



1989

## Biofeedback Training in Counselor Education (Programs): North Central Region

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*Loyola University Chicago*

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BIOFEEDBACK TRAINING IN COUNSELOR EDUCATION (PROGRAMS):  
NORTH CENTRAL REGION

BY  
DAVID MONTROSE

A DISSERTATION SUBMITTED TO THE FACULTY OF THE  
SCHOOL OF EDUCATION OF LOYOLA UNIVERSITY OF CHICAGO  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF EDUCATION

JANUARY

1989

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Loyola University of Chicago

BIOFEEDBACK TRAINING IN COUNSELOR EDUCATION (PROGRAMS):

NORTH CENTRAL REGION

This study was undertaken to explore the extent in which biofeedback training skills are presently being taught in the graduate school programs of counseling and/or counseling psychology.

Professional literature maintains that counselors and/or counseling psychologists are not being trained sufficiently in biofeedback skills.

An extensive history and literature review is presented along with a definition of terms in order to impart the strong scientific, psychological and medical base for the study of biofeedback. The review included the role of biofeedback in education.

The actual research procedure consisted of the collection of data using a Biofeedback Questionnaire instrument. This questionnaire sought the response of chairpersons from North Centrally approved universities offering masters and doctoral degree programs in counseling and/or counseling psychology.

The results of the questionnaire indicated that a majority of respondents felt that biofeedback training should be one of the skills of the counselor and/or counseling psychologist; a majority of respondents felt that trainees in their programs are aware that biofeedback training can be a

useful skill for them to have in the work setting; most respondents agreed with the literature, in that counselors and/or counseling psychologists are not being sufficiently trained in biofeedback skills; over one-third of all responding universities already have established biofeedback training programs consisting of both didactic and practicum experience.

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both of them have had a great impact upon my life, development and education. A special thank you to my wife's mother, Mrs. Shoshana Dolgin-Be'er, for her constant encouragement and typing skills.

Finally, and most importantly, I acknowledge my wife, Fruma. Her patience, support and love is a constant source of inspiration.

## VITA

The author, David Montrose, was born to Rabbi Lawrence and Ruth (Raskin) Montrose, May 21, 1953 in Chicago, Illinois.

His secondary education was completed in 1971 at the Yeshiva High School in Skokie, Illinois. He continued his Rabbinical Studies for one year in Israel at Yeshiva Har Etzion, in 1972. He received his Bachelor of Arts degree in English Literature from Loyola University in 1974 and State of Illinois Teachers Certification. Simultaneously, he attended the Hebrew Theological College and was ordained a Rabbi, in 1976. His continued graduate studies at Loyola earned him his Masters Degree in School Administration and Supervision and he was awarded the University Scholarship in 1977. He received his State of Illinois Certification in School Administration K-12, and Certification in School Supervision. He was elected a member of Phi Delta Kappa at Loyola. He was granted a Doctor of Education degree in Counseling and Educational Psychology by Loyola University in 1988.

In 1977, he became the founding Principal of the Des Moines Jewish Academy, an elementary school. In 1978, he became the Midwest Executive Director of a non-profit organization. After a clinical and hospital residency he

became the Clinical Director of Biofeedback at the Diamond Headache Clinic in 1982 and was a staff psychologist at Weiss Memorial Hospital. He founded the Biofeedback Health Promotion Center, Inc. in 1984, where he continued to specialize in the treatment of pain and behavioral medicine. He has been certified in Biofeedback and he received certification in Thermography, by passing National Board review exams. He founded the Medical Thermography Ltd. Company, bringing new medical scanning technology to the Greater Chicagoland area. He served in the Department of Neurology at Cabrini Hospital, and as a founding Director of the Back and Arthritis Pain Center at Cuneo Hospital. In 1987 he was elected to the Board of the National Foundation for the Study of Pain, and is consultant to a number of Pain Clinics. He has been a guest lecturer at Stritch School of Medicine in Biofeedback and Behavioral Medicine in control of pain.

He and his wife, Fruma reside in Chicago with their children.



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## CHAPTER I

### INTRODUCTION

#### Background

In 1973 the Personnel and Guidance Journal published an article on biofeedback, counseling and education. In referring to biofeedback, Danskin and Walters (1973) stated that:

A body of research has been emerging that demonstrates that man can guide his own destiny by internal-control. The last few years have seen the development of biofeedback for helping persons learn to voluntarily regulate their own psychological and physiological processes. Of special interest to counselors and educators are applications of voluntary control to tensions and anxieties, depressions, access to 'unconscious' material, psychosomatic reactions, learning, memory, and creative insights. Of perhaps even more significance, biofeedback training stands out as a real breakthrough to truly voluntary self-regulation with philosophical and social consequences.

The professional literature in counseling and education, however, is nearly devoid of even causal reference to biofeedback training for self-regulation and self-development. The purposes of this article are to begin to fill this void and to encourage our colleagues to begin applying this promising field to psychological processes.

Danskin and Walters left no room for guesswork in their foresight. They concluded in the article that

The importance of biofeedback for enhancing voluntary control can hardly be overstated. Voluntary self-regulation is of primary importance in shaping and revitalizing peoples' self-image so that they can become more aware of their relationships with others. The



effects of self-regulating individuals will be of incalculable significance (Danskin & Walters, 1973).

As early as winter 1974, the Counseling and Values Journal (Danskin & Walters, 1974) published a special issue which included a description of a well established biofeedback training program at the counseling center at Kansas State University. This program allows the students to go through the training course first, and then to work with clients in the program for practicum and internship experience. It is this type of program that allows for a healthy integration and development of a 'holistic model' for counselors and psychologists. Over the past one and a half decades self-regulation of the bodily processes seems to have freed itself from the bonds of the 'medical model' (Gatchel & Price, 1979).

Many authors have felt that the use of biofeedback encouraged, in part, a development of a renewed interest in a holistic approach to physical illness (Engel, 1977; Lipowski, 1977; Schwartz, 1975). These authors have written about the need for a new "biobehavioral" model of health and disease. This model views health and illness as aspects of an individual's total behavioral repertoire and response to daily living (Price, Gaas-Abrams, & Browder, 1977).

Biofeedback has continued to rapidly develop. In its initial embryonic stage it took on an almost mystical aura. The pathway to nirvana almost opened up as many read "New Mind-New Body" by Brown 14 years ago (Brown, 1974).

There have been numerous critiques of biofeedback (Roberts, 1985; Shapiro & Surwit, 1976; Steiner, 1981). And even the most critical amongst those cited in this text are regular users of biofeedback as part of their therapeutic treatment programs.

Lazarus places biofeedback and therapy in an inseparable model. He writes,

First, we cannot in our thinking isolate the somatic disturbances and their self-regulation in biofeedback from the larger context of a person's adaptive commerce with his environment. Second, this adaptive commerce is constantly being mediated by social and psychological processes (Lazarus, 1977).

Gatchel and Price (1979) discuss the "tailoring" of therapy to fit the individual. This would allow a well trained therapist to target the responses and needs of a patient, and use a selected or mixed approach of biofeedback and counseling.

Gatchel and Price conclude in their text that

the clinician or researcher employing biofeedback needs knowledge in a number of different areas: the pathophysiology of the disorder being treated and the physiology of the response systems to be voluntarily regulated, the relation of such response systems to the etiology and systems of the particular disorder, the electrical functioning of the feedback device itself, the nature of the self-regulation process involved in biofeedback 'learning', and the knowledge and use of appropriate methodology. Without such expertise, it cannot be expected that useful and reliable biofeedback treatment procedures can be developed (Gatchel & Price, 1977).

This previous statement seems to imply that we must train the supercounselor. Yet, in describing graduate training programs for counselors, Carkhuff and Berenson

postulate that "We can never settle for less than a whole person in training" (Carkhuff & Berenson, 1967).

Initially, the counselor's role was closer to a teachers, with emphasis on vocational assistance (Aubrey, 1977). Holistic theories were still thawing out from the deep freeze of Cartesian dualism. Physicians Claude Bernard and later Sigmund Freud were influential in stressing the interaction of psychological and physical factors emerging as "whole" (Gatchel & Baum, 1983). Roger's client-centered approach to counseling opened up a new atmosphere in which change and development were encouraged under "facilitative therapeutic conditions" (Traux & Carkhuff, 1967).

These conditions have continued to grow along with the widening responsibilities of the counselor. Hollis and Wantz describe 12 different kinds of counselors, each with multifaceted job descriptions and settings (Hollis & Wantz, 1980). The broad based university programs are still the most sought after as is evidenced by student choice. Hollis and Wantz point out that "Eclectic and phenomenosocial are the two prevailing philosophical orientations in counselor preparation programs" (Hollis & Wantz, 1980).

Biofeedback training seems to have been offered in a wide range of format in universities throughout the country. David Danskin, one of the leading authorities on biofeedback and counselor programs, feels that the professional literature and graduate programs are finally evolving to keep

up with training demand, even though they still fall far short of the goal (Telephone interview by author in Chicago with Dr. David Danskin at Kansas State University, Manhattan, Kansas, February 11, 1986).

Other than Danskin's monumental works, and scattered critics calling for more research on the training programs, little research exists concerning biofeedback training in counselor or counseling psychology programs. An exhaustive multi-lingual computerized search over the last five to ten years was done on ERIC, PSYCH, and MESH abstracts. While there were thousands of abstracts to review, there were no articles or research conducted on biofeedback training programs in counseling, or counseling psychology. A survey had been conducted on clinical, experimental or health psychology programs in 1980 offering biofeedback training (Noonberg, 1985). Also a survey of clinical psychophysiology programs using biofeedback training was done in 1977 (Feurstein & Schwartz, 1977). A brief review of these surveys is given in Chapter II, in the section of Program Models and Training Skills.

The counselor's ability to synthesize and apply biofeedback skills in training a client or patient correlates directly with the counselor's sum total of experiences and knowledge base in studying biofeedback. Course work, seminars and lab or practicum exposure are the ideal ways to acquire proficiency in the biofeedback modalities.

The focus of this study is to survey the counseling programs in the North Central Region in order to demonstrate the extent of biofeedback training presently offered.

This will explore biofeedback programs to discover the extent that it has been included in training programs. The study proposes to answer the following questions: Do counselor educators view biofeedback training as an important role for counselors? Is biofeedback training given to students? To what extent is training being given? If training is not given, what are the reasons for omission? Do the programs intend to offer biofeedback training in the future? Do they presently have staff trained, proficient or certified in biofeedback?

It is hoped that whatever outcome this exploration reveals, it will act as a stimulus to enhance self-exploration within the various programs, and that it will at least serve as a catalyst and baseline for further research on the topic.

#### Definition of Terms

This section will define the following terms, providing a basis for further description of the study: Self-Regulation (autonomic control), Biofeedback, General Systems Theory, Feedback Loop Principle, Biofeedback Training, EMG Biofeedback, Temperature Biofeedback.

#### Self-Regulation and Biofeedback

On October 9, 1958, H.D. Kimmel submitted a grant

proposal to the United States National Institute of Mental Health, for funding research that might show the ability of modifying the human galvanic skin response "as an operant."

The root idea of that proposal is

the root idea of biofeedback: basically, that ordinarily uncontrollable or autonomic bodily processes--such as the secretions of glands, the activity of visceral, circulatory, and cardiac muscles, and of neural tissue itself--may be susceptible to modification and control (self-regulation) via appropriate delivery of significant information or feedback to the individual regarding their occurrence. This information may be delivered in the form of reinforcement that is made contingent upon the achievement of certain specified changes... (Birbaumer & Kimmel, 1979).

#### General Systems Theory and Biofeedback

According to Grinker: "If there be a third revolution (i.e. after the psychoanalytic and behavioristic), it is in the development of a general (systems) theory" (Grinker, 1967).

Weinberg describes this theory in that the "behavior of a system emerges from dynamic interaction of its parts" (Weinberg, 1975).

Schwartz synthesizes the systems theory into "holistic" terms, stating "that physiological patterning involves unique interactions of components that contribute to the emergent experience of consciousness and emotion..." (Schwartz, 1975; Schwartz & Weiss, 1977).

#### Feedback Loop and Biofeedback

Biofeedback has been described by Davidson and Krippner in a simple paradigm.

The concept of biofeedback involves an organism placed in a closed feedback-loop where information concerning one or more of his bodily processes is continually made known to him... When the organism possesses this type of information about a bodily process it can learn to control this function (Davidson & Krippner, 1971).

### Biofeedback Training

Biofeedback training is a feedback process, therapy or treatment program conducted by a skilled therapist. The therapist is assisted by instrumentation to feed to an individual his or her ongoing physiological processes, such as muscle tension, heart rate, temperature, brain waves, etc. The information is fed back directly to the individual by visual or auditory electrophysiological devices. The person learns to regulate these normally involuntary processes (Turner & Chapman, 1982).

A patient or client might receive anywhere from one to 30 sessions, depending on the goals of feedback and the level of refinement necessary to achieve.

Breathing, Jacobson's and Wolpe's, respectively, progressive relaxation (Jacobson, 1959), and imagery techniques are used to assist the patient to achieve their goal. Luthe and Schultz developed a mind-body training system called autogenic training, whereby the patient directs himself repeating phrases that the mind and the body relate well to (Wolpe, 1969).

### EMG Biofeedback

Electromyographic feedback for learned muscle relaxation was first suggested by Budzynski and Stoyva in 1969 (Turner &

Chapman, 1982). EMG feedback training uses surface electrodes which are attached to a specific muscle grouping on the skin. After monitoring and obtaining a baseline of the neuron firing mechanism, exercises are done to increase the awareness and control of that muscle grouping. As key muscle groups are taught, a general relaxation effect can be learned to affect, simultaneously, other muscle groupings for a generalized reduction of tension (Jacobson, 1959). The frontalis muscle (forehead) is considered to be a general indicator of arousal, relaxation or anxiety, and is therefore the most often used muscle for training. This common tension spot is often seen as a wrinkle in the forehead during stressful or tense periods.

#### Temperature Biofeedback

TEMP training is a method of monitoring the baseline peripheral temperature, and then training the patient through the techniques to increase temperature or vasodialate at will. The original research was developed at the Menninger Foundation (Blanchard & Young, 1974; Sargent & Green, 1973; Turin, 1976). One of the main characteristics of the stress response is to have an influx of blood into the trunk of the individual's body. This is commonly seen or experienced when one is tense or nervous and one tends to have cold hands due to vasoconstriction. So the vasodialation or hand warming becomes an anti-stress type of exercise that actually gets at the etiology or source of the stress response (Bedford, 1980;



Taub & Enurian, 1971; Thompson, 1976).

### Limitations of the Study

The scope of this study was limited to counseling or counseling psychology graduate programs in the North Central Region. While Hollis and Wantz list 11 other kinds of counselors, none of them is as multifaceted as the counseling psychologist (Hollis & Wantz, 1980). Ivey described that the

counseling psychologist may be doing psychotherapy, vocational counseling, group therapy, or psychoeducational training with an array of groups ranging from infants through seniors. Counseling psychologists may work in community outreach centers off the street, in medical school, or as government officials (Ivey, 1980).

A second limitation of this study was its limit to the North Central Region. However, the North Central Region offers a relatively sizeable number of programs which present a fair representation of other programs in the county.

A third limitation was the use of a survey questionnaire, which inherently suffers the general limitations of self-reporting systems, and percentage of return via the post office. The advantage of the system is the ability to get a wide sampling from hundreds of programs.

### Overview of the Study

The growth of biofeedback training has occurred over a period of 15 years. In the past, counselors and counseling psychologists for the most part have had only a small sampling of biofeedback in their formal education, and they have been compelled to attend seminars and national

conventions should they choose to begin learning biofeedback training. In recent years the universities have been adding biofeedback training to their programs, although the amount and extent of training are as yet unknown.

Chapter I presents a background of biofeedback training; the primary purposes are presented, major terms are defined and are followed by the limitations of the study.

Chapter II consists of an extensive review of the literature related to biofeedback, and biofeedback training for counseling psychologists and counselor educators. Chapter II presents history, rationale and roles, training and performance models of biofeedback.

Chapter III establishes the procedure and process of selecting a population, and the gathering of the data is described. The statistical procedure and instruments for measurement are defined.

The data are presented in Chapter IV, which also includes the questionnaire and survey results presented in tabular and percentile form for this descriptive study. A discussion of the tables and data are also included in this chapter along with a comparative summary of information.

Chapter V includes a summary of the study with recommendations for counselor biofeedback training, followed by conclusions and suggestions for further research.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### Historical Perspective

Biofeedback is a relatively new modality in the counseling profession. In the last 20 years biofeedback planted its roots firmly amongst the scientific communities of counseling, psychology and behavioral medicine.

It is worthwhile to briefly review the development of this new modality that shattered the strong traditional belief in the inferiority of the autonomic nervous system and the visceral responses that it controls.

Early in history we saw that Plato (Jawett, 1875) philosophized a 'dicha temnein' (dichotomy) system to the responses of the body. He expounded that "reason" and the voluntary responses of the skeletal muscles were considered superior, while "emotions" and the presumably involuntary glandular and visceral responses have been considered inferior. The rationale was that the "superior rational soul" was in the head, while the "inferior souls" were in the body below.

Years later the eminent French neuroanatomist Bichot (1800) further drew distinction between the cerebrospinal nervous system of the "great brain" and spinal cord,

controlling skeletal responses, and the dual chain of ganglia which he called "little brains" running down either side of the spinal cord in the body below and controlling emotional and visceral responses. He called the ganglionic system "vegetative", and felt it to be independent of the cerebrospinal system; hence the term 'autonomic nervous system'.

The Russian scientist Ivan Pavlov developed the classical conditioning response using an unconditioned stimulus to attain a similar response. From this theory emerged the operant (Skinner, 1938) or instrumental theory, which allowed reward to reinforce or shape the response.

In 1958, H.D. Kimmel (Kimmel, 1967) submitted a grant request to the United States National Institute of Mental Health to support research on the possibility of modifying the human galvanic skin responses "as an operant". This research was the first of thousands that would soon be pursued by a large and often distinguished scientific community. Kimmel was studying the idea that ordinarily uncontrollable or autonomic bodily-processes--such as the secretions of glands, the activity of visceral, circulatory, and cardiac muscles, and of neural tissue itself--may be susceptible to modification and control via the delivery of significant information or feedback to the individual regarding their specific occurrence. Reinforcement or reward was dependent on the achievement attained by specific changes occurring from within the monitored mechanisms, based upon

modifications made by the individual in the form of a learning process.

This learning process was further enhanced by the multi-volume work of Autogenic therapy by Luthe and Schultz (1969). Autogenic or self-regulating phrases were taught to the patient, to teach specific response techniques or treatment modality for the desired change. A similar system had been devised by Edmund Jacobson (1938) at the University of Chicago, known as "Progressive Relaxation". These techniques formulated the background for Dr. Joe Kamiya's work on training subjects to control brain waves (Kamiya, 1969). Refined brain wave control has led to teaching epileptics to abort seizures at will.

Dr. Neal Miller and his associates demonstrated numerous autonomic control factors in animal research (Miller & Miller, 1971). These early responses included increasing or decreasing blood pressure, heart rate and other responses that we now teach human patients, treating numerous disorders, including essential hypertension and other cardiovascular disorders.

Serendipitously, Dr. Elmer Green joined later by Sargant and Walters, found that during a handwarming or temperature biofeedback session using relaxation therapy, a migraine patient aborted a migraine attack (Sargant, Green & Walters, 1972).

Using EMG or electromyography biofeedback to train their

patients, Drs. Thomas Budzynski, Johann Stoyva and Charles Adler were able to effectively help their patients to reduce or abort muscle contraction or tension headaches (Budzynski, Stoyva & Adler, 1973).

Over the years, the previously cited methods for aborting various headache syndromes were perfected.

A four-year retrospective study by Diamond and Montrose (1984) covered the efficacy of these treatment methods for relieving vascular, muscle contraction or mixed headache syndrome, and showed an overall 83% efficacy of relief, with many patients off of previously prescribed medications, and many reporting a complete recovery.

Throughout the 1960's and the 1970's, expeditions were made to study the claims of voluntary control of the Far Eastern masters of the autonomic system (Trungpor, 1970). Wenger and Bagchi studied the yoga practitioners of India (Wenger & Bagchi, 1961). They found that one could perspire upon command, some could draw water into their bladder with a catheter. Wenger, Bagchi and Anand found subjects that could lower their heart rate at will, and cause their palpable radial pulse to disappear (Wenger, Bagchi & Anand, 1961).

Over the last decade biofeedback training has become almost commonplace amongst hospitals, clinics, universities and industry. Westerners have adapted well to self-regulatory training. The following pages represent an etiology and brief overview (a few of the applications) for

biofeedback by counselors and therapists. (As it is not within the perspective of this study to present biofeedback and its widespread clinical applications, the author will confine this presentation to academic counselor based clinical applications.)

### Rationale and Role

The World Health Organization (WHO) defines 'health' as a physiological, psychological, and social well-being, and not merely the absence of disease or infirmity (World Health Organization Report, 1947).

This definition is elaborated on by Wittkower and Warnes (1977) who cite the physiological investigation of Hill (1972) and Lader (1976) that

have shown that the interaction between man and his environmental stimuli results in arousal of the cortical, autonomic and peripheral nervous system which varies in intensity from individual to individual. Different bodily systems are involved in the level of response. When a person is moderately aroused by external stimuli, his behavior is adaptive, but, when the environmental influences are severely stressful, chronic, or abnormal, there is a higher state of arousal. Under such conditions, the subject is less able to adjust to repetitive stimuli. His ability to adapt diminishes and the state of hyperarousal becomes self-perpetuating. Chronic states of high arousal are associated with dysfunctions of the viscera which may lead to pathological changes over a period of time. Rational treatment of such disorders would thus include methods for decreasing the hyperarousal state at all levels.

The key to recovery and stability lies in the ability of the client or patient to acquire self-control. Strupp felt that self-control is the sole aim of the deep psychotherapies (Strupp, 1970). The theorists and literature clearly reflect

this change in therapy and intervention of counseling to include the "whole-person process" that Curran feels is a fitting integration of emotions, instincts and soma (Curran, 1968). Therapists are changing their course to incorporate the psychobiological processes in their therapeutical intervention (Schwartz & Weiss, 1977). A number of therapeutic approaches, as Rogerian (Rogers & Allen, 1958) and Gestalt (Perls, 1969) have incorporated this listening to "the wisdom of the body".

An individual can rely on his or her own experiential bodily process to relay the kinesthetic or sensory input necessary to understand and get closer in contact with our own feelings and reactions towards ourselves and the world around us (Lowen, 1980). Lowen stated that "a healthy person identifies with his body and feels the closeness of his ties to nature" (Lowen, 1980).

Lowen's teacher, Wilhelm Reich, was a strong advocate of muscular "armoring" and that the make up of an individual was actually a sum total of all past experiences which included emotional and physiological repression (Reich, 1970).

Maslow indicated that one of the characteristics of the self-actualized person was to be able to resist "rubricization" (Maslow, 1962). He felt that a well integrated person was capable of resisting certain cultural biases and societal conditioning. With the application of biofeedback, Davidson and Krippner felt that "large numbers



of people can evolve into more integrated beings, who are less subject to manipulation and more inner-directed" (Davidson & Krippner, 1971).

The medical community has also been a part of the societal conditioning. While they have recently recognized the integration of emotional and somatic forces, they have for the most part used a pharmacological pursuit to control and often mask the symptoms of their patients. In June 1983, the AMA had recognized biofeedback as an effective treatment for the headache syndrome (AMA, 1983). This position is also supported by the American Psychiatric Association (1980), the 'take two pills and call me in the morning' era may soon be ending. The control has been returning more and more to the patient.

Since the 1960's we have seen formidable evidence that man can control heartrate (Engel, 1967), systolic blood pressure (Shapiro, Tursky, Gershon & Stern, 1969), vasoconstriction (Snyder & Noble, 1970), salivation and electrodermal activity (Shapiro & Grider, 1967), etc. As the public becomes more educated concerning its health, people learn to make decisions regarding what is good treatment and what is inferior treatment. They are also looking for less invasive treatment modalities. The medical community has already begun to shift in order to meet the public's demand. The author of this paper has participated as a guest lecturer for a number of years in the Stritch School of Medicine

program on biofeedback and non-invasive pain treatment, as well as in other international medical conferences.

The role of the counselor or psychologist in using biofeedback goes beyond psychotherapy and physiological complaints. Schools and educators are concerned with learning, intelligence and skill building. Biofeedback can be used to enhance scholastic performance and personal achievement.

Studies done by Carter and Russell with children in non-homogeneous learning disorders, showed significant reading gains using EMG biofeedback training, as recorded by the Gray Oral Reading Test and the Wide Range Achievement Tests (Carter & Russell, 1978; 1979).

A similar study in Anderson, Indiana, produced similar results with the experimental group of underachieving children, improving with biofeedback training (Worster & Wenck). Almost the same results were achieved in a normal population, by Engelhardt, showing improved reading with temperature and EMG biofeedback training (Engelhardt, 1981).

In separate studies, Hardyck and Petrinovich and then Parsky and Papsdorf both used biofeedback training with college and high school students that were subvocalizing (Hardyck, Petrinovich & Ellsworth, 1969; Parsky & Papsdorf, 1976). Both studies noted excellent improvement, sometimes with only one biofeedback training session.

Gatchel and Proctor clearly showed the role of

biofeedback training in college students with speech anxiety (Gatchel & Proctor, 1977). They used heart rate feedback training to help the students overcome their fear. The experimental group did far better than the control group, self-reporting and being rated by observers to have less anxiety.

Bernthal and Parsdorf and then Hodge and Collatz showed the role of biofeedback in their respective research with college level test anxiety treatment. The students who used biofeedback training showed elevated to superior performance over previous testing abilities, and students at Kansas State University report staying more relaxed during test taking (Bernthal & Papsdorf, 1977; Hodge & Collatz, 1980).

Biofeedback has also been effective in the role of improving mathematics scores (Engelhardt, 1981), memory (Chaney & Andreason, 1972; Pascal, 1959) and hyperactivity (Estrada, 1978; Tomassetti, 1985). It is often viewed by society that adults have more control than children. However, research indicates that children have the ability to regulate their minds and bodies more readily and easily than adults. Researchers, Loughay-Machado and Suteo, grouped 38 pairs of children (six to ten years old) with one of their respective parents to compare ability to control skin temperature training. The children were significantly superior to their parents. In futuring, the role of biofeedback training early on in a child's life, might allow

children to learn the ability of self-regulation and the retention of these skills before reaching adulthood when numerous learning blocks have already been established. The authors of the research state that

It seems almost ironic that children are commonly viewed by their parents and teachers as so lacking in self-control that major efforts must be made by adults to enhance this supposedly deficient characteristic. We are concerned that the actual effects of such child-rearing may be quite to the contrary and may amount to ... 'damming up the flood of human potentialities', changing torrents to trickles. Continued biofeedback research in children should help reveal their full neuropsychological potential (Loughry-Machado & Suter, 1979).

Danskin and Walters call for the use of biofeedback

To increase the active role of the student in the schooling process, what could be more appropriate than to include in the regular curriculum a course of study designed to place the power for self-development in the hands of each individual student?

With this inner knowledge, students would be able to learn how to 'shift' themselves into the psychophysiological state most appropriate for each learning task at hand. For example, they could learn to achieve voluntarily the state of attention most conducive to learning new material; could shift easily to the state associated with nonanxious, efficient recall while taking tests; and could alter their state yet again for performing physical activities ... of all behavior modification techniques, biofeedback is the first to rely on each individual's ability to guide his own destiny (Danskin & Walters, 1973).

#### Program Models and Training Skills

This section reviews the biofeedback training done in counselor education and counseling psychology programs. In 1977, Feuerstein and Schwartz surveyed APA approved graduate schools of clinical psychophysiology. Of those programs using biofeedback, 64% had biofeedback equipment, and used a

biofeedback seminar for the didactic training model (Feurstein & Schwartz, 1977). In 1978, Warrenburg and Gram surveyed APA and non APA approved internship graduate programs and found that 28% offered supervision and coursework in biofeedback, 47% offered only biofeedback supervision, 8% offered only minimal training and another 7% planned to offer biofeedback training (Warrenburg & Gram, 1978).

A similar study was conducted by Noonberg of Johns Hopkins University in 1980, surveying 344 graduate clinical, experimental or health psychology programs (Noonberg, 1985). Noonberg found that the growth in university training programs has been paralleled in growth by state and national societies and an increase in research and literature. With 56% or 191 of 344 schools responding, 67% of the internships and 58% of the graduate schools were doing biofeedback training. One course a year for the didactic end seemed to be the most frequent offered, with five courses a year the most offered. Over 50% of the schools had 10-30 students in training.

There does not appear to be any single model of training specifically; however, macrocosmically there seems to be a general acceptance in training programs to include a minimal standard of at least one course a year didactically, and an internship program as well.

Each university program appears to present its own form

of training model unique to its staff and student demand. However the programs develop, the professionalism behind the given program is crucial. Numerous studies have been conducted that show how crucial it is for the therapist to be well trained, friendly, of positive attitude and experienced (Blanchard, Theobald, Williamson, Silver & Brown, 1978; Fahrion, 1977; Steiner & Dince, 1981).

The depth of training in biofeedback and the prerequisites for the didactic/internship experience have presently not been established. Biofeedback Society of America suggests the basic course of study, and offers national written and practicum exams. These exams for certification are very difficult and require extra seminar work in preparation offered by the Society to insure minimal standards. Biofeedback does not consist of one treatment modality. It may be compared to the schools of medicine or psychology which train their students to an in-depth and broad view of the physical and emotional sides of the patient.

The biofeedback therapist must be sensitive to the individualized needs of each client or patient. Even though biofeedback modalities have similar components, the therapist must realize that "Different strategies are used to achieve different goals and it is crucial that the therapist have this knowledge" (Steiner & Dince, 1981).

The techniques, protocol and criteria necessary in

approaching each patient or client, must be studied and assessed on an individual basis. Hands on exposure to specific populations is highly recommended and should occur in the practicum experience. This not only insures the selection of the correct protocol but it also allows for familiarity and expertise with the sensitive and often computer based technical instrumentation.

The level and extent of training will be included in the survey questionnaire instrument.

#### Summary

In these early years of development in biofeedback, training in the didactic and practicum course must be carefully nurtured to provide a strong base for the researcher, instructor and clinician.

The literature, as indicated throughout Chapter I and Chapter II is rapidly growing and the students need to be exposed and guided through its scientific base of psychology and physiology. Over the last decade counselors, educators and psychologists have seen the numerous applications that biofeedback can offer them and their school systems.

The future of biofeedback seems to indicate a strong preventive mode that can be taught in the early developmental years as well.

As evidenced from the review of the literature, there are existing biofeedback programs in many graduate school programs (Noonberg, 1980). The growth, extent and present

status of these programs must be monitored in order to insure and reaffirm their direction and quality of development.

In order to monitor the quality of development in biofeedback programs, this dissertation is including a description of courses in biofeedback.

In order to best monitor this growth rate, this dissertation proposes to draw a clear baseline of present and proposed biofeedback programs in graduate schools, utilizing the pulse of the North Central Region as a guideline for North American universities.

The emphasis in this study remains exclusively on counseling and counseling psychology programs, which have not been found in the literature to date.



## CHAPTER III

### PROCEDURE AND METHODOLOGY

This chapter includes the procedure followed in the collection and treatment of the data used by this study.

#### Subjects

The sources of data were the chairpersons or Director of all counseling and counseling psychology programs within the 13 state regions of the North Central Association of Counselors, and Education and Supervision. The actual states include: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota and Wisconsin. A complete listing of all schools used in this study may be found in Appendix A, p. 94. The chairperson(s) or Director(s) of each specialty were contacted. The population was chosen based on a regional basis and because this region encompasses a sizeable total number of programs in the United States.

The programs and their locations were obtained from Hollis and Wantz (1986). Their review of counseling programs distributes counseling programs in a multifaceted manner. Their breakdown of programs includes the following areas: College and University Counselors, Community College Counselors, Counseling Psychologists, Counseling for Blacks,

Individuals with Culturally Different Backgrounds, and/or other Special Groups, Counselors in Group Work, Elementary School Counselors, Employment Counselors, Marriage and Family Counselors, Mental Health Counselors and Secondary School Counselors.

The total North Central Region is being studied. No comparisons are being made between groups, so there is no need to control population variables as a factor amongst the various programs. Hollis and Wantz's (1986) study includes accredited programs as a criterion.

A total of 57 Biofeedback Questionnaires were mailed to the chairmen of programs meeting the above criteria. Of these, 43 questionnaires were returned, without follow-up, resulting in a 75.0 percent rate of return. These 43 were used as the sample in the study. While a 75% return is quite adequate, further follow-up may have resulted in a larger N. Of the 43 responding universities, 41 universities declared themselves to have such a program. There were 41.5 percent respondents as chairmen of their departments, and 56.1 percent responded as acting chairmen, director, and coordinator, etc. All of the respondents identified themselves as being involved with the programs.

#### Instrumentation and Data Collection

The principal tool for data collection in this study was a Questionnaire, directed to the chairperson or Director in each counselor program. This instrument may be found in

Appendix B, p. 96.

A cover letter was sent along with the Questionnaire, introducing the study to the respondents. This letter may be found in Appendix C, p. 102.

The Questionnaire was designed to gather information addressing three levels of study; the Masters level, the Doctoral level and the Post Doctoral level.

This questionnaire was designed, in part from the Death and Dying Questionnaire (Dowdle, 1984) and the Consultation Questionnaire used by Jurowicz (1982). These two dissertations at Loyola University were of similar format to this Biofeedback study. The information, population and data tool were of the same nature. The Questionnaire for this present study was based on their previous Questionnaire and pilot studies, which were able to yield high reliability, validity and information necessary to quantify and accurately identify the research question.

The Biofeedback questionnaire consists of 20 items which seek to discover professional attitudes towards biofeedback training, and the status of current and future biofeedback training programs. The Biofeedback Questionnaire consists of 10 closed questions, which consist of the broad, yet accurate choice responses of strongly agree, agree, undecided, disagree, and strongly disagree. This form of questionnaire is suggested by Leedy (1974).

There are two open form items, allowing respondents

greater freedom of expression, and at the same time they remain open to gather further data. Of the closed items four require "yes" or "no" responses, and five questions quantify or qualify additional data. The brevity and simplicity of the Biofeedback Questionnaire was designed in logical sequence for maximum information yield and the minimal friction and non-threatening format for easy and genuine response (Van Dalen & Meyer, 1962).

Kerlinger (1964) feels that questionnaires are not the most effective tools for gathering information. Poor returns are common, and the inability to verify responses exists. However, due to the large 13-state proximity, this mailed form of questionnaire is the most accurate and economical approach given a 50-60 percent response (Kerlinger, 1964). To affirm accuracy of responses, the name, title and university are asked of the responding chairperson.

The Biofeedback Questionnaire was introduced by an accompanying cover letter to the department chairperson, which may be seen in Appendix B, p. 96. The purpose of the letter was to introduce the study and request their cooperation. A self-addressed, stamped envelope was enclosed to encourage an accurate and quick response.

#### Data Analysis

The data from these sources were analyzed and this also included the Questionnaire and any other information sent by the school, such as an optional Biofeedback syllabus, or

brochure.

The results were tabulated and are presented in Chapter IV. The data is arranged in tabular and narrative form, with a percentile rating given to the number of respondents to each question. The Questionnaires were assigned a letter representing the state, and a number signifying the university.

All of the 20 questions yield pertinent information; however, questions 4, 7, 11, and 20 are the core questions of this study, and their interrelationship is significant. Question number four attempts to indicate the extent to which the responding representatives view biofeedback training as an important role for counselors and/or counseling psychologists. Question number seven attempts to indicate the extent to which the responding representatives believe that training in biofeedback skills should be given to counselors and/or counseling psychologists. Question number 11 reports the extent to which biofeedback training is actually now being given in responding graduate programs. Question number 20 qualifies those respondents as having had at least one course or workshop in biofeedback.

Question 7, 12 and 15 are of particular importance with a unique interrelationship. Included in the data analysis is a process for determining the significance amongst these three items.

## CHAPTER IV

### RESULTS AND DISCUSSION

#### Data Report

The following section lists each question or segment of a question from the Questionnaire and summarizes the responses. To simplify the presentation each question segment has been given a special number.

Table 1

Question 1: In my opinion, the majority of counselors and/or counseling psychologists who are active in their field have studied biofeedback, in the Masters Degree Program.

---

Responses	Number	%
Total Responses	41	
Strongly Agree	0	0
Agree	1	2.4
Undecided	5	12.2
Disagree	22	53.7
Strongly Disagree	13	31.7
Total Strongly Agree and Agree	1	2.4
Total Disagree and Strongly Disagree	35	85.4

---

Table 1 indicates that in the respondent's opinion, most or 85.4 percent of them felt that counselors or counseling psychologists have not studied Biofeedback in the Masters

Degree Program, while 12.2 percent remain undecided only 2.4 percent or one respondent felt that the majority of active counselors or counseling psychologists have studied Biofeedback in the Masters Program.

Table 2

Question 2: In my opinion, the majority of counselors and/or counseling psychologists who are active in their field have studied biofeedback, in the Doctoral Program.

Responses	Number	%
Total Responses	39	
Strongly Agree	0	0
Agree	9	23.1
Undecided	5	12.8
Disagree	16	41.0
Strongly Disagree	9	23.1
Total Strongly Agree and Agree	9	23.1
Total Disagree and Strongly Disagree	25	64.1

At the Doctoral level, Table 2, 64.1 percent of the respondents felt that the counselors or counseling psychologists did not study Biofeedback, and while 12.8 percent were undecided, 23.1 percent agreed that they indeed have studied Biofeedback.

Table 3

Question 3: In my opinion, the majority of counselors and/or counseling psychologists who are active in their field have studied biofeedback, in Post Degree Training.

Responses	Number	%
Total Responses	38	
Strongly Agree	2	5.3
Agree	8	21.1
Undecided	6	15.8
Disagree	16	42.1
Strongly Disagree	6	15.8
Total Strongly Agree and Agree	10	26.4
Total Disagree and Strongly Disagree	22	57.9

At the Post Degree level, Table 3 shows that 57.9 percent of the respondents are of the opinion that counselors and/or counseling psychologists have not received Biofeedback studies, and while 15.8 percent were undecided, 26.4 percent felt that at Post Degree level these counselors and/or counseling psychologists have received Biofeedback studies.



Table 4

Question 4: In my opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as part of their regular job; with a Masters Degree.

Responses	Number	%
Total Responses	40	
Strongly Agree	1	2.5
Agree	3	7.5
Undecided	6	15.0
Disagree	18	45.0
Strongly Disagree	12	30.0
Total Strongly Agree and Agree	4	10.0
Total Disagree and Strongly Disagree	30	75.0

Table 4 asks the chairperson if in their opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as a regular part of their job. At the Master Level, 75 percent said no, 15 percent were undecided, and 10 percent felt that they could.

Table 5

Question 5: In my opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as a regular part of their job; with a Doctorate Degree.

Responses	Number	%
Total Responses	38	
Strongly Agree	2	5.3
Agree	5	13.2
Undecided	7	18.4
Disagree	16	42.1
Strongly Disagree	8	21.1
Total Strongly Agree and Agree	7	18.5
Total Disagree and Strongly Disagree	24	63.2

Table 5 reflecting the chairperson's opinion at the Doctoral Level, showed that 63.2 percent disagreed with the counselor and/or counseling psychologist being able to provide biofeedback to their clients. Table 5 shows that 18.4 percent were undecided, and that 18.5 percent felt that counselor and/or counseling psychologist could provide biofeedback services.

Table 6

Question 6: In my opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as a regular part of their job; at the Post Doctorate training level.

Responses	Number	%
Total Responses	37	
Strongly Agree	1	2.7
Agree	11	29.7
Undecided	7	18.9
Disagree	12	32.4
Strongly Disagree	6	16.2
Total Strongly Agree and Agree	12	32.4
Total Disagree and Strongly Disagree	18	48.6

Table 6 reports the chairperson's opinion at the Post Degree level. At this level 48.6 percent responded that the counselor and/or counseling psychologist could not provide biofeedback as a regular part of their job. Further it is reported that 18.9 percent were undecided, and that 32.4 percent can provide biofeedback as a regular part of their job.

Table 7

Question 7: In my opinion, the majority of counselors and/or counseling psychologists do provide biofeedback as a regular part of their job with a Masters Degree.

Responses	Number	%
Total Responses	41	
Strongly Agree	0	0
Agree	0	0
Undecided	3	7.4
Disagree	24	58.5
Strongly Disagree	14	34.1
Total Strongly Agree and Agree	0	0
Total Disagree and Strongly Disagree	38	92.6

Table 7 asks the chairperson to state whether or not the counselor and/or counseling psychologist actually do biofeedback as a part of their job. On the Master level 92.6 percent felt that they do not do biofeedback as a regular part of their job, and 7.4 percent were undecided.

Table 8

Question 8: In my opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as a regular part of their job with a Doctorate Degree.

Responses	Number	%
Total Responses	38	
Strongly Agree	0	0
Agree	0	0
Undecided	6	15.8
Disagree	20	52.6
Strongly Disagree	12	31.6
Total Strongly Agree and Agree	0	0
Total Disagree and Strongly Disagree	32	84.2

Table 8 expresses their opinion at the Doctoral Level. There were 84.2 percent that felt that these Doctoral level counselors and/or counseling psychologists did not do biofeedback as a regular part of their job, while 15.8 percent were undecided.

Table 9

Question 9: In my opinion, the majority of counselors and/or counseling psychologists do provide biofeedback as a regular part of their job with Post Doctoral training

Responses	Number	%
Total Responses	38	
Strongly Agree	0	0
Agree	7	18.4
Undecided	6	15.8
Disagree	17	44.7
Strongly Disagree	8	21.1
Total Strongly Agree and Agree	7	18.4
Total Disagree and Strongly Disagree	25	65.8

Table 9 reflects the chairperson's opinion of Post Degree training. This table shows that 65.8 percent of counselors and/or counseling psychologists do not do biofeedback as a regular part of this job, and while 15.8 percent were undecided, 18.4 percent felt that at this level of training counselors and/or counseling psychologists do biofeedback as a regular part of their job.

Table 10

Question 10: In my opinion, biofeedback training should be one of the skills of the counselor and/or counseling psychologist, at the Masters level.

Responses	Number	%
Total Responses	41	
Strongly Agree	2	4.9
Agree	8	19.5
Undecided	12	29.3
Disagree	17	41.5
Strongly Disagree	2	4.9
Total Strongly Agree and Agree	10	24.2
Total Disagree and Strongly Disagree	19	46.4

Table 10 expressed the opinion of the chairpersons asking them if biofeedback training should be one of the skills of the counselor and/or counseling psychologist. At the Master level 46.4 percent felt it should not be one of the training skills. Table 10 further showed 29.3 percent undecided, and 24.4 percent felt biofeedback should be one of the training skills at this level.

Table 11

Question 11: In my opinion, biofeedback training should be one of the skills of the counselor and/or counseling psychologist, at the Doctoral level.

Responses	Number	%
Total Responses	39	
Strongly Agree	3	7.7
Agree	16	41.0
Undecided	11	28.2
Disagree	8	20.5
Strongly Disagree	1	2.6
Total Strongly Agree and Agree	19	48.7
Total Disagree and Strongly Disagree	9	23.1

Table 11 exhibits the importance of biofeedback training skills to the Doctoral level counselor and/or counseling psychologist. Table 11 reveals that 23.1 percent disagreed with the importance of biofeedback training skills. In addition, 28.2 percent were undecided and 48.7 percent agreed that biofeedback training was important at this skill level.



Table 12

Question 12: In my opinion, biofeedback training should be one of the skills of the counselor and/or counseling psychologist, at the Post Doctoral level.

Responses	Number	%
Total Responses	39	
Strongly Agree	4	10.3
Agree	13	33.3
Undecided	12	30.8
Disagree	9	23.1
Strongly Disagree	1	2.6
Total Strongly Agree and Agree	17	43.6
Total Disagree and Strongly Disagree	10	25.7

Table 12 exhibited the importance of biofeedback training skills at the post degree level. The respondents indicated that 25.7 percent felt that biofeedback training skills was not an important skill, and while 30.8 percent were undecided, 43.6 percent agreed that it was an important skill.

Table 13

Question 13: Graduate level trainees in your programs are aware that biofeedback training may be one of skills which may be useful to them in their work setting, with a Masters Degree.

Responses	Number	%
Total Responses	39	
Strongly Agree	0	0.0
Agree	25	64.1
Undecided	8	20.5
Disagree	6	15.4
Strongly Disagree	0	0.0
Total Strongly Agree and Agree	25	64.1
Total Disagree and Strongly Disagree	6	15.4

Table 13 reflects the awareness of Master level trainees, indicating if they know that biofeedback training may be useful to them in their work setting. The table identified 15.4 percent that felt trainees were not aware that biofeedback training may be one of the useful skills in their work setting. The table indicated that 20.5 percent of the chairpersons were undecided accordingly, and that 64.1 percent felt that the graduate level trainees were aware of usefulness of the skills.

Table 14

Question 14: Graduate level trainees in your programs are aware that biofeedback training may be one of skills which may be useful to them in their work setting, with a Doctoral Degree.

Responses	Number	%
Total Responses	37	
Strongly Agree	4	10.8
Agree	23	62.2
Undecided	7	18.9
Disagree	3	8.1
Strongly Disagree	0	0.0
Total Strongly Agree and Agree	27.3	73.0
Total Disagree and Strongly Disagree	3	8.1

Table 14 shows the awareness level of the Doctoral students towards the usefulness of biofeedback training as a skill in the work setting. Of the respondents, 8.1 percent disagreed, 18.9 percent were undecided, and 73.0 percent agreed that the Doctoral level graduate trainee was aware of the usefulness of the Biofeedback training in the work setting.

Table 15

Question 15: In the future, the performance of biofeedback will be an increasing part of the counselor's role, with a Masters Degree.

Responses	Number	%
Total Responses	41	
Strongly Agree	1	2.4
Agree	9	22.0
Undecided	14	34.1
Disagree	15	36.6
Strongly Disagree	2	4.9
Total Strongly Agree and Agree	10	24.4
Total Disagree and Strongly Disagree	17	41.5

Table 15 examines responses of the future performance of biofeedback as an increasing part of the counselor's role. There were 41.5 percent in disagreement to the future of increased performance of biofeedback in the counselor's role. There were 34.1 percent undecided and 24.4 percent agreeing that the performance of biofeedback would play an increased role in the future.

Table 16

Question 16: In the future, the performance of biofeedback will be an increasing part of the counselor's role, with a Doctoral Degree.

Responses	Number	%
Total Responses	39	
Strongly Agree	3	7.7
Agree	9	23.1
Undecided	14	35.9
Disagree	12	30.8
Strongly Disagree	1	2.6
Total Strongly Agree and Agree	12	30.8
Total Disagree and Strongly Disagree	13	33.4

Table 16 exhibits the futuring of biofeedback for Doctoral students having a stronger role in the future of counselors. There were 33.4 percent disagreeing, 35.9 percent undecided, and 30.8 percent who agreed to the increased part of biofeedback in the counselor's future role.

Table 17

Question 17: Training in biofeedback skills is an important aspect of training for counselors and/or counseling psychologists, with a Masters Degree.

Responses	Number	%
Total Responses	41	
Strongly Agree	3	7.3
Agree	5	12.2
Undecided	14	34.1
Disagree	17	41.5
Strongly Disagree	2	4.9
Total Strongly Agree and Agree	8	19.5
Total Disagree and Strongly Disagree	19	46.4

Table 17 reports that 46.4 percent of the respondents disagree with the statement that biofeedback skills are an important aspect of training for counselors and/or counseling psychologists at the Master degree level. Table 17 further reveals that 34.1 percent are undecided, and that 19.5 percent agree and feel that biofeedback skills are an important aspect of training.

Table 18

Question 18: Training in biofeedback skills is an important aspect of training for counselors and/or counseling psychologists, with a Doctoral Degree.

Responses	Number	%
Total Responses	40	
Strongly Agree	4	10.0
Agree	12	30.0
Undecided	9	22.5
Disagree	13	32.5
Strongly Disagree	2	5.0
Total Strongly Agree and Agree	16	40.0
Total Disagree and Strongly Disagree	15	37.5

Table 18 reports that 37.5 percent of the respondents disagree with the statement that biofeedback skills are an important aspect of training at the Doctoral level. Table 18 further shows that while 22.5 percent are undecided, 40 percent agree that biofeedback skills are an important aspect of training for counselors and/or counseling psychologists at the Doctoral level.

Table 19

Question 19: Training in biofeedback skills is an important aspect of training for counselors and/or counseling psychologists, with Post Doctoral training.

Responses	Number	%
Total Responses	39	
Strongly Agree	3	7.7
Agree	12	30.8
Undecided	10	25.6
Disagree	13	33.3
Strongly Disagree	1	2.6
Total Strongly Agree and Agree	15	38.5
Total Disagree and Strongly Disagree	14	55.9

Table 19 reviews the respondent's reply on the importance of training in biofeedback skills at the Post Doctoral level. There were 35.9 percent disagreeing with the importance of training Post Doctorally with biofeedback skills, and while 25.6 percent were undecided, 38.5 percent agreed with the important aspect of training counselors and/or counseling psychologists with biofeedback skills.



Table 20

Question 20: The professional literature maintains that counselors and/or counseling psychologists are, on the whole, not being sufficiently trained in biofeedback training skills, at the Masters Degree level. What is your opinion of this statement?

Responses	Number	%
Total Responses	41	
Strongly Agree	6	14.6
Agree	15	36.6
Undecided	13	31.7
Disagree	6	14.6
Strongly Disagree	1	2.4
Total Strongly Agree and Agree	21	51.2
Total Disagree and Strongly Disagree	7	17.0

Table 20 reports that 17.0 percent of respondents disagreed with the statement that on the whole counselors and/or counseling psychologists are not being sufficiently trained in biofeedback skills at the Masters level. Table 20 further reveals that while 31.7 percent were undecided, there were 50.2 percent who agreed with the statement that there is a lack of sufficient training of biofeedback skills for counselors and/or counseling psychologists.

Table 21

Question 21: The professional literature maintains that counselors and/or counseling psychologists are, on the whole, not being sufficiently trained in biofeedback training skills, at the Doctoral Degree level. What is your opinion of this statement?

Responses	Number	%
Total Responses	40	
Strongly Agree	6	15.0
Agree	18	45.0
Undecided	9	22.5
Disagree	6	15.0
Strongly Disagree	1	2.5
Total Strongly Agree and Agree	24	60.0
Total Disagree and Strongly Disagree	7	17.5

Table 21 identifies 17.5 percent of the respondents disagreeing with the statement that Doctoral level counselors and/or counseling psychologists are not being trained sufficiently with biofeedback skills. Table 21 signifies that while 22.5 percent are undecided, there are 60.0 percent that agree with the statement that on the whole, counselors and/or counseling psychologists are not being sufficiently trained in biofeedback skills.

Table 22

Question 22: Training in biofeedback should be a prerequisite for counselors and/or counseling psychologists, at the Masters Degree level.

Responses	Number	%
Total Responses	41	
Strongly Agree	0	0.0
Agree	1	2.4
Undecided	8	19.5
Disagree	23	56.1
Strongly Disagree	9	22.0
Total Strongly Agree and Agree	1	2.4
Total Disagree and Strongly Disagree	32	78.1

Table 22 reports that 78.1 percent of the respondents disagreed with the statement that biofeedback training should be a prerequisite for counselors and/or counseling psychologists. While 19.5 percent were undecided, only one respondent or 2.4 percent agreed that biofeedback training should be a prerequisite at the Masters level.

Table 23

Question 23: Training in biofeedback should be a prerequisite for counselors and/or counseling psychologists, at the Doctoral Degree level.

Responses	Number	%
Total Responses	40	
Strongly Agree	0	0.0
Agree	5	12.5
Undecided	10	22.5
Disagree	16	40.0
Strongly Disagree	9	22.5
Total Strongly Agree and Agree	5	12.5
Total Disagree and Strongly Disagree	25	62.5

Table 23 reports that 62.5 percent of the respondents disagree with biofeedback training as a prerequisite at the Doctoral level. There were 25.0 percent undecided and 12.5 percent felt that biofeedback training should be a prerequisite for counselors and/or counseling psychologists at the Doctoral level.

Table 24

Question 24: Training in biofeedback should be a prerequisite for any counselor and/or counseling psychology licensing, at the Masters Degree level.

Responses	Number	%
Total Responses	41	
Strongly Agree	0	0.0
Agree	1	2.4
Undecided	9	22.0
Disagree	19	46.3
Strongly Disagree	12	29.3
Total Strongly Agree and Agree	1	2.4
Total Disagree and Strongly Disagree	31	75.6

Table 24 indicates that 75.6 percent disagree with biofeedback training as a prerequisite for licensing at the Masters Level. There were 22.0 percent undecided and one respondent, or 2.4 percent agreeing to biofeedback as a prerequisite for licensing at the Masters level.

Table 25

Question 25: Training in biofeedback should be a prerequisite for any counselor and/or counseling psychology licensing, at the Doctoral Degree level.

Responses	Number	%
Total Responses	40	
Strongly Agree	0	0.0
Agree	3	7.5
Undecided	8	20.0
Disagree	18	45.0
Strongly Disagree	11	27.5
Total Strongly Agree and Agree	3	7.5
Total Disagree and Strongly Disagree	29	72.5

Table 25 indicates that there were 72.5 percent of the respondents disagreeing with training in biofeedback as a prerequisite for licensing at the Doctoral level. There were 20.0 percent undecided and 7.5 percent agreeing that biofeedback training should be a prerequisite for the licensing of counselors and/or counseling psychologists at the Doctoral level.

Table 26

Question 26: Do your graduate programs currently offer biofeedback training?

Responses	Number	%
Total Responses		
Yes	15	37.5
No	25	62.5

Table 26 requests from respondents to indicate if their graduate programs currently offer biofeedback training by a yes or no answer. There were 62.5 percent, or 25 respondents indicating that they did not currently offer biofeedback training. Table 26 reports that 37.5 percent, or 15 respondents indicated that their graduate program currently offers biofeedback training.

Table 27

Question 27: If yes, please check all degree levels where offered:

Responses	Number
Total Offering Training	
M.A.	10
M.Ed.	5
Ph.D.	12
Ed.D.	3
Psy.D.	0
Other	3

Table 27 respondents each level of graduate education, where biofeedback training is offered amongst the 15 affirmative respondents. At the Master of Arts level, 10 universities, or 66.7 percent of those offering programs were affirmative. There were five Masters of Education programs offering biofeedback training. It is further indicated that 13 Ph.D. programs offered biofeedback training, while three Ed.D. programs and no Psy.D. programs offered biofeedback training. Additionally, the "other" degree column left open yielded, one Ed.S., one Masters of Counseling, and one M.S. program offering biofeedback training.

All respondents that answered "yes" to question 11 continued to respond to questions 12 to 20. Those respondents who answered no to question 11, skipped to question 20.

Table 28

Question 28: In what format is Biofeedback Training offered?

Responses	Number	
	M.A.	Ph.D.
As a separate course	7	7
As part of another course	7	8
Both as a separate course and in other courses	1	1

Table 28 asked the respondents to state in what format



biofeedback training is offered. The three formats offered at both the Master and Doctoral levels were: (1) as a separate course, (2) as part of another course, or (3) both as a separate course and in other courses as well.

When taught as a separate course, Table 28 indicates seven graduate programs taught biofeedback training as a separate course at the Masters level and at the Doctoral level. When taught as part of another course, seven graduate programs offered biofeedback training at the Masters level and eight programs offered the training at the Doctoral level.

Table 28 further indicates that when biofeedback training is offered in the format of both separate courses and in other courses, there was one such format offered at the Masters level and one program at the Doctoral level.

#### Table 29

Question 29: If you offer a specific course in biofeedback, it is a:

Responses	Number
Master Requirement	0
Master Elective	9
Doctoral Requirement	2
Doctoral Elective	9

Table 29 indicates the number of universities offering a

specific course in biofeedback as an elective or required course. Table 29 reveals nine master level programs offering a biofeedback course as an elective and no programs as a requirement at the Masters level.

Table 29 further indicates that there were nine programs offering a biofeedback course as a Doctoral elective and one Doctoral program offering a biofeedback course as a requirement.

Table 30

Specific Title of Biofeedback Courses Offered

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Responses

---

Training with Clients  
 Independent Study  
 Counseling Interventions and Stress Management  
 Biofeedback in Psychological Practice, Hypnosis and Related  
 Techniques  
 Special Problems in Psychology: Biofeedback  
 Topical Research  
 Advanced Research: Biofeedback Counseling  
 Stress Management  
 Selected Topics  
 Rehabilitation Course  
 Psychology Intervention

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Table 31

Syllabus Request of Biofeedback Courses

---

Responses

Number

---

Returns with Syllabus

5

---

Table 31 indicated that five biofeedback course syllabi were sent in the return envelopes with the Biofeedback Questionnaire.

Table 32

Question 32: Courses are taught by:

Responses	Number
Full-Time Faculty	11
Adjunct (Part-Time) Faculty	3
Both	

Table 32 indicates the number of faculty, full time and part time that are actively teaching biofeedback. There were 11 full-time faculty, three adjunct faculty, and there were no programs indicating that they used both full-time and part-time faculty.

Table 33

Question 33: Do any of your faculty have biofeedback certification?

Responses	Number
Yes	6
No	9

Table 33 revealed how many programs have faculty with Biofeedback Certification. There were eight programs without

certification and six programs with Biofeedback Certification.

Table 34

Question 34: If yes, how many?

Responses	Number
Yes	6
No	8

Table 34 asks how many number of faculty of those six programs have Biofeedback Certification. The table indicates that there were seven faculty with biofeedback certification.

Table 35

Question 35: How many part-time or full-time faculty do you have?

Responses	Number
Part-Time	39
Full-Time	223

Table 35 reports the number of part-time and full-time faculty on staff at the responding universities. As indicated by Table 35, there were six responding programs with 38 part-time faculty and 14 responding programs with 194 full-time faculty.

Table 36

Question 36: Check any of the following self-regulating techniques that are taught in your biofeedback course(s):

Responses	Number
Breathing	13
Progressive Relaxation	13
Autogenic Phases	10
Temperature	12
EMG (Electromyograph)	10
EEG (Electroencephelograph)	3
GSR (Galvanic Skin Response)	12
Other	
Imagery	4
Imagery & Systematic Desensitization	1
Cognitive Restructuring Imagery	1

Table 36 enumerates the various self-regulating techniques that are offered, and quantifies the number of programs using techniques in their respective course of training. There were 13 graduate programs using breathing techniques, 13 programs using progressive relaxation, 10 programs using autogenic phrases, 12 programs using temperature training skills, 10 programs using electromyography (EMG) techniques, three programs using electroencephelogram (EEG) techniques, 12 programs using galvanic skin response (GSR), four programs using imagery techniques, one program using imagery and desensitization techniques, and one program using cognitive restructuring imagery. The latter three techniques were responses under the space "other".

Table 37

Question 37: Does your graduate work in biofeedback offer any hands-on instrumentation experience?

Responses	Number
Yes	15
No	0

Table 37 requested a yes or no response in order to ascertain how many programs offered hands-on instrumentation experience. There were 15 programs with hands-on experience instruction. There were no programs teaching biofeedback without hands-on experience.

Table 38

Question 38: If so where? (Check all that apply.)

Responses	Number
Masters - on campus	8
Masters - off campus	1
Doctorate - on campus	11
Doctorate - off campus	2

Table 38 exhibits the location of hands-on experience at both the Masters and Doctoral level. There were eight programs of the Masters level on campus and one masters program with off campus experience. There were 11 on campus

Doctoral programs and two off campus programs offering hands-on instrumentation experience.

Table 39

Question 39: Have you, yourself, participated in or attended a class/workshop in biofeedback?

Responses	Number
Yes	29
No	12

Table 39 requests of each respondent in the Biofeedback Questionnaire to signify if they themselves have participated in or attended a class/workshop in biofeedback. There were 29 respondents that have had class/workshop experience and 12 respondents that signified having no class/workshop experience.

#### Discussion

Data was presented in this chapter which explored the status of Biofeedback Training Programs in the North Central Region of the United States. The thrust of this study includes an investigation of the opinions and attitudes of Chairpersons or Program Directors towards biofeedback training.

Biofeedback is a relatively new field to the graduate schools in America. While two-thirds of the responding Chairpersons reported to have attended a class or workshop in

Biofeedback, one-third have no training whatsoever. It also appears that the respondents and their opinions towards the role of Biofeedback improved through the more advanced training levels or post-graduate position. Less positive responses occur at the Masters level of training. This finding does not necessarily diminish the importance of biofeedback training, as it is an adjunct tool and is unlikely to be the focus of early professional training and development.

Tables 10, 11, and 12 clearly delineate the respondents' opinions towards the need for biofeedback and favor it with a tendency towards the more advanced student or practitioner. Question 4 asks if biofeedback training should be one of the skills of the counselor and/or counseling psychologist. There were 46.4 percent disagreeing at the Masters level, while 48.7 percent and 43.6 percent agreed at the Doctoral and post-graduate levels, respectively.

Once again, the awareness and usefulness of biofeedback may be seen through the responses of Question 5. The respondents were asked if the graduate trainees in their programs are aware that biofeedback may be one of the skills which may be useful to them in their work setting. At the Masters level, 64.1 percent agreed and only 15.4 percent disagreed. At the Doctoral level, 73.0 percent agreed and only 8.1 percent disagreed.

Academically, respondents were asked if they concur with



the professional literature, which states that counselors and/or counseling psychologists are not being sufficiently trained in biofeedback. At the Masters level, 51.2 percent agreed, and at the Doctoral level, 60.0 percent agreed.

Of the 40 responding universities, 15 graduate programs, or 37.5 percent, currently offer biofeedback training. There were 25 universities or 62.5 percent that did not currently offer biofeedback training.

Of the 15 graduate programs offering biofeedback training, nine masters and nine doctoral programs offered biofeedback as an elective. Only two doctoral programs had biofeedback training as a requirement. At both levels of graduate training, half of the 15 programs offered biofeedback as a separate course, and half offered biofeedback as part of another course. Six of the 15 programs had an instructor with biofeedback certification.

There were a total of 25 opportunities in which to respond to a five choice, likert type scale. As noted, choices ranged from strongly agree, agree, undecided, to disagree and strongly disagree. An overall view of responses may be attained by total percent of responses, divided by the 25 possible responses in these categories. Strongly agree and agree were put in one category, undecided responses were in one category, and disagree and strongly disagree were put into one category.

In the "agree" category, the respondents chose agree and

strongly agree 26.96 percent of the time. The "undecided" category was chosen with a frequency of 23.18 percent of total responses. The "disagree" or combined disagree and strongly disagree responses were chosen 51.74 percent of the time.

This overall picture establishes that one-fourth of the responses were "undecided", and not able to commit to a specific category. It is possible that many of these respondents were never faced with these biofeedback questions, and that one-third of the respondents have had no prior biofeedback education or workshops on which to base responses.

Half of the responses were in the "disagree" category. Most responding universities did not offer a course in biofeedback (62.5%). It may be inferred that these institutions did not produce a concentrated effort of curricula on biofeedback and therefore responded to questions based on their concentrated efforts of other major areas, that as a byproduct do not lend credence nor importance to biofeedback in a substantial way. It was interesting to note however, that a strong majority or half to three-quarters of the respondents felt that biofeedback was a useful tool, and that it should be a skill of counselors and/or counseling psychologists. Most respondents agreed with the literature, in that counselors and/or counseling psychologists are not being sufficiently trained.

It would be logical for most respondents to "disagree" with licensure and prerequisite questions at this point of time. Most of the universities are not yet prepared for this area of curricula, nor can they assume that their student body of graduate professionals would be proficient in the biofeedback area for testing, or licensure.

This study seems to show that there is an awareness factor present in the graduate schools and amongst professionals indicating that they view biofeedback training as a skill useful to them in their work setting. Biofeedback seems to have anchored itself firmly in these early developmental stages, as this awareness factor is coupled with the fact that over one-third of the universities studied currently offer biofeedback training. This study recognizes that demand cannot often be met by supply, and it would be measured by a continuous state of growth with more universities offering biofeedback training in the future.

It was interesting to note that 100% of the 15 universities offering biofeedback training also offered the practicum or hands-on experience as well. As noted in the data collection section, the most widely used modalities in clinical practice (i.e. EMG, TEMP etc.) were actually part of the techniques the universities focused on in the practicum. This indicates that these programs are well constructed and invested in the instrumentation along with instructors to offer a complete training experience. In addition to the

seven main modalities, six other responses were made using "guided imagery" as part of the training program. Most of the training programs had hands-on experience with biofeedback instrumentation on campus.

Six of the programs with biofeedback training had faculty with biofeedback certification. Biofeedback certification is offered on a national level by the Biofeedback Institute of America (BCIA). The rigid and challenging tests consist of a written exam and a practical exam. The license must be renewed every four years with either retests or a significant verifiable record of continued educational credit, research and experience in biofeedback and related fields.

Pearson correlation coefficients were done on the SAS computer program to determine significance between questions. Those findings representing a medium-perfect correlation or better are reported here.

The relationship between the way respondents answered question 1 with questions 2 and 3 at the Masters level was significant as seen in Table 40.

Table 40

Relationship Between Way Respondents Answered Question 1  
With Questions 2 and 3 at the Masters Level

Questions	#1 (Masters) Counselors/ Psychologists practicing have studied biofeedback.	#2 (Masters) Counselors/ Psychologists can provide biofeedback as part of their job.	#3 (Masters) Counselors/ Psychologists do provide biofeedback as part of their job.
Pearson	(r)	0.47669	0.80411
	(p)	0.0019	0.0001

As observed, there was a medium-perfect correlation of 47% amongst respondents and the way they answered the Masters level question #1 of those who have studied biofeedback and question #2 of those who can provide biofeedback as part of their job. The probability of a "disagree" or "strongly disagree" answer existed. This table further shows a stronger high-positive relationship (80%) existing between questions #1 and #3 at the Masters level, as well.

The following table exhibits the Pearson correlation coefficients between questions #2 and #3 at the Masters (A) and Doctoral (B) levels of training.

Table 41

Pearson Correlation Coefficients Between Questions #2 and #3  
at the Masters and Doctoral Levels of Training

		Q 02 A	Q 03 A	Q 02 B	Q 03 B
Q 02 A	(r)	1.00000	0.62191	0.55652	0.37125
Biofb. - MA	(p)	0.0000	0.0001	0.0003	0.0237
	(n)	40	40	38	37
Q 03 A	(r)	0.62191	1.00000	0.27262	0.63304
Reg. Job - MA	(p)	0.0001	0.0000	0.0977	0.0001
	(n)	40	41	38	38
Q 02 B	(r)	0.55622	0.27262	1.00000	0.28435
Biofb. - Ph.D.	(p)	0.0003	0.0977	0.0000	0.0881
	(n)	38	38	38	37
Q 03 B	(r)	0.37125	0.63304	0.28435	1.00000
Reg. Job - Ph.D.	(p)	0.0237	0.0001	0.0881	0.0000
	(n)	37	38	37	38

At the Masters level, there is a strong acceptance that this level of counselors/counseling psychologists cannot provide, nor do they provide, biofeedback services ( $r = .622$  and  $p = .0001$ ). A similar significance exists for the Doctoral level ( $r = .633$  and  $p = .0001$ ).

As further exhibited by Table 41, there is a significant correlation between the Masters level being able to provide biofeedback as part of their job and the individual of doctoral level training ( $r = 0.556$  and  $p = .0003$ ).

There exists a significant, yet weaker, correlation between doctorally trained individuals who do biofeedback as part of their job and Masters level individuals who can

provide biofeedback as a regular part of their job ( $r = 0.37125$  and  $p = 0.0237$ ).

Table 42 exhibits the Pearson correlation of coefficients that occur at Masters and Doctorally trained counselor and/or counseling psychologist in questions 4 and 8.

Table 42

Pearson Correlation Coefficients of Masters and Doctorally Trained Counselors and Counseling Psychologists

		Q 04 A	Q 08 A	Q 04 B	Q 08 B
Q 04 A	(r)	1.00000	-0.09327	0.52354	0.03164
Training	(p)	0.0000	0.5619	0.0006	0.8463
Skills-MA	(n)	41	41	39	40
Q 08 A	(r)	-0.09327	1.00000	0.16776	0.62959
Lit: Not	(p)	0.05619	0.0000	0.3073	0.0001
Trained-MA	(n)	41	41	39	40
Q 04 B	(r)	0.52354	0.16776	1.00000	0.06034
Training	(p)	0.0006	0.3076	0.0000	0.7152
Skills-Ph.D.	(n)	39	39	39	39
Q 08 B	(r)	0.03164	0.62959	0.06034	1.00000
Lit: Not	(p)	0.8463	0.0001	0.7152	0.0000
Trained-Ph.D.	(n)	40	40	39	40

In comparing the responses of question 4, there is a significant correlation existing between Masters and Doctorally trained levels. The respondents were asked to state, in their opinion, if biofeedback training should be one of the skills of the counselor and/or counseling psychologist. There was a ( $r$ ) 0.52354 correlation with a

significance at the (p) level of 0.0006.

A similar strongly correlated response occurred in question 8. This question asked the respondents if they agreed with literature that stated the findings that counselors and/or counseling psychologists are not on the whole being trained sufficiently in biofeedback skills. Those agreeing were strongly correlated between the Masters and Doctoral level at (r) 0.62959 and were significant at the (p) 0.0001 level.

Table 43 examines the correlation of responses of questions 9 and 10. Question 9 asks respondents if training in biofeedback skills should be a prerequisite in studies. Question 10 asks if training in biofeedback skills should be a prerequisite for licensing. The Pearson correlation coefficients are again given to compare these two questions at the two levels of graduate school. In between comparisons are also correlated.



Table 43

Pearson Correlation Coefficients of Questions 9 and 10

		Q 09 A	Q 10 A	Q 09 B	Q 10 B
Q 09 A	(r)	1.00000	0.70963	0.47187	0.56210
Prereq.	(p)	0.0000	0.0001	0.0021	0.0002
Training-MA	(n)	41	41	40	40
Q 10 A	(r)	0.70963	1.0000	0.58888	0.82738
Prereq.	(p)	0.0001	0.0000	0.0001	0.0001
Lic. - MA	(n)	41	41	40	40
Q 09 B	(r)	0.47187	0.58888	1.0000	0.44099
Prereq.	(p)	0.0021	0.0001	0.0000	0.0044
Training-Ph.D.	(n)	40	40	40	40
Q 10 B	(r)	0.56210	0.82738	0.44099	1.00000
Lit: Not	(p)	0.0002	0.0001	0.0044	0.0000
Lic. - Ph.D.	(n)	40	40	40	40

Table 42 correlates the way in which respondents replied to the need for biofeedback as a prerequisite for professional training and the prerequisite of training in biofeedback for licensing. At the Masters level, a strong (r) correlation of 0.70963 exists (p = .0001) with respondents disagreeing to biofeedback training as a prerequisite to professionalization or licensure.

A similar finding occurs at the Doctoral level for the same "prerequisite" questions; yet, the correlation (r) 0.44099 and significance (p) .0002 are considerably weaker. Between comparisons of question 9 (Prerequisite Training) at the Masters and Doctoral level yield a mild significance, with an (r) 0.47187 correlation with a (p) of 0.0021.

Between comparisons of question 10 (Prerequisite Licensure) at both the Masters and Doctoral level there was a strong correlation of (r) 0.82738 with a significance of (p) 0.0001.

The final two correlations of Table 42 compare both Masters and Doctoral level responses between the questions of 9 and 10. The first statistic correlates prerequisite training of the Masters to the prerequisite training for Licensure. The correlate was (r) 0.56210 and had a (p) value of 0.0002. The last correlate was made between the prerequisite Licensure of biofeedback at the Masters level with the prerequisite of biofeedback training at the Doctoral level. The correlation was (r) 0.58888 at the (p) value of .0001.

#### Summary

This chapter presented the results of the Biofeedback Questionnaire, which yielded information based on responses from chairpersons from graduate schools approved by the North Central Regional Committee. The results of the data were presented and the discussion followed the tables. Over one-third of responding universities already have established biofeedback training programs. All of these programs have combined didactic instruction with a hands-on experience with instrumentation. A majority of respondents felt that trainees in their programs are aware that biofeedback training can be a useful skill for them to have in their work setting. Most of the respondents agreed with the literature,

in that the counselors and/or counseling psychologists were not being sufficiently trained. It is important to note that the higher the degree and experience, the more favorable the response was towards biofeedback training. Whereas when the inverse position occurred, or lower the degree, the frequency of response was then less favorable to biofeedback training.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### Summary

This study was undertaken to explore the extent in which biofeedback training skills are presently being taught in the graduate school programs of counseling and/or counseling psychology. Professional literature maintains that counselors and/or counseling psychologists are not being trained sufficiently in biofeedback skills.

An extensive history and literature review were presented along with a definition of terms, in order to impart the strong scientific, psychological and medical base for the study of biofeedback. The review also gave a significant overview to the recent educational role in which biofeedback training has become both useful and appropriate.

The focus of the study was Biofeedback Training in Counselor Education (Programs): North Central Region. The actual research procedure consisted of the collection of data using a Biofeedback Questionnaire instrument. This questionnaire sought the response of chairpersons from North Centrally approved universities offering masters and doctoral degree programs in counseling and/or counseling psychology. The return rate of the questionnaire was 75 percent, which

strengthened the validity of the data.

The results of the questionnaire indicate that of the chairpersons responding: a majority of respondents felt that biofeedback training should be one of the skills of the counselor and/or counseling psychologist; a majority of respondents felt that trainees in their programs are aware that biofeedback training can be a useful skill for them to have in the work setting; most of the respondents agreed with the literature, in that the counselors and/or counseling psychologists were not being sufficiently trained in biofeedback skills; over one-third of all responding universities already have established biofeedback training programs consisting of both didactic and practicum experience.

It appears that the formal biofeedback training is presently being offered by over one-third of the counseling and/or counseling psychology programs. Chairpersons from these major graduate institutions view biofeedback training as a useful skill, they agree that it should be one of the tools of the counselor and/or counseling psychologist, but they also agree that professionals are not being sufficiently trained, as the literature states.

#### Conclusion

High technology and greater demands accompanied by stress, have caused society to tighten with tension in this nuclear age. Competition in school and in the work setting

has grown. Where as years ago the computer was an object at the Science and Industry Museum, it is now at home, on the school desk, gas pump and even worn on the wrist. Stress and tension seem to have more direct dilatereous links to our health picture than previously thought. Frustration can be linked with inflation, and a greater demand for treating the "holistic" individual with mind and body is presently occurring (Engel, 1977; Gatchel & Baum, 1983; Lazarus, 1977; Lipowsky, 1977; Schwartz et al., 1977).

Physicians have been trained to heal the body, counselors and psychologists to heal the mind. The role of mind/body synchronicity and homeostasis can no longer be neglected, and biofeedback is an important link that reaffirms our ability to treat the whole system.

Danskin and Walters (1973) felt that the professional literature was "nearly devoid of even casual reference to biofeedback training for self-regulation and self-development." Danskin feels that in developing graduate programs of biofeedback training, "we are still falling short from the goal," although he also felt that "we are evolving to keep up with the demand."

The results of this study indicate that both statements of Danskin are true. This study reveals that biofeedback training was viewed favorably as a useful and important skill. The majority of chairpersons did not agree that biofeedback was used on a regular basis, but they did agree

that it "should" be one of the skills of a counselor and/or counseling psychologist.

Biofeedback training appears to be gaining in popularity, as this study has revealed that one-third of the (15 out of 40 programs) responding universities presently offer formal biofeedback training. Considering that one-third of responding chairpersons had never had any biofeedback training or workshops, the overall responses to the Biofeedback Questionnaire were positive and encouraging, possibly due to the fact that two-thirds of the programs still do not have biofeedback training, most chairpersons did not favor a biofeedback prerequisite or licensure question at this time.

This study further revealed that there were few programs (six) that had certified (BCIA) biofeedback instructors. This presents a difficulty in that trainees need to learn at an acceptable standard and level to give them proficiency at the biofeedback skills, although it is not within the realm of this report to rate the individual programs being offered.

Unbeknownst to those respondents that did not favor or know about biofeedback training and skills, most of their programs may well use many biofeedback techniques, albeit without instrumentation. This would include; guided imagery, relaxation techniques, breathing skills and other feedback principles that are often a part of many training paradigms, but would be enhanced and refined by formal biofeedback

training.

As was evident by the Pearson correlation of coefficients, the greater the program experience, and the higher the degree became, the more favorable biofeedback responses became on the questionnaire. This was probably due to the fact that at these higher and more advanced levels, there becomes more room in the curricula for further study or adjunct techniques. Sometimes the initial graduate programs simply don't have room for more training or electives. The correlation of coefficients done on the SAS computer program helped to reconform the validity and consistency of responses. This clearly demonstrated that positive attitudes exist on biofeedback training and are evident within the responding universities.

#### Recommendations

It is recommended that a similar study of this kind should be undertaken on a national basis. This would help to define if similar responses exist in the other regions. It is likely that biofeedback training is more predominant and prevalent on the west coast, for example, where it had taken root not too long after the early findings of autonomic control at the Menninger Clinic (Sargant, Green & Walters, 1972).

It is further recommended that the study be repeated every three to five years in order to evaluate change over time. It would be important to monitor the growth and



development of biofeedback training programs. Biofeedback training is still in its early stages of development in our universities, and if we are to see it mature further, we will have to teach it carefully. It will have to be taught as an exact science, demanding the kind of clinical research that continues to require double blind studies that can be replicated, and those which allow for peer review. It would also be crucial to establish standards within the new and existing programs. It would therefore be recommended that every program would have at least one (BCIA) certified biofeedback instructor as part of the staff in order to insure the quality of instruction.

It is also recommended that similar research be conducted on biofeedback training at other degreed programs, such as clinical psychology, and educational psychology, and in counseling centers. Biofeedback can be taught to early elementary classrooms as well as be used on individuals in a clinical setting. It would even be appropriate for teachers to learn some of the biofeedback skills through in-service training conducted by counselors and/or counseling psychologists, classroom applications.

Another recommendation is for the chairpersons or professors at the graduate level to participate in workshops in biofeedback, in order to expand their knowledge base in the area of self-regulation and autonomic control. New techniques are often a challenge and there appears to be a

tendency to resist change and shy away from new and different innovations. By taking these courses, they will greatly enhance the options for creating new curricula in biofeedback so that their students will have new opportunities in their selected professional positions. It is further recommended that graduate programs introduce biofeedback to the students initially through selected topics, workshops and eventually as a complete course, to be followed by a practicum experience, for hand-on familiarity with instrumentation.

Major investments of working capital are not needed to initiate biofeedback training. Its non-invasive format allows the counselor and/or counseling psychologist to get more in-depth information on the patient or client. It simultaneously gives important feedback to their client or patient often enhancing the quality of treatment and care. It would therefore be recommended that a pilot study be undertaken to examine the ease and efficacy in funding these programs in order to encourage and expedite this potential at new graduate sites.

It would be simultaneously appropriate to recommend more comparative studies that would utilize the clinical approach with and without biofeedback techniques, in order to ascertain the clinical effectiveness of biofeedback. It would be important to research studies that could evaluate present biofeedback programs and offer suggestions as to how we could improve upon those programs as well.

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Ultimately, it would be recommended to formulate a biofeedback major to be developed within the context of the counseling and/or counseling psychology department. Biofeedback training can be studied and applied professionally in a variety of sophisticated roles, allowing for in depth research and advanced methodology. The numerously diverse opportunities and directions that are available for the counselor and/or counseling psychologist confluently call for a wider base of preparation. The same degree and training program can help to create a specialist in behavioral medicine or a school counselor.

When treating a patient or client we are treating more than a name and a face, we are treating the whole person, mind, body and emotions. It is therefore crucial that we train the whole counselor as well. Short of calling a need for the 'super counselor', Carkhuff (1967) postulates that "We can never settle for less than a whole person in training."

## References

- Aubrey, R.F. (1977). Historical development of guidance and counseling and implications for the future. Personnel and Guidance Journal, 55, 291-293.
- Basmajian, J.V. (1976). Facts vs. myths in EMG biofeedback. Biofeedback and Self Regulation, 1, 369-372.
- Bedford, S. (1980). Stress and tiger juice. Chico, CA: Scott Publications.
- Bernthal, J.R., & Papsdorf, J.D. (1977). The effects of different forms of relaxation training on text anxiety and test performance proceedings of the Biofeedback Society of America. (Denver, BSA, 1977).
- Bichat, X. (1800). Recherches physiologiques sur la vie et le mort. Brosson, Gabon, Paris.
- Birbaumer, N., & Kimmel, H.D. (1979). Biofeedback and self-regulation. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Blanchard, E.A., & Young, L.D. (1974). Clinical application of biofeedback training: A review of evidence. Archives of General Psychiatry, 30, 573-589.
- Blanchard, E.B., Theobald, D.E., Williamson, D.A., Silver, B.V., & Brown, D.A. (1978). Temperature biofeedback in the treatment of migraine headaches: A controlled evaluation. Archives of General Psychiatry, 35, 581-588.
- Brener, J., & Kleinman, R.A. (1970). Learned control of decreases in systolic blood pressure. Nature, 226, 1063-1064.
- Brown, B. (1974). New mind new body: Biofeedback new directions for the mind. New York: Harper and Row.
- Budzynski, T.H., Stoyva, J.M., Adler, C.S., & Multaney, D.J. (1973). EMG biofeedback and tension headache: A controlled study. Psychosomatic Medicine, 35.
- Carkhuff, R.R., & Berenson, B.G. (1967). Beyond counseling and therapy. New York: Holt, Rinehart & Winston, Inc.

- Carter, J.L., & Russell, H.L. (1978). Effects of biofeedback training on academic ability of four language/learning disabled boys. Academic Therapy.
- Carter, J.L., & Russell, H.L. (1979). Relationships between reading frustration and muscle tension level in children with reading disability. American Journal of Clinical Biofeedback, 2, 60-62.
- Chaney, D.S., & Andreason, L. (1972). Relaxation and neuromuscular control and changes in mental performance under induced stress. Perceptual and Motor Skills, 34, 677-678.
- Crider, A., Shapiro, D., & Tursky, B. (1966). Reinforcement of spontaneous electrodermal activity. Journal of Comparative and Physiological Psychology, 61, 20-27.
- Curran, C.A. (1968). Counseling and psychotherapy: The pursuit of values. New York: Sheed & Ward.
- Danskin, D.G., & Walters, E.D. (1973). Biofeedback and voluntary self-regulation: Counseling and education. Personnel and Guidance Journal, 41.
- Danskin, D.G., & Walters, E.D. (1973). Biofeedback and self regulation: Counseling and education. Personnel and Guidance Journal, 51, 633-663.
- Danskin, D.G., & Walters, E.D. (1974). Counseling and Values. Winter.
- Davidson, R., & Krippner, S. (1971). Biofeedback research: The data and their implications. Paper presented at the Second International Invitation Conference on Humanistic Psychology, 1971; Wurzburg, Germany, and at the 17th International Congress of Applied Psychology, 1971, Liege, Belgium.
- Deckner, C.S., Hill, J.T., & Bourne, J.R. (1972). Shaping of human gastric motility. Paper presented at the meeting of the American Psychological Association, Honolulu.
- Diamond, S., & Montrose, D. (1984). The value of biofeedback in the treatment of chronic headaches: A four-year retrospective study. Headache Journal, 24.
- Deobold, B., Van Dalen, & Meyer, W.J. (1966). Understanding educational research: An introduction. New York: McGraw-Hill Book Company.

- Dowdle, N.O. (1984). Death and dying training in counselor education programs: A national study. Doctoral Dissertation, Loyola University of Chicago.
- Engel, B.T. (1972). Operant conditioning of cardiac function: A status report. Psychophysiology, 9, 161-177.
- Engel, B.T., & Chism, R.A. (1967). Operant conditioning of heart rate speeding. Psychophysiology, 3, 4, 418-424.
- Engel, G.L. (1977). The need for a new medical model: A challenge for biomedicine. Science, 196, 129-136.
- Engelhardt, L. (1981). Biofeedback in public education: Current use and future implications. Paper presented at the 12th Annual Meeting, Biofeedback Society of America, Louisville, KY, March 13-17.
- Estrada, N. (1978). Biofeedback and hyperactivity: A case study. In M.J. Fine (Ed.), Case studies in hyperactivity. Jamaica, NY: Spectrum Publishers.
- Fahrion, S.L. (1977). Autogenic biofeedback treatment for migraine. Mayo Clinic Proceedings, 52, 776-784.
- Feurstein, M., & Schwartz, G.E. (1977). Training in clinical psychophysiology: Present trends and future goals. American Psychologist, 32, 560-567.
- Freeza, D.A., & Holland, J.G. (1971). Operant conditioning of the human salivary response. Psychophysiology, 8, 581-587.
- Gatchel, R.J., & Baum, A. (1983). An introduction to health psychology. Reading, MA: Addison-Wesley Publishing Co., Inc.
- Gatchel, R.J., & Price, K.P. (1979). Clinical applications of biofeedback appraisal and status. Pergamon General Psychology Series. New York: Pergamon Press.
- Gatchel, R.J., & Proctor, J.D. (1976). Effectiveness of voluntary heart rate control in reducing speech anxiety. Journal of Consulting and Clinical Psychology, 44, 381-389, and in J. Kamiya et al. (Eds.), Biofeedback and self-control. Chicago: Aldine (1977).
- Grinker, R.R. (Ed.) (1967). Towards a unified theory of human behavior (2nd ed.). New York: Basic Books.

- Hardyck, C.D., Petrinovich, L.F., & Ellsworth, D.W. (1966). Feedback of speech muscle activity during silent readings. Rapid Extinction Science, 154, 1467-1468. Also appears in T. Barber et al. (Eds.), Biofeedback and self-control. Chicago: Aldine (1971). See also C.D. Hardyck & L.F. Petrinovich (1969), Treatment of subvocal speech during reading. Journal of Reading, 12, 361-422.
- Heiss, A.M. (1970). Challenges to graduate schools. San Francisco: Jossey-Bass Inc.
- Hill, D. (1972). Summing up. Physiology, emotion and psychomatic illness, Ciba Foundation Symposium 8 (New Series). North Holland, Amsterdam, London. Elsevier, Excerpta Medica 1972, 401-408.
- Hodge, G.K., & Collatz, F.A. (1980). Efficacy of EMG biofeedback training in improving examination performance of test anxiety college students. Proceedings of the Biofeedback Society of America.
- Hollis, J.W., & Wantz, R.A. (1980). Counselor preparation 1980; Programs, personnel trends. Muncie, IN: Accelerated Development Inc.
- Hollis, J.W., & Wantz, R.A. (1986). Counselor preparation 1986; Programs, personnel, trends. Muncie, IN: Accelerated Development Inc.
- Ivey, A.E. (1976). An invited response: The counselor as teacher. Personnel and Guidance Journal, 431-433.
- Ivey, A.E. (1980). The counselor as psychoeducational consultant: Toward a value-centered advocacy model. Personnel and Guidance Journal, 58, 567-568.
- Jacobson, E. (1938). Progressive relaxation. Chicago, IL: University of Chicago Press.
- Jacobson, E. (1959). Progressive relaxation. Chicago, IL: University of Chicago Press.
- Jawett, B. (1875). The dialogues of Plato. Translated, University of Oxford Press, London, Ed. 2, Vol. 3, "Timaeus".
- Jurowicz, J. (1982). Consultation training in counselor education: North Central Region. Doctoral Dissertation, Loyola University of Chicago.

- Kamiya, J. (1969). Operant control of the EEG alpha-rhythm and some of its reported effects on consciousness. In Altered states of consciousness. New York: John S. Wiley.
- Kamiya, J., Barber, T.X., Miller, N.E., Shapiro, N., & Stoyva, J. (1977). Biofeedback and self-control: An Aldine Annual on the regulation of bodily processes and consciousness. Chicago: Aldine.
- Kimmel, H.D. (1967). Instrumental conditioning of autonomically mediated behavior. Psychological Bulletin, 67, 337-345.
- Kerlinger, F. (1974). Foundations of behavioral research. Chicago: Holt, Rinehart & Winston.
- Klinge, V. (1972). Effects of extoreceptive feedback and instructions on control of spontaneous galvanic skin response. Psychophysiology, 9, 305-317.
- Lader, M. (1976). Psychophysiological research and psychosomatic medicine. Physiology, emotion and psychosomatic illness. Ciba Foundation Symposium 8 (New Series). North Holland, Amsterdam, London, New York, Elsevier, Excerpta Medica.
- Lazarus, R.S. (1977). A cognitive analysis of biofeedback control. In G.E. Schwartz & J. Beatty (Eds.), Biofeedback theory and research (p. 73). New York: Academic Press.
- Leedy, Paul D. (1974). Practical research: Planning and design. New York: Macmillan Publishing Co., Inc.
- Lipowski, Z.J. (1977). Psychosomatic medicine in the seventies: An overview. American Journal of Psychiatry, 143, 233-244.
- Loughry-Machado, G., & Suter, S. (1979). Skin temperature biofeedback in children and their parents. Proceedings of the Biofeedback Society of America.
- Lowen, A. (1969). The betrayal of the body. New York: Collier.
- Lowen, A. (1980). Fear of life. New York: Macmillan Publishing Co.
- Luthe, W., & Schultz, J.H. (1969). Autogenic therapy, Vol. 1, 2, 3. New York & London: Grune & Stratton.



- Maslow, A.H. (1962). Towards a psychology of being. Princeton, NJ: D. Van Nostrand.
- Miller, N., & Miller, E. (1971). Selected papers. Chicago: Aldine-Atherton, Inc.
- Noonberg, A.R. (1985). Biofeedback training: Offerings, plans and some attitudes in graduate schools and internships. Biofeedback Regulation, 10, 25-32.
- O'Grady, D.F. (1986). The effects of adding a somatic intervention on the Gestalt two-chair technique on career decision-making. Doctoral Dissertation, Loyola University of Chicago.
- Olton, D.S., & Noonberg, A.R. (1980). Biofeedback: Clinical applications in behavioral medicine. Englewood Cliffs, NJ: Prentice-Hall.
- Parsky, L., & Papsdorf, J.D. (1976). EMG biofeedback suppression of busvocalization in reading disabled grade VI students. Proceedings of the Biofeedback Research Society (Denver: BRS, 1976).
- Pascal, G.R. (1959). The effect of relaxation on recall. American Journal of Psychology, 62 32-47.
- Perls, F.S. (1969). Ego, hunger and aggression. New York: Random House.
- Pickoff, H. (1981). Biofeedback: A resource directory and outline of the literature. Professional Psychology, 12, 261-270.
- Price, K.P., Gaas-Abrams, E., & Browder, S. (1977). Research developments in behavioral intervention with psychophysiological disorders. Paper presented at APA meeting, San Francisco, August.
- Reich, W. (1970). The discovery of the orgone: The function of the orgasm. Trans. T. Wolfe, New York: Farrar, Straus and Giroux.
- Roberts, A.H. (1985). Biofeedback: Research training and clinical roles. American Psychologist.
- Roberts, A.H., Kewman, D.G., & MacDonald, H. (1973). Voluntary control of skin temperature: Unilateral changes using hypnosis and feedback. Journal of Abnormal Psychology, 82, 63-168.

- Rogers, G.M., & Allen, O.R. (1958). Relationship of body image to self-concept. Journal of Consulting Psychology, 32, 100.
- Rosen, R.C. (1973). Suppression of penile tumescence by instrumental conditioning. Psychosomatic Medicine, 35, 509-514.
- Sargent, J.D., Green, E.E., & Walters, E.D. (1972). The use of autogenic feedback training in a pilot study of migraine and tension headaches. Headache, 12, 120-124.
- Sargent, J.D., Green, E.E., & Walters, E.D. (1973). Preliminary report in the treatment of migraine and tension headaches. Psychosomatic Medicine, 35, 129-135.
- Schwartz, G.E. (1975). Biofeedback, self-regulation and the patterning of physiological responses. American Scientist, 63, 314-324.
- Schwartz, G.E., & Weiss, S.M. (1978). Proceedings of the Yale Conference on Behavioral Medicine. DHEL Publication No. (NIH), 78-1424.
- Schwartz, G.E., & Weiss, S.M. (1977). What is behavioral medicine? Psychosomatic Medicine, 39, 377-381.
- Shapiro, D., & Grider, A. (1967). Operant electiodermal conditioning under multiple schedules of reinforcement. Psychophysiology, 4, 168-175.
- Shapiro, D., & Survit, R.S. (1976). Learned control of physiological function and disease. In H. Leitenberg (Ed.), Handbook of behavior modification and behavior therapy. Englewood Cliffs, NJ: Prentice-Hall.
- Shapiro, D., Schwartz, G.E., & Tursky, B. (1972). Control of cliostolic blood pressure in man by feedback and reinforcement. Psychophysiology, 9, 296-304.
- Shapiro, D., Tursky, B., Gershon, E., & Stern, M. (1969). The effects of feedback reinforcement on the control of human systolic blood pressure. Science, 163, 588-590.
- Siegel, S. (1956). Non-parametric statistics for the behavioral sciences. New York: McGraw-Hill Book Company.
- Skinner, B.F. (1938). The behavior of organisms: An experimental analysis. New York: Appleton-Century-Crofts.

- Snyder, C., & Noble, M. (1968). Operant conditioning of vasoconstriction. Journal of Experimental Psychology, 77, 263-267.
- Snyder, C., & Noble, M. (1970). Operant conditioning of vasoconstriction. Journal of Experimental Psychology, 72, 356-360.
- Steiner, S.S., & Dince, W.M. (1981). Biofeedback efficacy studies. Biofeedback and Self Regulation, 6, 275-289.
- Steiner, S.S., & Dince, W.M. (1981). Biofeedback efficacy studies: A critique of critiques. Biofeedback and Self Regulation, 6, 275-287.
- Stoyva, J., & Budzynski, T.H. (1974). Cultivated low arousal - an anti-stress response? In L.V. DiCara (Ed.), Recent advances in limbic and autonomic nervous system research (pp. 265-290). New York: Plenum.
- Strupp, H.H. (1970). Specific versus nonspecific factors in psychotherapy and problems of control. Archives of General Psychiatry, 23, 393-401.
- Taub, L., & Enurian, C.S. (1971). Operant control of skin temperature. Paper presented at the Meeting of the Biofeedback Research Society, St. Louis.
- Thompson, D. (1976). Learning voluntary control of fingertip skin temperature: Issues, questions, and answers. Proceedings of the BSA Annual Meeting.
- Tomassetti, J.T. (1985). An investigation of the effects of EMG biofeedback training and relaxation training on dimensions of attention and learning of hyperactive children. Doctoral Dissertation, Loyola University of Chicago.
- Traux, C.B., & Carkhuff, R.R. (1967). Toward effective counseling and psychotherapy: Training and practice. Chicago: Aldine Publishing Co.
- Trungpor, C. (1970). Meditations in action. Berkeley, Shambala.
- Turin, A., & Johnson, W.G. (1976). Biofeedback therapy for migraine headaches. Archives of General Psychiatry, 33, 517-519.
- Turner, J.A., & Chapman, C.R. (1982). Psychological interventions for chronic pain: A critical review. Relaxation training and biofeedback. Pain, 12, 11-21.

- Van Dalen, D., & Meyer, W.J. (1962). Understanding educational research: An introduction. New York: McGraw-Hill Book Company.
- Warrenberg, S., & Gram, J.F. (1978). Biofeedback training opportunities in clinical internship facilities: An extension of the Feurstein and Schwartz survey. American Psychologist, 33, 190-191.
- Weinberg, G.M. (1975). An introduction to general systems thinking. New York: Wiley.
- Wenger, M.A., & Bagchi, B.K. (1961). Studies of the autonomic functions in practitioners of Yoga in India. Behavioral Science, 6, 312-323.
- Wenger, M.A., Bagchi, B.K., & Anand, B.K. (1961). Experiments in India in 'voluntary' control of the heart and pulse. Circulation, 24, 1319-1325.
- Wittkower, E.D., & Warnes, H. (1977). Psychosomatic medicine, its clinical applications. New York: Harper & Row Publishers.
- Wolpe, J. (1969). The practice of behavior therapy. New York: Pergamon.
- World Health Organization Report. (1947). 1:1-2.
- Worster, V.J., & Wenck, L.S. Biofeedback in the school setting. Mimeo. Write Vivien J. Worster, Director, Biofeedback Project, Andersen Community Schools, 325 W. 38th St., Andersen, IN 46014.

**APPENDIX A**

## LIST OF SCHOOLS RESPONDING TO SURVEY

Andrews University  
Arizona State University  
Ball State University  
Central Missouri State  
Cleveland State  
Fort Hays State University  
Indiana State University  
Iowa State University  
Kearney State University  
Kent State University  
Loyola University  
Marquette University  
Michigan State University  
Northern Arizona University  
Northeastern State University  
Ohio State University  
Oklahoma State University  
Southern Illinois University  
The University of O  
University of Alaska  
University of Arkansas  
University of Chicago  
University of Illinois  
University of IO  
University of Michigan (Two programs responding)  
University of Nebraska (Two programs responding)  
Universith of NO (Two programs responding)  
University of SO  
University of TO  
University of Wisconsin (Two programs responding)  
University of Wyoming  
University of TU  
Wayne State University  
West Virginia University  
Western Michigan University

**APPENDIX B**

Coded - \_\_\_\_\_

## BIOFEEDBACK QUESTIONNAIRE

Name of person completing questionnaire:  
\_\_\_\_\_Title: Chairperson\_\_\_\_\_ Acting Chairperson\_\_\_\_\_  
Other\_\_\_\_\_

Name of University:\_\_\_\_\_

Please answer the following in the context of your Masters or Doctoral programs in counseling and/or counseling psychology:

Use a circle to indicate your choice of: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) or Strongly Disagree (SD).

1. In my opinion, the majority of counselors and/or counseling psychologists who are active in their field have studied biofeedback:
 

In Masters Degree Programs:	SA	A	U	D	SD
In Doctoral Degree Programs:	SA	A	U	D	SD
In Post-Degree:	SA	A	U	D	SD
  
2. In my opinion, the majority of counselors and/or counseling psychologists can provide biofeedback as a regular part of their job:
 

With Masters Degree:	SA	A	U	D	SD
With Doctoral Degree:	SA	A	U	D	SD
Only with Post-Degree Training:	SA	A	U	D	SD
  
3. In my opinion, the majority of counselors and/or counseling psychologists do biofeedback as a regular part of this job:
 

With Masters Degree:	SA	A	U	D	SD
With Doctoral Degree:	SA	A	U	D	SD
Only with Post-Degree Training:	SA	A	U	D	SD



4. In my opinion, biofeedback training should be one of the skills of the counselor and/or counseling psychologist:

At the Masters Degree: SA A U D SD

At the Doctoral Degree: SA A U D SD

Only with Post-Degree Training: SA A U D SD

5. Graduate level trainees in your programs are aware that biofeedback training may be one of the skills which may be useful to them in their work setting:

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

6. In the future, the performance of biofeedback will be an increasing part of the counselor's role:

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

7. Training in biofeedback skills is an important aspect of training for counselors and/or counseling psychologists:

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

At the Post-Degree Level: SA A U D SD

8. The professional literature maintains that counselors and/or counseling psychologists are, on the whole, not being sufficiently trained in biofeedback training skills. What is your opinion of this statement?

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

9. Training in biofeedback should be a prerequisite for counselors and/or counseling psychologists:

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

10. Training in biofeedback should be a prerequisite for any counseling and/or counseling psychology licensing:

At the Masters Level: SA A U D SD

At the Doctoral Level: SA A U D SD

11. Do your graduate programs currently offer biofeedback training?

Yes \_\_\_\_\_ No \_\_\_\_\_

11a. If yes, please check all degree levels where offered:

\_\_\_\_\_ M.A.          \_\_\_\_\_ Ph.D.          \_\_\_\_\_ Psy.D.

\_\_\_\_\_ M.Ed.          \_\_\_\_\_ Ed.D.          \_\_\_\_\_ Other

If you answered "yes" to question 11, continue with question

12. If you answered "no" to question 11, skip to question 20.

12. In what format is biofeedback training offered?  
(Check all that apply.)

	At the Masters Level _____	At the Doctoral Level _____
As a separate course	_____	_____
As part of another course	_____	_____
Both as a separate course and in other courses	_____	_____

13. If you offer a specific course in biofeedback, it is a:  
(Check all that apply.)

\_\_\_\_\_ Masters requirement          \_\_\_\_\_ Masters elective

\_\_\_\_\_ Doctoral requirement          \_\_\_\_\_ Doctoral elective

14. The title and number of any specific course(s) are:

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15. Briefly describe the course content, or kindly send a syllabus:

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16. Course(s) are taught by:

\_\_\_\_\_ Full-time faculty

\_\_\_\_\_ Adjunct (or part-time) faculty

\_\_\_\_\_ Both

17. Do any of the faculty have Biofeedback Certification?

\_\_\_\_\_ Yes                      \_\_\_\_\_ No

- 17a. If "yes", how many?

\_\_\_\_\_

- 17b. How many part-time or full-time faculty do you have?

\_\_\_\_\_

18. Check any of the following self-regulating techniques that are taught in your biofeedback course(s): (If you do not know the answer to this question, please consult the professors' syllabus.)

\_\_\_\_\_ Breathing

\_\_\_\_\_ Progressive relaxation

\_\_\_\_\_ Autogenic phrases

\_\_\_\_\_ Temperature

\_\_\_\_\_ EMG (electromyography)

\_\_\_\_\_ EEG (electroencephalogram)

\_\_\_\_\_ GSR (galvanic skin response)

\_\_\_\_\_ Other: \_\_\_\_\_

\_\_\_\_\_

19. Does your graduate work in biofeedback offer any hands-on instrumentation experience?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

19a. If so, where? (Check all that apply.)

Masters

Doctorate

\_\_\_\_\_

\_\_\_\_\_ on campus

\_\_\_\_\_

\_\_\_\_\_ off campus

20. Have you, yourself, participated in or attended a class/workshop in biofeedback?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

Please return this questionnaire in the accompanying self-addressed, stamped envelope.

Thank you once again for your assistance!

David Montrose  
6614 North Whipple Avenue  
Chicago, Illinois 60645

**APPENDIX C**

Coded - \_\_\_\_\_

6614 North Whipple Avenue  
Chicago, IL 60645

September 23, 1987

Dear Chairperson:

I am in the process of writing a doctoral dissertation in the Department of Counseling and Educational Psychology at Loyola University of Chicago. The topic of this dissertation concerns counselor preparation in the use of biofeedback.

Biofeedback is used in a variety of settings ranging from school systems to counseling and medical centers. It is the goal of this research to establish a baseline of present biofeedback training in counselor education in the North Central Region.

Enclosed is a brief questionnaire which I would appreciate your completing and returning to me at your earlier convenience. I would also appreciate any biofeedback course syllabus or department information regarding biofeedback training. With the completion of this study, I will be happy to share the significant data with you. Thank you.

Very truly,

David Montrose

Work: (312) 722-1166

Home: (312) 761-3619

DM:vjc

Enclosure

APPROVAL SHEET

The dissertation submitted by David Montrose has been read and approved by the following committee:

Dr. Manuel S. Silverman, Director  
Professor, Counseling and Educational Psychology,  
Loyola

Dr. Kevin J. Hartigan  
Assistant Professor, Counseling and Educational  
Psychology, Loyola

Dr. Jack A. Kavanagh  
Professor, Counseling and Educational Psychology,  
Loyola

Dr. John M. Wozniak  
Professor Emeritus, Educational Leadership and Policy  
Studies, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

1/11/89  
Date

Manuel S. Silverman, PhD  
Director's Signature