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The Development of a Video Tape Procedure to Train Awareness of Behavioral Cues of Anxiety

Brian Lee Smith
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THE DEVELOPMENT OF A VIDEO TAPE
PROCEDURE TO TRAIN AWARENESS OF
BEHAVIORAL CUES OF ANXIETY

by
Brian Lee Smith

A dissertation submitted in partial fulfillment
of the requirements for the degree
of
DOCTOR OF PHILOSOPHY
in
Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1978
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Brian Lee Smith
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ABSTRACT

The Development of a Video Tape Procedure to Train Awareness of Behavioral Cues of Anxiety

by

Brian Lee Smith, Doctor of Philosophy
Utah State University, 1978

The purpose of the present investigation was two-fold: (1) to develop a training procedure which might be helpful in trying to teach beginning counselors how to recognize levels of anxiety by observing silent, nonverbal behavior of clients in association with EMG feedback, and (2) to assess the effectiveness of this procedure by using it to train a group of graduate psychology students. Graduate trainees exposed to the training procedure were compared with a control group of students to determine whether the training procedure effectively taught the skill.

Using the split image capabilities of a videotape recorder, video tapes were made of simulated interview situations in which clients were subjected to anxiety-inducing content and/or discussion. During each interview, EMG feedback, or "levels of muscle tension," were recorded in the upper right hand portion of the video monitor. The recorded interviews were made without audio recording so that only the clients' nonverbal behaviors, in association with visual
EMG feedback, were used in the training procedure. The intent of the study was to develop the above procedure and then to determine whether graduate students trained via these video tapes would increase in their ability to recognize different levels of anxiety by observing client nonverbal behavior. A pretest-posttest control group design, with random assignment of subjects, was used to assess the effectiveness of the procedure.

The results of the study showed that subjects exposed to the procedure did not increase in their ability either to recognize three specific levels of anxiety or to rate closer to the correct anxiety level, when observing the nonverbal behavior of video clients. No differences were found between experimental and control subjects in their ability to discriminate differing levels of client anxiety, as shown by thirty, separate EMG readings, or in their ability to rate closer to the correct anxiety levels of clients' EMG readings.

It was concluded that video examples of nonverbal behavior, even in association with EMG feedback, are not effective in training graduate students to recognize levels of client anxiety, particularly when nonverbal cues are presented without verbal (audio) cues, and when this procedure utilizes induced rather than real anxiety and simulated rather than actual clinical interviews. It was therefore suggested that future research concerning the teaching of behavior cues of anxiety should include concurrent verbal feedback and should utilize clients who evidence anxiety in actual clinical interviews.
Also, further research will be necessary to establish the electromyograph as an effective device in teaching psychology graduate students to recognize nonverbal cues of anxiety.
INTRODUCTION

Anxiety is recognized as a basic underlying symptom and/or cause of many emotional and nervous disorders. It is a complex emotional response which involves physiological changes (Cammeron, 1944; Schwartz, 1975; Spielberger, 1972). Teaching beginning counselors and therapists how to recognize the characteristic verbal and nonverbal expressions of anxiety is a challenging task. In current counselor programs, the focus is mainly on learning to interpret verbal cues from the client which are indicative of anxiety. There is ample research indicating that a great amount of communication is delivered nonverbally (Watzlawick, Beven & Jackson, 1967; Mehrabian, 1967; Birdwhistle, 1970) and that this nonverbal behavior is a significant source of information in therapeutic interaction. However, little research has been reported which has studied nonverbal behavior in the absence of verbal and extraverbal cues.

A number of researchers have studied nonverbal behaviors of anxiety. Many have concentrated on facial expressions, whereas others have focused on body language, known as kinesics. The particular behaviors of eye movement, eye contact, body posture, body movement, self touching, gestures and mannerisms have been isolated as indicators of the presence or absence of anxiety (Day, 1967; Mehrabian, 1969; Hobson, et al., 1973; Patterson, 1973; Beir, 1973; Jurich and Jurich, 1974). In almost all of these studies, the measurement of anxiety was generally either assessed by the subjective conclusion of expert observers or the self report of the client. Of
the studies reviewed in the literature on nonverbal behavior, per se, only two were conducted in the absence of sound. That is, all other reported studies, while concentrating on nonverbal cues, did so in the presence of verbal cues. Of the studies on nonverbal behavior which have dealt more specifically with anxiety, none were found which investigated nonverbal cues of anxiety in the absence of sound. This study purports to examine students' learning of nonverbal cues in the absence of verbal cues via the utilization of video tape and electromyograph feedback.

Many studies of physiological measures of anxiety have been conducted. The original studies of the physiological components of anxiety were reported by Cammeron as early as 1944. Since that time, it has been demonstrated that anxiety is related to the action of the peripheral nervous system, which is divided into (a) the somatic system, composed of nerves which carry messages to and from the sense receptors, muscles, and body surface, and (b) the autonomic system, composed of nerves running to the internal organs which regulate such body processes as respiration, heart rate, and digestion. The autonomic system is further sub-divided into the sympathetic and parasympathetic systems. It is presently felt that anxiety, for most people, is a complex combination of somatic and autonomic processes (Cammeron, 1944; Germania, 1969; Gellhorn, 1964, 1967; Budzynski and Stoyva, 1972; Schwartz, 1975).

For years the schools of progressive relaxation (Jacobson, 1938), autogenic training (Luthe, 1969, 1970), and behavior therapy (Wolpe, 1973) have all identified muscle tension as a major physiological index of anxiety and have developed treatment therapies that assume
a therapeutic relationship between muscle relaxation and the absence of anxiety. It has been repeatedly demonstrated that the anxiety level of an individual can be consciously decreased through muscle relaxation techniques.

The electromyograph (EMG) is a product of the technology of the past 15 years and has been used considerably in behavioral therapy to measure and monitor physiological indices of anxiety. This instrument gives constant visual and auditory feedback indicating specific levels of anxiety of the individual being monitored (Budzynski & Stoyva, 1969, 1972). EMG has contributed to the research on anxiety by providing an objective measure of one of the physiological indicators of anxiety, and this scientific indicator of anxiety has been considered to be superior to the subjective reports of clients and expert observers. The use of EMG to objectively monitor the physiological indices of anxiety of an individual while studying the nonverbal behavioral cues of anxiety has apparently not been reported.

In addition to reported research benefits of the EMG, there is also evidence in the literature that the use of videotape equipment has also been used successfully in various types of research. For example, Rosenthal (1974), Waxer (1974), and Jurich & Jurich (1974) have used videotape techniques in the training of counselors. Also, videotapes have been used to assess specific types of counselor competencies and performance skills (Stone, 1975). Video equipment has been especially helpful in studying nonverbal behavioral cues of anxiety (Jurich & Jurich, 1974).
Need for the Study

One problem for many beginning counselors is their lack of proficiency in identifying nonverbal cues of anxiety. Developing basic skills in recognizing nonverbal cues of anxiety should enable psychotherapists to more quickly and accurately diagnose the anxiety levels of different clients, which in turn should relate significantly to the treatment procedures of choice with each client. Recognizing nonverbal cues of anxiety is also helpful throughout the therapeutic process, enabling the therapist to be more acutely in tune with a client's covert, and often unexpressed, anxiety. However, many counseling practicums have historically focused on listening to the verbal communications of the client, while leaving the counselor to learn to recognize the nonverbal behaviors of anxiety as his experience permits. While verbal communication is a valuable source of diagnostic information, the vast amount of information in nonverbal communication is largely being overlooked in clinical practice.

A number of theoretical orientations are available to psychotherapists for interpreting nonverbal behavior (Beier, 1966; Scheflen, 1973, 1974), and within the nonverbal domain of communication, there are a number of areas in which nonverbal behavior is focused. The present study was designed to focus primarily and specifically on Kinesics, or the nonverbal cues of body language, since the video equipment used in the study was limited in its reproductive clarity of eye and subtle facial movements.

Using the split image capabilities of the videotape recorder, EMG feedback of anxiety levels were recorded by one camera in the
upper right hand portion of the video screen, while another camera simultaneously recorded the nonverbal behavior of the client. This procedure enabled the counselor trainees to see the EMG readings of client anxiety level as they observed client nonverbal behavior. It was felt that the association of the nonverbal behavior with the EMG feedback would prove effective, and hopefully more efficient than didactic methods in teaching the recognition of nonverbal anxiety cues to beginning counselors.

**Purpose of the Study**

The purpose of the present research was two-fold: (1) to develop a training procedure consisting of two split-image videotape presentations as described above, and (2) to determine whether students trained to identify client anxiety via the above procedure would be more able to identify anxiety levels of clients after training than would students not trained with the videotape procedure.

**Hypotheses**

This study will seek answers to the following questions: Can experimental subjects who receive the video training depicting nonverbal behavior in the absence of verbal cues, and in association with EMG feedback, (1) correctly discriminate differing levels of anxiety in clients more often than control subjects and, (2) increase their ability to rate more closely the correct anxiety level than control subjects.

Statistical tests for these questions are presented in terms of the null hypothesis, i.e.: (1) the experimental group, those who
receive video training, will not differ in their ability to correctly identify specific levels, (excessively tense, somewhat tense, normal tension) of anxiety in clients when compared with the control group and, (2) the experimental group will not differ in their ability to rate closer to the correct anxiety level than the control group.

**Definition of Terms**

**Counseling and Psychotherapy**

While in the literature there are some defined differences between counseling and psychotherapy, there are many similarities in terms of functions. For the purpose of the present study, the terms "counselor" and "psychotherapist" and "counseling" and "psychotherapy" are considered synonymous and are used interchangeably.

**Anxiety**

For the purpose of this study, anxiety will be defined as state anxiety, i.e., a specific situational stress characterized by consciously perceived feelings of apprehension with accompanied arousal of physiological processes, namely muscle tension as measured by the EMG. Anxiety level will be determined by the microvolt level of the Autogen 1700 electromyograph. The terms "tension" and "anxiety" or "tense" and "anxious" are used interchangeably.

**Expert Rater**

Expert raters used in this study were psychologists who have been active in clinical research and private clinical practice for over 10 years.
REVIEW OF LITERATURE

Importance of Nonverbal Behavior

In Communication and Therapeutic Interaction

The study of body language has been scientifically and theoreti-
cally explored for a number of years. Labeled "Kinesics," this area
of study examines behavioral patterns of nonverbal communication.

Watzlawick, Beven and Jackson (1967) pointed out the comprehen-
sive nature of behavioral communication in saying:

There is no such thing as nonbehavior, or, to put it
more simply, one cannot not behave. Now, if it is accept-
ed that all behavior in any interactional situation has
message value, i.e., is communication, it follows that no
matter how we try, one cannot not communicate. Activity
or inactivity, words or silence, all have message value.
They influence others and these others, in turn, cannot
not respond to these communications and are thus themselves
communicating. (p. 48)

Thus, even though a person may not verbally speak, he/she con-
tinues communicating nonverbally, and although one may remain com-
pletely silent, he/she is communicating something. Clark, Bock and
Cornett (1973) stated:

All that you are and do is inherently bound up with
communication experience; no matter if you're alone in the
desert or with thousands of people in a city, you are com-
municating. When it stops, you stop. Communication is
the sine qua non of your existence. (p. 9)

In estimating the quantity of nonverbal behavior, Birdwhistle
(1970) indicated that in a normal two-person conversation, as much as
65% of the social meaning expressed will be communicated nonverbally.
Mehrabian (1971) suggested that 55% of the expression of feeling is
shown by facial expressions or nonverbal behavior. He indicated further that if nonverbal gestures contradict verbal speech, the nonverbal behavior generally carries the most accurate information and intensity of the message.

Since counseling and psychotherapy involve interpersonal relationships between therapists and patients, and since therapeutic relationships necessitate accurate and clear interpretations of communication between the therapist and patient, it is reasonable to assume that the study of both verbal and nonverbal communication would be of importance to counseling professionals.

Many theoreticians, scholars and practitioners have noted the importance of understanding nonverbal transactions in the therapeutic counseling situation. Deutscher (1969) emphasized the need for counselors to understand the nonverbal behavior of clients, citing such examples as body cues, facial expressions, vocal cues, and personal appearance in the therapeutic situation. Stressing the point that counselors can achieve better understanding of their clients by "attending to" nonverbal cues, Deutscher added that counselors cannot trust verbalizations alone for a complete picture of the client's situation. Additionally, he advocated a keen self awareness, on the part of therapists, of the body cues which they themselves are emitting during the course of the relationship.

Hughey and Piepgrass (1976) refer to a statement by Stefflre which says that:

Whether through nonverbal cues, through symbolizations or plain speaking, through physical arrangements or limited time, the counselor and client must communicate...the sensitivity and objectives of the counselor will greatly determine the extent and accuracy of
communication. If the counselor with his 'third ear' can hear and understand the story of the client's private language and symbols and if he can detect the presence and meaning of nuances of tone, word choice and body gestures, then communications and counseling become possible. (p. 274)

The relevance of nonverbal behavior to therapeutic communication has been further supported by Ekman and Friesin (1968, 1969) who suggested that what the communicator does is as significant communicatively as what he says. Citing previous research, these authors reported that "most information which can be gleaned from the client's words--information about affects, attitudes, interpersonal styles, psychodynamics--can also be derived from his concomitant nonverbal behavior".

The authors concluded that (a) nonverbal behavior can be considered a relationship language, sensitive to, and the primary means of, signaling changes in the quality of an on-going interpersonal relationship; (b) nonverbal behavior is the primary means of expressing or communicating emotion; (c) nonverbal behavior has special symbolic value, expressing in body language basic, perhaps unconscious, attitudes about the self or body image; (d) nonverbal behavior has a metacommunicative function, providing qualifiers as to how verbal discourse should be interpreted; and (e) nonverbal behavior is less affected than verbal behavior by attempts to censor communication.

Behavioral Vs. Extraverbal Cues In Communication and Therapeutic Interaction
Behavioral Cues with Accompanied Extraverbal Cues

Extraverbal messages, sometimes referred to as vocalisms, are constantly being used in the course of verbal interaction. Interview oriented counseling is conducted verbally, thus providing a rich source of vocalisms occurring in the speech of therapists and clients alike. Extraverbal cues can be used to convey attitudes, emotions and ideas as well as serve to support defenses, deception, and a whole series of similarly significant attitudes. Argyle (1967), stated that nonverbal expressions termed "vocalisms" consist of the following two subcategories "(a) prosodic signals, that is, pitch pattern, stress patterns, and junctures (pauses and timing) which affect the meaning of sentences, and are regarded as true parts of the verbal utterances and paralinguistic signals which include emotions expressed by tone of voice; group membership expressed by accent; personality characteristics expressed by voice quality, speech errors, etc." Mehrabian (1967) found that vocalisms have implications for counseling, in that the meaning of verbal utterances is greatly affected by extraverbal messages. Utilizing words previously judged as positive, negative or neutral, Mehrabian learned that the meanings of these words as judged by 75 undergraduate observers, were dependent on variations of vocalisms alone. For example, when the attitude communicated by the word content contradicted the attitude communicated by a negative tone, the total message was judged as communicating a negative attitude.

Deutscher (1969), as part of a research project concerning
behavioral and extraverbal communication cues developed an audio tape which could be used to demonstrate the importance of listening for extraverbal cues in counseling interviews. According to Deutscher, the tape illustrated implied meanings of counselees and also helped to evaluate how well a student listener was able to interpret the implied meanings. The audio tape contained excerpts from actual counseling interviews. Each excerpt was only long enough to give the student a basic idea of what was happening in the counseling situation. A multiple choice question, which asked the student listeners to select the best response from what could be implied from the manner in which the counselee spoke, was developed for each excerpt. The questions and excerpts were coordinated so as to allow a short period of time to choose an answer between each audio excerpt as the student listened to the tape. Deutscher reported that results of his research with this tape indicated that (1) counselors can gain a greater understanding of the counselee's problems by noting the extraverbal cues presented by him in the counseling situation. (2) The counselor cannot trust what he hears in words alone. (3) The counselor must be aware of the extraverbal cues he presents to the counselee.

Behavioral Cues in the Absence of Extraverbal Cues

Dittman, Parloff and Boomer (1965) reported the relationship between nonverbal behaviors and feelings, mood and emotion. He and his associates used two groups of observers, psychotherapists and professional dancers to determine whether different types of observers differentiate and respond to body cues of affect as distinct
from facial cues of affect. Since facial cues carry much easily recognized information, the study was designed to place facial and body cues in conflict so that an observer's response to facial cues might be influenced by an incongruent message from the body. The stimulus material consisted of three series of short segments of motion picture film of a woman during an interview. There were 20 segments in each series and each segment was 6.5 seconds in length. All segments were shown without sound. The results showed that information about affect is available in both of the body areas which were studied. Facial cues were easier for the judges to use, but when these were precluded, judges were remarkably consistent in appraising feelings expressed in body cues. Although body expressions yielded rich information, the groups of judges did differ in their ability to respond to these cues. The professional dancers responded more accurately to the body cues than the psychotherapists. In conclusion, Dittman et al. stated that since there is affectual information available in body cues these cues warrant further thought because of their implications for psychotherapy training and practice.

Waxer (1974) offered support to the findings of Dittman et al. (1965). He stated that nonverbal cues can be a valuable unobtrusive observation of emotional states. In a study of depression, 25 final-year psychology undergraduates, 21 final-year counseling undergraduates, 15 counseling graduates and 6 clinical faculty were asked to watch a silent videotape of 5 depressed and 5 nondepressed psychiatric patients. The raters were asked to identify depressed patients on the basis of nonverbal cues alone. Waxer found that all
four rating groups were able to identify the depressed patients with much better than chance success. The clinical faculty and counseling graduate students identified depression the most accurately and were significantly more adept at doing so than the least accurate group, the psychology undergraduates. It was predicted that after a minimum of one year of counseling practicum, graduate students are better able than undergraduate psychology students to utilize nonverbal cues to isolate and identify characteristics of specific emotional states.

In a very thorough review of the literature on nonverbal behavior, Hughey and Piepgrass (1976) reported that nonverbal behavior is very helpful in understanding the feelings of clients who have difficulty expressing themselves verbally. They further reported that nonverbal behavior has been found to be more expressive of feelings and more accurate in expressing the intensity of feelings than verbal communication alone. Hughey and Piepgrass recommended that (a) counselor educators should give more serious consideration to the necessity of training student counselors in the use and interpretation of nonverbal communication skills, and (b) that this type of training should be done deliberately and systematically, making use of available knowledge in the field.

Extraverbal Vs. Behavioral Cues

as Indicators of Anxiety

Extraverbal Cues of Anxiety

Extraverbal messages which are characteristic of anxiety have been studied by Jurich and Jurich (1974). The extraverbal cues that
were isolated in their study were (1) tone of voice, (2) rate of speech, (3) immediacy, which referred to the process of using words and forms of speech to place distance between the speaker and the person to whom the speech is directed, (4) speech articulation errors defined as stutters, tongue slips and incoherent sounds, (5) speech editorial errors which were described as omissions of key words, sentence changes and sentence incompletions, (6) filled pauses defined as pauses in the flow of speech which were filled with the word "Ah", repetitions, and phrases such as "you know," and (7) general speech errors which were undefined. Four behavioral cues were also isolated and were (1) posture relaxation, (2) posture shift, (3) hands touching head and (4) percent of no eye contact.

Forty female college students were interviewed. They were questioned about sexual attitudes in such a manner as to elicit increasing levels of anxiety. All interviews were videotaped for evaluation. The seven extraverbal cues of anxiety as well as the four behavioral cues of anxiety were tabulated and compared with the following three measures of anxiety. (1) A global assessment of overall anxiety of each subject made by students completing advanced degrees in human development. (2) A finger sweat test, which was described as an objective autonomic test of anxiety, and (3) the subjects' self report as to how high they perceived their anxiety during the interview.

Results indicated that all extraverbal cues except articulation error and behavioral cues correlated significantly with the global rating of anxiety and the finger sweat test of anxiety. None of the
above cues correlated significantly with the subjects self report rating of anxiety. Jurich and Jurich concluded that most of the non-verbal and behavioral cues of anxiety used in their study, including the global ratings of anxiety and the finger sweat test were possible measures of anxiety that could be used in future research. Also, they concluded that self report ratings of anxiety are probably not accurate.

In tabulating the extraverbal and behavioral cues of anxiety Jurich and Jurich allowed raters to both see and hear the video recordings of the interview. The audio portion of the tapes were necessary in tabulating extraverbal cues of anxiety, however the audio feedback may have had a confounding affect on assessing behavior cues of anxiety.

Behavioral Cues of Anxiety

In reviewing the literature on behavior manifestations of anxiety, it was found that a number of behavioral cues relate with global ratings of anxiety. Day (1964, 1967) in his studies of eye movement and anxiety observed that the extent of eye movement as well as its velocity, seemed related to the level of anxiety or affect. For example, under conditions of maximum interpersonal security, the eye movement was slow and extensive. In schizophrenic patients, Day observed that eye movement could not be observed visually. High speed electrooculograph and electroencephalography demonstrated its presence at a greatly reduced extent and greatly increased velocity. He noted also that normals momentarily exhibited the same phenomenon as the schizophrenics when anxiety was deliberately provoked by a
personally embarrassing question. The raters in Day's studies made global ratings of anxiety as they both listened and observed the subjects.

Hobson, Strongman, Bull and Craig (1973) have reported two separate studies of eye gaze aversion in relation to anxiety. These authors hypothesized that for a given dyadic encounter, an optimal level of mutual eye contact exists and that if this level is exceeded, the resultant disequilibrium will be anxiety arousing and will result in avoidance of eye contact, i.e. gaze aversion. From the results of their two studies, Hobson and his associates found that anxiety had no effect on eye gaze. More particularly, they stated that whatever other functions gaze aversion serves, reduction of anxiety is not one of them. Hobson et al. concluded that the results of their studies casts doubt on the "somewhat vague allusions to anxiety and eye contact" which appear in the literature.

The results of Patterson's (1973) study generated an opposite conclusion than that of Hobson and his associates. Patterson found that the lack of eye contact during a counseling interview was significantly related to global ratings of anxiety. He also found that when a subject was allowed to determine how close to sit by the interviewer (approach distance), anxious subjects chose a greater distance than clients rated as nonanxious. Patterson used "expert" raters to arrive at these conclusions.

Mehrabian (1969) found a positive relationship between an open body posture, i.e., openness of arms and legs, and the degree or state of relaxation in the client. He suggested that an open posture
is considered an index of relaxation whereas a closed posture, i.e., arms folded in front of body and/or legs and feet crossed, is an index of tension.

Beier (1973) observed that married couples in conjoint therapy communicated anxiety and insecurity by touching themselves more than each other, by avoiding eye contact, and by sitting with arms and legs crossed. Beier's assessments were made by expert raters of anxiety and by counting the couples' behaviors.

**Trait Vs. State Anxiety**

Anxiety, when operationally defined in the literature as a stable personality trait, refers to anxiety proneness or the predisposition of an individual to have chronic feelings of apprehension with accompanied arousal of physiological processes (Spielberger & Sarasen, 1975). Anxiety as a transitory state is characterized by consciously perceived feelings of apprehension with accompanied arousal of physiological processes due to a specific situational stress (Spielberger, 1972). When assessing anxiety as a function of induced stress, the researcher is primarily concerned with state anxiety.

Day (1964, 1967) in his studies on anxiety and its effect on eye movement, which have been previously cited, used personally embarrassing questions to induce anxiety in the "normal" subjects in his studies. He found that these situationally stressful questions brought about the momentary presence of slight, but fast eye movement. Jurich and Jurich (1974), also previously cited, asked female subjects four questions concerning their premarital sexual attitudes. The questions were designed to elicit increasing levels of anxiety.
Jurich and Jurich concluded that subjects did respond with increased levels of anxiety as the questions became increasingly more intimate.

*Research and Therapy Uses of Biofeedback and Video Equipment*

**Advantages and Limitations of the Electromyograph (EMG)**

A major thrust in the research and therapy of anxiety has grown out of the electronic achievement in recent years. Budzynski and Stoyva (1969) introduced a portable, safe and sensitive electromyograph (EMG) capable of providing (a) analogue feedback to facilitate relaxation in the subject, and (b) objective quantification of muscle activity for monitoring and recording. The EMG device operates through surface electrodes that detect electrical activity in the muscle being monitored. The resulting electronic signal is converted into an auditory or visual signal. If the muscle tension is high, the auditory tone is high and the visible meter reading registers high on the scale. If the muscle is relaxed, the tone decreases in pitch and the meter reading is lowered. Since muscle tension generally fluctuates, the EMG meter reading and/or tone change rather regularly, reflecting increased or decreased changes in muscle tension.

Proponents of progressive relaxation (Jacobson, 1938, 1962), autogenic training (Luthe, 1969, 1970) and behavior therapy (Wolpe, 1973) have all identified muscle tension as a major physiological index of anxiety. A crucial aspect of this assumption is that muscle relaxation affects the autonomic nervous system and brings about the
condition in which sympathetic responses are dominant which result in muscle tension. Implicit in this belief is the assumption that anxiety has both muscular and autonomic nerve components. If either of these components remain at a high or activated level, the high arousal condition necessary for the experience of anxiety is present.

Evidence indicating that the autonomic and somatic systems act in an integrated way has been provided by the experiments of W. R. Hess (1954), who conceived of the "ergotropic" and "trophotropic" systems. Hess discovered that when he electrically stimulated certain diencephalic regions, he observed simultaneous behavioral arousal and sympathetic activation, an ergotropic response. Stimulation of other diencephalic regions produced parasympathetic activity and a behaviorally calm animal, a trophotropic response.

The essential validity of the "ergotropic-trophotropic" distinction has been demonstrated by Gellhorn (1964, 1967). According to Gellhorn, the "ergotropic syndrome" consists of sympathetic adrenergic events, e.g., increased heart rate and blood pressure, adrenomedullary secretion, sweat secretion, pupil dilatation, EEG desynchronization and increased somato-motor activity. Generally, the trophotropic responses are opposite in nature.

Gellhorn also reported that the organism's response is graded, depending on the type and intensity of stimulation. For example, when the animal is exposed to a moderate stimulus, only the sympathetic system is activated and the adrenomedullary component is absent. However, with more intense stimulation, both the sympathetic and adrenomedullary responses typically appear.
Germana (1969) reviewed a number of neurophysiological and psychological studies which provided consistent support for the hypothesis that the central integration of autonomic and somatic systems normally results in a high degree of intercorrelation between autonomic and behavioral responses. Germana pointed out that the distinction between these nervous systems is primarily an anatomical convenience, but constitutes a gross over-simplification of central organization. He indicated that, more correctly, one should think in terms of response complexes which possess both autonomic and somatic components. Germana's work agreed with the earlier writings of Hess (1954) and Gellhorn (1964, 1967).

Germana (1969) concluded that it is more realistic to view the two systems as complexly coordinated into response patterns. He suggested that integrated autonomic-somatic activity may occur predominantly in situations which involve intensive and/or extensive preparations for overt behavior. An example of an intensive preparation would be a situation in which there is a transition from behavioral inactivity to overt behavior, or a transition to more intense, sustained, or complex behavior. An example of the extensive situation would be the presentation of a novel stimulus and or the acquisition of a new response to a stimulus. Germana noted that the above mentioned situations are precisely the kind of situations in which a human might report anxiety or apprehensions.

With some individuals, the muscle and autonomic systems may be more loosely coupled, in that one system may have little effect on the other. In a study of "autonomic responders," Cammeron (1944) dealt
with the physiological manifestations of anxiety and reported that anxious patients fell into three types of people: (a) those who mainly responded through the skeletal musculature system, (b) those who responded fairly equally through the muscular and autonomic systems, and (c) those who were predominantly autonomic responders (usually either cardiovascular or gastrointestinal symptoms).

A more recent study by Budzynski and Stoyva (1972) added support to the groupings of responders suggested by Cammeron. Budzynski and Stoyva reported therapy cases in which muscle relaxation did not diminish the anxiety of the patient. They explained that, although such cases are not typical, they have had a few clients who have mastered muscular relaxation, as monitored by EMG, and who still reported feelings of anxiousness.

Schwartz's (1975) article reported a "patterning of physiological processes" and pointed out that anxiety is probably manifested differently in individuals because of different and complex combinations of physiological processes which produce different kinds of responses to anxiety provoking situations. Schwartz suggested the possible need to classify various kinds of anxiety, involving combinations of cognitive, visceral and somatic components. Schwartz indicated further that some people are autonomic responders, some are muscular responders, some are cortical responders, while still others respond through combinations of these factors.

The works of both Schwartz and Cammeron have suggested that autonomic nervous system responders could be extremely anxious but not show any tension with EMG. This would suggest that when doing
physiological monitoring of anxiety, it would be wise, if possible, to use more than one sophisticated instrument to accurately monitor the different physiological indices and combinations of indices of anxiety. However, since this is not typically possible or practical in a therapy setting, the focus of most therapy and research in therapy concerning anxiety has concentrated on using the muscular system as an indication of anxiety (Jacobson, 1938; Luthe, 1969, 1970; Wolpe, 1958; Budzynski & Stoyva, 1972).

In conclusion, research indicates that the electromyograph has been an acceptable instrument in monitoring muscle tension which is indicative of the presence of anxiety. The present study, like many others did not find it practical to monitor anxiety with other physiological indices and, therefore, used the EMG to determine its possible utility for counselor training in spite of some apparent limitation noted in previous studies. Though the use of EMG in research and therapy is fairly common, the possible use of EMG in training counselors to identify nonverbal cues of anxiety has apparently not been reported. This study monitored and recorded muscle tension by the EMG and used this EMG feedback as an indication of levels of anxiety in a video counselor training program.

**Video Techniques Utilized in Counselor Training**

Use of simulation methods in counselor education has often been proposed in the literature, and counselor education programs have used many of these simulation procedures (Ivey, 1971; Krumboltz, Thoresen
and Zifferblatt, 1971). The most frequently used simulation techniques are the "low fidelity" methods of instructional manuals and audiotapes and the "high fidelity" methods of videotapes, lectures, and role-playing.

In a study to investigate the efficiency and efficacy of different simulated instructional methods, Stone (1975) tried to determine which simulation method in counselor training was most effective. Four simulated modeling treatments were developed. An instructional manual and audiotape were prepared to serve as the low fidelity model treatments, and the high fidelity treatment models were represented by videotape and in vivo models. The specific counseling skill of "tacking leads" which was defined as a response that helped a client discuss abstract or general concepts in more specific terms, was introduced, defined and demonstrated in a standard way across all treatment modes.

Although all of the training methods investigated led to desired performance, it was concluded that the least effective training methods were the low fidelity simulation procedures, i.e. instructional manual and/or audiotape. It was concluded that these "low fidelity" methods fail to stimulate and maintain interest and motivation in learning counseling skills. The most significant gains in Stone's study came from the use of the audiovisual treatment procedures. Stone therefore argued that counselor educators should consider the importance of developing counselor training procedures using audiovisual media.

In a similar study, Yenawine and Arbuckle (1971) contrasted the
effects of using audiotape and videotape recording techniques as part of the training experience in a counseling practicum, and they concluded that the videotape recordings provide a more objective basis than audiotapes for the evaluation of counselor interviews, as well as a much more comprehensive feedback of counselor behavior.

Eisenberg and Delaney (1970) developed a videotape which consisted of 40 independent videotape frames, each containing one client appearing alone. The clients were role-played by 5 male and 5 female assistants, each playing 4 different client roles. Another videotape was developed which contained the same clients playing their same roles as seen in the original tape. However, in the second training tape an experienced counselor appeared with each of the clients in the first 20 frames and modeled a "tacking lead". The model was not present in the final 20 frames.

These two tapes were then used as training and assessment tapes in counseling practicum classes to compare several procedures and test their effectiveness in facilitating the acquisition of "tacking response leads."

Hackney (1974) examined the effects of 4 nonverbal videosimulated facial gestures on the verbal affect responses of 72 female undergraduate college students. A 30 year old male and a 30 year old female were trained to give approximately the same four gestures. They were then videotaped separately as they performed these nonverbal gestures. The facial gestures that were recorded were (1) no head, eye, and mouth movement, (2) affirmative head nods, (3) slight smiles, and (4) a combination of affirmative head nods and
slight smiles.

One of the objectives of the study was to develop a methodology that would permit the control and manipulation of nonverbal gestures under an experimental condition. Hackney concluded that this objective was achieved by using the videotaped stimulus presentations. He reported that (a) all nonverbal stimuli were presented on the same schedule, (b) all subjects who received the same treatment did receive identical stimuli, and (c) stimuli produced by male and female presenters were as close an approximation of each other as could be achieved. Hackney also reported that the results of this study supported the assumption that nonverbal gestures play a significant role in the total communication process between individuals and that videotape instrumentation is a valuable tool in studying these nonverbal gestures.

Rosenthal et al. (1974) also used visual media to present stimulus behavior. They developed a test of sensitivity to nonverbal behaviors of emotion. The test consisted of a 45-minute film which presented the viewer with a series of scenes of facial expressions and spoken phrases that were audible as sounds and tones, but not as words. Some of the scenes had both visual and auditory components. After each scene, the subject was required to choose one of two labels that identified the emotion demonstrated. It was found that women and girls correctly identified the appropriate label more often than men and boys. However, it was reported that, in general, males in the profession of mental health and education did as well as women.

Waxer (1974), in his study outlined previously in this review of
literature, used video equipment to develop a 1/2-hour videotape showing 10 interview examples of 5 depressed and 5 nondepressed psychotic patients. Each interview segment was separated by a 30-second interval of blank tape. The sound was eliminated from all the interview tapes, requiring raters to make discrimination from nonverbal cues alone. Waxer then showed the edited videotape to 67 raters who were given the task of identifying the depressed patients. Waxer found that this procedure was effective, in that, students with one year or more of counseling training were able to identify the depressed patients from viewing the video examples.

In the study of nonverbal communication of anxiety by Jurich and Jurich (1974) a videotape machine was used to record the nonverbal behavior of clients who were responding to anxiety-producing questions concerning premarital sexual attitudes. The tapes were later played to trained raters who made judgments on global anxiety as well as other specific behavior indices of anxiety. In addition to the previous outcomes cited, Jurich and Jurich reported that the use of videotape equipment proved invaluable in both the training of observers and in the actual assessment of nonverbal cues of anxiety.

**Review Summary**

In reviewing the research literature, the following conclusions were drawn:

*Nonverbal behavior is a potentially rich source of information in interpreting the emotional state of an individual* (Hughey & Piepgrass, 1976). The studies concerning the identification of
behavioral cues of anxiety have identified a number of possible characteristic behaviors associated with anxiety, i.e., eye movement, eye contact, approach distance, posture, self touching, etc., and have generally assessed anxiety by subjective ratings of "expert observers" or by self-reports of clients. Most such studies have rated behavioral cues of anxiety in association with verbal and extraverbal cues. Only a few of the studies were designed so that raters had to make judgments from behavioral cues alone. None of the studies, reviewed on anxiety, attempted to rate behavioral cues of anxiety in the absence of verbal and extraverbal cues.

One study (Jurich and Jurich, 1974) reported the use of a "finger sweat test," which was described as an objective autonomic test of anxiety and which correlated highly with global assessment of anxiety made by trained "expert raters." Another objective measure of anxiety was reported by Budzynski and Stoyva (1969), who found an electromyograph (EMG) to be capable of safe, accurate, and reliable measurements of levels of muscle tension. According to Gellhorn (1964, 1967) and Germana (1969) muscle tension is a good physiological indicator of anxiety. The use of EMG to objectively monitor muscle tension as a physiological index of anxiety, while studying the nonverbal behavioral cues of anxiety in the absence of verbal cues, apparently has not been reported.

The use of video simulation in counselor training has been reported as a valuable tool both for training and assessment of counselor skills (Eisenberg & Delaney, 1970; Waxer, 1974). Film presentations have also been used to assess sensitivity to nonverbal

The design and procedures of the present study were based, to some extent, on previous research reports which successfully utilized both the EMG and video simulations in monitoring client (subject) anxiety and in attempts to train counselors and therapists to better recognize nonverbal cues of client anxiety.
RESEARCH DESIGN AND PROCEDURES

The following section outlines the research design and methodology followed in gathering and analyzing the data of the present study.

Sample

The sample of subjects selected for this study was comprised of graduate students in the Professional Scientific Psychology program at Utah State University, spring quarter, 1977 and graduate students enrolled in the Educational Psychology program at Brigham Young University spring semester, 1977. All of the subjects from Utah State University were enrolled in Psychology 636 (N=24). The subjects from B.Y.U. were enrolled in Education 675, counseling practicum (N=11). All of the subjects were either masters or doctoral level students in counseling/clinical psychology.

Even though the sample of graduate students was drawn from two different settings, they were treated as one combined sample (N=35) for the purposes of the study. These particular students were chosen to participate in the study not only because of their availability and their status as graduate trainees in counseling psychology, but also because one purpose of the study was to develop a training tape which might be used as an adjunct to other counseling practicum activities in which the subjects were enrolled. Of the total sample, 83% were male (N=29) and 17% were female (N=6); 71% were masters level students (N=25) and 29% were doctoral level
students (N=10). The ages of the subjects ranged from 22 to 37 years. The mean level of training was the first quarter of the second year for the master level students and the third quarter of the second year for the doctoral level students.

**Instrumentation and Data Collection**

The treatment was a videotaped presentation developed for training students to recognize nonverbal cues of anxiety. A separate video tape requiring subjects to make discriminations of anxiety levels by watching taped examples of client nonverbal behavior was developed and used for both the pre and post test. The study data was collected on a standard test form developed for this study. (See Appendices D and E).

The following instruments were used to develop the above-mentioned tapes. An Autogen, model 1700, electromyograph with remote meter was used to monitor forearm muscle activity of video tape clients. This equipment allowed for continuous visual monitoring of client muscle tension, measured by a meter indicating physiological feedback. The 100-200 Hz frequency band pass was used throughout the study. This frequency is recommended for most applications involving general muscular monitoring, exhibits especially good artifact rejection characteristics, and the highest signal to noise ratio (see Instruction Manual for the Autogen 1700, 1975). The meter scale selector was kept at x1 throughout the study. A JVS, model CR-6100U video cassette recording system and 24" monitor were used for recording and training use of the video tapes developed for this study. Two Concord Communication System cameras, model MTC-21, were used to
videotape the client and the EMG meter stationed near the client. A Panasonic cassette tape recorder was used to give the subjects standardized instructions for testing and training procedures.

**Procedures to Ensure Reliability and Validity of EMG Feedback**

The Autogen 1700 is one of the newest and most reliable electromyographs available today. It was designed and constructed to be highly sensitive to neuromuscular activity while at the same time being resistant to environmental electrical interference. However, due to the highly sensitive nature of such an instrument, electrical activity near the machine can create unwanted artifacts in feedback readings.

Prior to the commencement of this study, it was found that if fluorescent lights and electrical cords were used near the instrument, it significantly increased meter readings. Therefore, it was necessary to take precautions to minimize artifact interference throughout the study. All videotaping was done without the use of fluorescent lights in the interview room, or in adjacent rooms or hallways. Although adequate light for recording was provided by natural light through a ceiling skylight in the room, a 75-watt "clip on" spot light was also placed on the opposite side of the room from the EMG machine to provide added clarity to the video picture. Through pilot testing it was determined that EMG feedback was not affected when the spot light was in operation. Since each of the video cameras were electrically operated, a similar check was made by observing EMG meter feedback when the cameras were in use. It was found that no change
was noted in the EMG meter readings when the cameras were in operation. Most interviewing was conducted on Saturday when there was minimal activity in the building, so as to avoid any possible artifact interference in the video recording and EMG monitoring.

The electromyograph receives physiological stimuli through surface electrodes which are attached to the muscle sites of the body. The most often used muscle site for relaxation training is the frontalis muscle on the forehead. At a band pass frequency of 100-200 hertz, these muscles have been used to indicate a general overall level of relaxation during desensitization and/or relaxation training. (Budzinsky and Stoyva, 1972). In most reported relaxation training, the client reclines on a soft bed or reclining chair and stays motionless with eyes closed. However, the present project was concerned with identifying nonverbal behavior of a client while sitting in a chair conversing with the therapist. Therefore, it was necessary to determine which muscle site would give the most accurate feedback readings while allowing for a client position most appropriate and practical for a typical counseling situation.

To answer the above concerns, pilot interviews were conducted with four subjects who were randomly selected from a group of volunteers interested in biofeedback research. Ten minute baseline readings were collected on the frontalis muscle while each person was sitting motionless and silently in the chair that was to be used in the experiment. After the ten-minute period, the person was asked to openly converse with the interviewer for ten minutes. It was found in all cases that electrode attachment to the frontalis was only
accurate when the client was sitting quietly and not conversing with the interviewer. It was concluded that slight movements of the head, eyes, mouth and neck produced artifacts that were registered by the machine. The electrodes were then attached to the cervical muscles (back of the neck), the stomach, the left forearm extensor (underside palm down) and finally the left forearm flexor (top side with palm down). Two conclusions were evident after trials on each pilot client. When the client was in the quiet, motionless, sitting position with eyes closed, EMG readings using the band pass of 100-200 Hz were the same across all attachment sites that were tested. Furthermore, when the client was sitting upright and actively talking with the interviewer the two forearm sites gave fewer artifacts and, compared to baseline readings, the most consistent and accurate feedback. It was also found that if the client was told to place his/her left forearm on the arm rest of the chair and to hold it as still as possible throughout the interview, the artifacts were limited and easily recognized as artifacts when they did occur. It was observed that most clients generally accepted this procedure and became reasonably comfortable and expressive throughout the interview while unconsciously maintaining "good" control of the left arm.

On the basis of the trial testing the EMG electrode attachments throughout the study were made on the left forearm flexor muscles of all clients except four. Because of a poor impedance test on the flexor muscle of four clients, electrode attachment on these four people was made on their left forearm extensor muscles.

The procedures outlined in the instruction manual for electrode
attachment were carefully followed (see Instruction Manual for Autogen 1700, 1975 p. 11-13). After the electrodes were properly placed on the left forearm, a number of tests were conducted before proceeding with the interview. A battery check was made to assess the strength of both batteries that operate the electromyograph. Following this test, electrode impedance (quality of attachment to forearm) was assessed. In EMG monitoring, proper electrode attachment is crucial. The Autogen 1700 incorporates an AC impedance test for each of the active electrodes. The impedance level of 20,000 ohms (2 on the meter scale) or below was used as the accepted criterion level for this study. After these tests, the client was asked to lift the index finger of the left hand. If the electrodes are properly placed and making good contact, the meter needle would move rapidly upward when the finger was raised and then downward when the finger was relaxed. The laboratory technician in charge of the use and maintenance of the EMG equipment periodically supervised the procedures of the experimenter, thus adding an additional reliability check to the procedures.

Even though all of these precautions and procedures were followed, there were a number of instances when meter readings fluctuated wildly or failed to respond accurately to the above tests. It is of technical interest to note that on two particular days, weather conditions seemed to adversely influence the EMG reading. On one day the wind was blowing excessively and on the other there was a thunder storm. The tapes made on these two days were excluded from the study.

Careful editing procedures were followed to insure that the examples used in the videotapes developed for the study were accurate.
Sections of tapes where meter readings fluctuated greatly or were sporadic and inconsistent were not used. Attention was directed toward left arm and particularly left hand and finger movement. Careful evaluation of movement which caused artifacts was made throughout the study. It was found that some people used their hands in communicating and often without awareness moved their fingers or hands during the interview. Segments in which movement was observed were not used in the video tapes. Taped examples in which movement produced artifacts that only affected meter readings for a few seconds were allowed to be part of the training tapes. However, these types of artifacts were pointed out to experimental subjects when they viewed these examples.

It was observed that the use of alcohol may influence EMG readings. The second client interviewed complained of a "hangover". The experimenter recorded the baseline EMG readings during this client's "hangover" and again after the client had abstained from alcohol for forty-eight hours. A two-microvolt difference was noted in the two baseline readings for this client. Subsequently, three other clients reported using alcohol within 24 hours of the interview, and when their respective baselines were compared with later monitoring, a two-microvolt difference was consistently noted between earlier and later EMG readings.

After the initial report of the recent use of alcohol, the experimenter asked all clients before the interview if they had used alcohol within 24 hours or if they were presently on medication. Tapes were discarded of clients who had consumed alcohol within 24
hours of the interview. One client was excused from participating in the interview when he reported that he was taking codeine to alleviate the pain of a recent head injury.

It was noted by the experimenter that assertive role playing tasks during assertiveness training exercises tended to raise the anxiety level of those who participated. A pilot effort was made before proceeding with the study to collect EMG readings before, during and after assertive role playing tasks. The same four volunteers previously mentioned were used and it was found that EMG readings consistently went up during the assertive task. Nonverbal behavior of anxiety was also more evident during this time.

**Video Tape Development**

The treatment tape was developed in the following manner. An announcement was made by the experimenter in the General Psychology class (Psych 101), indicating that volunteers were needed for a study he was conducting. Other acquaintances of the experimenter were also invited to participate in the study. All who agreed to do so were asked to participate in a 30-minute videotaped interview while being monitored by the electromyograph. The volunteers, referred to as "clients," were told that the exact purpose of the interview could not be revealed until after it was completed. However, it was explained that during the interview they would be monitored by an electromyograph which would measure their muscle activity while at the same time being recorded by a videotape recorder. The clients were further told that the interview would consist of "getting to know him/her better" as well as to act out a few assertive role
playing situations.

Before entering the interview room, each client was told how the EMG electrodes would be attached to the forearm. It was explained that there was no danger in being monitored by the instrument. An "ethical consideration statement" (see Appendix A) was given to each client to read. The client was then asked to sign a letter of consent (see Appendix B) allowing the experimenter to use the videotaped interview in a counselor training research project.

At the conclusion of the interview, all clients were debriefed by showing them their videotape while explaining the purpose of the study and answering any questions about the future use of the tapes.

The interview was held in a counseling laboratory room equipped with two video cameras mounted on the walls. Two comfortable chairs with arm rests were placed facing toward each other at a distance of four feet. The client's chair faced directly toward one of the video cameras, which was focused on a full-body view of the client. The electromyograph was located on a small table at the left side of his/her chair. A remote EMG meter was placed on a tripod platform near the second video camera. In this way, with the use of the split image capabilities of the videotape equipment, the client was taped in full-body view by one camera while the EMG meter was simultaneously taped by the second camera. The EMG equipment was arranged to the left and behind the individual to minimize distraction while accurately recording the data required for the study.

At the appointed time of the interview, the client was taken into the interview room by the experimenter, who conducted the
interviews with all clients. When each client had been seated in the chair the experimenter attached the EMG electrodes to his/her forearm, and after the experimenter had tested the accuracy of the electrode placement, videotaping was begun.

Spontaneous conversation was allowed for 10 to 15 minutes, which gave the client a chance to become accustomed to the interview situation and also to allow his/her basic tension level to be recorded. The experimenter then asked the client to participate in a number of role-playing situations which required the client to assert himself/herself in a number of "everyday" situations (see Appendix C for role-playing situations). The basic situation was read to the client. Questions from the client were entertained, followed by a re-reading of the situation. The client was then expected to respond assertively. The object of the role-playing was to induce higher anxiety levels (muscle tension levels) which could be recorded by the EMG and videotape equipment. Between each role-playing situation, spontaneous conversation was allowed so that anxiety levels could fluctuate downward as well.

After a pool of videotapes were collected, several steps were taken for the editing procedures. Three different levels of tension were identified. In developing the Autogen 1700 electromyograph, Autogenic Systems Incorporated (ASI) identified categories of tension levels that the Autogen 1700 would discriminate (Instruction Manual for the Autogen 1700). Level one, "normal tension," is defined by EMG feedback as 1 or 2 microvolts of muscle activity. Level two, "relatively tense," referred to in this study as "somewhat tense,"
is defined as 2 to 5 microvolts and level three, "excessively tense," is defined as over 5 microvolts. Because EMG equipment manufactured by different companies are not identically synchronized in their measurements, these microvolt guidelines are only appropriate for the ASI Autogen 1700 electromyograph. Examples of these levels were identified for each client. From the pool of examples generated in the interviews, a composite training tape was developed. Each basic tension level was represented quite equally in the final training tape.

The pretest-posttest was also developed from videotaped interviews. In developing the pretest, which was also used as the posttest, different clients were used from those used in the training tape so that experimental subjects would not have the advantage of recognizing clients that were in the training tape. Thirty-second example sequences of the three levels of tension were identified and categorized as levels 1, 2 and 3, respectively. Each sequence in a given category received a number. After all of the tapes were edited and the example sequences categorized and numbered, 10 sequences of each category were randomly chosen for the pretest. These 30 sequences were assigned a new number and placed in random order, and from this randomization, were assigned a position on the final assessment tape. The final tape was 20 minutes in length. Each tension level was equally represented, with a 10-second pause between each example allowing time for the graduate trainees and staff (subjects) to mark the answer sheet. All editing was done electronically.

A prepared standardized pretest-posttest scoring sheet was
developed which consisted of a sheet of paper numbered from 1 to 30. After each example number on the answer sheet, the following was listed: (a) "normal tension level," (b) "somewhat tense," or (c) "excessively tense" (see Appendices D and E).

A standard audio cassette tape was developed to instruct experimental and control subjects on how to use the score sheet in conjunction with the pretest-posttest tape. The same instructions were given by audio cassette tape before the posttest.

A standard audio cassette tape was also developed for instructional purposes to explain the procedures of the training sessions and was played to the experimental group at the beginning of the training session.

**Experimental Procedure**

The graduate students who were used in this study were randomly assigned to the experimental group and control group, as follows:

(1) A list of all graduate students enrolled in counseling practicum at Utah State University (N=24) was obtained. (2) A short questionnaire was given to each student requesting him/her to list the total number of quarter and semester hours of practicum experience that he/she had completed as of March 22, 1977 (see Appendix F). A student with 15 quarter hours at Utah State University would lack 3 quarter hours from fulfilling the Master's Degree requirements. (3) The names of all students who had the equivalent of from 0 to 15 quarter hours of practicum experience were placed on list A, and the names of all students with the equivalent of over 15 quarter hours of practicum experience were placed on list B. (4) One-half of all names of
students on lists A and B were randomly selected and designated as experimental subjects and these subjects received the video training tape presentation. The remaining subjects on both lists were designated as a control group.

The study was designed so as to allow 5 weeks for data collection and training. Data collection at Utah State University took place from April 18 through May 26, 1977. The following schedule was followed at Utah State University. Two weeks before actual data collection, the graduate students were assigned to their respective practicums. The consent of all practicum instructors was first obtained so as to allow the study to be part of the practicum experience. The experimenter visited each practicum and asked all students if they would participate in the study. It was explained to them that the study involved the recognition of anxiety levels through watching videotaped examples of nonverbal behavior. Further, they were told of the training and testing procedures and assured that their pre- and posttest scores would remain completely confidential. The questionnaire assessing the number of graduate practicum hours was then given to each student. Experimental and control groups were chosen by the procedure indicated above.

During the first week of the study, the subjects were given the pretest as a group in their regular practicum session. Before the class began, the room was prepared to minimize distractions and to provide a quiet, comfortable climate. The subjects were seated so as to be able to clearly see the video television, which was approximately 3 to 5 feet in front of them. A small gray card was attached to the
upper right hand corner of the video screen so as to block out the EMG meter reading, allowing the subjects to see only the behavior of the video client and not his/her accompanying physiological indices of anxiety. The subjects were only allowed to see the video screen. The audio portion was shut off.

The prepared standardized audio cassette tape was then played providing the subjects with the following instructions:

The pretest answer sheet is numbered from 1 to 30. After each number there are 3 choices which described 3 discrete tension levels. The first level (a) is designated as "normal tension," the second level as "somewhat tense," and the third level (c) as "excessively tense." The video presentation you are about to see consists of 30 examples of clients that are experiencing one of these different tension levels. The video examples are each 30-seconds in length with a 10-second pause between each example which allows time for you to mark your pretest after viewing each client. Remember, you are to mark 1 of the 3 tension levels on your pretest which you feel applies most accurately to the client during the particular 30-second example you have viewed.

Some clients are used more than once. The tension level of which they are an example may vary from one sequence to another. The entire video presentation will last 18 minutes. It is a silent presentation requiring your choices to be dependent on observing the client's nonverbal behavior. Remember that there are only 10 seconds between each example for marking your pretest. Please make your decisions quickly and be ready to view each new example after the 10-second pause.

You will notice that the television monitor before you has a small gray paper attached to the upper right hand corner of the screen. This paper covers an electromyograph meter reading of the client's tension level. These EMG readings will be later used as the criterion to judge actual anxiety levels. You will note, while viewing the example clients, that they are being monitored by EMG on their left forearm. The experimenter will call out the number of every 5th example so as to minimize the possibility of marking an answer on the wrong number of your answer sheet.
If you have any questions, please ask them at this time.

The subjects were then tested (pretest) by viewing the pretest tape, which consisted of the 30 discrete client examples of the 3 levels of tension. After completing the pretest, the subjects were instructed to return to the practicum session.

During weeks 2 through 4, experimental subjects were excused from several short periods of their practicum and were taken into an adjacent laboratory room to view part of the training tape. The entire training tape was 90 minutes in length. Each week, 30 minutes of this tape was shown until the subjects had seen the entire tape (3 sessions). Audio taped instructions were briefly given, instructing the subjects to concentrate on associating the nonverbal behavior of the video client with EMG meter readings. The exact instructions were as follows:

The training tape is 30 minutes in length and shows the client's nonverbal behavior in association with EMG meter readings. Watch the tape and associate the different levels of tension recorded by EMG with the nonverbal behavior of the client.

Normal tension as recorded by EMG is 0 to 2 microvolts, somewhat tense is from 2 to 5 microvolts, and excessively tense is above 5 microvolts.

You are encouraged to discuss your observations openly inside of the training session, but are asked not to discuss them outside the session.

If you have any questions during the session, you may ask the experimenter.

Subjects in the experimental group were encouraged to discuss their observations among themselves, but were asked not to discuss their training experience with control subjects. After each 30-minute
session, the subjects returned to their regular practicum room. While the experimental subjects were receiving treatment, the control subjects were continuing their regular practicum experience with the instructor.

The posttest, which was the same as the pretest, was given during the 5th week of the study. The posttesting followed the exact procedures as the pretest (see week number 3).

The exact procedure as outlined above was followed with the subjects at Brigham Young University. Data collection at BYU took place from May 11 through June 8, 1977.

Analysis of Data

Analysis of covariance was used to analyze the data (Borg and Gall, 1971; Campbell and Stanley, 1963; Ferguson, 1976). The pretest means served as the covariate to control for initial group differences. Analysis of covariance analyzed the difference between the posttest measures after taking into account initial group differences on pretest measures, which resulted in an obtained adjusted posttest measure.
RESULTS

The purposes of the present research were to develop a training procedure consisting of two split image videotape presentations which depict silent examples of client nonverbal behavior of anxiety with accompanied visual EMG feedback and to also answer the following questions: Can experimental subjects who receive the video training, depicting nonverbal behavior in the absence of verbal cues, (1) correctly identify specific levels of anxiety in clients more often than control subjects and, (2) increase their ability to discriminate anxiety levels and thus rate closer to the correct anxiety level than control subjects. The study tested the null hypotheses that, (1) those who receive the training procedure and those who do not will not differ in their ability to correctly identify specific levels, (excessively tense, somewhat tense, normal tension) of anxiety in clients and, (2) will not differ in their ability to rate closer to the correct anxiety level.

Analysis of covariance was used to analyze the data (Borg and Gall, 1971; Campbell and Stanley, 1963; Ferguson, 1976). The pretest means served as the covariant to control for initial group differences. Analysis of covariance analyzed the difference between the posttest measures after taking into account initial group differences on pretest measures, which resulted in an obtained adjusted posttest measure.
Testing the Hypothesis

To test for the first hypothesis, analysis of covariance for the data yielded an $F(1, 32) = .189$ which is not significant at the .05 level (see Table 1), thus evidencing no significant differences between the adjusted posttest means of the experimental and control groups. Therefore, the null hypothesis was not rejected.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Pretest Means</th>
<th>Posttest Means</th>
<th>Adjusted Posttest Means</th>
<th>*F Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Treatment</td>
<td>12.77</td>
<td>12.33</td>
<td>12.32</td>
<td>.189</td>
</tr>
<tr>
<td>Control Group</td>
<td>12.47</td>
<td>12.65</td>
<td>12.67</td>
<td></td>
</tr>
</tbody>
</table>

Degrees of Freedom = 1/32. The larger the adjusted posttest mean the more correct the discriminations of ability to identify anxiety. * $F \geq 4.15$ required for significance at .05 level.

To test the second hypothesis, the following system of ranking was applied to the Pretest-Posttest answer sheets. If the subject marked the correct answer, he/she received two (2) points for that answer. If he/she marked an answer which was the next closest answer above or below the correct answer, the subject received a score of one (1) for that example. If the subject marked an answer that was two (2) answers above or below the correct answer, he received a score of zero (0) for that example. Table 2 illustrates this ranked system of scoring:
Table 2
Examples of Ranked Scoring System Used in Recognition of Anxiety

<table>
<thead>
<tr>
<th>Example 1</th>
<th>normal tension</th>
<th>somewhat tense</th>
<th>*excessively tense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 2</th>
<th>normal tension</th>
<th>*somewhat tense</th>
<th>excessively tense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example 3</th>
<th>*normal tension</th>
<th>somewhat tense</th>
<th>excessively tense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

* Indicates correct answer for that example.

An analysis of covariance was used to analyze the ranked data and yielded a nonsignificant $F(1,32) = .203$ (see Table 3).

Table 3
Analysis of Covariance Comparing Ranked Mean Posttest Scores of the Experimental and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>Pretest Means</th>
<th>Posttest Means</th>
<th>Adjusted Posttest Means</th>
<th>*F Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Treatment</td>
<td>39.77</td>
<td>39.66</td>
<td>39.64</td>
<td>.203</td>
</tr>
<tr>
<td>Control Group</td>
<td>39.59</td>
<td>39.12</td>
<td>39.15</td>
<td></td>
</tr>
</tbody>
</table>

Degrees of Freedom = $1/32$. The larger the adjusted posttest mean, the more positive the change of ability to discriminate anxiety. *$F > 4.15$ required for significance at .05 level.

Analysis of covariance has shown that the treatment used in this study was of no significant influence in teaching awareness of nonverbal behavior of anxiety in the absence of verbal cues.
Application of an analysis of variance test to estimate the reliability of the Pretest-Posttest video tape yielded a reliability coefficient of .29 (see Table 4).

Table 4
Analysis of Variance Estimate of Reliability of Pretest-Posttest Video Tape

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>MS</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Film Segments</td>
<td>.568</td>
<td>29</td>
</tr>
<tr>
<td>Within Film Segments</td>
<td>.406</td>
<td>60</td>
</tr>
</tbody>
</table>

Reliability = 1 - \(\frac{.406}{.568}\) = .29.

In this chapter, the results were presented and no significant differences were found between the experimental and control groups on any of the variables analyzed. The reliability coefficient of the assessment instrument was low.
DISCUSSION

The first and most general conclusion of this study was that the training procedure, i.e., the video training tape developed during this project, was no more helpful than regular practicum activities in helping graduate trainees accurately recognize nonverbal behavior cues associated with higher EMG readings of muscle tension. Correct responses on the pretests and posttests ranged from 8 to 18 in both the experimental and control groups. Average scores from each group were no better than chance factor alone which indicates that both the experiment and control subjects could not accurately recognize levels of anxiety evidenced by EMG readings. It appears then that training had no significant results. The reliability of the pretest-posttest video tape was low enough to indicate that part of the problem may have been with this assessment instrument. These results generate a number of questions concerning the study of behavior cues of anxiety, particularly in the absence of verbal feedback, as well as questions concerning the procedures and design used in this study.

Implications

As reported in the review of literature, there is a tremendous quantity of nonverbal information given in a particular therapeutic situation; however, few studies have attempted to recognize and study these cues in the absence of verbal feedback. One of the major implications of the present study may be that nonverbal communication of anxiety should not and probably cannot be studied in the absence of
verbal and extraverbal feedback. Instead, it should be studied as an inseparable part of the total communication process. This study may clarify the need for audio feedback to properly understand the meaning of behavioral expressions.

Support for the above conclusion may also be indicated from interrater reliability scores of the "experts" used in the present study. "Expert" raters of anxiety, in a number of reported studies (Hobson, et al., 1973, Jurich & Jurich, 1974) referred to in the review of literature arrived at interrater reliability scores which were high enough to imply that judges were seeing and interpreting the same cues that they judged indicative of anxiety. In each of these studies the raters were allowed to both see and hear the client they were rating. The expert raters that participated in the present study were experienced professionals in both research and clinical practice. The interrater reliability among these raters was no better than one would expect by chance factor alone, which further may indicate that behavioral cues alone are not sufficient in communicating and interpreting anxiety.

Stone's (1975) study, which was previously cited, supported the above conclusion by noting that behavior cues in combination with verbal cues give more precise meaning to the verbal communication. In Stone's studies of low and high fidelity simulation methods in counselor education, he concluded that the most productive method of presenting simulated material was a combination of audio and visual information.

The results of the present study also suggest that EMG feedback, as used procedurally in the study, is not effective in teaching
beginning counselors how to recognize levels of anxiety. In fact, it may have been a limiting or confounding factor in the recognition of anxiety from behavioral cues. Specifically, there is a question as to the effect and implication of electrode attachment on the left arm of the client being videotaped. Even though the forearm was found to be the most practical and most reliable electrode attachment site for this study, the fact that the person was asked to keep his left arm as motionless as possible may have affected the spontaneity of nonverbal behavior. This could have inhibited anxiety behavior, thus making it more difficult for the subjects to clearly discriminate particular behaviors that might characterize anxiety.

Another question raised about EMG feedback in the present study concerns EMG criterion for monitoring anxiety. The measurement levels of 0 to 2 microvolts to indicate "normal tension," 2 through 5 microvolts to indicate "somewhat tense," and 5 through 10 microvolts to indicate "excessively tense" may have been so sensitive that the behavior manifested during these EMG readings was too slight to have realistically communicated overt anxiety. One "expert" rater commented during the assessment session that "all of my anxious clients are much more tense than any of these examples in this tape." It is quite possible that the seasoned counselors used as "experts" in this study would have had a higher interrater reliability if the EMG tension levels had been defined on a more gross scale than 0 to 10 microvolts.

The procedural use of the instrumentation in the present study was designed so as to simultaneously present EMG feedback in conjunction with nonverbal behavior on the television monitor. This was done so
that the subjects could associate behavior with EMG levels. It was found that the attention of the subjects, while viewing the monitor, of necessity fluctuated between reading the meter and watching the client's behavior. It is possible that during such change of attention the subjects missed behavior cues which may have affected the planned learning process.

The research on anxiety reviewed prior to the present project used procedures to induce a state of anxiety in clients, so as to study nonverbal cues of anxiety (Bier, 1973; Day, 1964; Hobson et al., 1973; Jurich & Jurich, 1974; Mehrabian, 1969; Peterson, 1973). A similar procedure was also used in the present study. However, in retrospect there is a question as to whether trait anxiety clients would have exhibited more discernible and consistent behavioral cues than the population of clients used in the present study. In Waxer's (1974) study on nonverbal cues of depression, clinical patients that had been diagnosed as depressed were used as video client examples. He reports the depressed behavior of these patients was discernible to professional clinicians as well as trained graduate students in psychotherapy. In Day's (1964, 1967) studies on eye movement as an indicator of anxiety, two groups of subjects were used, i.e., patients diagnosed as schizophrenic and "normals". Both groups were asked an embarrassing question to induce a state of anxiety. Day concluded that although both groups produced rapid eye movements, the movement noted in "normal" patients was only momentary. Since clients in the present study were not from a clinical population, it is possible that the behavior expressed by these clients was not lasting or explicit enough
to be recognized as an indication of anxiety. It is therefore possible that behavior cues of anxiety may have been much more discernible if clients with real anxiety had been used in the present study.

Day's (1964, 1967) study also suggests another possible difficulty in the procedure and instrumentation of the present study. Day reported that eye movement was difficult to observe, and therefore special instruments were used in his study to measure eye fluctuation. In the present study the angle in which the client was being photographed by the video camera limited the clarity of recorded eye and facial cues. Although there was support in the literature for limiting the present study to general body behavioral cues, the results of this study imply that such a focus may be too narrow to adequately interpret anxiety.

All of the above factors, or a combination of these factors, may have influenced the lack of significant effects expected from the use of video tapes to train and assess nonverbal cues of anxiety.

Limitations of the Study

In view of the results of this study, it is very possible that in studying the nonverbal behavior of anxiety it is necessary to hear verbal feedback to accurately recognize and define levels of anxiety. This confusion suggests that if research studies omit or limit verbal feedback while teaching or studying nonverbal cues of anxiety, the results of such research will be difficult if not impossible to generalize to a live therapy situation.

There are also limitations concerning the use of the electromyograph in the present study. The literature reported by Schwartz (1976)
and Cameron (1944) indicate that EMG monitors "somatic responders" or those who respond to anxiety in ways which are in combination with the somatic nervous system. EMG would not, therefore, give valid indications of anxiety for those few people that are reported by Budzynski & Stoyva (1972) who can be relaxed, according to EMG feedback, and yet be very anxious. Therefore, a limitation of using EMG in research is that it does not adequately validate the presence of anxiety in all people.

Another limiting dimension of this study is the population used in the development of the videotapes. The example clients used were selected at random from a group of volunteer Psychology 101 students and from volunteer friends and neighbors of the experimenter. These example clients did show EMG readings indicative of anxiety when placed in an assertive task situation. However, only a few of these people reported that anxiety was a chronic occurrence in their lives. The major drawback of this population of clients is that beginning counselors probably would benefit most from learning the nonverbal behavior cues of chronic anxiety clients so that their training would have a greater chance of generalizing to the population that they are being trained to ultimately treat as therapists. Secondly, as previously suggested, it may be found that a chronically anxious population would give clearer and more consistent behavioral cues of anxiety which could be more readily learned by beginning counselors.

There is also some concern that the sample of subjects in the present study was not large enough or varied enough to be considered a typical population of graduate psychology students, which would make
it more difficult to generalize the results of the training procedure
to graduate psychology students nationally. While the study sample
did include graduate students at two different universities, Brigham
Young University and Utah State University, the size and nature of the
population of subjects was still somewhat limited in this study.

When doing research in the area of counseling, it is very
difficult to control the many variables that each individual client
may introduce. Because of this, it was decided from the onset of
this experiment that a videotape of each client's nonverbal behavior
and EMG readings would bring control to the study so that all subjects
would be introduced to the same example stimuli for the same amount of
time. However, even though reported research supports the use of video
equipment as an effective teaching tool, the fact that the examples are
simulated and that the subjects are not required to observe or respond
to a live client raises a question as to whether the transfer of a
skill that is learned while watching videotapes will be made into the
actual counseling setting.

Suggestions for Further Research

There was no evidence that the training procedure developed in
the present study was effective in teaching subjects to recognize
nonverbal cues of anxiety. Further research is necessary to determine
if any utility exists with such a training procedure. It is suggested
that if a training aid is developed with the goal of teaching behavior
cues of anxiety, that verbal content and expressions be included in
conjunction with the nonverbal behavior of the clients.
The use of EMG in the present study raised questions as to the utility of using biofeedback instrumentation in active interview situations. If research is conducted using EMG to monitor physiological indications of anxiety during a counselor interview, it is recommended that other physiological indicators of anxiety be used in conjunction with EMG feedback, e.g., galvanic skin response, heart rate, respiration rate, blood pressure, blood volume, or vasoconstriction, etc., so as to give a more comprehensive and valid indication of anxiety levels. Having more than one physiological indicator would tend to encompass the "autonomic responders" that EMG alone cannot properly monitor. If a study can be creatively designed to incorporate a number of measures of client physiology and at the same time not interfere significantly with the interview behavior of the client, it may add considerable power to the study.

It is further recommended that efforts to study anxiety cues in clients utilize subjects from a regular "clinical" population, i.e., individuals who have requested therapy because of real anxiety problems, rather than attempting to induce situational anxiety in a simulated interview. It would seem essential, from the results of the present study, that other types of validity data should be collected on example clients in order to substantiate that they are, in fact, anxious individuals. Such validity data might be obtained by collecting information on some of the anxiety scales currently being used in clinical settings. A videotaped example developed from a regular clinical interview of a client or patient known to be anxious would greatly improve the value of the study in two ways: (1) It would help
validate the training procedure and (2) it would greatly increase the generalizability of the results.

The following technical and procedural suggestions may prove beneficial in improving the quality of the study. A reassessment of electrode attachment sites may prove beneficial. Even though pilot work was undertaken in the present study to find an ethical and practical electrode attachment site, there may be other, more suitable, locations on a client's body that would give valid EMG data and yet allow the client more freedom of movement. The quality of the video tapes could be improved. It is suggested that an electrical technician be consulted to arrange for a more professional videotape production while at the same time shielding biofeedback equipment from unwanted artifacts. Color videotape recordings may add clarity. More attention may be focused on nonverbal facial movement. Valuable, but more subtle cues may not be recorded when taping the "full body" of the client. The split image capabilities of video equipment may be used to videotape both "full body" and close up "facial" examples at the same time. And finally, the training sessions may need to be longer or more frequent.
SUMMARY AND CONCLUSIONS

The development of counselor skills in diagnosis and therapy is a basic goal of all counseling and clinical psychology programs. Anxiety is a form of emotional stress that is a complex affective experience involving physiological changes. It is expressed overtly in characteristic verbal and nonverbal behavior. The recognition of anxiety, which is a basic underlying symptom or cause of many emotional and nervous disorders, is a necessary skill for beginning counselors to acquire.

In current counselor practicum programs, the focus is mainly on learning to interpret verbal cues from the client. At the same time, there is evidence that nonverbal behavior, as well as physiological measures, are potentially rich sources of information in identifying anxiety. The electromyograph (EMG) has been used for a number of years in behavioral therapy to measure and monitor physiological indices of anxiety. This instrument gives a constant visual feedback of the physiological signs of anxiety.

Teaching behavioral cues of anxiety in the absence of verbal feedback as well as the use of EMG feedback in counselor training has apparently not been reported in the literature. The purpose of the present investigation was two-fold: (1) To develop a training procedure which might be helpful in trying to teach beginning counselors how to recognize levels of anxiety by observing silent, nonverbal behavior of clients in association with EMG feedback, and (2) to assess the effectiveness of this procedure by using it to train a group of graduate
psychology students. Graduate trainees exposed to the training procedure were compared with a control group of students to determine whether the training procedure effectively taught the skill.

Two silent split image videotape presentations, using EMG feedback, while simultaneously showing client nonverbal behavior, were developed as treatment and assessment tools. The video training tape was shown to the experimental subjects. The tape showed the nonverbal behavior of a number of example clients in full body view while simultaneously indicating the EMG visual feedback of the client's tension level in the upper right hand corner of the videotape. It was anticipated that the association of the nonverbal behavior with the EMG feedback would prove effective in teaching the recognition of anxiety through observing nonverbal cues.

The hypotheses of the study were tested in the null form, i.e., that the experimental subjects trained by this procedure would not differ from control subjects in ability to correctly identify specific levels of anxiety in clients, and also that experimental subjects would not differ from control subjects in their ability to rate closer to the correct anxiety level of clients.

The subjects used in this investigation were all graduate students in the Professional-Scientific Psychology program at Utah State University, Spring Quarter 1977, and all graduate students in the Educational Psychology program at Brigham Young University, Spring Semester, 1977, N=35.

The subjects were randomly assigned either to a control group or to the experimental group. Subjects in the control group did not
receive any special kind of training on nonverbal behavior of anxiety. These student trainees remained with their practicum advisor while the experimental subjects were excused from the practicum for a 30-minute period on three separate occasions in which time they viewed the training tape. Both experimental and control subjects were pretested and posttested with the assessment tape. The tape consisted of thirty 30-second examples of client nonverbal behaviors which the subjects were required to observe and then to make a discrimination of client anxiety levels by choosing one of three levels of tension they felt the client was exemplifying at each of the thirty behavior examples viewed in the tape. This choice was made on a pretest-posttest answer sheet designed for this study.

Analysis of covariance techniques were used for statistical comparisons of the data. The results of the study showed that subjects exposed to the procedure did not increase in their ability either to recognize three specific levels of anxiety or to rate closer to the correct anxiety level, when observing the nonverbal behavior of video clients. No differences were found between experimental and control subjects in their ability to discriminate differing levels of client anxiety, as shown by thirty separate EMG readings, or in their ability to rate closer to the correct anxiety levels of clients' EMG readings.

Detailed discussion and implications of the study findings are presented in the Discussion section of this dissertation.
LITERATURE CITED


APPENDICES
Appendix A

ETHICAL CONSIDERATIONS AND SAFEGUARDS FOR
CLIENTS VIDEOTAPED AND MONITORED BY EMG
ETHICAL CONSIDERATIONS AND SAFEGUARDS FOR
CLIENTS VIDEOTAPED AND MONITORED BY EMG

Subjects will not be informed of the "hypothesis" of the study nor the fact that the focal use of the video tapes is to isolate non-verbal cues of anxiety until after the video tape sessions are complete; nor will they be given deceptive information as to the purpose of the interview.

Subjects will be informed that they may terminate their participation in the video session at any time. Their names will remain anonymous in any discussions, reports, publication of the study, or presentation of the video tapes.

The instrumentation used in this study was designed and constructed with built-in subject/patient safety precautions. All the equipment to be attached to the subject is DC powered. No earth grounding of the equipment is intended at any time, eliminating the potential for any accidental electric shock.
Appendix B

INFORMED CONSENT
INFORMED CONSENT

I hereby consent to participate as a client in a research study in which a video tape presentation utilizing electromyograph feedback is developed. I understand that I am to participate in a video interview lasting not longer than one-half hour. I understand that I am free to terminate my participation at any time during the video session.

I have been informed that my name will remain anonymous in any written, oral or taped communication of the research and that my name will also be anonymous in any use of the video tape.

I have further been informed that there is no danger of accidental or electrical shock nor any negative side effects anticipated as a result of my participation.

Signature ___________________________ Date ______

Witness ___________________________ Date ______
Appendix C

ROLE PLAYING SITUATIONS
Dating Scene

Narr.: You've been dating Charlene/(Bob) for two months and want to tell her how much you like her. You're sitting in a quiet lounge and are getting ready to let her know how you feel about her. There's a quiet moment; it's your chance to speak.

(DO NOT SPEAK UNTIL STUDENT INITIATES A LINE)

Friend: Oh, come on.
Friend: Oh, you don't really mean that.
Friend: Please, you're embarrassing me.
Friend: Oh, I don't fall for those kinds of lines.
Friend: I didn't expect you to say something like that.
Friend: You really mean what you say. Don't you. You know, I like you, too.
Change Your Grade Scene

Narr.: You've taken an objective final exam - 50 multiple choice items. You picked up the exam and see you've gotten a 78 on the test, a C for the course. However, you noticed that two answers that Dr. Crego has marked wrong on your exam are marked correctly on your friend's exam. If you get these two marked correctly, you'd get an 82, a B instead of a C for the course. You decide to go speak to Dr. Crego, your professor. You are standing in front of the door to his office with your exam in your hand. You knock on the door.

Professor: Yes. Come in. What is it? (Wait for problem).

Professor: I marked these tests very carefully and double checked them so it's doubtful I've made a mistake.

Professor: You may have read your friend's exam incorrectly.

Professor: I don't make a habit of changing grades.

Professor: (Take Exam) You're right. I have made a mistake but it's only four points.

Professor: Well, that grade has already been recorded with the registrar, so it's a little difficult to change it.

Professor: Okay, I see your point. I'll write a letter to the registrar and change your grade. Thank you for calling it to my attention.
Mooching Scene

Narr.: Picture yourself just getting out of class on any weekday morning. Hmm. You're a little hungry so you get a candy bar and milk from the machines. While you're eating you see your mooching friend (same sex) coming over again. The one who already owes you about five dollars from borrowing "just a dime" or "just fifty cents." Although you have enough money including change in your pocket, you're very tired of lending him money. Oh, here he comes now.

Moocher: Hi, how are you doing?

Moocher: Hey, I don't have any money and I'm hungry. How about loaning me 40¢ so I can get a snack from the machine.

Moocher: I'll pay you back.

Moocher: What are friends for -- Gee -- I sure am disappointed with you.

Moocher: You don't trust me -- that's great.

Moocher: I'd lend it to you if you asked me.

Moocher: A lousy 40¢, that's all -- how about a quarter then?

Moocher: You're really a cheap sort of guy. How can you be that way?

Moocher: See ya around.
Drop and Add Scene

Narr.: It's lunch time and you have classes for the rest of the after­noon, all of which require attendance. You know your friend (same sex) with whom you are eating lunch is free for the rest of the afternoon. It is the last day to drop and add courses. Thus, you would like your friend to take care of the drop and add slip for you. You still need to get your advisor's signature on the slip and he won't be back in his office until after lunch and then you need the slip taken to the registrar's office. You look at your watch and see it is 12:50 p.m. You must leave for class in a few minutes. You must speak now.

(DON'T SAY ANYTHING UNTIL STUDENT INITIATES A LINE)

Friend: Hey, sorry but I'm busy this afternoon.

Friend: You can cut a few classes, can't you?

Friend: I had to go through drop and add for myself yesterday and it took about a half hour. That's too much time.

Friend: (Sarcastically) First I have to get your advisor's signature and then go to the Registrar's Office. Sure there isn't anything else that you want me to do?

Friend: You could have taken care of it instead of eating lunch.

Friend: All right, I'll do it but I expect the same in return. Who's your advisor, anyway?
Mother Wants You Home Scene

Narr.: Your mother has just called you on the phone and tells you that she wants you to come home this weekend since Aunt Sally will be visiting from out of town. You have already made very important plans for the weekend which you are not going to break. Your mother has just finished speaking and is waiting for you to speak. This is your chance.

(DON'T SPEAK UNTIL STUDENT INITIATES A LINE)

Parent: I expect you to be here this weekend.

Parent: There are plenty of other weekends for parties and social events.

Parent: Look, I pay a lot of the bills and I want you home.

Parent: Your Aunt has done a lot of things for us, the least you can do is be here. She'll be terribly hurt if you're not here.

Parent: What shall I say? My child is too busy for us now?

Parent: I hope when I call tomorrow night you will have altered your plans. Goodnight for now.
Appendix D

PRETEST ANSWER SHEET
PRETEST

1. a) normal tension level  b) somewhat tense  c) excessively tense
2. a) normal tension level  b) somewhat tense  c) excessively tense
3. a) normal tension level  b) somewhat tense  c) excessively tense
4. a) normal tension level  b) somewhat tense  c) excessively tense
5. a) normal tension level  b) somewhat tense  c) excessively tense
6. a) normal tension level  b) somewhat tense  c) excessively tense
7. a) normal tension level  b) somewhat tense  c) excessively tense
8. a) normal tension level  b) somewhat tense  c) excessively tense
9. a) normal tension level  b) somewhat tense  c) excessively tense
10. a) normal tension level  b) somewhat tense  c) excessively tense
11. a) normal tension level  b) somewhat tense  c) excessively tense
12. a) normal tension level  b) somewhat tense  c) excessively tense
13. a) normal tension level  b) somewhat tense  c) excessively tense
14. a) normal tension level  b) somewhat tense  c) excessively tense
15. a) normal tension level  b) somewhat tense  c) excessively tense
16. a) normal tension level  b) somewhat tense  c) excessively tense
17. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

18. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

19. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

20. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

21. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

22. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

23. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

24. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

25. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

26. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

27. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

28. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

29. a) normal tension level  
   b) somewhat tense  
   c) excessively tense

30. a) normal tension level  
   b) somewhat tense  
   c) excessively tense
Appendix E

POSTTEST ANSWER SHEET
1. a) normal tension level  b) somewhat tense  c) excessively tense
2. a) normal tension level  b) somewhat tense  c) excessively tense
3. a) normal tension level  b) somewhat tense  c) excessively tense
4. a) normal tension level  b) somewhat tense  c) excessively tense
5. a) normal tension level  b) somewhat tense  c) excessively tense
6. a) normal tension level  b) somewhat tense  c) excessively tense
7. a) normal tension level  b) somewhat tense  c) excessively tense
8. a) normal tension level  b) somewhat tense  c) excessively tense
9. a) normal tension level  b) somewhat tense  c) excessively tense
10. a) normal tension level  b) somewhat tense  c) excessively tense
11. a) normal tension level  b) somewhat tense  c) excessively tense
12. a) normal tension level  b) somewhat tense  c) excessively tense
13. a) normal tension level  b) somewhat tense  c) excessively tense
14. a) normal tension level  b) somewhat tense  c) excessively tense
15. a) normal tension level  b) somewhat tense  c) excessively tense
16. a) normal tension level  b) somewhat tense  c) excessively tense
17. a) normal tension level  b) somewhat tense  c) excessively tense
18. a) normal tension level  b) somewhat tense  c) excessively tense
19. a) normal tension level  b) somewhat tense  c) excessively tense
20. a) normal tension level  b) somewhat tense  c) excessively tense
21. a) normal tension level  b) somewhat tense  c) excessively tense
22. a) normal tension level  b) somewhat tense  c) excessively tense
23. a) normal tension level  b) somewhat tense  c) excessively tense
24. a) normal tension level  b) somewhat tense  c) excessively tense
25. a) normal tension level  b) somewhat tense  c) excessively tense
26. a) normal tension level  b) somewhat tense  c) excessively tense
27. a) normal tension level  b) somewhat tense  c) excessively tense
28. a) normal tension level  b) somewhat tense  c) excessively tense
29. a) normal tension level  b) somewhat tense  c) excessively tense
30. a) normal tension level  b) somewhat tense  c) excessively tense
Appendix F

QUESTIONNAIRE ON PRACTICUM EXPERIENCE
QUESTIONNAIRE ON PRACTICUM EXPERIENCE

NAME: ____________________________________________

Would you please indicate the total number of graduate Practicum hours you have completed as of March 22, 1977.

Quarter Hours _______________________

Semester Hours _______________________

Thank you.

Brian Smith
VITA

Brian L. Smith
Candidate for the Degree of
Doctor of Philosophy

Dissertation: The Development of a Video Tape Procedure to Train Awareness of Behavioral Cues of Anxiety

Major Field: Psychology

Biographical Information:

Personal Data: Born in Murray, Utah, December 7, 1944, son of Don Carlos and Ruth Smith; married Paula Ann Gardiner, August 16, 1967; five children--Lee Ann, Elizabeth, Sandra, Mark, and Emily.

Education: Graduated from Hillcrest High School, Midvale, Utah in 1963; received the Bachelor of Arts degree from Brigham Young University, Provo, Utah, with a major in History and a minor in Zoology, 1970; received the Masters of Education degree from Brigham Young University, Provo, Utah, with a major emphasis in guidance and counseling in 1975.

Professional and Related Experience: Presently, clinical intern at Wilford Hall USAF Medical Center, Lackland AFB, Texas; 1975-1977, graduate assistant, instructor for General Psychology (101), Utah State University, and graduate practicum instructor Professional and Scientific Psychology, Utah State University; 1970-1975, Seminary teacher for the Church of Jesus Christ of Latter-Day Saints, Layton, Utah; 1964-1966, Missionary, Great Canadian Mission, Toronto, Ontario, Canada.