is the foundation of most subsequent studies in desensitization. Wolpe's (1958) principle of reciprocal inhibition is this: "If a response antagonistic to anxiety can be made to occur in the presence of anxiety evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between these stimuli and the anxiety responses will be weakened" (p. 71). The response antagonistic to anxiety is relaxation because "the outcome effects that accompany deep relaxation are diametrically opposed to those characteristics of anxiety" (p. 59). In a state of relaxation, imagery, (the act of imagining oneself in a particular situation), is used to replace real life situations with the expectation that transfer will occur. The imagery presented is derived from the subject's anxiety

hierarchy in which he has listed and ranked the things that provoke least to most anxiety relevant to a given situation. Thus, three separate procedures are involved in systematic desensitization: training in deep muscle relaxation, construction of anxiety hierarchies, and the counterposing of relaxation and anxiety through emotive imagery. Wolpe and Lazarus (1965) used these techniques in the treatment of 600 anxiety-prone patients, with amazing results showing that almost 90% either recovered or improved markedly.

In Wardle's study, 30 students were randomly selected from the Florida State University Summer School and Music Camp. All were brass instrumentalists, aged 13 - 27. The subjects were randomly assigned to one of three treatment groups: 1) desensitization (which used the principle of reciprocal inhibition), 2) insight-relaxation, and 3) no-contact control. Each subject was examined on a pre- and posttest consisting of sight reading examples from the Watkins-Farnum Performance Scale (1954). The subjects received both written and oral instructions. Their performances were taped. Heart rate was monitored by telemetric methods using an FM receiver and a physiograph for recording heart-beat data. Heart-beat records were made from two minutes prior to being called to perform until one minute following the performance. Each subject was called one minute and forty seconds prior to performance. When the subject reached the performance position, he was

given one minute to "study the music," then he was notified when 20 seconds remained by the sounding of a metronome set at 120 beats per minute. He was instructed to "begin performance" when five seconds were left. The metronome continued through the first complete measure and stopped.

Group A consisted of ten subjects given seven 40-minute treatment sessions in systematic desensitization using procedures established by Wolpe as well as modifications suggested by Paul (1966). The ten subjects in Group B were given seven 40-minute treatment sessions in insight-relaxation procedures. Both experimental groups (A and B) constructed an anxiety hierarchy and had relaxation training. The anxiety hierarchy consisted of 28 items. First (or least threatening) on their anxiety hierarchy was "assembling horn for practice session," and last (or most anxiety provoking) was "playing the solo in public."

Group C, the control group, attended an orientation session and took both pre- and posttests. The subjects in this group received no treatment sessions.

The results of Wardle's study indicated that there was indeed a general anxiety reduction for treatment groups on all dependent measures between the pre- and posttests. However, only the physiograph measurement and one behavioral measure achieved the .05 level of significance between groups (p. 196). These two measures indicated a statistically significant difference between groups after

the treatment.

The physiograph measured a reduction in heart rate between pre- and posttests for both insight-relaxation and desensitization groups. The no-contact group made a general increase in heart rate during the period between pre- and posttests. The reduction of heart rate in the insight- relaxation group was somewhat greater than that of the desensitization group. Analyses in posttest reduction demonstrated that heart rate can be lowered by these treatments both before and during performance.

Behavioral observations were obtained for one minute and forty seconds before and two minutes after performance by two trained observers. The observations consisted of ratings of nervousness within six categories: 1) feet and legs, 2) body, 3) arms and hands, 4) face, 5) instrumental behavior, and 6) vocalizations. Mean responses showed a reduction of anxiety behaviors for both desensitization and insight groups on the post-test. The no-contact control group increased its anxiety behaviors. The category in which behavior was significantly improved was that of instrumental behavior, meaning physical manipulation of the instrument. The other categories indicated reduced movement in feet, legs, hands, and arms. Increased behaviors were those of bodily movements and facial gestures.

The Watkins-Farnum Performance Scale was another dependent measure used in the study. All subjects

performed the ninth exercise and performances were tape recorded and analyzed for performance errors. They were scored by the suggested procedure in which each measure is a basic unit in noting errors in pitch, rhythm, time changes, ties, and expression. Raw data indicated that 29 of the 30 subjects achieved a reduction in errors between pre- and posttests. The analysis of variance indicated that there was no significant difference among groups on the Wakins-Farnum Performance Scale.

The performance ratings by judges were made at separate times, in isolation, and without knowledge of groups, subjects, or intent of the study. They were asked to give percentage ratings by aural discrimination rather than on the basis of Watkins-Farnum standards. The raw data total scores and group mean scores indicated improvement of all groups between pre- and posttests. The general improvement in performance led to no significant difference among groups.

Wardle's study reveals that both systematic desensitization and insight-relaxation procedures may be used to reduce performance anxiety. The relaxation principle employed in both groups seems inherent to the success to either treatment. One must be aware of possible "pitfalls," including difficulties of relaxation, misleading or irrelevant hierarchies, or, in the case of systematic desensitization, inadequacies of imagery.

Wardle had probably hoped to show that desensitization would contribute more to anxiety reduction than the insight-relaxation technique, but neither group proved to be better than the other. He stated, "The hypothesis that desensitization would be more effective than insight-relaxation procedures was not substantiated" (p. 197). It should be noted that the insight group was not based on the traditional psychotherapy definition but rather evolved into a rational discussion situation with the purpose of discovering the inappropriateness of the anxiety response in performance situations. The essential difference between the insight and emotive-imagery treatments was that subjects were encouraged to talk through the problem rather than to systematically think through a carefully structured hierarchy with counterconditioning of relaxation. Also, Wardle was not a trained psychotherapist, and was not necessarily qualified to administer either treatment. He may have employed one technique more effectively than the other. The results of the study do indicate that anxiety is a learned response and it can be unlearned.

Wardle's study did not necessarily indicate improvement in performance after treatment. Most of the subjects improved but this would be expected in a music camp situation in which the students receive intensive training in a highly motivated situation. Wardle handles this problem in his carefully worded statement, "Behavioral and physiological anxiety reduction is not detrimental in

performance and may be helpful to improved performance" (p. 191). It should not be expected that a reduction in the intensity of anxiety can produce a sudden improvement in performance skills, but one may conclude that it could allow more efficient use of already acquired abilities and free individuals of inhibiting anxieties.

The experiment was not concerned with what causes performance anxiety but rather with the possibility of reducing anxiety in stressful performance situations, and unlearning inappropriate responses.

The study is valuable for many reasons and it opens up many possibilities for further research. Most relevant to the present study was the analysis of Wardle's measuring processes.

A similar study to Wardle's is that of Sylvia S. Appel (1976). Modifying Solo Performance Anxiety in Adult Pianists was a study in which 30 volunteer graduate students including both piano majors and nonpiano majors, all of whom admitted to previously experiencing solo performance anxiety, were randomly assigned to one of three experimental groups: 1) systematic desensitization with "in vivo" counterconditioning, a method focussing on control of the physiological anxiety response, ("in vivo" means that the subjects actually performed during their treatment sessions instead of just imagining it); 2) music analysis with performance rehearsal, a method focussing on more complete intellectual mastery of the performance

material; and 3) the control group. Appel sought to refute the widely held notion that the more thoroughly one prepares the material to be performed, the less likely one is to experience performance anxiety. Another theory, also widely believed, is that frequent repetition of the performing experience will reduce performance anxiety. Appel was aware that behavior therapists had treated performance anxiety with considerable success, hence, her choice of systematic desensitization for one of the experimental situations.

As a means of measuring performance anxiety in her 30 volunteers, Appel used the Personal Report of Confidence as a Performer (PRCP), a questionnaire she derived from Paul's (1966) instrument, Personal Report of Confidence as a Speaker. This questionnaire consisted of 30 keyed true and false statements indicating experienced anxiety directed toward the event of piano solo performance.

All subjects were instructed to select a composition already learned and geared to their present proficiency level. The composition was to be practiced 15 minutes per day. In addition, members of training groups were required to practice their individual training procedures 15 minutes per day.

The pre- and posttest recitals were held under the same conditions. The audience was made up of faculty, students, subjects, and experimental personnel. A registered nurse recorded each subject's pulse rate before

performance. During the performance, a tape recording was made for later tabulation of errors. Immediately after performance, each subject filled out the PRCP questionnaire.

The training procedures for the experimental groups consisted of eight sessions, all of which were aurally directed by the experimenter. The first group was trained in systematic desensitization techniques based on Wolpe's procedures as modified by Paul. Taped instructions were used to guide the subjects' training in progressive muscle relaxation. Rather than each individual devising his own fear hierarchy, a group fear hierarchy was used. All members of the group had to report relaxation before progressing to the next item. When relaxation abilities were sufficiently advanced, each subject performed his or her test composition as "in vivo" counterconditioning experience. During these training sessions, subjects could stop their own performances when they felt overwhelming anxiety and resume performance when they felt sufficiently relaxed.

The second group was trained in musical analysis and performance rehearsal techniques devised by the experimenter. The rationale behind the musical analysis training was explained as the reduction of learned performance anxiety by repeated successful performances in the face of anxiety-provoking stimuli. These successful performances would be the product of an intense analysis of the composition, thereby increasing the subjects' familiarity with the composition and subsequently their ability to

concentrate. Each subject thoroughly analyzed his or her score, and then verbally described and pianistically demonstrated the structure at all training sessions, striving to concentrate, while the group was either neutral or distracting in response.

The third group received no training and acted as a control.

The results of Appel's experiment supported the following conclusions:

1. Solo performance anxiety in adult pianists was modifiable.
2. Systematic desensitization training, including "in vivo" activities, reduced solo performance anxiety in adult pianists.
3. Music analysis training with performance rehearsal also reduced solo performance anxiety in adult pianists.
4. The systematic desensitization training procedure was more effective in reducing solo performance anxiety in adult pianists then the music analysis training procedure or no training.
5. The music analysis training procedure was more effective in reducing solo performance anxiety in adult pianists than no training.
6. Piano majors and nonpiano majors showed

> no differences in solo performance anxiety.
>
> 7. Experienced solo performance anxiety in adult pianists was less among those performing more technically difficult compositions (pp. 11 - 12).

Like Wardle's study, this experiment revealed success in the use of systematic desensitization for the reduction of music performance anxiety. Furthermore, Appel was successful in conducting the training procedures herself. This would seem to indicate that one does not necessarily have to be a trained psychotherapist to successfully implement procedures such as were used here.

The PRCP which was developed by the experimenter proved to be an effective tool in measuring performance anxiety of the subjects. Self-report methods such as this are of practical use. They are readily available and do not require special training to administer. Whereas various physiological means of measurement require a trained person, (e.g., a registered nurse to record pulse rates), self-report methods can be administered by the teacher or researcher.

In addition to her findings which were of primary importance in her study, Appel showed that music performance anxiety is indeed measurable.

Another study in which a questionnaire was used dealt with measuring music performance anxiety under certain conditions, namely the presence or absence of the

musical score and the size of the audience. Mary Alice Leglar (1978) wanted "to ascertain whether or not the anxiety of the performer increased with the absence of the musical score and whether or not anxiety increased in relation to the number and calibre of the audience" (p. 5201A). An additional consideration of the study was to determine if higher anxiety levels correlated positively with less satisfactory performances. The subjects were 30 organists. Each subject was required to perform a single composition under six different conditions: solitary performance with and without the score, performance in the presence of a critic with and without the score, and performance in the presence of a critic and professional peers with and without the score.

A physiograph and datagraph measured heart rate, respiration, temperature, blood pressure, galvanic skin response, and residual muscle tension. The subjects measured their own anxiety and performance levels by means of a questionnaire. Also measured was the number of errors made in each performance as recorded through the automatic event marker on the physiograph. A subjective assessment of the musical quality of each performance was obtained through a consensus of the opinions of three adjudicators, who ranked the six performances of each subject.

The statistical analysis revealed sufficient evidence to indicate that both the removal of the score and the size of the critical audience were factors which increased

anxiety. Also, conditions which produced high anxiety levels tended to result in a poorer performance.

In this study, again, a questionnaire was used to assess the degree of anxiety experienced by the subjects. Questionnaires have been widely used as a means of measuring a certain trait. Many researchers have used the questionnaire medium to obtain statistics pertaining to their particular study. One questionnaire used as a tool in measuring anxiety is the Anxiety Scale Questionnaire (ASQ) produced by the Institute for Personality and Ability Testing (IPAT).

The IPAT Anxiety Scale Questionnaire developed out of a need for standard and dependable measures of anxiety. Often, anxiety has been measured by observation and interview. For reasons such as lack of frankness, differences in use of words, and lack of a standardized situation, an accurate estimate of anxiety is difficult to achieve in an interview. The disparity in definitions of anxiety and anxiety manifestations accounts for much of the disagreement among skilled diagnosticians. Recognizing that this disparity existed not only in the field of anxiety but in the entire area of trait description, Raymond Cattell began a series of programmatic researches in the late 1930's to determine the primary dimensions of the normal, human personality. The goals of his research were to identify the primary source traits among more than 4,000 trait names in the English language and to "provide for an

exact, operational definition of each source trait as a specifiable, replicable factor pattern" (Krug, Scheier, & Cattell, 1976, p. 2). The questionnaire medium was eventually used to check the perspective of the self-rater in comparison to that of the observer. That is, does the individual evaluate his own behavior along the same dimensions used by an outside observer? Five or six of the 16 primary personality traits were found to contain immediate manifest content suggesting psychiatric symptoms of anxiety. They involve questions which "look like" anxiety, for example, they ask whether the examinee has difficulty sleeping, cries easily, and feels guilty. The conclusion reached was that apprehension and tension play the dominant role in the anxiety pattern. Next in importance are factors of emotional instability, suspiciousness, and lack of self-control.

The ASQ was developed as a means of getting clinical anxiety information in a rapid, objective, and standard manner. It is brief and nonstressful, applicable to all but the lowest educational levels, and appropriate for ages of 14 or 15 years through adulthood. The test is easily administered, taking only 5 to 10 minutes of the examinee's time. It is easily scored by using a standard key that fits over the test booklet.

The test was first published in 1957 and included the best 40 anxiety items among several thousand personality items which had been examined up to that time. The number

of items per anxiety component was approximately proportional to that component's importance in the anxiety pattern. A further division of items was made into those which appeared less obvious (covert) and those which manifestly refer to anxiety symptoms (overt). Separate scores measuring covert and overt anxiety may be derived from the test. In 1976, the items in the test were carefully updated to adjust to language changes.

The ASQ is only one of several anxiety measures available from IPAT. When the examiner's interest is in obtaining an anxiety score quickly and under conditions where distortion is unlikely to occur, the ASQ is appropriate. The title that appears on the test is "Self Analysis Form."

Gordon Paul (1966), whose work influenced both Wardle and Appel, used the ASQ in a study on performance anxiety of speech students at the University of Illinois. His primary objective was "to compare traditional insight-oriented psychotherapy with modified systematic desensitization for the reduction of interpersonal performance anxiety manifested in public speaking" (p. 9).

Ninety-six subjects were obtained from a population of 710 students enrolled in a public speaking course (required for most undergraduates) at the University of Illinois. They were selected on the basis of high ratings on performance anxiety as measured by a series of scales used in the pretreatment test battery, including the ASQ. The follow-up battery of scales administered on completion

of the speech course were the same as those in the pre-treatment battery. Each subject was assigned either to the insight group, the modified systematic desensitization group, the attention-placebo group, (subjects in this group were given a "tranquilizer" and told that they would not experience anxiety during the performance), or the no-contact control group. (Subjects in this last group were never contacted personally. They merely took the pre- and follow-up battery and continued in the speech course.)

The results of the study showed that all three treatment groups improved significantly over the no-treatment control on observable behavior. The desensitization group was the only group to achieve a significant reduction in measures of physiological arousal. The systematic desensitization group revealed a remarkably consistent superiority on all measures. Taking into consideration all of the measures used in the study, a percentage breakdown showed that 86% of those in the desensitization group were "much improved," while only 20% in the insight group were much improved as a result of treatment (Paul, 1966, p. 39).

Of particular interest in Paul's study was the use of observational and physiological measures. A behavioral checklist similar to Wardle's was used to score observable manifestations of anxiety during presentation of test speeches. Immediately before each test speech, the measures of physiological arousal taken were pulse rate (PR)

and the Palmar Sweat Index (PSI). Pulse rate, (taken by the investigator from the radial artery of the right arm in a resting position), was counted for 30 seconds, timed by a stopwatch, recorded on a coded card, and later converted to PR/minute by doubling. The PSI is done by a photometric process in which film is pressed against the finger for 30 seconds with a constant pressure of one pound.

An alternative to systematic desensitization was devised for another study on the treatment of speech anxiety. It is called cue-controlled relaxation and it can be administered with ease. Like systematic desensitization, it involves relaxation training but it differs in that the subject is taught to relax in response to a cue word. The cue-word association is developed by having the relaxed subjects focus their attention on their breathing while repeating the word "calm" with each exhalation.

Cue-controlled relaxation was compared to systematic desensitization and it was found that cue-controlled is as effective as the latter in achieving reduction in performance anxiety (Russell & Wise, 1976).

A fairly new area of investigation is in biofeedback, the control of internal processes through conditioning. Two psychologists in a study at DePauw University (Stagefright Solution, 1975) found that a reduction of muscle tension and an increase in alpha brain waves (measured through electrodes on the head) are accompanied by a

feeling of relaxation. They reasoned that if the subject could be trained to control these responses while being monitored electronically in the laboratory, he or she could perhaps be "taught" to relax or become less anxious. The single subject used in their study was a music student facing a senior recital who had always suffered severe stage fright. After several sessions, the student learned to reduce anxiety and tension through the electronic apparatus, and gave a "very successful" recital before a large audience of students and faculty.

Of course, there are numerous articles on the topic of performance anxiety or "stage fright" as it is commonly called, which cannot all be examined in detail here. Many of them include helpful suggestions on preparing for a performance and many stress the importance of positive reinforcement given by the teacher. However, several pertinent studies have been reviewed: Wardle's study on behavioral modification of music performance anxiety, Appel's study on modifying solo performance anxiety by the use of systematic desensitization procedures and musical analysis, Leglar's study on the measurement of performance anxiety under varying conditions, Gordon Paul's study of insight vs. desensitization and their effects on speech performance anxiety, and the study of cue-controlled relaxation in comparison to systematic desensitization. The overall findings indicate that systematic desensitization and behavior therapy which involves training in relaxation

are extremely helpful to the treatment of performance anxiety.

Of primary interest, however, is the measuring of performance anxiety. Several physiological measures were mentioned such as heart rate as measured by a physiograph in Wardle's study, pulse rate, the Palmar Sweat Index, and others. Psychological measurement includes the questionnaire medium of which the IPAT Anxiety Scale Questionnaire is an example. The basis of psychological measurement has been discussed, with the work of Wolpe in behavior therapy and that of Raymond Cattel in developing psychological measures like the ASQ cited as important contributions to the study of anxiety and applicable to performance anxiety. The material that has been discussed is the foundation for the present investigation in the measurement of performance anxiety, and the procedures used in this study will be described in the following chapter.

Procedure

Measures

Three different measures were used in this study to measure performance anxiety: 1) a behavioral checklist, 2) the IPAT Anxiety Scale Questionnaire, and 3) a structured interview.

The behavioral checklist (Appendix A) was that designed and used by Alvin Wardle for his dissertation, Behavior Modification by Reciprocal Inhibition of Instrumental Music Performance Anxiety (1975). This measure was chosen for the present study because it had already been used successfully in other research studies of performance anxiety such as in Wardle's. Also, it requires very little time or skill to use. The observer merely places a check in the proper category each time a particular behavior is observed. On the checklist there are five categories with items contained in each, describing symptoms of nervousness. The five categories are: 1) feet and legs; 2) body; 3) arms and hands; 4) face; and 5) vocalizations. To accommodate both vocal and instrumental music students, one category on Wardle's checklist which dealt with instrumental behavior was eliminated.

The second measure used was the IPAT Anxiety Scale Questionnaire (ASQ), recommended to the researcher by a professor of psychology. The title that appears on the questionnaire is "Self Analysis Form." This scale, developed by Raymond B. Cattell, consists of 40 items

which yield separate "covert" and "overt" scores. "Covert" refers to unrealized anxiety, and "overt" refers to anxiety of which the individual is aware. The ASQ was not designed specifically for performance anxiety but it can apply to it. It is easy to administer and to score, and is reasonably priced. A handbook accompanies the test, with instructions for use. The ASQ is scored by means of a scoring key placed over the test booklet. The scorer simply adds 2's or 1's for each answer, according to the numbers printed above the hole through which the answer appears. The higher score always indicates more anxiety. About 5 minutes are required to fill out the questionnaire.

The ASQ was first published in 1957, and was updated in 1976 to adjust for language changes which had taken place in the interval since initial publication. Two types of reliability estimates have been provided for the total ASQ score: test-retest (consistency over time) and internal consistency (consistency across items). The standard error of measurement for the ASQ is approximately 3 raw score points. That is, about two-thirds of the time, the individual's "true" anxiety score will fall within 3 raw score points of the obtained score.

The criterion-related validity of the ASQ has been approached from three sources: (a) how well the test score correlates with the pure anxiety factor it was designed to measure; (b) how well the test score corresponds with clinical judgment regarding anxiety level; and

(c) how well the test score relates to other questionnaire measures of anxiety. The pure anxiety factor was obtained through Cattell's research which led to his identification of primary source traits of anxiety. The correlation of the ASQ total score with the pure anxiety factor averaged .90 across samples differing with respect to age, sex, education, and culture. In the second approach to test validity, the average correlation between clinically judged anxiety and the test score was .49. This may not seem high, especially in comparison with the previous score. However, the pure anxiety factor is considered perfectly reliable whereas clinical judgment is not free of error. When adjustment is made for the imperfect reliability of clinical judgment, the corrected value is approximately .90. (Cattell does not explain the process he used in making this adjustment.) In the third approach, the ASQ was found to have an average correlation of .70 with other well-known measures of anxiety. In essence, the criterion-related validity of the ASQ--the extent to which it measures the central core of the anxiety concept--approaches .90 (Krug, Scheier, & Cattell, 1976).

The personal structured interview (Appendix B) consisted of questions devised by the researcher dealing with performance anxiety in music. The interview was taped for later analysis of answers. None of the subjects objected to being taped. The purpose of the interview was to give the subject a chance to voice his or her own feelings and

allow the researcher to gain information that was not attainable through the other measures. There were twelve questions contained in the interview. Some of the things asked were whether or not the subject experiences performance anxiety, the amount of anxiety felt, when it occurs, and what situations cause the most anxiety.

Sample

Twenty students from the Michigan State University Summer (1978) Youth Music participated in this study. All of the subjects were high school students between the ages of 14 and 17. Of the 20 students, 14 were female and 6 were male. Permission to carry out this study was obtained from the camp administration before research began. At registration the students were given a form (Appendix C) asking them to participate in a study for a graduate thesis on "performance characteristics." Stated this way, the students were unaware of the intent of the study to measure performance anxiety. (Knowing the intent might have caused more anxiety, or perhaps might have discouraged some students from taking part in the study.) The form stated that the student would be observed during his or her audition as a part of the study. Some students expressed an objection to being observed, and a few of them did not sign up for that reason. Each of the subjects was assigned a number and that number was used in place of their name to protect their anonymity.

The same day as registration each of the subjects was observed during his or her audition by the researcher or one of her assistants. The purpose of the audition was for chair placement in the band and to give teachers a chance to get acquainted with students. Only the teacher(s) and the observer were present at the audition. The behavioral checklist was used to measure observable signs of nervousness.

At a later time, the researcher privately asked the teachers who had auditioned students involved in the research for their general impression of a subject in regard to performance anxiety. This was not used as a measuring device but rather as a means of receiving the teachers' input and to get a general confirmation or denial of results obtained from other measurements.

During the first week of Summer Youth Music, (the entire study was conducted within a week), each of the subjects was interviewed. First, they were asked to complete the ASQ. While the subjects completed the form, the researcher left the room to provide a more comfortable atmosphere for the subject. Next, the subject was asked questions pertaining to his or her thoughts on performance anxiety in a structured, taped interview.

Analysis

The research data was prepared for computer analysis. Eleven different variables were coded for this analysis. These included the subject's I.D. number, sex, and age.

The answers to questions 2, 6, and 7 of the interview were the only answers coded for analysis. A "yes" answer for question 2 received an assignment of 1 or 2 depending on the degree of anxiety; a "no" answer was coded as 0. A "yes" answer for question 6 was coded as 1 and a "no" answer as 0. The answer to question 7 was assigned a number on a scale of 1 - 5. The subject's interview total was computed, as was the behavioral observation total. Three separate scores were computed from the ASQ: the overt score, the covert score, and the raw score total. In every instance, a higher number indicated more anxiety.

One concern of this study was to identify interrelationship between the variables. Relationships were studied by computing Pearson product-moment correlation coefficients with the PEARSON CORR subprogram of the Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Points of interest in this study were the relationship between music performance anxiety scores obtained through Wardle's observational checklist and the general anxiety scores obtained through administration of the "covert" section of the IPAT questionnaire. "Covert" refers to unrealized anxiety and this is sometimes manifested in body movements. For this reason the investigator thought that covert anxiety might also be measured through behavioral observation.

Another topic examined in this study is the relationship between music performance anxiety as measured in a

structured interview and general anxiety scores obtained through administration of the "overt" section of the IPAT questionnaire. "Overt" refers to anxiety of which the individual is aware.

Finally, correlations were computed between music performance anxiety as measured by Wardle's behavioral observation, and a structured interview, and general anxiety as measured by the total score of the ASQ.

The results of this study will be examined in the following chapter.

Results

The statistical analysis did not indicate high levels of significance in most of the relationships. However, significance is related to the size of the sample, and because a larger sample provides a more representative index of the nature of a relationship, it can be assumed that higher significance levels might have been reached if there had been more subjects in this study. Initially, 26 students signed up, but only 20 followed through with the study.

An adjustment had to be made in scoring the observational checklist. One of the observers did not follow instructions in filling out the form correctly. Instead of writing a check mark each time a behavior was observed, she placed a check only once next to the items. Therefore, instead of totaling the points within each category, points were totalled for the entire checklist by counting just one check per category.

It was not possible to get an instructor's opinion of each of the subjects but this did not really matter because it was not used as a measure. Instructors were questioned solely for the purpose of getting their opinion of the student's performance anxiety or lack of it.

Analysis of Results

The mean and standard deviation of each variable were computed, and results are presented in Table 1.

Table 1

Anxiety Variables Examined

Variable	Mean	SD
Age	15.55	1.19
Interview Question 2	1.25	.55
Interview Question 6	.75	.44
Interview Question 7	2.75	1.55
Interview Total	4.75	2.17
Observational Total	5.35	3.73
ASQ Overt	16.75	8.34
ASQ Covert	14.45	5.86
ASQ Total	31.20	13.34

The average student age was 15.5 but the ages ranged from 14 - 17. The standard deviation was 1.19 years. (The sample of this study was distinctly in the high school age bracket.) The student age variable correlated negatively with the ASQ scores. Thus, older students showed less anxiety than the younger students on the ASQ. This might be explained by the fact that the older students had had more experience in performing, and therefore, were less anxious.

In each of the criterion measures, a higher score indicated more anxiety. Interview Question 2 which asked, "Do you feel nervous when you perform," was coded in the following way: a "yes" received an assignment of 1 or 2 depending on the amount of nervousness; a "no" was coded as 0. The mean of this variable was 1.25, and the standard deviation was .55. Question 6 was, "Were you nervous at your audition on Sunday?" (Each student had been required to audition on the first day of Summer Youth Music.) A "yes" was coded as 1; a "no" as 0. The mean was .75, and the standard deviation was .44 which showed a rather large amount of variability in the answers. Question 7 of the interview was a follow-up to 6, and asked, "How nervous were you?" The answer was coded on a scale of 1 - 5, with a higher number indicating more anxiety. This scale was used because of the wide range of variability expected in the subjects' answers. The mean was 2.75, and the standard deviation was 1.55. Answers did indeed range from 1 - 5.

The highest possible score on the interview as a whole was 8. The mean of the interview total was 4.75; the standard deviation was 2.17. All of these figures indicate an amount of nervousness that was slightly more than the midpoint of the scales.

As in the other measures, a higher number on the behavioral checklist indicated more anxiety. The total amount of points possible on the behavioral observation as it was scored in this study was 22. The mean was 5.35; the standard deviation was 3.73. The scores ranged from a low of 1 to a high of 13.

Raw scores were computed for the ASQ overt and covert scores, and the total score. The higher the number, the more anxiety indicated. Scores on the overt section ranged from a low of 6 to a high of 33. The mean of these scores was 16.75; the standard deviation was 8.34. The large amount of variability found in these scores suggested two kinds of responses. One, because the overt questions are those which look like anxiety, the subject had the option of deliberately lying because he knew his anxiety was being measured. The opposite response was available to subjects who wanted to "tell all."

The covert section had a mean of 14.45; the standard deviation was 5.86. Scores ranged from a low of 3 to a high of 26. The mean of the total ASQ scores was 31.20; the standard deviation was 13.34. Scores ranged from a low of 9 to a high of 59. Norms for this age group

(teen-age high school students) as shown in Table 2.1 of the handbook which accompanies the ASQ, reveal a raw score mean of 31.5 and a standard deviation of 12.2 (p. 20). These norms are extremely close to the scores obtained in this study. Seemingly, the sample in this study is representative of typical high school students.

Correlational Analysis

As expected, significance was achieved in part-to-whole correlations, for example, among the interview questions, and between the individual questions and the total interview score. Part-to-whole significance was also found between the ASQ covert and overt scores, and those individual scores and the ASQ total. These part-to-whole correlations give evidence of consistency of agreement between different components of the measures used in this study. It must be remembered, however, that part-to-whole correlations are artificially inflated by the part's inclusion in the measure's total score.

Admission of anxiety in the interview was significantly related to a higher score on the overt section of the ASQ. Interview Question 2 which dealt with admission of anxiety correlated .38 with the ASQ overt score to exceed the .10 level of significance. This correlation was expected to be significant because "overt" refers to anxiety of which the subject is aware. Those who admitted anxiety in the interview also admitted it on the questionnaire. This was taken as evidence of the validity of the

Table 2

Matrix of Intercorrelations Obtained for Anxiety Measures

	Interview Total	Observational Total	ASQ Total
Interview Total	1.000		
Observational Total	.336	1.000	
ASQ Total	.263	.472*	1.000

*significant .05

ASQ in this application.

The relationship between the interview total and the behavioral observation was positive and moderately large but not significant. The interview total did not attain a significant correlation with obtained data. Its strongest relationship was with the behavioral observation.

The correlation between music performance anxiety scores obtained through the behavioral observation and scores on the covert section of the ASQ was not significant as had been hypothesized. However, the .53 correlation between the behavioral observation and the overt section exceeded the .05 level of significance. The .47 correlation between the behavioral observation and the total ASQ score also exceeded the .05 level (Table 2). The behavioral observation probably functioned below normal in this study because one of the observers misunderstood the directions.

Interview

The interview revealed some information not used in the statistical analysis, but pertinent to the topic of performance anxiety. All but one of the subjects said they believed there is a need to study performance anxiety. Some ways in which subjects said performance anxiety affects them included the following: face gets red, sweats, shifts weight, sweaty hands, cold hands, and "butterflies" in the stomach. Of the 20 subjects, 65% mentioned "shaking" or "shaky" hands--a behavior of which

an individual is very much aware, especially in playing an instrument. Other physical symptoms, such as blushing, moistening lips, and so forth are characteristics of nervousness of which the individual is usually not aware. The behavioral checklist is useful in capturing those things.

Of the 20 subjects, 80% said that performance anxiety affects the way they play or sing either sometimes or all of the time. Problems mentioned were: wrong notes played, increase in tempo, lack of breath support, poor tonality, uncontrollable vibrato, and loss of concentration. One subject said that performance anxiety causes him to play better because it makes him more aware.

Of the subjects, 55% said they feel the most nervous right before a performance; 20% said it was worst during the performance; 15% said more than an hour before; and 1% said they feel most nervous right after a performance.

When asked what their earliest recollection of experiencing performance anxiety was, subjects gave a variety of answers including: first recital, playing or singing in front of a class, solo festivals, and auditions. Most reported that these experiences took place somewhere during the third through the eighth grades. Seventh was the grade most often mentioned.

When asked what kind of people caused them to feel the most anxiety, many subjects cited their peer group. Others said: judges, teachers, a critical director, relatives,

people they admire, older people, and people they don't know.

Of the subjects, 40% said they do nothing (or can do nothing) to try to solve their nervousness. Others said they try to calm themselves by taking a deep breath; talking to themselves, (giving themselves a "pep talk"); trying to concentrate on the music; and praying.

When asked what the consequences of a bad performance are to the individual, many said it bothers them. They said they were angry with themselves because they knew they could have done better. Some took it philosophically, with the attitude that they could learn from the experience.

The last question asked the student if anxiety could be prevented. Of the 20, 55% said "no." A few of the subjects said that some nervousness helps. One person said performance anxiety cannot be prevented but it can be controlled.

The teachers' assessments of the students they auditioned usually confirmed the level of anxiety obtained on the criterion measures. The subjects' degree of anxiety as observed by teachers ranged from "very calm" to "abnormally nervous."

Summary of Results

1. Older students showed a lesser degree of anxiety on the ASQ than younger students.

2. Admission of anxiety in the interview was significantly related to a high score on the overt section

of the ASQ.

3. A high score on the behavioral checklist was significantly related to a high score on the ASQ total.

4. A high score on the behavioral checklist was significantly related to a high score on the overt section of the ASQ.

Summary and Conclusions

Most music teachers agree that performance anxiety in music is a very common problem. Nearly every student performer experiences or has experienced performance anxiety. It is a problem which must be dealt with to prevent negative experiences in performing which could discourage students from further study of music.

In this study, varying amounts of student performance anxiety were measured by methods available to the average music teacher. A variety of methods of measurement were analyzed to determine some of the best tools available to the average music teacher. The level of training required to administer these tools was determined as was the practicality of measuring performance anxiety with these tools.

The study made the assumptions that performance anxiety can be measured by observation and self-report methods, and that the average music teacher is qualified or can become qualified to use these measures.

Several pertinent studies were reviewed, including Wardle's study on behavior modification by reciprocal inhibition of music performance anxiety, Appel's study on modifying solo performance anxiety by the use of systematic desensitization procedures and musical analysis, Leglar's study on the measurement of performance anxiety under varying conditions, Paul's study of insight vs. desensitization and their effects on speech performance anxiety, and the study of cue-controlled relaxation in comparison

to systematic desensitization. The overall findings indicate that systematic desensitization and behavior therapy which involves training in relaxation are extremely helpful to the treatment of performance anxiety. However, these studies revealed that some kind of treatment is generally more effective than no treatment at all. Furthermore, each of the researchers concluded that aspects of music performance anxiety could be measured.

The work of Wolpe in behavior therapy and that of Raymond Cattell in developing psychological measures like the ASQ was discussed and cited as an important contribution to the study of anxiety and applicable to performance anxiety.

Three different measures were used in this study: 1) a behavioral checklist, 2) the IPAT Anxiety Scale Questionnaire, and 3) a structured interview. The behavioral checklist is that designed by Wardle. It contains five categories with different symptoms of nervousness in each. The observer merely places a check next to the behavior each time it is observed. The ASQ is the questionnaire developed by Cattell. It contains 40 items which yield separate "covert" and "overt" scores, referring to anxiety which is unrealized or realized. The structured interview gave subjects a chance to voice their own feelings on performance anxiety and added information not attainable through other measures.

The sample was 20 high school students from the Summer (1978) Youth Music at Michigan State University. Subjects were observed during their auditions at which time the behavioral checklist was used. Later, they completed the ASQ and then were interviewed. The research data was prepared for computer analysis which revealed the means and standard deviations for each measure. Also, relationships between the variables were studied by computing Pearson's r's. Significant correlations were found between admission of anxiety in the interview and a high score on the overt section of the ASQ, a high score on the behavioral checklist and a high score on the ASQ total, and between a high score on the checklist and a high score on the overt section of the ASQ.

Conclusions

The results of this study supported the following conclusions:

1. Performance anxiety can be measured by observation and self-report methods.

2. Methods such as behavioral checklists, questionnaires, and interviews are readily available to the average music teacher.

3. A minimal level of training is required to administer questionnaires such as the ASQ and the structured interview.

4. The behavioral checklist used in this study requires training and practice before using.

5. Measuring student performance anxiety with methods of self-report and observation is of practical value to teachers and can be extremely helpful in assessing the degree of performance anxiety in a student.

Recommendations for Further Research

Many possibilities exist for designing future studies of music performance anxiety. This study could be replicated with a larger sample and more thorough training procedures for observers. Another possibility for further research would be the same study done with younger students if adjustment is made for their age level. Another questionnaire would be used because the ASQ is designed for ages 14 and up. Also, the same study could be done using college students in the sample.

The IPAT Anxiety Scale Questionnaire was successfully used in this study and should be used again in the study of music performance anxiety. (The Institute for Personality and Ability Testing requires a written request and statement of purpose before ASQ forms can be ordered by an individual.) The behavioral checklist designed by Wardle, and used in this study should be carefully evaluated using very well-trained observers. The behavioral checklist could be used in comparison with self-report results and ASQ results. The ASQ, self-report, and observation scale results could be compared with physiological measurement of anxiety. This would require skill in the use of physiological research equipment.

The subject of music performance anxiety is still wide open for research possibilities. Much study remains to be done before this problem is completely understood and effectively treated.

APPENDICES

Appendix A

BEHAVIORAL CHECKLIST FOR PERFORMANCE ANXIETY

Student No. _____ Observer _____

Date _____ Instrument _____

Behavior Observed

I. Feet and Legs:

- Paces
- Shuffles
- Shifts weight
- Knees tremble
- Taps toe or foot

II. Body:

- Sways body
- Breathes heavily

III. Arms and Hands:

- Extraneous arm or hand movement
- Clutches instrument
- Touches stand
- Touches self (lips, face, hand on hips, adjusts clothes)

IV. Face:

- Deadpan
- Pale
- Moistens lips
- Swallows
- Clears throat
- Perspires
- Moves head
- Winks or bats eyes

V. Vocalizations

- Hums
- Whistles

Appendix B

INTERVIEW QUESTIONS

1. Do you think there is a need to study anxiety in relation to music?
2. Do you feel nervous when you perform?
3. How does it affect you? (how does it show?)
4. Does it affect the way you play (or sing)?
5. When do you feel the most nervous? (an hour before, immediately before, during the performance, etc.)
6. Were you nervous at your audition on Sunday?
7. How nervous were you? (extremely, fairly, not at all, etc.)
8. What is your earliest recollection of experiencing performance anxiety?
9. What kind of people or situations create anxiety?
10. How do you solve nervousness in performance?
11. What are the consequences of a bad performance to you? Are the effects lasting?
12. Can you prevent anxiety in performance? In what ways?

Appendix C

A study is being done this week for a graduate thesis on Performance Characteristics. 25 students of Summer Youth Music are needed to participate. It will involve a brief interview at which time you will fill out a questionnaire. The total amount of time it will take is about 15 minutes. The researcher or her assistant might also sit in on your audition. If you would like to be included in this experiment please fill out the information below.

NAME:

INSTRUMENT:

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