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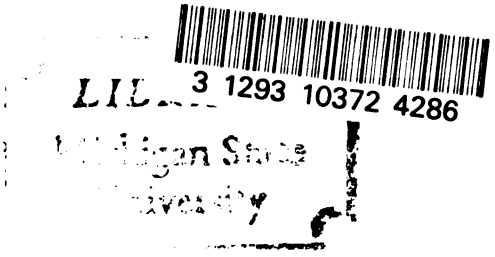

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BIOFEEDBACK-ASSISTED, CLIENT-CENTERED COUNSELING
IN THE TREATMENT OF ANXIETY AND
DEPRESSION IN MASTECTOMY PATIENTS

presented by

Janice Morgan Lazar

has been accepted towards fulfillment
of the requirements for

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Bob B. Winborn

Major professor

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BIOFEEDBACK-ASSISTED, CLIENT-CENTERED COUNSELING IN THE TREATMENT OF ANXIETY AND DEPRESSION IN MASTECTOMY PATIENTS

By

Janice Morgan Lazar

A DISSERTATION

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ABSTRACT

BIOFEEDBACK-ASSISTED, CLIENT-CENTERED
COUNSELING IN THE TREATMENT OF
ANXIETY AND DEPRESSION IN
MASTECTOMY PATIENTS

by

Janice Morgan Lazar

The purpose of this study was to investigate the use of client-centered counseling used in conjunction with biofeedback-monitored relaxation training to reduce anxiety and depression in mastectomy patients receiving chemotherapy. It was hypothesized that counseling and biofeedback would produce greater change in reported anxiety and depression in the treatment group than the group serving as a control and receiving only weekly telephone calls for the purpose of gathering information.

Twenty female mastectomy patients were randomly assigned to the treatment or telephone control group. The IPAT Anxiety Scale, IPAT Depression Scale, and Profile of Mood States served to measure the outcomes.

Analysis revealed that a treatment of assisted, client-centered counseling produces no greater change in reported anxiety and depression than a telephone control group receiving no treatment. Trend analysis revealed

age to have an effect upon confusion, with younger women scoring higher on a measure of confusion than older women.

An examination of suspected error sources includes the following: theory, sampling, design, instrumentation, treatment, and individual differences.

DEDICATION

To my mother and father who continually demonstrated their love, support, and encouragement throughout my education;

To my husband, Steve, who was always behind me with helpful advice and gentle pushing; and

To our long-awaited, yet to arrive, new family addition:

Thanks, I love you.

ACKNOWLEDGMENTS

This disseration reflects the work, cooperation, and support of many people to whom I would like to express my appreciation. I am particularly grateful to each of the clinicians--Dr. Dan Price, Dr. Ruth Rosenthal, and Dr. Vince Cornellier--who invested a great deal of energy and concern into their work. Also, I would like to thank Dr. Claudia Sowa who was very helpful in the initial stages of this research.

My doctoral committee, chaired by Dr. Bob B. Winborn, and comprised of Dr. Richard Johnson, Dr. Gary Stollak, and Dr. Alex Cade, was very helpful and supportive. Their suggestions and ideas provided valuable assistance to me.

I would like to express appreciation to Dr. Leif Suhrland and the staff at the MSU Cancer Clinic for their willingness to make referrals of patients to participate in this study.

Also to the Psychological Evaluation and Treatment Center, East Lansing, Michigan, I would like to express thankfulness for the use of its facilities.

Special thanks go to my typist, Ms. Barbara Reeves, who quickly took care of many "last details."

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CHAPTER I

THE PROBLEM, RATIONALE, AND RELATED RESEARCH

Need

The importance of adequate and timely psychological care has been stressed in both medical and psychological literature concerning breast cancer patients. Mammary carcinoma is the foremost site of cancer and cause of death in American women today. One out of every 13 women, or about 7%, will develop breast cancer in her lifetime. In 1981, an estimated 110,000 new cases will be found which will result in a mortality rate of 37,000 (American Cancer Society, 1981). The incidence of breast cancer steadily increases after age 25, peaking in middle to late years with a median age of 54 (Leis, 1977).

Fitzpatrick (1976) reported that the single woman is more likely to develop breast cancer than the married woman. The married, childless female seems more prone to breast cancer than women who bear children. Of childbearing women, those who bear their first children after 25 are considered in the high risk group, as are women who experience early menarche and/or late menopause. Although it is not proven to be hereditary, women with a family history of

breast cancer have a higher incidence of this type of cancer than women without such a history.

Treatment for this disease most often involves surgical procedures ranging from lumpectomy to radical mastectomy. A mastectomy, or surgical removal of the breast and possibly surrounding muscle tissue, is the most common treatment for this potentially fatal disease. This operation involves permanent disfigurement of a body part highly associated with a woman's feminine self-concept. Asken (1975) stated that while a mastectomy performs a gratifying and life-saving service, the woman's appreciation is muted by the actual loss of the breast, physical disfigurement, and accompanying psychological trauma.

Goldsmith and Alday (1971) reported that mastectomy raises several fears in a woman:

> First, there is the anxiety associated with any major surgical operation. Perhaps more important than this, however, are the fears associated with breast loss: concern over sexual desirability, interpersonal and sexual relations, and, if the woman is married, danger to her marriage. Third, there is the fear of death, an omnipresent consideration for all mastectomy patients (p. 1672).

The psychological problems of the mastectomy patient can be compounded by the physical problems involved in chemotherapy treatment. Unpleasant side effects of certain drugs include life-threatening infections, mood changes, gastrointestional disturbance and opecia (loss of hair). Some drugs have profound neurological effects. Holland (1976) states that chemotherapy poses many

psychological stresses. It is usually associated in a patient's mind with the phrase, "There isn't much left to be done for me."

The relationship between psychological factors and neoplastic disease can be noted in medical literature throughout history. Personality patterns, psychiatric illnesses, and emotional losses have been suggested as being factors hampering recovery or remission. For the woman who first learns she has breast cancer and must undergo a mastectomy, the emotional stress is tremendous. Cancer, being the dread disease that it is, tends to evoke life-threatening fears. Thus, there is a need for emotional support and effective coping skills. This research was designed to study a technique which could permit mastectomy patients to cope with and manage the emotional problems brought on by breast cancer and chemotherapy.

Hypothesis

It was the intention of this study to investigate the hypothesis that mastectomy patients undergoing chemotherapy and who receive an intensive program of counseling and relaxation training will display less anxiety and depression than those who have not been given such a treatment program.

Also investigated was the need for and type of supportive help sought by the individual patient on her own or on the advice of someone else. The availability and helpfulness of such support was also noted.

Third, the similarity between a mastectomy patient's self-report mood state and a significant other's evaluation of the same patient was investigated. The hypothses will be stated in testable form in Chapter II.

Review of the Literature

The review of the literature is presented in four sections: the psychological origins of cancer, the psychological problems of breast cancer patients, a review of the development and research involving client-centered therapy, and a review of the development and research involving stress reduction using electromyographic biofeedback. The section on the psychological origins of cancer discusses the roles of predisposing personality patterns and emotional stress in the development, site, and course of cancer. It is an historical review, focusing on the works of LeShan, Worthington, among others.

The second section looks at the psychological problems specific to breast cancer in patients: the impact upon family, sexual issues, and body image concerns. Existing treatment programs for mastectomy patients will be reviewed as well as research discussing psychological intervention for mastectomy patients. The additional stress and problems inherent in chemotherapy treatment will also be discussed.

Client-centered counseling is examined in the third section, focusing on the contributions of Carl Rogers. The

process of therapy and the necessary conditions for change are reviewed as well as the existing literature. Last, stress reduction and relaxation training as measured by biofeedback or electromyographic (EMG) will be focused upon. The development of this technique is reviewed in detail, focusing on the works of Brown, Benson, and Pelletier.

Psychological Origins of Cancer

The relationship between psychological factors and personality typology to neoplastic disease has been noted in medical literature for many years. A variety of hypotheses have been offered on this subject. Galen considered melancholly women to suffer cancer more frequently than sanguine women. In the late 1800s, Herbert Snow studied statistically 250 successive patients in the London Cancer Hospital (LeShan, 1959). In 156 patients,

> there had been immediate antecedent trouble, often of a poignant form, as the loss of a near relative . . . 32 spoke of hard work and deprivation . . . 43 had histories permitting a suspicion of mechanical history . . . and in 19 no common history was found.

Later, in the middle of the twentieth century and with the development of the field of psychoanalysis, a renewed interest in the relationship between the psyche and cancer came about. Elida Evans (1926) studied 100 cancer patients by Jungian depth-analysis. The typical cancer patient, she reports, had lost an important emotional relationship prior

to the onset of cancer and was unable to secure any effective outlet for psychic energy. She saw the basic problem of the cancer patient as that of being driven back into him/herself.

Bacon and associates (1952), after observing 40 women, felt that breast cancer could be conceptualized as passive suicide precipitated by guilt feelings and depression. Reznikoff (1955) raised the question of hormonal imbalance secondary to psychodynamic conflict when he compared women with benign and malignant breast tumors and found an apparent disturbance in feminine identification and a history of excessive responsibilities during childhood in the group with malignant tumors. He also reported depressive reactions prior to the onset of cancer and speculated about the possibility of decreased host resistence due to depression.

LeShan and Worthington attempted to statistically study the relationship between cancer and personality. They reported (1956) four consistent factors found in reports of personality studies on some patients with cancer: (a) the patient's loss of an important relationship prior to the development of a tumor, (b) the cancer patient's inability to express hostile feelings and emotion, (c) the cancer patient's unresolved tension concerning a parent figure, and (d) sexual disturbance. These same factors are very similar to factors described in patients with auto-immune disease.

Not only do psychological factors seem to influence who gets neoplastic disease but also the success of treatment and rate of remission. West, Blumberg, and Ellis (1952) studied cancer patients and found those with faster growing tumors could be described as having more defensiveness, higher anxiety levels, and less ability to reduce tension through motor discharge than patients with slower growing neoplasms. LeShan and Gassman (1958) discussed their findings after 1400 hours of in-depth psychotherapy with patients having fatal cancers. They point out that changes in the growth rate of tumors are apparently highly correlated with certain types of emotional stress and with reductions in stress occurring in psychotherapy, and that this imposes the necessity for extreme care and often special methods on the part of the therapist.

The concept of a precancerous personality or the suggestion of significant losses' contributing to the development of cancer has received less attention in more recent literature. An exception is a doctoral dissertation by Sheehan (1977) who studied the personality characteristics, interpersonal needs, and biographic variables of women who had malignant and women who had benign breast tumors. The results of this study indicated that women who developed breast cancer were depressed, compared to the benign group. This depression seemed to be long-standing. The interpersonal world of the malignant group appeared to be barren

and devoid of emotional nourishment compared to the benign group.

In addition to psychological factors, other environmental aspects of life are implicated in the onset and course of neoplastic disease, such as radiation and carcinogenic substances found in food, water, and the air. When exposed to carcinogenic substances, many individuals do not develop cancer. There is growing evidence that the ability to resist cancer is immunologic in nature. Some event at a critical time may allow a mutant cell (ordinarily rejected) induced by a virus, radiation, chemical carcinogen, or chance somatic mutation to thrive and multiply (Solomon, 1969). There is evidence for tumor-specific antigens (Prehn, 1963) and for lowered immunologic capacity in patients with cancer (Southam, 1957). Immune mechanisms maintain a constant surveillance of the body cells, recognizing as abnormal those cells that undergo a neoplastic transformation from whatever cause and destroying them before they can develop into tumors. There is also some evidence that even when these surveillance mechanisms fail to eliminate neoplastic cells, they may slow their propagation (Southam, 1957). These mechanisms are markedly depressed by high levels of corticosteroid hormones, hormones which are elevated by emotional stress.

Achterberg and Lawlis (1978) have diagramed the interaction between psychological and physical factors, based upon the work of Hans Selye (1956). They state:

> The emotions accompanying psychological and physiological stress-fear, anxiety, and depression are reflected in limbic system activity, which directly involves hypothalmic and pituitary function. The pituitary, the body's master gland, regulates all hormonal activity. Further, imbalances in hormonal activity have frequently been demonstrated to be connected to increases in malignant growth. Oversecretion of the adrenal has been particularly noted to affect the thymus and lumph integrity and subsequently the white blood cells. Stress can thus be viewed as having a two-fold influence on the malignant process: (1) the production of abnormal cells increases, and (2) the capability of the body to destroy these cells is diminished. Imagery moving in a positive direction may serve to alleviate the disruptive emotional condition and thereby intervene in the stress-disease-stress cycle (p. 15).

The diagramatic model of the physiological concomitants of stress appear in Figures 1 and 2.

The immune mechanism is not only an important factor in the onset of cancer, but also as an important deterrant in the spread of malignant cells. Surgeons have recognized that manipulation of a tumor mass during surgery or physical examination may increase the dissemination of cells. Southam (1957) suggests that smooth muscle contraction which accompanies emotional stress and is controlled by adrenalin and autonomic nerves might influence cancer cell dissemination. As muscle contraction occurs, the cancer cells are spread.

Psychological Problems of Breast Cancer

The diagnosis of cancer is perceived by most individuals as being terrifying, tending to evoke images of pain,

Figure 1. Psychophysiological Model of Cancer Growth

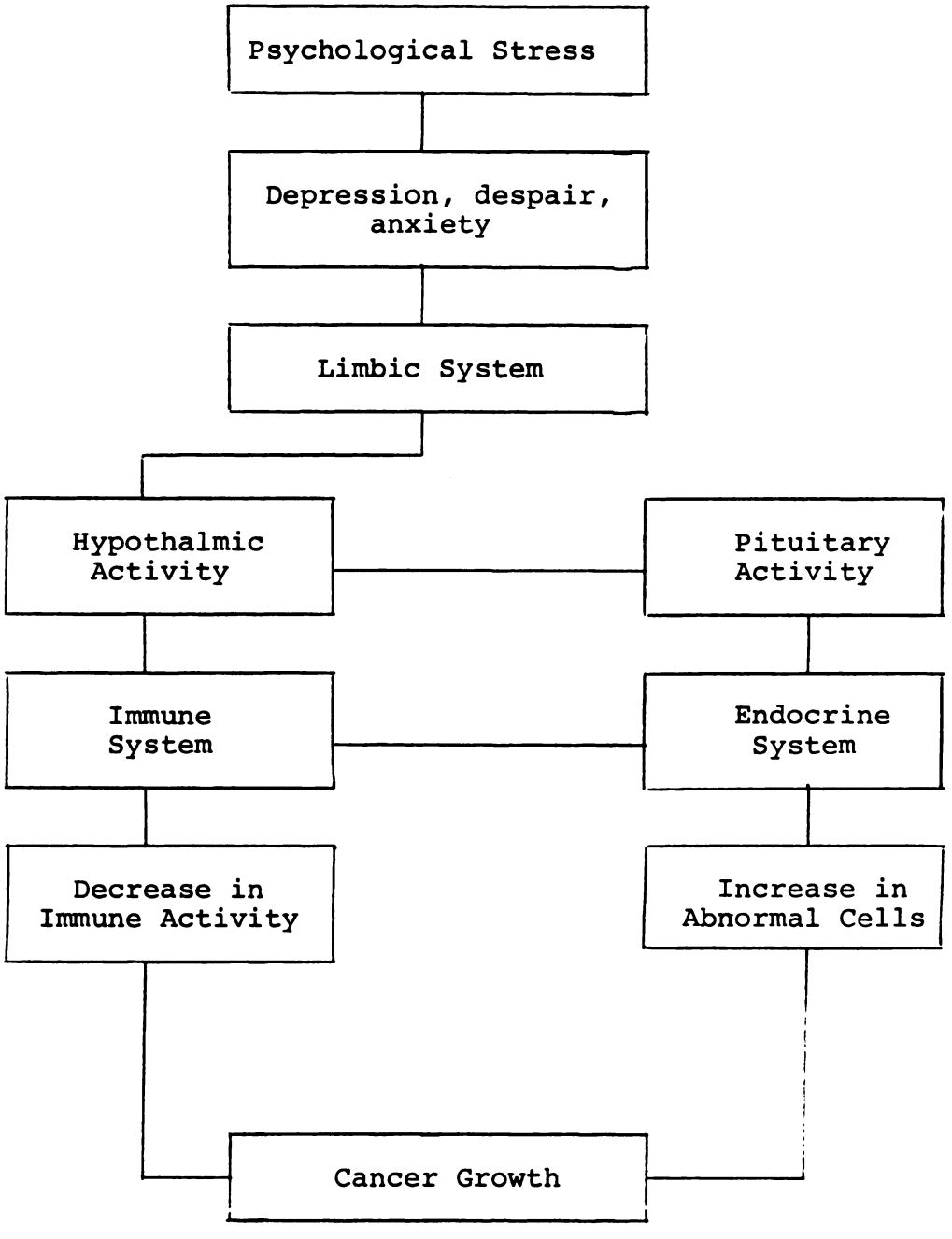
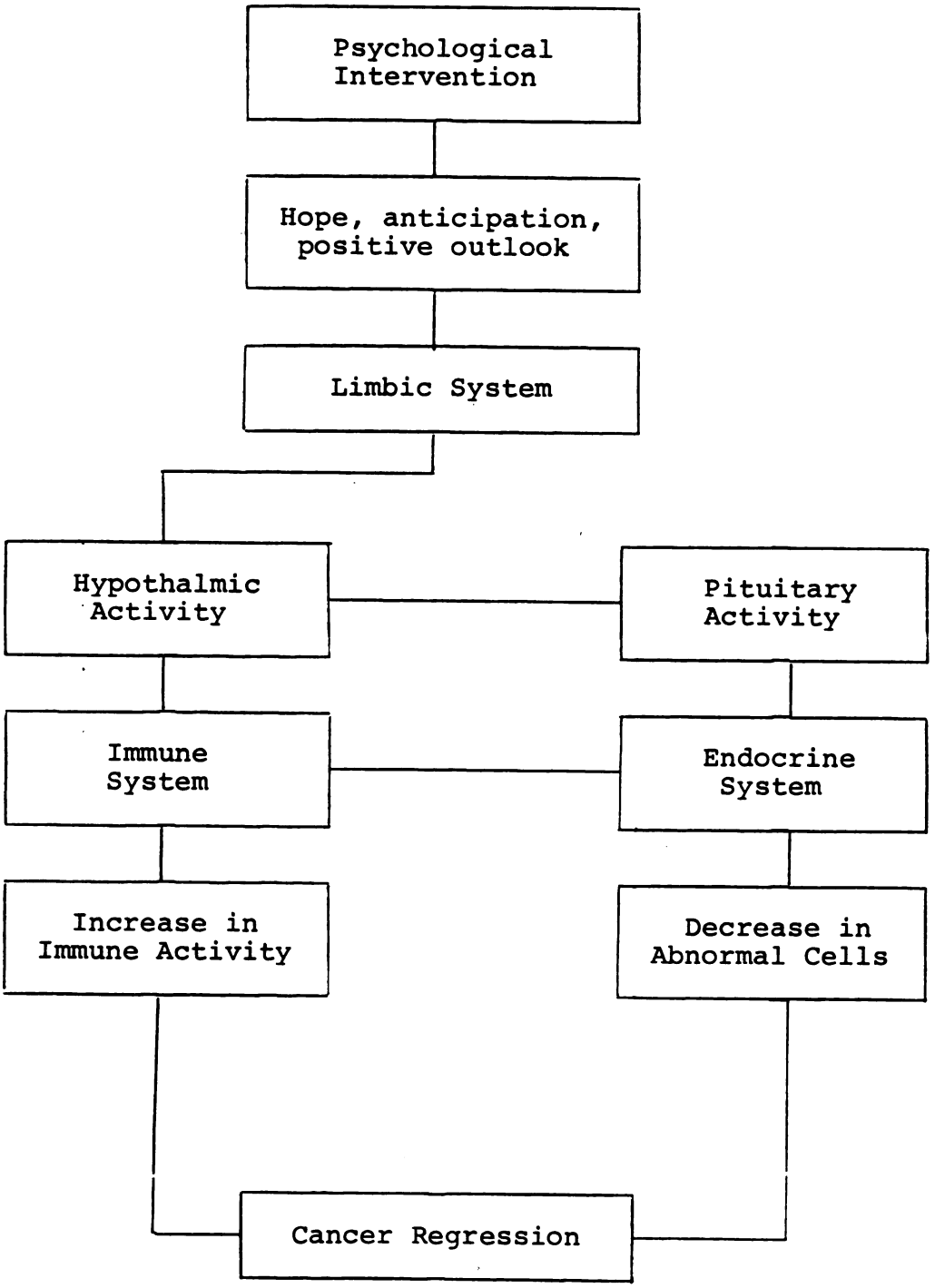


Figure 2. Psychophysiological Model of Cancer Regression



mutilation, and death. Even in those cases when the tumor is operable and a good chance for survival is given, emotional distress may still exist for the patient. Laxenaire (1971) described intense anxiety and suicidal preoccupation (without any reported suicide attempts) as the initial response to the diagnosis of cancer. Bronner-Huszar (1971) described anxiety as a frequent first response that in some cases led to the delay in obtaining surgery because the patient denied the illness. Farberow, et al. (1971), working with Veterans Administration statistics, discovered that about 25% of general medical and surgical hospital suicides occurred among patients with neoplasms, an overrepresentation by about 12% of hospital populations. Most importantly, suicides took place when the patients were outside the hospitals.

Renneker and Cutler (1952), in their study of mastectomy patients, found a typical post mastectomy depression in most patients. In addition to persistent depression, patients complained about increased anxiety, worthless feelings, shame, and occasional ideas of suicide. It was concluded that the two primary forces beyond the syndrome which has been compared to a bereavement process were (1) adjustment to breast mutilation and diminished femininity and (2) reaction to a potentially fatal disease. Comparison studies of women with other cancers were not carried out, nor were the mastectomy patients followed up at regular intervals. Ray (1977) did experimentally study

mastectomy patients and cholecystectomy patients (a gall bladder operation that requires an equivalent hospital stay but is not associated with a diagnosis of cancer or disfigurement). The adjustment of a group of mastectomy patients to their operations was assessed at an interval of between 18 months and five years of survery. They were found to be significantly more depressed and anxious than the control group of cholecystectomy patients, they tended to have lower self-esteem, and they described themselves as being more introverted in behavior. These differences were attributed to concern about both the loss of the breast and the possibility of the recurrence of cancer. Jamison, et al. (1978), administered a questionnaire to 41 mastectomy patients. Their descriptive research showed approximately one-fourth of the women to have experienced suicidal ideation after the operation. More than one-third noted their tranquilizer use to be greater or much greater than before the mastectomy, and 15.4% reported that their alcohol use significantly increased.

Maquire, et al. (1978), in an experimental study assessed psychiatric morbidity associated with mastectomy in 75 women by following them up from the time they presented suspected breast cancer to one year after the operation. Fifty women with benign breast disease served as controls. Throughout the follow-up period, the incidence of emotional problems was higher in the mastectomy patients. One year after surgery, 25% of these women

compared with only 10% of the controls needed treatment for depression or anxiety or both. Altogether, 39% of the mastectomy patients and 12% of the control patients had serious anxiety, depression, or sexual problems.

Lee and Maquire (1975) monitored the communication between 400 women referred to a breast cancer clinic and their surgeons. They found a striking discrepancy between the level of distress detected by mood scales which had been administered to the patients and that indicated verbally by the women to the surgeons. Sixty-nine percent of the patients exhibited non-verbal signs of distress which were usually ignored by the surgeons. When reassessed three months after their operations, 34% of the patients were still reporting moderate to marked degrees of anxiety or depression compared with seven percent in a control group. While there was an improvement in those parameters at the end of one year, there was found increased incidence of marital discord, sexual problems, and a dimunution in leisure and social activities. Similar disturbances were found in their husbands.

There has been little research addressing the effect of a patient's breast cancer and mastectomy on significant others. Observations made on this issue are diffuse and based largely on clinical impressions. Nuehring and Barr (1980) view substantial sociopsychological impact upon a family as a logical consequence, given the magnitude and

complexity of the patient's response to breast cancer and mastectomy. Furthermore, they write:

> The depressed, anxious mood of the patient who has undergone a mastectomy, may precipitate adverse emotional responses within the family in a variety of ways. For example, family members may experience guilt and despair because they are unable to alter the patient's mood; they may be unpracticed at handling or unable to tolerate negative moods and behavior. Children may not understand and may thus fear their mother's emotional state (p. 52).

The self-concept of the mastectomy patient is closely linked to sexuality and perception of body image. A discrepancy between actual appearance and perceived bodily self-image may generate anxiety, undermine self confidence and interfere with normal social and sexual interactions (May, 1980). Polivy (1977) measured changes in body image, self-concept, and total self-image in mastectomy patients and two control groups (biopsy and surgical control). She found that mastectomy patients did, indeed, evidence a decline in body image and total self-image, but not until months after surgery.

In interviews with 41 women, Witkin (1978) found that sexual self-concept superseded mortality as the primary concern of most mastectomy patients. The effects of the operation itself may have a direct impact upon the sexual relationship of a couple, with some partners being hesitant to resume sexual activity for fear of hurting the woman (May, 1980). Mantell and Green (1978) report that there is concern that lovemaking may cause further injury or

complications, such as pain or a reopening of the surgical incision. Other factors such as heightened sensitivity of the surgical site and post-surgical lymphedema, or swelling of the involved arm, can result in physical awkwardness and psychological tension for both individuals (May, 1980). The sexual consequences of mastectomy are reported by Leif (1978), who found women had a temporary decrease in the frequency of organism following mastectomy, 19% had no intercourse in the first three months postoperatively, and breast stimulation reported by 79% of women prior to surgery declined to 44% after the operation. Erotic sensations from the breast decreased or disappeared in 50% of the women for whom it had been significant preoperatively. There was also a marked decrease in those who could undress with comfort in front of their partners and a decrease in nudity during sex.

The psychological problems of the mastectomy patient can be compounded by the physical problems involved in surgical removal of the breast. Lymphedema (swelling of the upper extremity of the operative side) is a negative side effect of surgery, estimated to occur in 39% of mastectomy operations (Healey and Villanueva, 1972). In addition to the swelling and pain caused by lymphedema, notable restriction of shoulder motion often develops. Therefore, certain activities for a woman may be prohibitive. Phantom sensations such as itching, numbness, and

pain also appear to be a fairly common occurrence (Silberfarb, 1977-1978).

As previously stated, the administration of adjuvant chemotherapy is not usually without unpleasant side-effects. Adjuvant chemotherapy and adjuvant chemoimmunotherapy have been shown to delay early recurrence and increase survival of cancer patients (Sparks, et al., 1976). As evidence of its usefulness accumulates, more and more women will probably be receiving chemotherapy (Holland, 1973). The psychological reactions of patients who receive chemotherapy for advanced breast cancer has been studied by Krakoff (1973), but no distinction could be made between the effects of advanced cancer and the effects of chemotherapy. Meyerowitz, et al. (1978), reported the only research found in the literature which attempted to evaluate the psychological and social condition of patient's receiving adjuvant chemotherapy after surgery for stage II breast carcinoma and reported the following results:

1. Every woman interviewed reported that participation in the adjuvant treatment program had resulted in adverse changes in her life, with 94% interpreting these changes as emotionally upsetting. Virtually every woman reported adverse side-effects related to treatment, fatigue being the most commonly reported. Eighty-eight percent reported feeling "sick" and nauseated at least some of the time during treatment.

2. Increased financial burden was reported by 54% of the respondents, attributed to lost income and/or increased medical expenses.

3. The most frequent and marked effect of chemotherapy was a decrease in both general and work-related levels of activity. Sixty percent of the women employed outside of the home reported an average forced work loss of 9-3/4 days per year as a direct result of the physical side-effects of chemotherapy, in addition to the 2.6 hours per week required for treatment-related activities. Forty-five percent of the employed women claimed job status to have been adversely influenced.

4. Forty-one percent of the women claimed that their family and/or sexual life had been adversely affected.

In spite of these numerous reports of negative effects, 74% of the patients "would definitely" recommend the treatment to friends in a similar situation. The distress and disruption tended to abate soon after the chemotherapy treatments were stopped.

Psychological Intervention for Breast Cancer Patients

More has been written in the literature about the necessity and content of psychological intervention for the mastectomy patient than on the process or technique by which the intervention should be delivered. Schain (1976) states that the major issue for a mastectomy patient is similar to that described by Bach (1974) in reference to

counseling divorced women: to attempt to turn a traumatic situation into a potentially growth-producing experience. Counseling should not only be reparative, it should be integrative in helping these women understand their current reactions in light of their past psychological and social histories.

The literature describing psychological intervention for the most part has predominantly included a team approach including a surgeon, a nurse, a medical social worker, and, perhaps, a recovery worker who has, herself, experienced a mastectomy. Most have been relatively short-term programs unable to deal with in-depth personal issues. Schwartz (1977) described a pilot group program held once a week for three weeks, where information on the medical and psychological aspects of breast cancer was imparted by films, videotapes, and small group discussions of mutual problems. Seventy-five percent of the participants indicated through a questionnaire that they would be interested in regular, on-going discussions or another similar program.

Reach to Recovery, a volunteer organization which is part of the American Cancer Society and comprised of women who have undergone mastectomies, visits with hospitalized mastectomy patients at the request of the treating surgeon. Its purpose is to act as a model of adjustment and to talk with the patient about the feelings she is experiencing. In far too many cases, this is the only intervention which

is suggested to the mastectomy patient whether she appears to be adjusting well to the surgery or not. While some women may seek out a volunteer on their own, for the most part, Reach to Recovery reaches only those women whose physicians refer them.

Trachtenberg (1972) describes a group counseling project lead by a team consisting of a nurse, social worker, physical therapist, and a volunteer who has previously undergone a mastectomy. The purpose of this particular team approach is to supply immediate postoperative intervention to aid in the recovery and adjustment process. Klein (1971) presents examples of content to be covered in pre-operative counseling which includes giving information and helping the client decide what to tell others about her situation. Akehurst (1971) believes that the use of a former mastectomy patient in counseling is important because having suffered the effects of the operation, she is the only person who can talk to the patient with real understanding.

A post-mastectomy rehabilitation program has been developed at the Memorial Sloan-Kettering Cancer Center which is comprised of a series of structured exercise, information, discussion, and group therapy sessions conducted by a social worker, nurse, physical therapist, and a Reach to Recovery volunteer. The purpose of this program is to prevent mastectomy patients from being left to

themselves to adjust psychologically and physically (Winick and Robbins, 1977).

A more comprehensive program for psychosocial care has been established at the UCLA Center for Health Sciences which includes preventive, interventive, and postventive care (Pfefferbaum, et al., 1977-1978). This approach to the psychological care of the mastectomy patient is one of crisis intervention, and what is offered to the patient in terms of postoperative care is a four to six month follow-up interview.

Simonton, Simonton, and Sparks (1978) have detailed a pilot study of patients with medically advanced malignancies for the purposes of altering the course of the disease and supplying the patient with useful mental health tools. Their approach included a combination of regular relaxation and guided fantasy, desensitization, grief work, goal setting, suggested supplemental reading, regular physical exercise, group therapy, and individual counseling. This psychological intervention, in addition to medical treatment, was administered to 180 consecutive patients at the Cancer Counseling and Research Center over a 4½ year period. Median survival time of 31 months for advanced breast cancer was reported, representing an improved survival time over advanced cancer patients not receiving psychotherapy.

Pelletier (1979) describes an approach to improve the quality of the cancer patient's life by helping the

individual to adapt to the psychosocial stress of cancer. He has published a case presentation of one of 12 patients treated using biofeedback as a stress-reduction adjunct to primary cancer therapy. The case presentation is intended to detail the procedure where the primary emphasis is on (a) instructions in meditation and relaxation posture used in conjunction with EMG feedback and (b) visual imagery exercises. On-going research on this technique is exploring each patient's immunologic response as an empirical index of stress.

A review of the literature shows a lack of research using control groups in the treatment of stress and other psychological problems of the mastectomy patient. In using a Medline search, a Psychological Abstracts search, and a search of literature by the National Institute of Mental Health, Pelletier's case study was the only research article found which utilized EMG biofeedback and relaxation therapy techniques to reduce stress in the cancer patient. This case study and the work of Simonton, Simonton, and Sparks (1978) were the only research found treating emotional distress as being viewed as a possible predisposing factor in neoplastic disease.

In summary, extensive research literature supports the correlation between stress and psychosocial factors and the incidence of disease. Recently, there has been increased interest in stress and other psychological factors which may contribute to the etiology and alleviation

of neoplastic disease. Anxiety, fear, and depression appear to be primary emotional problems experienced by many mastectomy patients. Pfefferbaum, Pasnau, Jamison, and Wellisch (1978) point out that breast cancer and its surgical treatment carry with them more adverse emotional distress for women than cancer of any other organ. The secondary treatment for cancer, chemotherapy, also involves numerous adverse physical and emotional side effects.

There is a general agreement of the need for emotional support and psychological intervention in the rehabilitation of mastectomy patients, but the interventions mentioned in the literature are predominantly based upon personal clinical observations. The effectiveness of counseling and psychotherapeutic techniques with mastectomy patients has not been tested experimentally.

Review of Development and Research in Client-Centered Counseling

Client-centered counseling is an approach developed by Carl R. Rogers (1951). The central hypothesis is the belief that the growthful potential of an individual will tend to be released in a relationship in which a helping person is experiencing and communicating realness, caring, and a deeply sensitive, nonjudgmental understanding. It is a process oriented in drawing its hypotheses from raw data of therapeutic experience and from recorded interviews. It has application in every field of human

endeavor where the healthy psychological growth of the individual is a goal (Meador and Rogers, 1979). The underlying view of the nature of a person postulates the individual's tendency toward self-actualization.

> This is the inherent tendency of the organism to develop all its capacities in ways which serve to maintain or enhance the organism (Rogers, 1979).

As an individual grows and develops, significant others in one's life impose "conditions of worth" upon the person. These conditions place value and acceptance upon the individual, dependent upon that individual's behavior. These conditions are then assimulated into the individual's own self-concept. Then, according to Rogers,

> he values an experience positively or negatively solely because of those conditions of worth which he has taken from others, not because the experience enhances or fails to enhance his organism (1979).

The process of therapy begins as an intervention into the incongruence an individual has developed between his/her self-concept and experience of reality. Experiences not consistent with one's concept of oneself create anxiety and arouse defense mechanisms. Meador and Rogers (1979) describe the psychologically mature person as one who perceives realistically, is not defensive, accepts responsibility of being different from others, accepts responsibility for his/her own behavior, evaluates experience in terms of evidence coming from one's senses, changes evaluation of experience only on the basis of new evidence, accepts others as unique individuals, prizes

him/herself, and prizes others. The mastectomy patient, in many instances, experiences anxiety and vulnerability to debilitating emotional disturbance when her self-concept is one of a health body and she has now learned she has cancer. Many researchers who have studied the emotional effects of a mastectomy operation have mentioned the need for therapeutic intervention to aid in the enhancement of just those qualities ascribed to the mature person.

Client-centered counseling begins as the therapist relates three necessary and sufficient attitudes to the client. The counselor must (a) possess an attitude of unconditional positive regard, (b) be empathic or understanding, and (c) be genuine or congruent. The process of positive personality change will occur when the client perceives these attitudes and is uncomfortable with him/herself (Meador and Rogers, 1979).

Client-centered therapy, along with being one of the most well-respected counseling theories, has stimulated a great deal of research. Experimental studies have shown:

1. Clients experiencing client-centered therapy to be less defensive, more flexible, more consciously aware of material previously unavailable to awareness, more differentiating in their perceptions, and more open to experiencing themselves (Haigh, 1949; Kessler, 1949; Rogers, 1951; Vargas, 1954);

2. An improvement in psychological adjustment as shown on the Rorschach, the Thematic Apperception Test, and personality inventories of the self-report type (Dymond, 1954a; Dymond, 1954b; Grummon and John, 1954; Haimowitz and Haimowitz, 1952; Mosak, 1950);

3. A clearer, more positive, and more congruent self (Butler and Haigh, 1954; Raimy, 1948; Rogers, 1951; Stock, 1949);

4. Less psychological tension and greater adaptive capacity in response to frustration as evidenced by autonomic nervous reactivity (Thetford, 1952); and

5. A decrease in psychological tension (Assum and Levy, 1948; Cofer and Chance, 1950).

Review of Development and Research of Stress Reduction Techniques Using EMG Biofeedback

Biofeedback, or electromyography (EMG) is a process or technique for learning voluntary control over automatically, reflexly-related body systems (Brown, 1977). A selected physiologic activity is monitored by an instrument which senses, by electrodes, signals of physiologic information about such body functions as heart rate, blood pressure, muscle tension, and/or brain waves. Benson (1975) describes the relaxation response which can be learned through biofeedback as being opposite of those physiological reactions occurring in the human body in times of threat. The "flight or fight" response is that

state of arousal which prepares the body to take action in threat of danger. The response elicited in relaxation is decreased oxygen consumption, carbon dioxide elimination, heart rate, respiratory rate, minute ventilation, and arterial blood lactate (Wallace and Benson, 1972).

In social situations of less obvious threat, many of the same physiological reactions occur: blood pressure and pulse rise, digestion ceases, the skin blanches, and blood pools where it is needed (Brown, 1977). Tension or contraction of muscles without movement is a normal body reaction to any stressful stimulus and may or may not be recognizable. The role of stress and predisposing factors on the body's autoimmune system and the origin and course of neoplastic disease has been discussed previously.

In 1962, Gardner Murphy suggested the possibility of using electrophysiological instrumentation for measuring and presenting to a person some of his/her own normally unconscious physiological processes; that is, processes of which a person is normally unaware. In 1969, Green, Green, and Walters described the psychophysiological principle:

> Every change in the physiological state is accompanied by an appropriate change in the mental-emotional state, conscious or unconscious, and conversely every change in the mental-emotional state, conscious or unconscious, is accompanied by an appropriate change in the physiological state.

This concept is the cornerstone in understanding the role of biofeedback training in the treatment of the

physiological effects of stress and psychosomatic illness. As the individual modifies the physiological state, through biofeedback learning, the mental-emotional state also changes as a result.

Pelletier (1975) adds two additional principles to the concept of biofeedback previously stated:

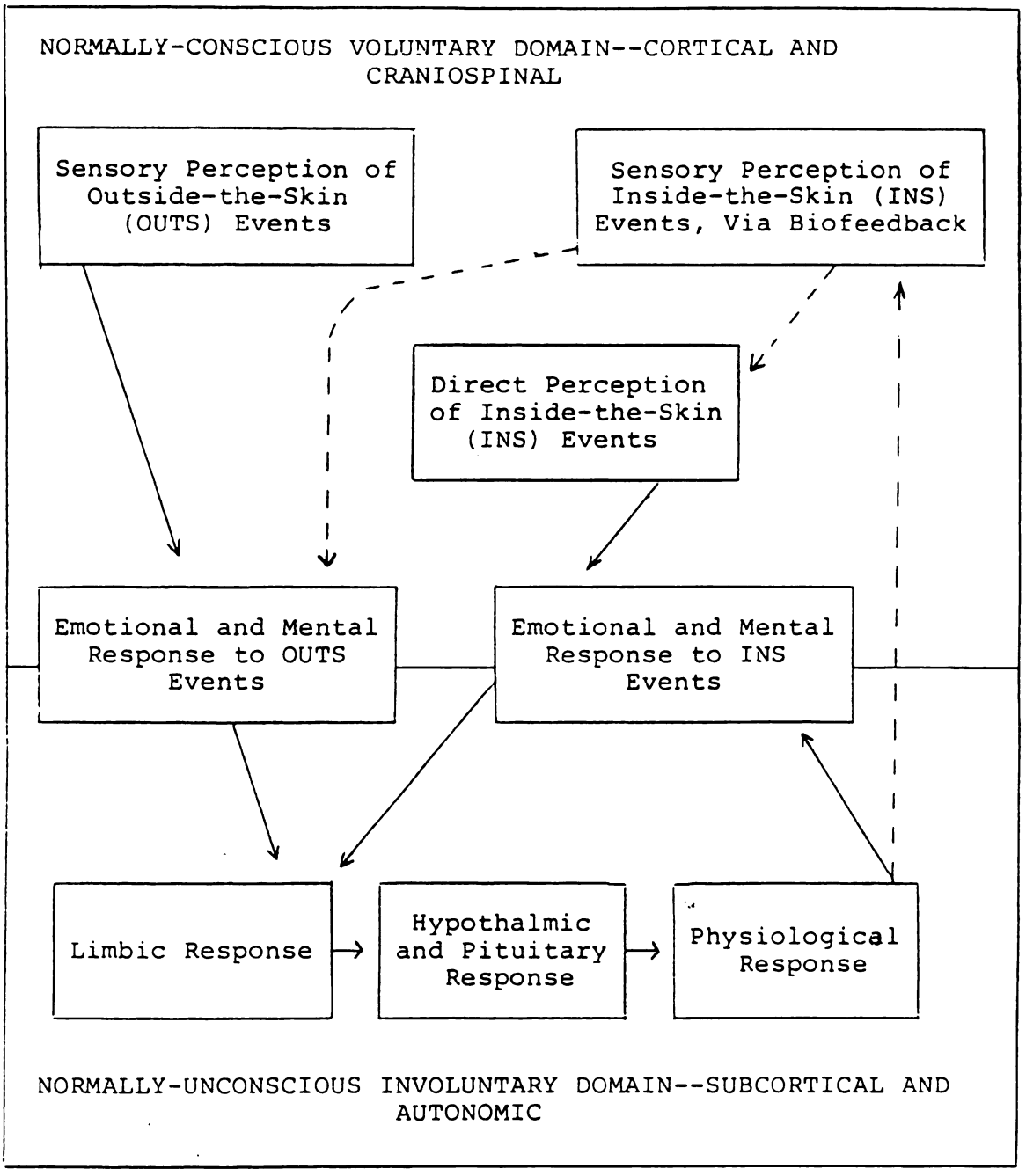
1. Any physiological process which can be monitored, amplified, and made visible to an individual can be voluntarily controlled by that individual; and

2. A meditative state of deep relaxation is conducive to the establishment of voluntary control by allowing the individual to become aware of subliminal imagery, fantasies, and sensations.

What actually mediates biofeedback effects themselves is still open to question. One possibility is that the relaxation process could serve as a means of attention deployment (Budzyaski, et al., 1973). The person learns to focus attention on relaxing muscles, and attention is turned away from the stress-producing sources of tension. Alternately, such training might induce a relaxed psychological state that is incompatible with tension, a mechanism suggested by Wolpe (1958).

Green and Green (1977) have diagramed a rationale of self-regulation of psychophysiological events and the process of how biofeedback may work (see Figure 3). Their own electrophysiological studies indicate that every perception of outside-the-skin events (OUTS) (upper left box)

Figure 3.


NORMALLY-CONSCIOUS VOLUNTARY DOMAIN--CORTICAL AND CRANIOSPINAL
Sensory Perception of Outside-the-Skin (OUTS) Events
Sensory Perception of Inside-the-Skin (INS) Events, Via Biofeedback
Direct Perception of Inside-the-Skin (INS) Events
Emotional and Mental Response to OUTS Events
Emotional and Mental Response to INS Events
Limbic Response
Hypothalmic and Pituitary Response
Physiological Response
NORMALLY-UNCONSCIOUS INVOLUNTARY DOMAIN--SUBCORTICAL AND AUTONOMIC

has associated electrical activity in both conscious and unconscious central nervous sytem structures. These structures are involved in emotional and mental responses (Harlow and Woolsey, 1958). The two boxes labeled "emotional and mental responses..." have been placed at the middle of the diagram divided by the horizontal center line into conscious and unconscious parts, in order to indicate their two-part nature. The next box, called "limbic response," is placed entirely in the unconscious section of the diagram, though some neural pathways lead from limbic structures directly to cortical regions, implying that "information" from limbic processes can reach consciousness. The limbic system coined by McLean (1949) as the "visceral brain" or emotional brain correlates emotional states and visceral processes with electrophysiological activity. Limbic signals are then converted to autonomic and hormonal processes through the activity of the hypothalmus and pituitary glands.

The sensory perception of OUTS events, stressful or otherwise, leads to a physiological response along arrows 1 to 4. If the physiological response is "picked up" and fed back (arrow 5) to a person who attempts to control the "behavior" of the feedback device, the arrows 6 and 7 come into being, resulting in a "new" limbic response. This response, in turn, makes a change in "signals" transmitted along arrows 3 and 4, modifying the original physiologic response. A cybernetic loop is thus completed, and the

dynamic equilibrium (homeostasis) of the system can be brought under voluntary control. Biofeedback practice, acting in the opposite way to drugs, increases a person's sensitivity to inside-the-skin events (INS), and arrow 8 develops, followed by the development of arrows 9 and 10. External feedback is eventually unnecessary because direct perception of INS events becomes adequate for maintaining self-regulation skills. Simply stated, the perception of outside-the-skin events leads to limbic-hypothalmic-glandular responses, and physiological change is the inevitable consequence.

Much of the research utilizing EMG biofeedback has been in the form of case studies and personal experience. Gladman and Estrada (1974) in an address to the 21st Annual Meeting of the Academy of Psychosomatic Medicine state that they have applied the use of EMG biofeedback in the treatment of chronic headache (migraine and tension), chronic pain, hypertension, anxiety states, and depression accompanied by various somatic complaints (weakness, palpitations, fatigue, etc.). Symptom removal has occurred rapidly, and they have observed the patient's internal state to be generally more calm and less vulnerable to stress. They also report patients to be functioning more to their own satisfaction in relation to themselves and the people around them. They report observing clients who have previously seemed to be at the mercy of external forces, beyond their control, to develop a sense of mastery with the

realization that one can change him/herself and make changes in one's own environment.

Further research studies have demonstrated the clinical usefulness of EMG biofeedback for the treatment of stress-related anxiety neuroses (Jacobson, 1970), asthma (Davis, et al., 1973), spasmodic torticollis (Brundy, et al., 1975), and muscle hypertonicity in cerebral palsy patients (Finley, et al., 1976).

Personality variables have been suggested to correlate with the effects of stress on muscle tension. Duffy (1946) commented that individual energy mobilization tendencies are one of the most significant aspects of a person's personality and that some people react more intensely to stress than others. Wenger commented that "generalized muscular tension is a correlate of certain aspects of personality" (1943, p. 224). Some of the differences in personality that may correlate with muscle tension include frequency of emotion; restlessness of the person; and the sensitivity, emotional control, or impulsiveness of the person (Wenger, 1943). Several studies have suggested the variable of locus of control to be related to stress and expectation of one's success using biofeedback. Vogt (1975) found that a subject's estimate of success in controlling forearm muscle tension was slightly poorer in those with an external locus of control compared with those individuals found to be more internally controlled. In internals, there was a negative relationship between

perceived EMG changes and actual changes. Hume (1977) writes,

> It seems reasonable that a person's beliefs about his own ability to influence events in general should extend to his ability to alter his own physiology.

The clinical application of biofeedback as a means of alleviating a wide range of psychosomatic disorders is well documented. The role of biofeedback has also been well noted in the treatment of emotional disturbance. Muscle tension levels often change naturally as emotions change. Jacobson (1938) found that a sudden start would arouse emotions of surprise and fear. When subjects were "directed to be inattentive, tension seemed to give way to relaxation" (p. 103). Theorists have correlated muscle tension with a variety of emotional disturbances. Smith (1973) reviewed several studies in this area and found that variations in muscle tension in response to stress correlate significantly with temporary emotional states (Shipman, et al., 1964), trait anxiety (Balshan, 1962), psychological rigidity (Harvey, 1966), depression (Goldstein, 1965), and psychosis (Goldstein, 1965).

In treating chronic anxiety, Raskin, et al. (1973), found EMG feedback training in combination with daily practice of relaxation to be useful for ten patients who had been troubled by severe anxiety symptoms for at least three years. Additionally, he reports that previous therapeutic efforts by the same investigators--treatment with individual psychotherapy and medication--had not been

successful. In a controlled study, Townsend, et al. (1975), compared chronically anxious patients given EMG training to a matched control group treated with group psychotherapy. In the feedback group, there were significant decreases in EMG levels, mood disturbance, trait anxiety, and state anxiety that did not occur in the control group.

Little experimental research is available concerning the use of EMG biofeedback for the treatment of depression; however, Seitz (1971) has found relaxation training useful in his work with depressed patients. He believes relaxation is useful in part because it induces an affect which is incompatible with depression. Gladman and Estrada (1974) in discussing their methods of work utilizing biofeedback techniques in psychotherapy with individual patients state,

> We use the personal interaction between patient and therapist to encourage and support his efforts, to learn to control internal states as quickly and effectively as possible, while modifying his way of dealing with problems.

Summary

Current psychological literature contains numerous studies concerning improvement of the quality of life of the breast cancer patient. The existing literature on client-centered counseling and EMG biofeedback demonstrates the applicability and efficacy of these approaches in a variety of settings. Specifically, a treatment program

combining client-centered counseling and EMG biofeedback was utilized in this research for treatment of anxiety and depression commonly found to be present in women who have undergone mastectomies and who are undergoing chemotherapy treatments. In Chapter II, the subjects, methodology, and instruments used are discussed. In addition, the testable hypotheses and research design are offered.

CHAPTER II

EXPERIMENTAL DESIGN AND METHODOLOGY

Sample

The sample used consisted of 20 women who were asked to volunteer to participate in a study concerning the emotional adjustment to breast cancer. The following demographic data are offered:

Table 2.0. Demographic Information

Marital status:	9 married, 11 unmarried
Employed outside of home:	6 employed, 14 unemployed
Race:	20 white
Range of age:	31-40 years = 2 41-50 years = 3 51-60 years = 11 61-70 years = 3 71 to above = 1

The first 20 women to volunteer were accepted into this study. It is recognized that large samples are typically preferred due to their allowance for greater reliability, their smaller sampling errors, and larger alpha error. However, there are also valid reasons for favoring smaller samples; i.e., small samples may be economically feasible, whereas large samples may not be. Also, Isaac

and Michael (1977) point out that when conducting exploratory research, it becomes essential to remain close to the data. To allow for this, samples between ten and twenty are advantageous as they provide for easy calculations and provide for testing of the null hypotheses while overlooking weak treatment effects (Isasc and Michael, 1977). It is important to remember that within any investigation, statistically signficant findings can be created for relevant variables by merely increasing the sample size, and that this common practice debilitates the variables in question to the point where educational significance is negated (Denenberg, 1976).

Population

The sample was obtained from the existing population of breast cancer patients being treated at the Michigan State University Clinical Center. The Clinical Center is designed for outpatient care for the general public and includes an oncology specialty service. The breast cancer patients treated at the Clinical Center are all referrals from physicans in the mid-Michigan area. All of the patients have been diagnosed prior to coming to the Center, and almost all have had mastectomies. All of the patients are in stage II or more advanced stages of cancer. They are admitted for follow-up care and chemotherapy. Patients are typically seen every six weeks for two years and every three months thereafter. Approximately 168 new admissions were seen last year, ranging from 30 to 89 years of age.

Methodology

Subjects were randomly assigned to either the treatment or control group. The treatment program combined client-centered counseling and biofeedback-aided relaxation training. Those subjects assigned to the treatment group were then randomly assigned to one of two client-centered therapists and one of two biofeedback technicians. The client-centered counseling was scheduled for ten weekly sessions, each 50 minutes in length. Responsibility for scheduling these sessions was placed with the individual counselor. Both counselors were fully trained in client-centered counseling techniques, licensed to practice psychology in the state of Michigan, and had at least four years' experience in private practice psychotherapy. Vitae for both counselors appear in the appendix.

The relaxation training and biofeedback sessions were also scheduled for ten weekly sessions, 50 minutes in length, to run concurrently with the counseling sessions. Scheduling was also done by individual therapists. Each of the biofeedback technicians was licensed as a psychologist to practice in Michigan as well as being licensed as a biofeedback specialist by the Biofeedback Society of Michigan. Additionally, they were both engaged in private practice, primarily using biofeedback techniques. Vitae for both biofeedback technicians appear in the appendix. The EMG equipment used by both technicians was Autogen 1700, 1-2000 Hz bandpass. It was equipped with powerline

rejection and radio frequency rejection filters, in addition to input protection against overload static electricity damage. The electrodes were silver/silver chloride, impeded with plastic insulated discs. Spectra gel was used with electrodes being placed on the frontalis (forehead) muscle. Specific steps of biofeedback training are presented in the appendix.

A preparatory discussion among this researcher and all the therapists involved was held for the purpose of orientation to the patient population and standardization of procedure among the therapists. Therapists were also instructed on procedures involving phone calls, missed appointments, and emergencies.

Following the administration of each of the therapy programs to each subject, each subject was administered the Institute for Personality and Ability Testing Anxiety Scale (IPAT Anxiety Scale), the Institute for Personality and Ability Testing Depression Scale (IPAT Depression Scale), and the Profile of Mood States (POMS). An additional POMS scale was given to each subject with instructions to give the form to a close friend or relative, someone who knew the subject well enough to give an assessment of that particular subject's mood at the present time.

Telephone Control Group

Research concerning breast cancer and mastectomy patients abounds with evidence suggesting the presence of

psychological distress. The process and content of psychological treatment has also been noted, yet little is mentioned in terms of resources available to each woman and likelihood of her seeking help both within and outside of the family. One of the functions of the control group was to answer just this question. The members of the control group were telephoned on a weekly basis for ten weeks, at a time previously arranged and convenient to them. The calls were made by a doctoral student in counseling psychology whose previous experience and training allowed her to be an empathic listener, sensitive to the feelings of the participant. The following is a sample of questions asked during the ten week period:

1. Have you had any problems since being told of the need for a mastectomy? since chemotherapy? work-related problems? family problems? personal issues and concerns?

2. Have you felt the need for psychological help or counseling? If so, where have you sought help? Was this counseling helpful and how long did you attend?

3. What did you do to help yourself? Did you read any books, magazine, articles, etc., which were helpful?

4. Did you spend time talking with others; i.e., relative, friend, minister? was this helpful?

5. Have you talked with anyone else who also has had a mastectomy or undergone chemotherapy treatments?

After the ten week period of telephone contacts, each subject in the control group was administered the IPAT Depression Scale, the IPAT Anxiety Scale, the POMS, and the

POMS to be given to a significant other, just as the treatment group. The subjects were then given the treatment program of counseling and biofeedback relaxation training. Because there is no psychological treatment as a part of a total therapeutic regimen at the Michigan State University Clinical Center, this procedure will allow for comparison of the effects of the treatment program to the anxiety and depression level present in the typical mastectomy patient who receives no psychological intervention.

Instruments

There were three instruments used to evaluate the outcomes of this study: the IPAT Anxiety Scale, the IPAT Depression Scale, and the POMS. An additional POMS Scale was given to each subject with instructions to have a significant other (close friend, relative, husband) give a report of his/her own perception of the subject's present mood state.

IPAT Anxiety Scale

The IPAT Anxiety Scale (ASQ) is based upon factor-analytic theory and research. It is comprised of 40 items and has a reading level of approximately sixth grade. The test is based upon Cattell's research in the late 1930s to determine the primary dimensions of the normal, human personality (Cattell, 1973). None of the 16 primary personality traits developed by factor analysis could clearly be interpreted as anxiety, although a pattern of correlations

converged to reveal apprehension and tension to play a dominant role in the anxiety pattern. Next in importance were the factors of emotional instability, suspiciousness, and lack of self-control (Krug, Scheier, and Cattell, 1976).

Reliability is established through the utilization of test-retest (consistency over time) and internal consistency (consistency across items). Evidence of test-retest reliability for the ASQ is offered through four studies with reliability factors ranging from .82 to .93. Retest after one week yielded a value of .93 (Levitt and Persky, 1962), after two weeks .86 and .87 (Cattell, Scheier, and Madge, 1968), and retests after four weeks .82 (Nesselroade, unpublished). Internal consistency reliability was demonstrated by nine studies with values ranging from .78 to .92.

The validity of the anxiety scale was approached by its developers from three sources: (a) how well the test score correlated with the pure anxiety factor it was designed to measure, (b) how well the test score corresponded with clinical judgment regarding anxiety level, and (c) how well the test score related to other questionnaire measures of anxiety (Krug, Scheier, and Cattell, 1976). Regarding the first approach to validity--the correlation between test score and the pure anxiety factor--five independent factor analyses were performed. The correlation of the anxiety scale total score with the pure

expression of anxiety averaged .90 (726 total sample size) across samples differing with respect to age, sex, education, and culture.

The correlation of anxiety scale scores and clinical ratings of anxiety average .49 (156 total sample size) with a range of .17 to .95. This extreme variability of correlations was felt to be due to the error present in clinical judgment. However, when the validity coefficient of .49 was used as an adjustment for the imperfect reliability of clinical judgment, the correlated value was then calculated to be approximately .90.

Numerous studies have reported the results relating the IPAT Anxiety Scale to other questionnaire measures of anxiety. In seven studies correlating the ASQ with the Taylor-Manifest Anxiety Scale (total sample size, 1217), an average correlation of .70 was reported. Correlation with the Maudsley Personality Inventory (N scale) was reported to be .68 (total sample size, 905). Correlation with the Eysenck Personality Inventory and the State-Trait Anxiety Scale was reported to be .79 and .76, respectively. In summary, the validity of the anxiety scale approached through factor analysis, clinical judgment and from other questionnaire measures of anxiety converges to the conclusion that validity of the scale approaches .90 (Krug, Scheier, Cattell, 1976).

The ASQ has been used in various settings and for various purposes with good results. Sherman and Plummer

(1973) concluded that relaxation may be a useful skills for controlling tension, after subjects who received six weeks of relaxation training demonstrated significant improvement on the ASQ when compared to a control group. Nicolette (1972) investigated the effectiveness of a deep muscle relaxation technique in the reduction of generalized and speech anxiety. Both types of subjects showed a significant reduction in ASQ scores following six hours of training.

Schonfield (1972) found that individuals who had returned to work nine months after a diagnosis of cancer scored significantly lower on the ASQ than a contrast group who had not yet returned to work. He stated that the scale is apparently sensitive to the covert anxiety and that non-working patients may experience higher levels of unconscious anxiety. Schonfield (1975) also studied 112 Israeli women with benign and malignant breast tumors. Cancer patients under 42 years of age had significantly higher covert anxiety scores than the benign group. Among those over age 42, no differences were found.

IPAT Depression Scale

The IPAT Depression Scale is based primarily upon factor analytic studies, but is also based in part on the contrasted groups approach similar to the Minnesota Multiphasic Personality Inventory. Cattell and Bjerstedt (1967) isolated and replicated seven distinct though correlated

depression factors. Each reflected different aspects of clinical depression such as somatic complaints, sleep disturbances, feelings of guilt and worthlessness, and excessive self-criticism. These seven factors and five other clinical factors discovered by Cattell and Bolton (1969) were then integrated into the Clinical Analysis Questionnaire (CAQ: Delhees and Cattell, 1975). Item responses of clinically diagnosed depressives were contrasted with item responses of normals. The results of this work were added to the CAQ factors and refined into a final Depression Scale.

The Depression Scale is comprised of 40 items and, like the Anxiety Scale, has a sixth grade reading level. The items are arranged so that more positive-sounding questions are evenly distributed throughout the test to keep the test taking experience itself from becoming depressing. Sex differences in clinical depression have been frequently noted in research literature. Beck (1960) studied 966 clinical cases with respect to sex and severity of depression. Among males, 31% showed no symptoms, 33% showed mild symptoms, 31% showed moderate symptoms, and 5% reported severe symptoms. Among women the corresponding percentages were higher: none--18%, mild--29%, moderate--42%, and severe--11%. In the final refinement of the Depression Scale, items were deleted which showed any significant difference between men and women in terms of correlation with the pure depression factor. Separate norm tables for each sex are available as women have been found to score higher on the scale than men.

Reliability has been established through the use of internal consistency measures such as coefficient alpha and parallel split-halves. The coefficient alpha is mathematically equal to the average of all possible split-half coefficients that could possibly be calculated. Using the coefficient alpha yielded reliability coefficients between .85 and .92. According to Krug and Laughlin (1976), the second coefficient--based on the correlation between structurally parallel halves of the test--is even more meaningful in the Depression Scale, since the items of the scale are known to represent at least six different primary depression components. Reliability estimates based on these intercorrelations of halves run somewhat higher than alpha coefficients, from .89 to .95.

The validity of the Depression Scale was evaluated by three approaches: how well the test score correlated with the pure depression factor, how well the test differentiated normals from diagnosed depressives, and how well the correlations of the test with other constructs conforms to theoretical expectation. With respect to the first method, a correlation of .88 was obtained between the scale and the pure depression factor in a sample of 1904 normals and clinical cases. When the Depression Scale was administered to a group of normals and a group of diagnosed depressives, the two groups were found to differ significantly on each item of the scale. A test of the overall mean difference yielded a t-test of 13.52 (df=697), which

is highly signficant (Krug and Laughlin, 1976). In addition, when the relative frequencies of Depression Scale sten scores were plotted in a frequency distribution, less than one in twenty diagnosed depressives obtained a sten score of 1, 2, or 3 and almost a third received a top score of ten on the scale. In contrast, 23% of normals received scores of three or less, and only one in 100 scored a sten of ten.

The IPAT Depression Scale has been statistically compared to several other psychological tests. The Depression Scale has been found to correlate .39 ($p < .01$) with the D (depression) scale of the Minnesota Multiphasic Personality Inventory. When compared to data from the Tennessee Self-Concept Scale, all relationships were found to be in the anticipated direction. Correlations with seven of the nine Positive Scores of the TCSC were all negative and significant, ranging in size from -.32 to -.51. This result is consistent with Beck's (1960) observation that low self-esteem is a characteristic feature of depression. Feelings of inadequacy or inferiority were reported by more than 80% of the severely depressed patients he studied.

Scores on the Depression Scale appear to be relatively independent of motivational patterns as measured by the Motivational Analysis Test (Cattell, et al., 1964). The MAT is designed to measure drive strength, satisfaction level, total interest strength, and conflict in each of ten interest areas. A negative correlation with MAT

Narcism is reported; consistent with the clinical finding that depressed patients show lower concern for self-indulgent pursuits. Again, this is consistent with Beck's (1960) findings that roughly 90% of moderately or severely depressed patients report a loss of interest or motivation.

Profile of Mood States

The POMS contains 65 five-point adjective rating scales representing the refinement of a total of 100 different adjective scales by means of repeated factor analyses. Typically, persons with at least seventh grade education have little or no difficulty in understanidng the POMS. Respondents are requested to rate particular adjectives to indicate how they have been feeling during the past week, a week's being sufficiently long to depict typical and persistent mood reactions to current life situations and sufficiently short to assess acute treatment effects. The following provides a description of the six factors defined by the POMS:

1. Tension-Anxiety (T): Heightened musculoskeletal tension, somatic tension both observable and not overtly observable.

2. Depression-Dejection (D): Depressive mood accompanied by a sense of personal inadequacy, worthlessness, futility, isolation, sadness, and guilt.

3. Anger-Hostility (A): Mood of intense overt anger and milder feelings of hostility and antipathy toward others.

4. Vigor-Activity (V): Mood of vigorousness, ebullience, and high energy.

5. Fatigue-Inertia (F): Mood of weariness, inertia, and low energy level.

6. Confusion-Bewilderment (C): Bewilderment, muddled mood, and cognitive inefficiency.

Reliability of the POMS was established through methods of internal consistency and test-retest reliability. Homogeneity of the six factor scores or the extent to which individual items within the six mood scales measure the same factor are near .90 or above. In a test-retest study of 600 subjects referred for treatment at a university medical center psychiatric clinic, reliability estimates ranged from .65 for vigor to .74 for depression. Patients were tested at intake and just before treatment, the median time being 20 days with a range of 3-110 days. McNair, et al. (1971), remark that seeking and finding a source of treatment is, in itself, probably associated with a change in emotional states and, thus, the correlations between intake and pretreatment POMS scores are probably lower-bound estimates of reliability. Correlations between intake scores and those following six weeks of treatment for the same sample range from .45 for fatigue to .53 for anger. These correlations reflect both a much longer time period and influence of treatment, thus they are considerably lower.

Four areas of research have provided evidence for the predictive and construct validity of the POMS: (a) brief psychotherapy studies, (b) controlled outpatient drug trials, (c) studies of response to emotion-inducing

conditions, and (d) studies of concurrent validity coefficients and other POMS correlates. In several studies one or more of the POMS factors have proved sensitive to change associated with psychotherapy. Lorr, et al. (1961), compared psychotherapy alone with four other psychotherapy combined drug treatments. Over an eight week period of treatment, the total sample of 180 Veterans Administration outpatients showed highly significant ($p < .001$) improvement on tension-anxiety, depression-dejection, anger-hostility, and fatigue. The same study found no significant changes in any of the mood factors for a control group.

A number of reports of controlled clinical drug trials suggest the POMS factors to be sensitive to short-term changes associated with mild tranquilizers. For example, Lorr, et al. (1964), reported significant reductions in tension-anxiety and significant increases in vigor after one week of diazepoxide (librium) treatment compared to a placebo-treated group of subjects.

In the area of research studying response to emotion-inducing conditions, several unpublished studies (McNair, et al., 1971) have utilized simulated public speaking situations to induce anxiety. The procedure effectively produced significant mean increases in both the tension-anxiety score and several physiological measures of anxiety. In the behavioral analysis of alcoholics, Nathan, et al. (1970), have reported significant elevations of tension, depression, and anger during periods of prolonged

drinking as contrasted with non-drinking periods. In addition, vigor scores were significantly lower during drinking periods.

The POMS has also been correlated with several other measures of psychological symptomology. Patients administered the POMS and the Hopkins Symptom Distress Scale (Parloff, 1954) which consists of 60 common outpatient complaints, demonstrated moderate to high correlations between nearly all POMS factors and the three symptom measures of the HSDS (somatization, anxiety, and depression). A correlation of .80 between the tension-anxiety scale and the Taylor Manifest Anxiety Scale is also reported. This correlation is about as high as the test-retest reliability of the TMAT, itself.

Testable Hypotheses

The following hypotheses were tested to evaluate the effects of the treatment:

1. There is no difference between the means of the treatment and control groups as measured by the IPAT Anxiety Scale.

2. There is no difference between the means of the treatment and control groups as measured by the IPAT Depression Scale.

3. There is no difference between the means of the treatment and control groups as measured by the tension score of the POMS.

4. There is no difference between the means of the treatment and control groups as measured by the depression score of the POMS.

5. There is no difference between the means of the treatment and control groups as measured by the anger score of the POMS.

6. There is no difference between the means of the treatment and control gorups as measured by the vigor score of the POMS.

7. There is no difference between the means of the treatment and control groups as measured by the fatigue score of the POMS.

8. There is no difference between the means of the treatment and control groups as measured by the confusion score of the POMS.

9. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the tension score of the POMS.

10. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the depression score of the POMS.

11. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the anger score of the POMS.

12. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the vigor score of the POMS.

13. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the fatigue score of the POMS.

14. There is no difference between the means of the treatment and control groups as measured by the "significant other" report of the confusion score of the POMS.

Design and Statistical Analysis

The design of this research is the posttest only control group design as defined by Campbell and Stanley (1966). Subjects were randomly assigned to the two treatment groups to insure equlality and lack of initial bias.

Table 2.1. Graphic Representation of the Research Design

R	X	01
R		02

The data collected were analyzed using multiple t-tests to determine a significant difference between the treatment and control group means. Hays (1973) describes research inferring a statistical relationship from the difference between two sample means; i.e., an experimental and control group, as being a relatively simple kind of experiment, best suited for the use of a t-test. More complicated statistical procedures were not necessary in this research as there was only one treatment administered to one experimental group. The t-test assumes equal means

and equal variances of the populations from which samples are drawn. In general, the power of the t-test is enhanced when the sample sizes and the variances underlying the two samples are equal or nearly equal.

The level of significance for all tests used in this study was .05.

CHAPTER III

ANALYSIS OF RESULTS

The analysis was calculated at the Computer Center on the campus of Michigan State University. The data reported are the result of multiple t-tests.

Treatment Effects

Hypothesis 1

There is no difference between the means of the treatment and control groups as measured by the IPAT Anxiety Scale.

Results of the analysis of Hypothesis 1 are shown in Table 3.0. A significant t-ratio was not obtained and, therefore, the null hypothesis of no difference remains.

Table 3.0. Analysis of Treatment Group Means Using the IPAT Anxiety Scale.

Mean	SD	DF	P (.05)
T1[a] 12.5	16.064	18	.067
T2[b] 33.3	29.612		

[a]Experimental [b]Telephone Control Group

This is interpreted as showing that after the treatment, no significant difference exists between the means of the treatment and control groups.

Hypothesis 2

There is no difference between the means of the treatment and control groups as measured by the IPAT Depression Scale.

Results of the analysis of Hypothesis 2 are shown in Table 3.1. A significant t-ratio was not obtained and, therefore, the null hypothesis of no difference remains.

Table 3.1. Analysis of Treatment Group Means Using the IPAT Depression Scale.

	Mean	SD	DF	P (.05)
T1	60.6	31.931	18	.198
T2	77.6	24.400		

This is interpreted as showing that after the treatment, no significant difference exists between the means of the treatment and control groups.

Hypothesis 3

There is no difference between the means of the treatment and control groups as measured by the POMS Tension Score.

Results of the analysis of Hypothesis 3 are shown in Table 3.2. A significant t-ratio was not found and, therefore, the null hypothesis of no difference remains. This is interpreted as showing that after the treatment, no significant difference exists between the means of the treatment and control groups.

Table 3.2 Analysis of Treatment Group Means Using the POMS Tension Score.

	Mean	SD	DF	P (.05)
T1	39.8	6.828	18	.411
T2	37.2	6.973		

Hypothesis 4

There is no difference between the means of the treatment and control groups as measured by the POMS Depression Score.

Results of the analysis of Hypothesis 4 are shown in Table 3.3. A significant t-ratio was not obtained, resulting in the retention of the null hypothesis.

Table 3.3. Analysis of Treatment Group Means Using the POMS Depression Score.

	Mean	SD	DF	P (.05)
T1	40.3	6.183	18	.848
T2	39.7	7.587		

As in the preceeding analysis, this is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 5

There is no difference between the means of the treatment and control groups as measured by the POMS Anger score.

Results of the analysis of Hypothesis 5 are presented in Table 3.4. A significant t-ratio was not obtained and the null hypothesis was retained.

Table 3.4. Analysis of Treatment Group Means Using the POMS Anger Scale.

	Mean	SD	DF	P (.05)
T1	42.7	5.498	18	.430
T2	45.5	9.478		

Results of this analysis reveal that after the treatment, no significant difference exists between the means of the treatment and control groups.

Hypothesis 6

There is no difference between the means of the two treatment groups as measured by the POMS Vigor score.

Results of the analysis of Hypothesis 6 appear in Table 3.5. The null hypothesis was retained because a significant t-ratio was not found.

Table 3.5. Analysis of Treatment Group Means Using the POMS Vigor Score.

	Mean	SD	DF	P (.05)
T1	60.5	10.596	18	.218
T2	66.3	9.684		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 7

There is no difference between the means of the treatment and control groups as measured by the POMS Fatigue score.

Results of the analysis of Hypothesis 7 appear in Table 3.6. A signifidant t-ratio was not obtained, resulting in the retention of the null hypothesis.

Table 3.6. Analysis of Treatment Group Means Using the POMS Fatigue Score.

	Mean	SD	DF	P (.05)
T1	45.2	7.627	18	.839
T2	44.5	7.576		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 8

There is no difference between the means of the treatment and control groups as measured by the POMS Confusion score.

Results of the analysis of Hypothesis 8 appear in Table 3.7. A significant t-ratio was not found, resulting in the retention of the null hypothesis. Results of this analysis reveal that after the treatment, no significant difference exists between the means of the treatment and control groups.

Table 3.7. Analysis of Treatment Group Means Using the POMS Confusion Score.

	Mean	SD	DF	P (.05)
T1	40.2	5.653	18	.201
T2	37.0	5.121		

Hypothesis 9

There is no difference between the means of the treatment and control groups as measured by the POMS Tension score.

Results of the analysis of Hypothesis 9 appear in Table 3.8. A significant t-ratio was not obtained, resulting in the failure to reject the null hypothesis.

Table 3.8. Analysis of Treatment Group Means Using the POMS Tension Score.

	Mean	SD	DF	P (.05)
T1	36.2	5.073	18	.883
T2	36.6	6.786		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 10

There is no difference between the means of the treatment and control groups as measured by the POMS Depression Scale and scored by a significant other.

Results of the analysis of Hypothesis 10 appear in Table 3.9. A significant t-ratio was not obtained, resulting in the failure to reject the null hypothesis.

Table 3.9. Analysis of Treatment Group Means Using the POMS Depression Scale and Scored by the "Significant Other."

	Mean	SD	DF	P (.05)
T1	36.2	5.574	18	.311
T2	38.9	5.990		

Hypothesis 11

There is no difference between the means of the treatment and control groups as measured by the POMS Anger scale and scored by a significant other.

Results of the analysis of Hypothesis 11 appear in Table 3.10. A significant t-ratio was not obtained, resulting in the failure to reject the null hypothesis.

Table 3.10. Analysis of Treatment Group Means Using the POMS Anger Scale and Scored by the "Significant Other."

	Mean	SD	DF	P (.05)
T1	40.0	2.261	18	.058
T2	44.1	5.990		

This is interpreted as showing that after the treatment, there was no significant different between the two groups.

Hypothesis 12

There is no difference between the means of the treatment and control groups as measured by the POMS Vigor scale and scored by a significant other.

Results of the analysis of Hypothesis 12 appear in Table 3.11. A significant t-ratio was not found, thus resulting in the retention of the null hypothesis.

Table 3.11. Analysis of Treatment Group Means Using the POMS Vigor Scale and Scored by the "Significant Other."

	Mean	SD	DF	P (.05)
T1	66.6	8.488	18	.822
T2	65.8	7.115		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 13

There is no diffference between the means of the treatment and control groups as measured by the POMS Fatigue scale and scored by a significant other.

Results of the analysis of Hypothesis 13 appear in Table 3.12. A significant t-ratio was not found, thus resulting in the retention of the null hypothesis.

Table 3.12. Analysis of Treatment Group Means Using the POMS Fatigue Scale and Scored by the "Significant Other."

	Mean	SD	DF	P (.05)
T1	43.9	5.915	18	.604
T2	45.4	6.769		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Hypothesis 14

There is no difference between the means of the treatment and control groups as measured by the POMS Confusion scale and scored by a significant other.

Results of the analysis of Hypothesis 14 appear in Table 3.13. A significant t-ratio was not obtained, resulting in the retention of the null hypothesis.

Table 3.13. Analysis of Treatment Group Means Using the POMS Confusion Scale and Scored by the "Significant Other."

	Mean	SD	DF	P (.05)
T1	36.5	3.408	18	.254
T2	35.0	2.309		

This is interpreted as showing that after the treatment, there was no significant difference between the two groups.

Explorational Data: Trend Analysis

While the investigation failed to reject any of the 14 null hypotheses, further analysis was initiated to examine the role of subject age upon the various factors of the dependent variables. Multiple analyses of covariance were performed using age as a covariate with the IPAT Anxiety Scale, the IPAT Depression Scale, and the six factors of the POMS: tension, depression, anger, vigor, fatigue, and confusion. The appendix gives the results of each of the ANCOVAs performed. To summarize these data, only one significant F-ratio was found, as indicated in Table 3.14.

Table 3.14. ANCOVA: POMS Confusion Score

MS Between	DF	F	P (.05)
119.926	1	5.211	.036

This is interpreted as showing that age has an effect on confusion. To further investigate the effect of age upon reported confusion, subject age and confusion scores are reported in Table 3.15.

Table 3.15. Subject Age and Confusion Score.

Age	T-score
37	51
38	46
41	42
43	34
48	36
50	30
55	39
55	36
56	45
56	36
57	42
58	36
58	40
59	39
60	32
60	42
61	45
62	36
66	33
71	32

Mean standard score = 50
Standard deviation = 10

Examination of data reveals the two highest scores to have been reported by the two youngest women in the study, the only women in their 30s. Five of the six eldest women,

women between the ages of 59 and 71, have scored relatively low on the POMS Confusion scale. Scores appear to be evenly distributed between women whose ages are midrange, between 40 and 58. Women scoring higher on the onfusion scale have admitted to feelings of confusion, inability to concentrate, feelings of being muddled, bewilderment, inefficiency, forgetfulness, and uncertainty about things. These results could possibly reflect a greater degree of acceptance of poor health and the necessity for medical treatment in older women. Younger women with younger families and perhaps children may be less likely to accept a life-threatening illness and, thus, display more confusion and loss of efficiency. Where a woman in her 60s or 70s would probably have her children raised and may be retired from a career, a younger woman's lifestyle may still involve children, a larger family, and a career which reflects her portion of financial support of the family.

Non-experimental Data

Subjects assigned to the control group were telephoned weekly for a period of ten weeks before they were administered the measurement devices and the treatment. The purpose of these contacts was to gather information concerning the problems, needs, and availability of psychological support for mastectomy patients. Subjects had been randomly assigned to either the treatment or the control group before the telephone contacts were made.

Questions about problem areas a woman may have encountered included but were not limited to problems concerning the operation itself, chemotherapy, work-related problems, family and personal problems. Two women reported continuing problems of pain and restriction of movement, while eight reported no other physical problems with the operation itself. Five women reported continued discomfort with chemotherapy treatments, with nausea and lack of energy's being the most common complaints. One woman found the waiting room where she received chemotherapy treatments to be the most depressing aspect of the treatments. She reported feeling "down" and depressed when other patients would discuss with her their medical progress or lack of progress.

Two of the ten women interviewed continued to be employed on a full-time basis after the mastectomy. Both expressed feelings of gratefulness to their employers as they were given flexible hours to fit in with the chemotherapy treatments and were allowed to make up for lost time. One subject attended a community college, but reported failing some classes due to frequent absences and the inability to study. Financial problems were mentioned by four women, including two who left their jobs after having had the mastectomy operation.

Family problems were reported by four of the ten subjects. These women reported problems primarily concerning their children: not wanting them to see the scar for fear

they would be shocked, feelings of increased concern for their children's health and safety, and problems concerning their children's fear of their being ill or of dying and their refusal to discuss these fears. Two women were widows and had no chidlren. They reported feelings of loneliness and "having to go it alone." Two women reported problems with their own parents: their concern about their daughter's health and their own failing health.

Four women reported emotional distress of some kind. Problems ranged from anger--"I was just getting on my feet after a divorce"--to depression, pessimism, and feelings of "stress." Four women denied any emotional problems after the mastectomy or during chemotherapy treatments. They reported being "able to make it on their own." Two women who were both unmarried mentioned dating as a problem. Decisions of what to tell a male companion about their operation and when to tell were the primary concerns. One woman stated, "A man doesn't want an unhealthy wife; I'm afraid of what he'll say."

Concerning the need and availability of psychological support, three women stated that they felt no need for counseling or other therapeutic help. Three women reported "wanting to avoid even thinking about having to seek counseling." One woman reported not knowing where to go for psychological support but did feel it would be helpful to her. Two were presently in therapy and had started before they had found out that they had cancer. They both

reported counseling as being helpful during the time when they first found out they had cancer and during their recovery. An additional subject belonged to a support group for mastectomy patients which she described as very helpful. She stated, "They don't get nervous talking about cancer like my friends do."

Three women reported having sought out reading material concerning breast cancer, the mastectomy operation, and chemotherapy. Two reported the reading materials as being helpful while one woman reported increased feelings of fear and pessimism after reading cancer statistics.

Five women purposely sought the support of close friends with three finding this a supportive and valuable experience. Two women felt that going to their friends for support was not helpful, with one woman stating, "I felt like I helped them more than they helped me." Three women purposely avoided discussing their operation or chemotherapy treatments with their friends. Fear of rejection, not wanting to think about breast cancer, and not wanting to be a burden were mentioned as reasons for not seeking the support of friends.

Almost all of the subjects, eight, were visited by a Reach to Recovery volunteer during their hospitalization. While they all found this as a helpful experience as advice-giving support, several women mentioned the need for further advice on prostheses, exercise, and clothing. The length of time spent with this volunteer was reported to

range from 15 minutes to one hour with most women reporting visits of 15 to 20 minutes.

Although this question was not asked, many women spontaneously reported to the person making the telephone calls that they enjoyed talking to someone about their mastectomies and their feelings. Several reported an improved mood and less or a feeling of being alone because of the contacts.

CHAPTER IV

SUMMARY AND DISCUSSION

The purpose of this study was to assess the effect which a treatment program of relaxation training and client-centered counseling may have on measures of anxiety and depression for breast cancer patients. The majority of research literature suggests anxiety and depression as being primarily psychological symptoms occurring in women who have undergone mastectomy operations for treatment of breast cancer. The use of adjuvant chemotherapy and the usual side-effects compound psychological distress and extend greatly the period of recovery. Research literature has primarily addressed the existence of psychological distress in mastectomy patients with few research studies investigating methods and efficacy of treatment programs. Research which has addressed treatment programs has primarily focused upon short-term discussion groups and information giving seminars.

Subjects for this study were selected from the existing population of patients currently undergoing chemotherapy treatment at the Michigan State University Clinical Center cancer clinic. In all, 20 women expressed interest in participating in a study involving counseling and relaxation techniques. Subjects were randomly assigned to

either the treatment group or the control group. Each subject in the treatment group received a ten week program of client-centered counseling (one hour each week) and relaxation training utilizing biofeedback instruments (one hour each week). This treatment program resulted in a total of 20 treatment hours for each individual. Subjects in the control group were contacted by telephone for the same ten week period. They were interviewed concerning their adjustment to the mastectomy operations and chemotherapy treatments. Problem areas such as work adjustment, family and personal problems were also investigated. After the ten week period of telephone contacts, subjects in the control group were administered the same ten week treatment program administered to subjects in the experimental group.

Scores on the IPAT Anxiety Scale, IPAT Depression Scale, and Profile of Mood States were used to measure the effects of treatment.

Discussion

The investigation revealed no significant difference between the experimental and the control group due to treatment. Ahthough hidden factors and interactions may affect these research results, recognizable sources of error can be explored and discussed retrospectively. Possible contributing factors to be reviewed are theory, sampling, design, instrumentation, treatment, and individual differences.

Theory

If theory is vague or misinterpreted, it serves as a viable source of error. The theory behind this research assumes psychological distress, namely anxiety and depression to be amenable to treatment. Error may lie in the premise that a relatively short-term treatment could suffice to treat emotional problems of cancer patients when a recovery period ranging from several months to several years is necessary. This source of error must remain a possibility since sufficient research has not been carried out investigating the treatment of psychological problems related to mastectomy.

The theoretical basis of the psychological treatments used in this study could also be discussed as possible sources of error. Chapter I discusses the use of both biofeedback and client-centered counseling and their efficacy in treating a variety of psychological problems. However, existing literature cites little evidence for the use of these two theoretical approaches in treating the psychological problems of cancer and chemotherapy patients. The use of a different counseling theory or combination of theoretical approaches may have resulted in more positive outcomes for this research.

Sampling

Sampling is considered to be a major source of error for this study as the chosen sample may have been unique to

the population of patients' receiving chemotherapy at the Clinical Center. Referral of subjects was made by several Clinical Center nurses under the direction of a physician. These nurses were responsible for the administration of chemotherapy medication for each patient on a monthly basis. The nurses were requested to ask for volunteers from the entire population of chemotherapy patients. Those woment who did agree to participate tended to be those who developed close relationships with the nurses, were friendly, talkative, and may have wished to please the nurses. They may have been better-adjusted to their mastectomy operations. Also referred were those women who wanted some type of psychological support and were able to express this need to the nurses. Noticeably absent from the sample of volunteers were women who were uncooperative with their treatments and the referring nurses or were withdrawn and angry. This type of reaction is not only mentioned frequently in the literature as being commonly found in cancer patients undergoing chemotherapy, but was also mentioned by the nurses making the referrals. While the recruitment of subjects may be considered a serious source of error in this study, it was necessary to proceed in this manner as a requirement of the Clinical Center and in order to consider the confidentiality between patient and medical practitioner. The use of random assignment was chosen as a research design in order to counter the effects of volunteer

differences and balance out such characteristics between the treatment and control groups.

Design

The general concern in this respect is whether the organization of the study could have affected the outcome. Members of the control group were contacted weekly for a period of ten weeks to gather information regarding their adjustment to the mastectomy. As mentioned previously in Chapter III, several women spontaneously reported that they looked forward to the weekly telephone calls and felt less lonely and isolated as a result of the telephone contacts. While the person making the telephone contacts was instructed to do no counseling, but merely direct questions in specified areas, the effects of this empathic listening experience for the subjects in the control group may have served to alleviate some psychological distress before measurements were administered. The subjects in the control group could also anticipate ten weeks of treatment beyond the ten weeks of telephone contacts, a factor which may also have led to decreased tension, depression, and feelings of hopelessness.

Another possible confounding variable is the differences existing between the individual therapists. The investigator of this study attempted to keep individual differences to a minimum by preparing the clinicians as a group, using only licensed, experienced therapists, and using the same sex therapists for the counseling (female) and

biofeedback (male) treatments. Differences in ability to establish rapport, interpersonal style, and personality could be considered as possibly affecting outcomes.

Instrument

Validity and reliability of the instruments used in this investigation have been discussed in Chapter II. In summary, these instruments have been well documented as being adequate for their purpose. The question arises here as to what might account for the scores obtained in the measures. The use of denial as a defense mechanism is commonly seen in the research literature investigating the psychological impact of breast cancer (Polivy, 1977; Neuhring and Barr, 1980; and Hotchkiss, 1976). Patients in the control group, in responding to the self-report measurements, may have been able to achieve similar scores as the treatment group, if through time they had not been able to confront the emotional impact of having breast cancer. If they had, indeed, denied the presence of negative feelings as is suggested by the research literature, their scores would not reflect the greater incidence of anxiety and depression as expected.

Treatment

Thorough training, preparation, and experience of all clinicians negate much of the possibility of inappropriate or inadequate presentation of the treatment conditions. A larger concern may be the length of treatment. It must be

considered that more time spent in treatment may have led to greater receptivity and, thus, greater change in members of the treatment group. This possible source of error is particularly relevant for this chosen population of mastectomy patients, considering the effects of denial commonly mentioned in the research literature. For those subjects using denial as a defense mechanism, a significant proportion of therapy time may have been spent working through this defense mechanism. Although subjects who needed or requested continued therapy beyond the ten week program were given this opportunity and may have made significant progress in dealing with psychological problems, any such progress would not have been reflected in the measurements taken at the end of ten weeks' participation.

An additional source of confounding which must be mentioned is the combination of two specific psychological treatments. The research literature contains numerous studies validating the approaches of both EMG assisted biofeedback and client-centered counseling, yet the possibility of an interaction between these two treatments cannot be ruled out as affecting the outcome of the study.

Individual Differences

It is here where the greatest source of confounding may be found. Subjects varied a great deal in terms of their having neoplastic disease. While most women had only a single mastectomy, several women had had double

mastectomies, indicating further progress of disease. The size, location, and variety of breast tumor differed between subjects and affected not only the type and efficacy of chemotherapy but prospects for survival. Beliefs concerning chances for survival varied throughout subjects and may certainly have affected outcome of the study. Mastectomy patients undergoing chemotherapy are typically given extensive testing every six months while includes brain and liver scans, blood work, and mammograms. Some subjects who had this testing during the treatment program continued to receive favorable reports of no progress of disease. Other women had test results which suggested that the cancer had spread to various organs from the breast tissue. Individual differences such as these may have affected test results and, possibly, treatment outcome.

Further individual differences considered as a source of variation included previous experience in psychotherapy, marital status, adjustment before mastectomy, and age. Women who had had previous experience in psychotherapy, depending upon the length of treatment and reason for referral, may have progressed in the treatment differently than other subjects. Women who were happily married prior to the mastectomy may not have had the extent of concerns a woman who was unhappily married may have had. Several women who were recent widows reported severe feelings of loneliness and a sense of loss which compounded problems

of having cancer. Furthermore, age affected the type and intensity of other problems in living. The women who were older tended to have different adjustment problems than the younger women, such as having to care for their own elderly parents. Younger women had concerns involving sexual relationships, children, and employment to a greater degree than the older women.

As mentioned in Chapter I, numerous cancer researchers suggest a link between predisposing personality factors (LeShan and Worthington, 1956; West, Blumberg, and Ellis, 1952), the presence of emotional stress (Simonton, Simonton, and Sparks, 1978), loss of important emotional relationships (Evans, 1926), and the occurrence and/or remission rate of cancer. The possibility of these factors having a relationship with a woman's breast cancer is unknown; however, the existence of these variables was commonly found throughout subjects being referred to participate in this research. The differential presence of these factors may have affected their progress in the treatment and, consequently, the outcome of this research.

Conclusions and Implications for Future Research

The goal of this study was to investigate whether a combination program of client-centered counseling and EMG-assisted biofeedback would result in less reported anxiety and depression than a control group which had not received such a treatment. The results indicate that this

combination of counseling and biofeedback does not, in fact, produce significant results at the .05 level of significance. Further analysis using age as a covariable indicated that age has an affect upon reported feelings of confusion. The highest confusion scores were by the youngest women (age range, 30s) and lowest scores reported by the older women (age range, 60s). Scores were evenly distributed between women whose ages are midrange; between 40 and 58. Non-experimental data was gathered in this manner supported the majority of research literature which suggests the presence of a variety of emotional problems to exist in women who have undergone breast cancer surgery and chemotherapy.

Future researchers might consider that longer treatment programs and tighter controls may produce more significant results. The area of greatest concern for control would seem to lie in the area of individual differences such as type of mastectomy, psychological adjustment prior to the mastectomy operation, progress of disease and personal variables such as age, marital status, employment and previous psychotherapy experience. A more intensive research design which would allow for blocking on these variables or a more homogeneous sample may produce more meaningful results. Of critical importance would be the timing of any treatment. To be of most benefit, it would seem that any psychological treatment should begin at or

before the period of time in which the woman undergoes the mastectomy.

An additional consideration would be the use of two treatment groups separating the effects of biofeedback and client-centered counseling or the use of other theoretically-based counseling approaches or techniques. As a further avenue of investigation, several women reported a decrease in the negative side-effects of chemotherapy such as nausea, gastro-intestinal upset, and loss of appetite which they attributed to the use of relaxation techniques learned in the treatment program and used during the administration of chemotherapy. Also reported was the decrease in what would seem to be conditioned nausea several women would suffer by driving near the Clinical Center or Michigan State University campus where they received chemotherapy treatments. Further investigation of relaxation training and the use of learning theory with regard to the treatment of chemotherapy-induced nausea may prove worthwhile.

APPENDIX

VITA: VINCENT CORNELLIER

Education

BA, Michigan State University; Social Science

MA, Michigan State University; Education

Ph.D., Michigan State University; Counseling Psychology

Professional Experience

Teacher, Troy High School; Troy, Michigan

Principal/counselor, Project COOL School (alternative school for behavior problem youth)

Instructor, Michigan State University, Master's Programs for teachers. Intern at MSU Counseling Center, Olin Health Center

Present Employment

Biofeedback therapist; Birmingham, Michigan
1. Personal and Family Adjustment Center
2. Center for Contemporary Psychology

Founder-therapist, Stress Management, Inc. Consultant to U.S. Air Force Academy, public school systems, Michigan, Colorado; J. C. Penney Senior Executive Staff.

License

Certified Psychologist, State of Michigan, #002081

Certified Biofeedback Practitioner, State of Michigan, #00017

VITA: JANICE C. MORGAN LAZAR

Education

BA, Eastern Kentucky University; Psychology and Speech Pathology/Audiology

MS, University of Kentucky; Community Counseling

Ph.D. candidate, Michigan State University; Educational and Counseling Psychology

Professional Experience

Psychological Evaluation and Treatment Center

Private practice psychologist; Lansing, Michigan

Staff psychologist, Ingham County Probate Court, Juvenile Division; Lansing, Michigan

Present Employment

Private practice psychologist, Psychological Center; Marshall, Michigan

License

Psychologist, State of Michigan, limited license

Professional Affiliations

American Psychological Association
American Personnel and Guidance Association

VITA: DANIEL C. PRICE

Education

BS, University of Iowa; Education

MA, George Washington University; Education

Ph.D., Michigan State University; Counseling Psychology

Professional Experience

Private practice psychologist, Psychological Evaluation and Treatment Center; East Lansing, Michigan

Present Employment

Private practice biofeedback therapist, Psychological Center; Marshall, Michigan. Work primarily with stress-related disorders.

License

Biofeedback Society of Michigan

Professional Affiliations

Biofeedback Society of America
Biofeedback Society of Michigan
American Personnel and Guidance Association
Phi Beta Kappa

VITA: RUTH L. ROSENTHAL

Education

BS, Northern Arizona University; Psychology

MA, Northern Arizona University; School Psychology

Ph.D., Washington University; Clinical Psychology

Professional Experience

Clinical Psychologist, Psychological Evaluation and Treatment Center; East Lansing, Michigan

Clinical Psychologist, Twenty-second Judicial Circuit of Missouri, Juvenile Division; St. Louis

Instructor in psychology, Meramec Community College; Kirkwood, Missouri

Project Coordinator, Court/Police/School Project, Twenty-third Judicial Circuit of Missouri, Juvenile Division; Clayton

Research Assistant, Child Development Research Center, Washington University School of Medicine; St. Louis

Clinical Internship, Washington University's Child Guidance Clinic; St. Louis

Practicum in Psychotherapy, Pastoral Counseling Center; St. Louis

Practicum in Diagnostics, Youth Center, State Hospital; St. Louis

Research Assistant, Washington University's Behavior Research Laboratory, Malcolm Bliss Mental Health Center; St. Louis

Head of Diagnostics, Institute for Human Development; Northern Arizona University; Flagstaff

Practicum in Diagnostics, Institute for Human Development, Northern Arizona University; Flagstaff

Present Employment

Private practice psychologist, Psychological Evaluation and Treatment Center; East Lansing, Michigan

Papers/Presentations

A reanalysis of a three treatment study of menstrual difficulties. Paper presented at the Ohio Academy of Science; April, 1979

Differential treatment of spasmodic and congestive dysmenorrhea; Ph.D. dissertation, 1978

Women and health. Workshop, St. Louis, Missouri; February, 1977

An investigation of CFF and other paramaters in Navajos; Master's thesis, 1969

License

State of Michigan, limited license

State of Missouri, 1978

Professional Affiliations

American Psychological Association
American Psychology-Law Society
Michigan Psychological Association

SPECIFIC STEPS OF RELAXATION TRAINING

I. Introduction to relaxation biofeedback (first session)

   A. History of medication and related issues

   B. Explanation of self-control and relaxation

   C. Overview of treatment sessions, meeting times, direction and purpose of treatment

   D. Reading materials

   E. Base line EMG measurements obtained (10 minutes)

II. Progressive relaxation (second session)

   A. Process questions for reading materials

   B. Introduce concept of progressive muscle relaxation

   C. Use of cassette tape for the practice of progressive relaxation

   D. EMG frontalis baseline and introduction to the instrument

   E. Process relaxation and method of relaxation

   F. Home practice tape

III. EMG training (third session)

   A. Review home practice

   B. Hook up to EMG with direct audio-visual practice

   C. Relaxation session with imagery of muscles relaxing (passive physical relaxation)

   D. Homework--relaxation two times a day; one with tape, one with imagery

IV. Discuss effects of training (fourth session)

A. Develop patient's image of the process and effects

B. Introduce relaxation response with emphasis on passive attitude and mental relaxation

C. Practice relaxation response with EMG and thermal

D. Homework--combine relaxation response and progressive relaxation as fitting for the client

V. Selection of technique, active versus passive (fifth session)

A. Process effects and differences of active and passive relaxation

B. Identify cue word to elicit relaxation response

C. Introduce idea of generalizing relaxation throughout day based on cue word

D. Have client practice technique with direct audio EMG while monitoring thermal (reinforced positive experience)

VI. Autonomic nervous system with emphasis on thermal feedback (sixth session)

A. Discuss the use of thermal feedback and awareness of blood flow and hand temperature

B. Couple the relaxation training with autogenic suggestions and awareness of temperature increase

C. Direct audio temperature

D. Emphasis on breathing

E. Process experience and couple with spontaneous imagery

VII. Development of visualization

A. Discuss use of imagery

B. Draw from client's spontaneous imagery

C. Introduce image of "favorite place"

D. Practice imagery with thermal feedback

VIII. Integration of imagery and biofeedback (eighth session)

A. Process home practice of favorite place and spontaneous imagery

B. Introduce concept of positive self-image using a modality that is innovative for the client (specific versus nonspecific)

C. Process of imagery with emphasis on creative involvement

Favorite place

(three minute visualization with change, followed by process)

Favorite place

D. Recommendations for home practice

IX. Elaboration of imagery experience (ninth session)

A. Process home practice

B. Creative imagery during session without biofeedback

C. Process experience and subjects, internal awareness of successful relaxation matched with feedback from the therapist

D. Recommendations for home practice

X. Processing the therapeutic experience (tenth session)

A. Discuss home practice, with emphasis on integration of skills learned and continued use

B. Process termination issues

C. Termination

ANCOVA IPAT Anxiety Score

MS Between	DF	F	P(.05)
937.161	1	1.682	.212

ANCOVA IPAT Depression Score

MS Between	DF	F	P(.05)
195.648	1	.231	.637

ANCOVA: POMS

Variable	MS Between	DF	F	P(.05)
Tension	16.561	1	.336	.570
Depression	134.353	1	3.151	.094
Anger	159.434	1	2.909	.106
Vigor	149.108	1	1.508	.236
Fatigue	40.114	1	.683	.420
Confusion	119.926	1	5.211	.036

Anxiety Scale

1976 Edition

SELF ANALYSIS FORM

NAME_____ TODAY'S DATE_____
First Middle Last

SEX_____ AGE_____ OTHER FACTS_____
(Write M or F) (Nearest Year) (Address, Occupation, etc., as instructed)

CONFIDENTIAL

Inside this booklet there are forty statements about how most people feel or think at one time or another. There are no right or wrong answers. Just pick the one that is really true for you, and mark the a, b, or c answer.

You'll start with the two simple examples below, for practice. Read the first sentence and then put an X in the box that tells how you feel about walking. If you enjoy walking, you would put an X in the a box. If you don't, you'd mark the c box. If you enjoy walking once in a while, you'd mark the middle box. But mark the middle box *only* if it is impossible for you to decide definitely yes or no. But don't use it unless you absolutely have to.

1. I enjoy walking. a b c
   [a] yes, [b] sometimes, [c] no. ☐ ☐ ☐

Now do the second example.

2. I would rather spend an evening: a b c
   [a] talking to people, [b] uncertain, [c] at a movie. ☐ ☐ ☐

Now:

1. Make sure you have put your name, and whatever else the examiner asks, at the top of this page.

2. Please answer every statement. Don't skip a single one. Your answers will be entirely confidential.

3. Remember, use the middle box only if you cannot possibly decide on a or c.

4. Don't spend time thinking over the statement. Just mark your answer quickly, according to how you feel about it *now*.

   It will take only ten minutes or so to finish. Hand in the booklet when you're through, unless told to do otherwise. As soon as you're told to, turn the page and begin.

STOP HERE—WAIT FOR SIGNAL

Catalog No. CA 166

		A	
1. My interests, in people and ways to have fun, seem to change quite fast. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
2. Even if people think poorly of me I still go on feeling O.K. about myself. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
3. I like to be sure that what I'm saying is right, before I join in on an argument. [a] yes, [b] in between, [c] no.	a ☐	b ☐	c ☐
4. I am inclined to let my feelings of jealousy influence my actions. [a] sometimes, [b] seldom, [c] never.	a ☐	b ☐	c ☐
5. If I had my life to live over again I'd: [a] plan very differently, [b] in between, [c] want it the same.	a ☐	b ☐	c ☐
6. I admire my parents in all important matters. [a] yes, [b] in between, [c] no.	a ☐	b ☐	c ☐
7. It's hard for me to take "no" for an answer, even when I know what I'm asking is impossible. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
8. I wonder about the honesty of people who are more friendly than I'd expect them to be. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
9. In getting the children to obey them, my parents (or guardians) were: [a] usually very reasonable, [b] in between, [c] often unreasonable.	a ☐	b ☐	c ☐
10. I need my friends more than they seem to need me. [a] rarely, [b] sometimes, [c] often.	a ☐	b ☐	c ☐
11. I feel sure I could "pull myself together" to deal with an emergency if I had to. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
12. As a child I was afraid of the dark. [a] often, [b] sometimes, [c] never.	a ☐	b ☐	c ☐
13. People sometimes tell me that when I get excited, it shows in my voice and manner too obviously. [a] yes, [b] uncertain, [c] no.	a ☐	b ☐	c ☐
14. If people take advantage of my friendliness I: [a] soon forget and forgive, [b] in between, [c] resent it and hold it against them.	a ☐	b ☐	c ☐
15. I get upset when people criticize me even if they really mean to help me. [a] often, [b] sometimes, [c] never.	a ☐	b ☐	c ☐
16. Often I get angry with people too quickly. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
17. I feel restless as if I want something but don't know what. [a] hardly ever, [b] sometimes, [c] often.	a ☐	b ☐	c ☐
18. I sometimes doubt whether people I'm talking to are really interested in what I'm saying. [a] true, [b] uncertain, [c] false.	a ☐	b ☐	c ☐
19. I'm hardly ever bothered by such things as tense muscles, upset stomach, or pains in my chest. [a] true, [b] in between, [c] false.	a ☐	b ☐	c ☐
20. In discussions with some people, I get so annoyed I can hardly trust myself to speak. [a] sometimes, [b] rarely, [c] never.	a ☐	b ☐	c ☐

CONTINUE ON NEXT PAGE.

A Score ☐

	B		
	a	b	c
21. I use up more energy than most people in getting things done because I get tense and nervous. [a] true, [b] uncertain, [c] false.	☐	☐	☐
22. I make a point of not being absent-minded or forgetful of details. [a] true, [b] uncertain, [c] false.	☐	☐	☐
23. No matter how difficult and unpleasant the snags and stumbling blocks are, I always stick to my original plan or intentions. [a] yes, [b] in between, [c] no.	☐	☐	☐
24. I get over-excited and "rattled" in upsetting situations. [a] yes, [b] in between, [c] no.	☐	☐	☐
25. I sometimes have vivid, true-to-life dreams that disturb my sleep. [a] yes, [b] in between, [c] no.	☐	☐	☐
26. I always have enough energy to deal with problems when I'm faced with them. [a] yes, [b] in between, [c] no.	☐	☐	☐
27. I have a habit of counting things, such as steps, or bricks in a wall, for no particular purpose. [a] true, [b] uncertain, [c] false.	☐	☐	☐
28. Most people are a little odd mentally, but they don't like to admit it. [a] true, [b] uncertain, [c] false.	☐	☐	☐
29. If I make an embarrassing social mistake I can soon forget it. [a] yes, [b] in between, [c] no.	☐	☐	☐
30. I feel grouchy and just don't want to see people. [a] almost never, [b] sometimes, [c] very often.	☐	☐	☐
31. I can almost feel tears come to my eyes when things go wrong. [a] never, [b] very rarely, [c] sometimes.	☐	☐	☐
32. Even in the middle of social groups I sometimes feel lonely and worthless. [a] true, [b] in between, [c] false.	☐	☐	☐
33. I wake in the night and have trouble sleeping again because I'm worrying about things. [a] often, [b] sometimes, [c] almost never.	☐	☐	☐
34. My spirits usually stay high no matter how many troubles I seem to have. [a] true, [b] in between, [c] false.	☐	☐	☐
35. I sometimes get feelings of guilt or regret over unimportant, small matters. [a] yes, [b] in between, [c] no.	☐	☐	☐
36. My nerves get on edge so that certain sounds, such as a screechy hinge, are unbearable and give me the shivers. [a] often, [b] sometimes, [c] never.	☐	☐	☐
37. Even if something upsets me a lot, I usually calm down again quite quickly. [a] true, [b] uncertain, [c] false.	☐	☐	☐
38. I seem to tremble or perspire when I think of a difficult task ahead. [a] yes, [b] in between, [c] no.	☐	☐	☐
39. I usually fall asleep quickly, in just a few minutes, when I go to bed. [a] yes, [b] in between, [c] no.	☐	☐	☐
40. I sometimes get tense and confused as I think over things I'm concerned about. [a] true, [b] uncertain, [c] false.	☐	☐	☐

STOP HERE. BE SURE YOU HAVE ANSWERED EVERY QUESTION.

B Score ☐

Name _____ Sex _____ Age _____ Date _____ Examiner _____

A Score (Covert, indir.) _____ (p 2 score) B Score (Overt, manifest, sympt.) _____ (p 3 score)

TOTAL RAW SCORE _____ (A + B)

TOTAL, STANDARD STEN SCORE _____ (from Table)

Experimental Scales:

Overt-Covert Ratio $\left(\frac{B}{A}\right)$ _____, Q_3 _____, C _____, L _____, O _____, Q_4 _____.

Observations:

Diagnostic Summary:

Depression Scale

CONFIDENTIAL

PERSONAL ASSESSMENT INVENTORY

NAME _____ TODAY'S DATE _____

SEX _____ AGE _____ OTHER INFORMATION _____

Inside this booklet there are forty statements about how people feel or think at one time or another. There are no right or wrong answers. Just pick the one that is really true for you, and mark the **a**, **b**, or **c** answer.

You'll start with the two simple examples below, for practice. Read the first sentence and then put an X in the box that tells how you feel about friends. If you enjoy quiet friends, you would put an X in the **a** box. If you prefer lively friends, you'd mark the **c** box. If you *really* aren't sure, you'd mark the middle box. But mark the middle box *only* if it is impossible for you to decide definitely **yes** or **no**. Don't use it unless you absolutely have to.

1. I prefer friends who are:
   [a] quiet, [b] in between, [c] lively. ☐ a ☐ b ☐ c

Now try this second example.

2. People say I'm impatient.
   [a] true, [b] uncertain, [c] false. ☐ a ☐ b ☐ c

Now:

1. Make sure you have put your name, and any other information requested, at the top of this page.
2. Please answer every statement. Don't skip a single one. Your answers will be entirely confidential.
3. Remember, use the middle box only if you cannot possibly decide on **a** or **c**.
4. Don't spend time thinking over the statements. Just mark your answer quickly, according to how you feel about it *now*.

It will take only ten minutes or so to finish. Hand in the booklet when you're through, unless told to do otherwise. If you have any questions, ask them now. As soon as you're told to, turn the page and begin.

STOP HERE—WAIT FOR SIGNAL

Catalog No. PD 471

		★	
1. My zest for work is high. [a] nearly always. [b] sometimes. [c] hardly ever.	a ☐	b ☐	c ☐
2. I worry because I don't do much about solving my problems. [a] I often worry. [b] sometimes. [c] I almost never worry about it.	a ☐	b ☐	c ☐
3. I get into moods when I feel low and depressed. [a] often. [b] occasionally. [c] hardly ever.	a ☐	b ☐	c ☐
4. I very seldom have moments when my life seems lonely and empty. [a] true. [b] uncertain. [c] false.	a ☐	b ☐	c ☐
5. Much of the time I feel sluggish and too weary to move. [a] true. [b] partly true. [c] false.	a ☐	b ☐	c ☐
6. My mind works quickly and well these days. [a] yes, nearly always. [b] sometimes. [c] hardly ever.	a ☐	b ☐	c ☐
7. I feel my health is run down and I should see a doctor soon. [a] true. [b] uncertain. [c] false.	a ☐	b ☐	c ☐
8. I have the feeling that most people who know me really and truly like me. [a] true. [b] in between. [c] false.	a ☐	b ☐	c ☐
9. I'm not troubled by feelings of guilt. [a] true, I'm not troubled. [b] uncertain. [c] false, I am troubled.	a ☐	b ☐	c ☐
10. I make up my mind easily and quickly, and seldom have reason to change it. [a] true. [b] in between. [c] false.	a ☐	b ☐	c ☐
11. I seem to blame myself for everything that goes wrong, and I'm always critical of myself. [a] true, most times. [b] true, sometimes. [c] false.	a ☐	b ☐	c ☐
12. If I'm upset, my muscles twitch and jump. [a] yes, often. [b] occasionally. [c] no.	a ☐	b ☐	c ☐
13. I don't have very many fears of hidden physical dangers. [a] true. [b] partly true. [c] false, I am fearful.	a ☐	b ☐	c ☐
14. I feel life is so pointless and silly that I no longer even try to tell people how I feel. [a] true. [b] in between. [c] false.	a ☐	b ☐	c ☐
15. There are times when I think I'm no good for anything at all. [a] true, many. [b] in between. [c] false, almost never.	a ☐	b ☐	c ☐
16. I consider myself as able to manage my affairs as most people I know. [a] yes. [b] perhaps. [c] no.	a ☐	b ☐	c ☐
17. I feel self-confident and relaxed. [a] almost all the time. [b] sometimes. [c] hardly ever.	a ☐	b ☐	c ☐
18. I feel too depressed and "useless" to want to talk to people. [a] true. [b] in between. [c] false.	a ☐	b ☐	c ☐
19. I seldom get so excited that I say things I'm sorry for. [a] true. [b] uncertain. [c] false, I do say things.	a ☐	b ☐	c ☐
20. If acquaintances treat me badly and show they dislike me: [a] I tend to get downhearted. [b] in between. [c] it doesn't upset me a bit.	a ☐	b ☐	c ☐

CONTINUE ON NEXT PAGE.

		★	
21. I hardly ever feel sad and gloomy. **(a) true, I hardly ever feel sad and gloomy. (b) sometimes I do. (c) false, I'm often very gloomy.**	a ☐	b ☐	c ☐
22. I feel worn out and can't get enough rest. **(a) usually. (b) sometimes. (c) very seldom.**	a ☐	b ☐	c ☐
23. Sometimes a dark mood of depression comes over me for no reason. **(a) true. (b) uncertain. (c) false.**	a ☐	b ☐	c ☐
24. I hardly ever feel under such strain that it's too much effort to cope with things. **(a) true, I don't feel under a strain. (b) uncertain. (c) false, I *do* lack energy to cope.**	a ☐	b ☐	c ☐
25. Every few days my stomach feels bloated and uncomfortable. **(a) yes, definitely. (b) a little. (c) no, not at all.**	a ☐	b ☐	c ☐
26. I almost never feel that life is a burden. **(a) true. (b) in between. (c) false.**	a ☐	b ☐	c ☐
27. Sometimes I feel that my nerves are going to pieces. **(a) true. (b) uncertain. (c) false.**	a ☐	b ☐	c ☐
28. I find it easy to chat and joke with a person of the opposite sex. **(a) true. (b) in between. (c) false.**	a ☐	b ☐	c ☐
29. I almost never wish I were "out of it all." **(a) true, I almost never wish that. (b) uncertain. (c) false, I do wish that.**	a ☐	b ☐	c ☐
30. I hardly ever feel that I've failed in my duties. **(a) true, I don't. (b) in between. (c) false, I *am* troubled by guilt.**	a ☐	b ☐	c ☐
31. I have fears that no one really loves me. **(a) often. (b) once in a while. (c) not at all.**	a ☐	b ☐	c ☐
32. I dream a lot about frightening events. **(a) yes, often. (b) sometimes. (c) no.**	a ☐	b ☐	c ☐
33. I am confident that I can face and handle most emergencies that come up. **(a) true, always. (b) sometimes. (c) false, I cannot face emergencies.**	a ☐	b ☐	c ☐
34. I get a feeling of tension and have a ringing and buzzing in my ears. **(a) yes, often. (b) sometimes. (c) no, almost never.**	a ☐	b ☐	c ☐
35. I sometimes doubt whether I have been of much use to anyone in my life. **(a) true. (b) uncertain. (c) false.**	a ☐	b ☐	c ☐
36. I rate myself as a happy, contented person in spite of troubles here and there. **(a) true. (b) uncertain. (c) false.**	a ☐	b ☐	c ☐
37. I rarely lie awake at night wondering what will happen because of wrong things that I've done. **(a) true. (b) in between. (c) false, I do lie awake.**	a ☐	b ☐	c ☐
38. I have a weak stomach, and I easily get constipated. **(a) true. (b) in between. (c) false.**	a ☐	b ☐	c ☐
39. I never regret telling people frankly my feelings and ideas. **(a) true. (b) uncertain. (c) false.**	a ☐	b ☐	c ☐
40. If I were called in by my boss, I'd: **(a) be afraid I had done something wrong. (b) in between. (c) make it a chance to ask for something I want.**	a ☐	b ☐	c ☐

STOP HERE. BE SURE YOU HAVE ANSWERED EVERY QUESTION.

Name Sex Age Date Examiner

Observations:

	A *Without* Correction Factor	B *With* Correction Factor
Page 2 Score		
Page 3 Score		
Total Raw Score		
Standard Score		

Diagnos ic Summary:

Profile of Mood States

NAME_____ DATE_____

Below is a list of words that describe feelings people have. Please read each one carefully. Then fill in ONE space under the answer to the right which best describes HOW YOU HAVE BEEN FEELING DURING THE PAST WEEK INCLUDING TODAY.

IDENTIFICATION

The numbers refer to these phrases.
0 = Not at all
1 = A little
2 = Moderately
3 = Quite a bit
4 = Extremely

		0 NOT AT ALL	1 A LITTLE	2 MODERATELY	3 QUITE A BIT	4 EXTREMELY
T	1. Friendly	0	1	2	3	4
	2. Tense	0	1	2	3	4
D	3. Angry	0	1	2	3	4
	4. Worn out	0	1	2	3	4
A	5. Unhappy	0	1	2	3	4
	6. Clear-headed	0	1	2	3	4
V	7. Lively	0	1	2	3	4
	8. Confused	0	1	2	3	4
	9. Sorry for things done	0	1	2	3	4
	10. Shaky	0	1	2	3	4
F	11. Listless	0	1	2	3	4
	12. Peeved	0	1	2	3	4
	13. Considerate	0	1	2	3	4
	14. Sad	0	1	2	3	4
C	15. Active	0	1	2	3	4
	16. On edge	0	1	2	3	4
	17. Grouchy	0	1	2	3	4
	18. Blue	0	1	2	3	4
	19. Energetic	0	1	2	3	4
	20. Panicky	0	1	2	3	4
	21. Hopeless	0	1	2	3	4
	22. Relaxed	0	1	2	3	4
	23. Unworthy	0	1	2	3	4
	24. Spiteful	0	1	2	3	4
	25. Sympathetic	0	1	2	3	4
	26. Uneasy	0	1	2	3	4
	27. Restless	0	1	2	3	4
	28. Unable to concentrate	0	1	2	3	4
	29. Fatigued	0	1	2	3	4
	30. Helpful	0	1	2	3	4
	31. Annoyed	0	1	2	3	4
	32. Discouraged	0	1	2	3	4
	33. Resentful	0	1	2	3	4
	34. Nervous	0	1	2	3	4
	35. Lonely	0	1	2	3	4
	36. Miserable	0	1	2	3	4
	37. Muddled	0	1	2	3	4
	38. Cheerful	0	1	2	3	4
	39. Bitter	0	1	2	3	4
	40. Exhausted	0	1	2	3	4
	41. Anxious	0	1	2	3	4
	42. Ready to fight	0	1	2	3	4
	43. Good natured	0	1	2	3	4
	44. Gloomy	0	1	2	3	4
	45. Desperate	0	1	2	3	4
	46. Sluggish	0	1	2	3	4
	47. Rebellious	0	1	2	3	4
	48. Helpless	0	1	2	3	4
	49. Weary	0	1	2	3	4
	50. Bewildered	0	1	2	3	4
	51. Alert	0	1	2	3	4
	52. Deceived	0	1	2	3	4
	53. Furious	0	1	2	3	4
	54. Efficient	0	1	2	3	4
	55. Trusting	0	1	2	3	4
	56. Full of pep	0	1	2	3	4
	57. Bad-tempered	0	1	2	3	4
	58. Worthless	0	1	2	3	4
	59. Forgetful	0	1	2	3	4
	60. Carefree	0	1	2	3	4
	61. Terrified	0	1	2	3	4
	62. Guilty	0	1	2	3	4
	63. Vigorous	0	1	2	3	4
	64. Uncertain about things	0	1	2	3	4
	65. Bushed	0	1	2	3	4

MAKE SURE YOU HAVE ANSWERED EVERY ITEM.

Individual Results

Subject Number	IPAT Anxiety Score Percentile	IPAT Depression Percentile	POMS Tension T-scores	POMS Depression T-score	POMS Anger T-score	POMS Vigor T-score	POMS Fatigue T-score	POMS Confusion T-score
1	1	40	47	48	49	47	52	51
2	40	95	41	50	49	53	44	45
3	1	69	30	33	38	73	34	36
4	40	99	45	45	50	51	44	45
5	11	66	41	44	39	51	42	39
6	4	40	40	37	39	59	49	42
7	0	0	30	32	37	77	34	32
8	1	31	32	36	40	59	46	36
9	23	86	48	39	48	62	59	36
10	4	80	44	39	38	73	48	40
11	77	94	41	36	41	72	48	33
12	23	94	41	36	41	72	48	33
13	40	94	35	48	54	72	43	42
14	0	47	30	35	39	67	42	36
15	60	98	48	51	58	51	56	46
16	1	37	30	33	37	75	34	32
17	60	99	49	52	64	48	55	39
18	11	66	36	38	40	62	49	36
19	1	52	36	32	40	75	34	30
20	60	95	38	36	40	69	42	42

IPAT Anxiety Scale Percentile — IPAT Depression — POMS — T-scores

mean=50

mean standard score=50
standard deviation=10

DEMOGRAPHIC INFORMATION

Treatment Group

Marital Status:

5 married
5 unmarried

Employed Outside of Home:

3

Range of Age:

31-40	1
41-50	1
51-60	6
61-70	2
71-above	0

Telephone Control

Marital Status:

4 married
6 unmarried

Employed Outside of Home:

3

Range of Age:

31-40	1
41-50	2
51-60	5
61-70	1
71-above	1

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