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A Comparison Between Desensitization and Relaxation Training in the Treatment of Primary Dysmenorrhea

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A COMPARISON BETWEEN DESENSITIZATION AND

RELAXATION TRAINING IN THE

TREATMENT OF PRIMARY DYSMENORRHEA

by

Susan Myrna Jones Carcelli

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Susan Jones Carcelli

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ABSTRACT

A Comparison Between Desensitization and

Relaxation Training in the Treatment

of Primary Dysmenorrhea

by

Susan Myrna Jones Carcelli, Doctor of Philosophy

Utah State University, 1985

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The use of relaxation, desensitization, and relaxation plus
desensitization in the treatment of primary dysmenorrhea was investi-
gated in this study. Subjects were 45 university women who experi-
enced either congestive or spasmodic dysmenorrhea. Each subject was
individually treated in four, one-hour sessions during the first 20
days of her menstrual cycle. Subjects were divided into three
groups: Group 1 obtained four hours of progressive relaxation train-
ing, group 2 was asked to self-relax while being administered scenes
from a standardized menstrual hierarchy, and group 3 obtained both
relaxation training and desensitization. Type of dysmenorrhea was
assessed by the Menstrual Symptom Questionnaire (MSQ). Symptom
intensity and duration were assessed by the Retrospective Symptom
Scale, the Menstrual Semantic Differential, the Menstrual Activities
Scale, and the Menstrual Behavior Scale, and were administered pre-
test, posttest, and at three-month follow-up. Skin temperature

during session 4 was obtained to evaluate the level of relaxation.

Differences among treatment groups were analyzed using a one-way analysis of variance. t-tests for correlated samples were used to analyze within group changes from pretreatment to posttreatment.

Results suggest all three treatments to be equally effective in reducing symptoms, negative attitudes, pain mitigating behaviors, and invalid hours. Symptom relief was not associated with skin temperature increases. The possibility of placebo playing a role in these results cannot be ruled out. Finally, the division of primary dysmenorrhea into spasmodic and congestive types by the MSQ is inaccurate, most probably due to the confounding nature of the scoring system.

(175 pages)

One of the most frequent complaints encountered in medicine and gynecology is the pain accompanying menstruation termed "dysmenor-rhea" (Odgen, 1970). Reported incidence of dysmenorrhea is varied, usually ranging from 21-80% in women of childbearing age (Tasto & Chesney, 1974).

In a mailed questionnaire study of a family practice population, Sobczyk, Braunstein, Solberg, and Schuman (1978) found that at least 50% of women experience menstrual pain at one time or another. A minimum of 29% of all women experienced pain in any 60-day interval of time, with the average duration of their pain being greater than one day. Of this group, 40% reported disability to the point of becoming bedridden and missing both work and recreational activity, 14% reported being bedridden and missing only work, and 10% reported missed work or recreation without being bedridden. Sobczyk et al. (1978) further indicated that this index of disability agrees with at least one other published review of the subject (Santamarina, 1969).

Novak, Jones, and Jones (1975) similarly point out that dysmen-orrhea is the greatest cause of lost work hours among women. Despite the magnitude of disability involved, many researchers contend that dysmenorrhea continues to be one of the most overlooked disorders in existence (Sobczyk et al., 1978).

Dysmenorrhea is subdivided into two major types. Secondary dysmenorrhea results in conjunction with organic pelvic disorders, thus requiring gynecological treatment interventions. Primary dys-

menorrhea occurs in the absence of gross pathological conditions in the pelvic region (Kistner, 1971). Benson, Beary, and Carol (1974) estimates that 80% of dysmenorrhea cases are of the "primary type."

Since primary dysmenorrhea is identifiable only via symptoms (i.e., the subjective experience of the woman) rather than signs (i.e., diagnosable pelvic disorder), the woman herself is typically the one who diagnoses her condition. Most researchers and physicians suggest that the diagnosis of primary dysmenorrhea also requires the woman to have sought pain relief either from a physician (Israel, 1967) or from self-medication (Sobczyk et al., 1978). Psychological questionnaires (Chesney & Tasto, 1975a; Moos, 1968) have also been developed to be used to determine the severity, symptoms, and hypothesized type of dysmenorrhea present. Although some researchers question the validity of such subjective reports (Parlee, 1973, 1974), most researchers concede that since only the woman experiences her symptoms, only she can accurately assess them (Coppen & Kessel, 1963); therefore such questionnaires continue to be widely used in this area of research.

Definitions

Primary dysmenorrhea has been subdivided into two different clinical entities; these are spasmodic and congestive dysmenorrhea. It is these two types of primary dysmenorrhea to which recent behavioral therapies have been directed. The two types will be delineated below, as well as their respective etiologies and medical treatments.

Spasmodic dysmenorrhea does not usually appear until age 15 or 16, which is about two years after menarche, when ovulation begins,

and rarely persists beyond 30 years of age. Characteristically, the pain begins with the onset of menstruation and lasts a few hours, although in some cases the symptoms may continue throughout several days. Although it is most frequently of a colicky, labor-like nature, the pain is also sometimes described as a stuffy, aching feeling. The pain may further radiate to the lower back and along the thighs. Symptoms may necessitate bed rest from one to several days each month, and may be accompanied by diarrhea, nausea, headaches, vomiting, and irritability (Novak et al., 1975).

Congestive dysmenorrhea, unlike the spasmodic type, appears to be an indirect consequence of the menstrual flow. Pain is experienced approximately one week or more prior to the onset of menses and continues through the first day of bleeding. Symptoms are of increasing heaviness and a dull aching pain in the lower abdomen, and may be accompanied by nausea, anorexia, constipation, headaches, fatigue, backaches, and breast pain (Dalton, 1969). These symptoms are also accompanied by such psychological symptoms as anxiety, tension, depression, hostility, irritability, and emotional lability. Also, unlike its spasmodic counterpart, these symptoms do not abate with age, but continue until menopause or even thereafter. Congestive dysmenorrhea is not so clearly definable as its spasmodic counterpart, since its major criteria are cyclicity and time of occurrence in relation to the period (Rosenthal, 1978).

Congestive dysmenorrhea is also commonly referred to as "premenstrual tension," or "premenstrual syndrome" (PMS), although the term "PMS" is typically reserved for the most pronounced cases (Dalton,

1979). In this paper these two terms will be used interchangeably, with the original language of the researcher cited maintained.

Etiology

The etiologies of spasmodic and congestive dysmenorrhea also appear to be quite distinct from each other. A recent breakthrough in the understanding of spasmodic dysmenorrhea is the discovery of the role prostaglandins play in the etiology of menstrual cramps. Prostaglandins are minute substances produced in many body tissues which cause contraction of smooth muscle fibers. Cramps result from a diminished flow of blood to the uterine muscle which has been contracting, which is a situation brought about by excess prosta-glandins (Marx, 1979). Filler and Hall (1970) recorded the motility pattern of the uterus in several groups of women in different phases of the menstrual cycle, using latex intrauterine balloons connected to a pressure meter. They found that "...patients with dysmenorrhea have an inherent hypercontractibility of the uterus demonstrated more by elevated tonus than by change in the intensity of contractions" (p. 105). Filler and Hall also observed that during menstruation patients did not complain of severe pain even if the contractions were of high amplitude. But when the contractions were dysrhythmic and showed a "notching" pattern, the patients experienced severe pain. They concluded that elevated uterine muscle tonus and dys-rhythmic tetany (sustained contractions) resulted in focal ischemia (loss of adequate blood supply) and hypoxia in the myometrium (the uterine smooth muscle tissue), thus causing the pain sensation.

Prostaglandin excess is also hypothesized to account for the nausea, vomiting, diarrhea, headaches, and other symptoms such as fainting that constitute spasmodic dysmenorrhea, due to the effects of prostaglandins on the smooth muscles of the gastrointestinal tract and the blood vessels (Marx, 1979). However, it should be noted that although prostaglandin research has significantly contributed to the understanding of spasmodic dysmenorrhea, it does not rule out other potential contributors, since some women with low prostaglandin levels also experience menstrual cramping (Sommer, 1982).

The etology of congestive dysmenorrhea remains far less clear. Some researchers (Sommer, 1982) contend that "premenstrual syndrome" as a specific syndrome does not exist, since it does not constitute a reliable, predictable entity. However, Reid and Yen (1981) call PMS "a major clinical entity affecting a large segment of the female population" (p. 5). They hypothesize that the underlying mechanism of congestive dysmenorrhea involves the neuroendocrine events within the hypothalamic - pituitary axis that modulate neurotransmitter function. Other postulated causes of PMS include excessive estrogen levels, inadequate progesterone, vitamin B6 deficiency, and altered glucose metabolism (Gonzales, 1981), as well as increases of prolactin (Carrol & Steiner, 1978). Other factors which have been implicated as possible contributors to the syndrome include fluid and electrolyte imbalances, hypoglycemia, pelvic congestion and fibrosis, metatoxicity, changes in blood serotonin level, and changes in rapid-eye movement sleep (Sommer, 1982).

Medical Treatments

Medical treatment strategies for spasmodic and congestive dys-
menorrhea are also differentiated. For spasmodic dysmenorrhea,
recently developed drugs that inhibit prostaglandin activity appear
to significantly reduce menstrual cramps ("Two drugs," 1979). How-
ever, potential side effects can include vomiting and dizziness, and
these agents are contraindicated for those individuals with ulcers
and other gastrointestinal disorders (Schwartz, Zoe, Lindner, & Naor,
1974).

Oral contraceptives are also often prescribed for spasmodic
dysmenorrhea; these do not directly inhibit prostaglandin, but
instead contribute to a reduction in prostaglandin production by the
uterus via suppression of ovulation (Sommer, 1982). Their use is not
universally advocated by physicians due to contraindications such as
epilepsy, side effects such as thrombophlebitis and pulmonary embo-
lism, and nuisances which may develop such as weight gain, nausea,
and breast changes (Tyler, 1973). Fully 40% of women that attempt
this treatment report some sort of pill-related adverse reaction.

Since congestive dysmenorrhea is a much more ill-defined syn-
drome, it is not surprising that medical treatment strategies for it
have been much less efficacious. Although Dalton (1969, 1979) has
anecdotally reported successes with the use of natural progesterone
by vaginal suppository for the treatment of PMS, a study of double
blind trials of progesterone and a placebo indicated no significant
differences (Sampson, 1979). Sampson noted that 60% of both groups
reported being helped, and that this success rate was similar to many

other treatments for PMS using uncontrolled trials. A similar success rate for the use of oral contraceptives (which would also alter the estrogen/progesterone ratio) was also noted (Silberheld, Brast, & Noble, 1971), although the researchers indicated that in some cases, PMS symptoms were exacerbated by this treatment.

Reid and Yen (1981) similarly report a "striking" placebo effect in the disorder. They state that even with a sugar pill treatment, symptoms tend to disappear, only to reappear in four or five months.

It can be concluded from the previous review describing the etiologies and medical treatments of the two types of primary dysmenorrhea that,

1. in the case of the spasmodic type, the medical treatments have both dangerous and uncomfortable side effects;

2. in the case of the congestive type, medical treatments have been historically ineffective.

In light of these problems, it is interesting to note the recent investigations into the effect of behavior therapy techniques, biofeedback techniques, and relaxation training on primary dysmenorrhea. The reasons for the boost of such non-medical research in this area will next be discussed.

The Behavioral Treatment of Dysmenorrhea

A number of factors have given impetus to the burgeoning use of behavioral strategies in the treatment of primary dysmenorrhea. The first factor, which is the history of potentially harmful and/or ineffective medical treatments for this disorder, has been outlined

above. If dysmenorrhea symptoms had been historically responsive to gynecologic intervention then there would have been less interest in the development of alternative treatments.

Secondly, the success experienced by researchers and clinicians using relaxation training and biofeedback training to alleviate disorders such as insomnia, hypertension, headaches, and spastic muscular disorder has resulted in continued interest in the exploration of other disorders previously defined as "medical" (Heczey, 1978). This interest had also been impelled by afflicted individuals who express interest in controlling mild to moderate levels of symptomatology through self-control strategies rather than resorting to trials of medication.

Thirdly, despite increased understanding of the physiologic antecedents of primary dysmenorrhea, most researchers continue to acknowledge the role that psychological factors play in menstrual problems, particularly in the symptoms of congestive dysmenorrhea. Even the staunchest defender of the hormonal theory of PMS, Dalton (1979), acknowledges that dysmenorrhea is influenced by psychological factors, and it therefore logically follows that psychological treatments might also be effective.

One psychological factor that has been implicated in dysmenorrheaic symptomatology is the purported role of the women's self-mediated cognitions. Support for this psychological variable's effect on premenstrual and menstrual symptoms (together sometimes referred to as "paramenstrual symptoms") was made by Beaumont, Richards, and Gelder (1975), who compared psychological and physical

symptomatic changes over the course of the menstrual cycles of nor-mally menstruating women and women who had undergone simple hys-terectomies. Both groups had similar cyclic hormonal fluctuations, but only the normally menstruating group reported significant changes in symptoms during the various phases of their cycles. The authors indicate that a possible hypothesis to account for these results is that the level of symptomatology is as dependent on the woman's awareness of their position in the menstrual cycle as it is on any underlying biological change.

Finally, a number of researchers have reasoned that, despite the increased understanding of the physical antecedents of dysmenorrhea (particularly the spasmodic type), both types of primary dysmenorrhea continue to involve much unsuccessfully treated discomfort for the sufferers. This pain has been further hypothesized to cause height-ened dread of dysmenorrhea, and concomitant increased anxiety, which in turn causes even more pain (Heczey, 1978). This identified "pain spiral" has resulted in Russ (1977) and others suggesting that men-strual distress is influenced by complex interactions between psycho-logical processes, physiological changes, and social/cultural/envi-ronmental factors.

This interaction between the physiological and the psychological is also noted by Sturgis (1970):

> No single factor has ever been shown to be wholly responsible for the severity of these painful episodes... There are two components, however, that have been generally accepted as responsible for all such complaints. The first of these is physical: the action of progesterone on the menstruating uterus... The second is psychological: the reaction of the individual to pain associated with feminine function. (p. 150)

Treatment success with a combination of an anxiety reducing, cognitive/educational approach has also been reported by the gynecologist Kistner (1971). By citing case studies and other physicians' observations, he suggests that "psychotherapy" in the form of simple guidance, open discussions, and information regarding the natural phenomenon of menstruation can help to alleviate dysmenorrheic symptoms.

In conclusion, a number of factors have influenced the advent of behavioral strategies to treat primary dysmenorrhea.

These include:

1. the historically poor results in treating dysmenorrhea by traditional applications and techniques;

2. the successes noted in the literature in the teaching of self control strategies in the treatment of other psychophysiological disorders;

3. the contention that cognitions regarding menses play a role in menstrual discomfort; and

4. the recent discussion regarding the specific role played by anxiety in either increasing or mediating the psychophysiological experience of pain.

Problem Statement

The existence of primary dysmenorrhea as a major pain disorder in women is well documented. There exists a continued need to develop successful treatment strategies to counter the debilitating effects of the periodic pain and discomfort experienced by its

sufferers. Given the previously identified problems with medical treatments, as well as the established severity of the problem area, ample justification exists in exploring and expanding research into the behavioral treatment of primary dysmenorrhea.

Purpose of the Study

This study sought to treat women who reported experiencing either congestive or spasmodic dysmenorrhea with one of three behavioral treatments. The purpose of this study was to determine whether: (a) a relaxation only treatment, a desensitization only treatment, or a combination relaxation/desensitization treatment would decrease dysmenorrhea symptoms, (b) a relaxation only treatment or a desensitization only treatment would decrease dysmenorrhea symptoms as much as a combination relaxation-desensitization treatment previously shown to be effective, and (c) any of the three behavioral treatments identified above would differentially decrease spasmodic dysmenorrhea or congestive dysmenorrhea symptoms.

To wit, the primary purpose of the present study was to compare the effects of relaxation only, desensitization only, and relaxation plus desensitization on the symptoms of primary dysmenorrhea in relation to type of dysmenorrhea.

Secondary objectives were: (1) to determine if there existed a subgroup of women experiencing dysmenorrhea who were interested in managing their symptoms via self-control strategies, and (2) to relate number of home practices, levels of relaxation achieved at practice, skin temperature measures when relaxing, and ability to successfully visualize menstrual imagery to treatment outcome.

Hypotheses

To deal with the study's outlined purposes, three hypotheses were developed. The following null hypotheses were tested:

1. Experimental treatment hypothesis. There is no difference in the degree of experienced distress of primary dysmenorrhea between experimental groups exposed to four sessions of either (a) individual relaxation training, (b) individual desensitization training, or (c) individual relaxation plus desensitization training.

2. Time hypothesis. There is no difference in the degree of experienced distress of primary dysmenorrhea in experimental groups prior to compared to after exposure to four treatment sessions.

3. Spasmodic vs. congestive hypothesis. There is no difference in the degree of experienced distress of primary dysmenorrhea between a group experiencing spasmodic dysmenorrhea and a group experiencing congestive dysmenorrhea.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to review and summarize recent research in the areas of desensitization, biofeedback, and relaxation training in the treatment of primary dysmenorrhea, and to relate such research to the present dissertation study.

Reich (1972), in a study examining the effects of group relaxation plus systematic desensitization on the symptoms of primary dysmenorrhea (type unspecified) in relation to anxiety, treated twelve college women in four sessions with group systematic desensitization focused on menstruation. Reich also utilized a no-treatment control group. The subjects were treated in small groups, with semi-automated procedures such as tape recordings and standardized hierarchies. The Semiobjective Criteria of Teen Age Dysmenorrhea was used to measure the degree of primary dysmenorrhea, and subsequent change in dysmenorrhea symptoms. The Taylor Manifest Anxiety Scale (Taylor, 1953) was used to determine the anxiety level of the subjects.

Study results indicated a significant difference in amount of change in primary dysmenorrhea between the treated and untreated (control) subjects. Also noted was a significant interaction between treatment and anxiety level, indicating that the subjects receiving the most benefit from treatment were those belonging to both the treatment and the low anxiety groups. Reich further pointed out that since systematic desensitization, which is an anxiety reduction technique, was effective in reducing dysmenorrheic symptoms, anxiety in

some form was probably responsible for part of the pain involved. This finding was also supported by a significant interaction and a -.66 correlation between trait anxiety scores and change in dysmenorrhea.

In a similar study, Tasto and Chesney (1974) treated seven female college students suffering from primary dysmenorrhea with a combination of a standard behavior therapy muscle relaxation procedure and the imagination of common scenes (as differentiated from Reich's [1972] hierarchies) associated with menstrual pain reduction (e.g., reclining in a warm bathtub, using a heating pad). The major question explored was whether a subject who had learned to associate relaxation with menstrual pain reduction imagery could transfer such learning to the onset of real menstrual pain and therefore mitigate its occurrence. Two parts of the Symptom Rating Scale and the Menstrual Activities Scale were administered on three occasions, with treatment occurring between the second and the third administrations. Significant differences were not obtained between the first and the second administrations, but were obtained on these measures after treatment intervention, supporting the contention that behavior therapy can be an effective means of treating primary dysmenorrhea in college age women. This outcome was maintained at a two-month follow-up.

Continuing their research into behavioral treatments for primary dysmenorrhea, Chesney and Tasto noted that in their 1974 study, some subjects were unresponsive to treatment. They suggested the possibility of two types of primary dysmenorrhea, only one of which was

responsive to behavioral therapy. This theory had been first pre-
sented by Dalton (1969) who wrote, "There are two very different, in
fact opposite types of (primary) dysmenorrhea known as spasmodic and
congestive" (p. 23). The spasmodic type refers to spasms of pain
similar to labor pains which begin the first day of menstruation; the
congestive type to a variation of the premenstrual syndrome with
dull, aching pains accompanied by lethargy and depression prior to
the onset of menstruation. Chesney and Tasto (1975a) constructed a
questionnaire based on suggestions from Dalton's theory. The first
set of 51 items had mean test-retest reliabilities of 0.76, and
yielded two clearly distinct factors in support of the two-type
hypothesis. When items with factor loadings less than -0.35 were
discarded, 25 items remained, with mean test-retest reliability of
.78. Again, two clearly distinct factors emerged defining spasmodic
and congestive dysmenorrhea.

Chesney and Tasto (1975b) next utilized their newly developed
Menstrual Symptom Questionnaire to diagnose women reporting menstrual
discomfort as suffering from either spasmodic or congestive dysmenor-
rhea. Subjects for the study were 69 college student volunteers.
Subjects also completed the Symptom Severity Scale to assess the
degree to which they experienced discomfort during their last men-
strual period. The subjects in the two groups representing the two
types of dysmenorrhea were rank ordered by total score on the Men-
strual Symptom Questionnaire, and then randomly assigned to one of
three treatment conditions, forming a 2 x 3 factorial design with the
two types of dysmenorrhea, and the three treatment conditions (behav-

ior therapy, pseudotreatment, and waiting list). Behavior therapy
consisted of relaxation combined with premenstrual imagery (Tasto &
Chesney, 1974). The pseudotreatment involved a self-directed group
discussion with a therapist present. The purpose of the waiting list
group was to identify changes in the reported severity of dysmenor-
rhea over time and/or due to test taking behavior.

Results of the study indicated that the behavior therapy treat-
ment procedure was highly effective in reducing the reported symptoms
of women suffering from spasmodic dysmenorrhea, but was ineffective
in reducing symptoms of women suffering from congestive dysmenorrhea.
Chesney and Tasto (1975b) also indicated that many of the successful-
ly treated clients spontaneously reported using their relaxation
exercises in vivo during menstrual distress.

It should be noted that since the construction of the Menstrual
Symptom Questionnaire (MSQ) (Chesney & Tasto, 1975a), some authors
have explicitly questioned the basic assumptions underlying its
development. Cox (1977), although confirming the MSQ's test-retest
reliability and ability to discriminate along a congestive-spasmodic
dimension, suggested that this dimension was continuous, rather than
dichotomous as suggested by Tasto and Chesney. Cox noted that in his
study there were roughly equal numbers of respondents in each third
of the distribution. These findings are also supported by other
researchers (Rosenthal, 1978; Balick, Elfner, Moore, & May, 1982) and
also agree with Golub, Menduke, and Lang's (1959) assertion that
women experiencing premenstrual tension are just as likely to have
flow period distress as not.

Webster, Martin, Uchalik, and Gannon (1979) also insist that the concept of congestive and spasmodic dysmenorrhea as all-inclusive categories should be retired. In this report of a multiple group factor analysis, both confirmator and explorator factor analyses yielded little support for the theory of spasmodic and congestive dysmenorrhea as used in the MSQ. These authors point out that Dalton's (1969) widely accepted theory of two types of primary dys- menorrhea upon which the MSQ rests was not based on empirical evi- dence.

Webster et al. (1979) instead suggest that the most constructive way to view these symptoms is as either menstrual or premenstrual (i.e., as time related) with several different categories within each type. They further contend that the major flaw of the questionnaire lies in the scoring of the instrument, which is a direct application of the mutually exclusive properties of the two types of dysmenorrhea proposed by Dalton (1969). Since some women do experience both premenstrual and menstrual symptoms, these authors suggest that the scoring procedure is entirely confounded, since scores that fall midrange on the measure can either be reflecting a mixture of the two types of dysmenorrhea or no symptoms at all. They conclude that the MSQ as it stands is an inadequate instrument with which to execute either clinical diagnoses or empirical research.

Despite the important methodological and conceptual problems of the MSQ outlined above, researchers have continued to use it as the classification instrument of choice (Balick et al., 1982; Breckenridge, 1981; Cox & Meyer, 1978; Hart, Mathison, & Prater,

1981; Rosenthal, 1978).

Duson (1977), in a study comparing a group relaxation plus systematic desensitization treatment and a combination of relaxation, systematic desensitization, and cognitive restructuring to a delayed treatment control group, found both treatments superior to the delayed treatment control group in reducing self-reported severity of menstrual symptoms and reported interference with normal activity. Each group met for 1-1/2 hours twice a week for three weeks, for a total of six sessions. The subjects were 25 college students. Measures used were (1) the Menstrual Activity Scale, (2) two forms of the Symptom Severity Scale, (3) the Menstrual Behavior Scale, (4) the Activities Interference Scale, and (5) the Menstrual Symptom Questionnaire. Duson also commented that differences on two of the measures gave some slight support to Chesney and Tasto's (1975b) noted superior responsiveness of spasmodic over congestive subjects to the systematic desensitization treatment. She noted that study limitations included the small number of subjects, a large (and differential) attrition rate between her treatment groups, and the short length of treatment used.

In an exceptionally well organized and conceptualized study, Cox and Meyer (1978) treated 14 women with primary dysmenorrhea individually with four progressive relaxation plus systematic desensitization sessions between two menstrual cycles. Noting the reported wide variation in response to treatment in previous group-administered studies (Reich, 1972; Tasto & Chesney, 1974), Cox and Meyer postulated that group treatments were not effective for some subjects due

to the fact that during the treatment some subjects would be menstruating, and therefore would also be contending with their dysmenorrhea while attempting to learn relaxation skills. Cox (1977) had previously suggested that such group-administered treatment might also negatively bias congestive sufferers since they are typically distressed more days per month than their spasmodic counterparts, thus leading to Chesney and Tasto's (1975b) reported differential treatment response.

Study results indicated that menstrual symptoms as measured by the Daily Symptom Scale, the Retrospective Symptom Scale, and the Menstrual Semantic Differential, medication units consumed, and reported invalid hours all significantly improved posttreatment. Cox and Meyer (1978) also reported a total score reduction of 43% for treated subjects, noting that treatment effects appeared to be general, equally reducing symptom frequency and severity, and equally relieving cramping, systemic complaints, and emotional distress. At pretreatment, the treatment group scores were significantly different from those of a normative control group (calculated to assess the "average" distribution of the dependent variables) but at posttreatment, group scores were not significantly different from one another.

Cox and Meyer (1978) further noted that treatment outcome was unrelated to previous anxiety level (a finding contradicting Reich's [1972]), type of dysmenorrhea (again, a conclusion at odds with Chesney and Tasto [1975b] and Duson [1977]), or reduction to either EMG or peripheral temperature measures. This last finding supports other similar results (Balick et al., 1982; Hart et al., 1981). Six-

month follow-up indicated that symptom relief had continued to improve but that menstrual attitude scores had regressed to baseline.

Cox and Meyer's (1978) results and conclusions are methodologically strengthened by the use of a control group that differed from the treatment group only by the group's lack of reported dysmenorrhea symptoms. By utilizing such a control group, as well as a large normative group from the general population, Cox was able to compare his treatment results to both a specifically nondistressed group and a large normative group of "typical" women. Previous to his research, statistically significant treatment results had been reported, but it was unknown if such improvements were also of practical significance.

Cox and Meyer (1978) are as apparently perplexed as previous researchers regarding possible mechanisms for subject improvement. They rule out such possible theories as tonic sympathetic improvement, shift in pain threshold, phasic shifts in sympathetic arousal, and attitude shifts, and concluded that a desensitization effect (e.g., a reduction of anticipatory anxieties) is the most reasonable explanation of treatment gains. They suggest that further research will be necessary to clarify whether desensitization, relaxation training, self monitoring, or placebo is the active therapeutic agent in such successful outcomes.

As part of their study, Cox and Meyer (1978) also demonstrated their Retrospective Menstrual Symptom Scale (RSS) to have test-retest reliability (ranging from .73 to .85) and concurrent, construct, and content validity on three independent parameters of menstrual dis-

tress (symptoms, medication usage, and invalid hours). Concurrent validity between the RSS and a daily symptom scale was reported to be 0.95 and 0.96 on two separate administrations. These reported reliability and validity checks are extremely important due to previously used measures' lack of these checks (Moos, 1969), and concerns regarding the susceptibility of these measures to stereotypy, as well as possible influence on them by memory factors (Parlee, 1973, 1974).

In a methodologically weak study, Ben-Menachem (1980) treated ten women aged 16-22 suffering from dysmenorrhea with four weeks of twice-weekly, group administered relaxation and "posthypnotic suggestions" regarding the normalcy of menstruation. Dependent measures were an unspecified dysmenorrhea questionnaire based on Moos' (1968) Menstrual Distress Questionnaire and a self-judgment sheet. No control group was utilized. Results indicated that the symptoms of cramps and nausea were significantly improved.

Despite the identified weaknesses of the above study, such as unnormed measures, and unspecified treatment (which, parenthetically, appear all too commonly in published gynecological journals), the study does provide some convergent support to recent contentions as to the importance of cognitive factors in the successful behavioral treatment of dysmenorrhea. In this case, Ben-Menachem (1980) suggested that the interruption of a "pain spiral" involving fear and tension increasing sensations of discomfort was important to his successful results.

Biofeedback Treatments
of Primary Dysmenorrhea

More recently, researchers have focused on the use of different biofeedback treatment modalities in the treatment of dysmenorrhea.

In a study exploring the relative efficacy of EMG frontalis and temperature training in the treatment of primary dysmenorrhea, Hart et al. (1981) treated 11, mostly nulliparous college women volunteers for six months. The program consisted of two months of baseline data gathering, two months of (13 30-minute sessions) individually admin-istered biofeedback training (either EMG frontalis training or skin temperature training) and two months of follow-up data gathering. During the two months of the biofeedback training, subjects were also instructed to perform an unspecified type of home practice once daily. Measures used were the Symptom Severity Scale and the Menstrual Symptom Questionnaire. Subjects were treated by ten male doctoral students in clinical psychology.

Treatment results indicated that both biofeedback modalities were effective in reducing the symptoms of primary dysmenorrhea, and that there was no statistically significant difference between the EMG and the temperature training groups. No report was made of any change in psychophysiological measures as a result of biofeedback training. Although the MSQ was ostensibly used in this study to classify subjects in regard to congestive vs. spasmodic dysmenorrhea, no report in this study was made regarding possible differential response to treatment by the two groups. Post hoc analysis of symp-toms that were reported improved were: cramps, headache, backache, depression, irritability, general aching, and abdominal pain.

Nausea, vomiting, anorexia, leg aches, dizziness, weakness, diarrhea, and facial blemishes did not respond to either treatment.

Noting that in both treatment groups symptom reduction continued even after treatment was discontinued, Hart et al. (1981) theorized that reported symptom severity may actually depend more on a subject's feeling of control over the pain than on actual control of physiological function. To support their contention, they cited a study on low back pain (Nouwen & Solinger, 1979) that found that self report of pain decreased in many patients into the follow-up phase even though EMG measurements returned to baseline. However, placebo effect cannot be ruled out as being responsible for symptom decrease, since no control group was used. Attributing the results to the effect of the characteristics of the therapist can be ruled out, however, since more than one therapist was used.

Balick et al. (1982), in a study utilizing single subject multiple baseline design with multiple treatments, trained seven dysmenorrheic women in EMG and thermal biofeedback procedures with concurrent autogenic relaxation practice. The Menstrual Symptom Questionnaire indicated that five women had spasmodic dysmenorrhea, two had congestive dysmenorrhea, and "two suffered from a combination of both types" (p. 503). The dependent measure used was the Daily Symptom Scale, and was completed by each subject on each of the first two days of her menstrual period. The treatment outline was as follows: 6 months of baseline data gathering (4 months of DSS only, last two months DSS, and 3 sessions of baseline physiological measures); 2 months' treatment consisting of 12 40-minute sessions of autogenic

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training and then either EMG or skin temperature biofeedback; 1 month of DSS and 3 sessions of physiologic measures; and 2 more months of continued autogenic training in conjunction with the remaining bio-feedback modality. Therefore treatment length was for 11 months total duration.

Treatment results indicated that all subjects evidenced alleviation of their total daily disability resulting from dysmenorrhea, as well as reported number of increased hours of bedrest and medication used. No apparent relationship was noted between total DSS scores and physiological data. Also, symptoms were reported to be alleviated regardless of type of dysmenorrhea. Both sequences of bio-feedback appeared equally effective, and symptom alleviation appeared to be more related to time in treatment than to sequence of training, although there was some indication that symptom reduction was more related to muscle relaxation than peripheral temperature warming. Treatment recommendations were for autogenic relaxation concomitant with EMG training for more than two menstrual cycles.

An important weakness of this study is that the daily symptom reports were only collected on the first two days of menstruation. Such a report schedule would make it difficult to obtain appropriate data from congestive dysmenorrhea sufferers whose symptoms are primarily premenstrual rather than menstrual.

As in the case of Hart et al. (1981), Balick et al. (1982) also speculated on hypothesized psychological factors that played a role in symptom reduction. Increased sense of self control, change in attitude toward menstruation, and decreased anxiety toward menses

were all cited as potential sources of influence.

Conclusions

This literature review suggests four major conclusions:

1.   Despite wide acceptance of the hypothesized congestive-spasmodic dichotomy of primary dysmenorrhea (Dalton, 1969), many questions have been recently raised in the literature regarding the validity of the Menstrual Symptom Questionnaire, which is the classification tool purportedly able to discriminate dysmenorrhea sufferers into these two types (Cox, 1976; Webster et al., 1979). Major objections of the test are that its scoring system cannot differentiate between moderate levels of dysmenorrhea and no dysmenorrhea, and is a direct application of a theory (a) that has never been empirically confirmed and (b) about which there exists anecdotal evidence of refutation (Golub et al., 1959).

2.   After systematic support in the literature regarding the effectiveness of behavioral strategies in the treatment of primary dysmenorrhea (Chesney & Tasto, 1975b; Duson, 1977; Reich, 1972; Tasto & Chesney, 1974) more recent research has focused on treatment manipulations calculated to enhance treatment effectiveness. These include:

   (a) increased length of treatment duration (Balick et al., 1982; Hart et al., 1981);

   (b) increased focus on individual over group treatment (Balick et al., 1982; Cox, 1976; Hart et al., 1981);

(c) increased interest in the hypothesized role that cognitions play in symptom reduction (Balick et al., 1982; Ben-Menachem, 1980; Cox & Meyer, 1978; Hart et al., 1981); specifically, (1) increased sense of self control, (2) improved attitudes toward menstruation, and (3) decreased anxiety.

3. There presently exists in the literature no support of a relationship between physiological measures and symptom improvement even when the major aspect of treatment is simple biofeedback training (Balick et al., 1982; Cox & Meyer, 1978; Hart et al., 1981).

4. All the reviewed studies, with the possible exception of one (Hart et al., 1981), report improved dysmenorrheic symptoms in their subjects using either progressive relaxation or autogenic training combined with either systematic desensitization (Cox & Meyer, 1978; Duson, 1977; Reich, 1972; Tasto & Chesney, 1974), post-hypnotic suggestions regarding the normalcy of menstruation (Ben-Menachem, 1980), or biofeedback (Balick et al., 1982). The one excepted study to this conclusion reported an unspecified type of daily home practice for its biofeedback trainees that may also have involved some form of relaxation training.

A study evaluating the effectiveness of relaxation only compared to a previously effective combination treatment would be valuable on both practical and theoretical levels. Since simple relaxation training in clinical settings is a more quickly accomplished, simpler, and subsequently less expensive procedure than is relaxation plus any other treatment, relaxation alone should be the treatment of

choice if both procedures are found to be equally effective.

On a theoretical level, such an evaluative study would begin to clarify and refine the specific locus of treatment that is addressed in the behavioral treatment of dysmenorrhea. If dysmenorrhea can best be visualized as fitting a phobic model as argued by Cox and Meyer (1978), then the use of desensitization imagery as an anxiety reduction technique in the treatment paradigm is of importance, since such a combination treatment should be significantly more effective than a relaxation only treatment. However, it can also be presently argued that treatment effectiveness may stem simply from the training of subjects in relaxation strategies per se since all or nearly all of the reported studies used relaxation training as part of their treatment. If this is the case, then the use of systematic desensitization hierarchies, hypnosis, or biofeedback modalities in the treatment may be entirely unnecessary.

These questions are those the present study attempts to address. A description of the subjects, instruments, and treatments used in this study will be presented in the following chapter.

CHAPTER III

METHOD

This chapter will review subject characteristics and recruitment and provide a description of the instruments and treatments used.

Subject and Subject Selection

Fifty-nine women participated in the study. Subjects were primarily women undergraduate and graduate students enrolled at Utah State University from Spring Quarter, 1982 to Spring Quarter, 1983. In an attempt to broaden the subject pool, three women staff members and three clients of the Bear River Community Mental Health Center were also recruited for participation.

The student subjects were recruited from dance, nutrition, family studies, nursing, and elementary education classes, sorority meetings, and dormitory meetings where they were invited to participate in a study training them in a relaxation strategy to control menstrual and premenstrual discomfort. The mental health center-based subjects were recruited through an oral presentation to center staff requesting volunteers and client referrals for participation.

Instructors of the above courses and leaders of the above groups were contacted prior to the classes/meetings to gain a few minutes of time for the purpose of announcing the study. The classes selected had in common a preponderance of women in the class registration.

Each group was told of the ongoing treatment program that might be of potential benefit to them that was being offered by the Psychology Department to help women to use relaxation to control both

PMS and dysmenorrhea symptoms. The women were assured that such symptoms "are not in your head," and that physiologically-based symptoms could be treated by psychological interventions much like Lamaze training's helpfulness in the management of childbirth pain. The group was also informed that the relaxation training could also be possibly helpful to them in the management of anxiety associated with test-taking and public speaking as well as in the control of such psychophysiologic symptoms as tension headaches and insomnia, but that participation in the study required the presence of dysmenorrhea. Further requirements of the study were next outlined; these involved (1) a $10 refundable deposit, (2) attendance at four individually arranged one-hour treatment sessions over the course of three weeks, and (3) agreement to practice at least once but preferably twice daily to a tape recorded relaxation procedure.

After the presentation, a paper was passed around the room with the researcher's name and phone number; interested individuals were asked to list their names and phone numbers.

The experimenter experienced some difficulty in recruiting subjects for participation; however, unlike those noted by Reich (1972) and Cox (1976), the difficulty appeared to involve subject concern about making the necessary time commitment that participation required rather than their noted subject embarrassment over the topic of "menstrual cramps." This difference was possibly due to the fact that the presenter emphasized that all researchers and trainers involved were also women. It should be noted that many potential subjects appeared interested in participation in the study due to the

potential benefit of managing other anxiety-related discomforts in their lives besides their dysmenorrhea.

Three subjects were also contacted through an ad placed in the university student newspaper, which also outlined the requirements of the study.

Volunteers who signed the list at the time of the presentations were contacted by the investigator within three weeks. At that time, questions about the study were answered, and the study's requirements were reviewed. If the volunteer continued to express interest in participation, a pretest appointment was scheduled and directions to the Psychology Department Community Clinic were given. Information about last menstrual period was also obtained to determine when treatment could begin. Approximately fifteen to twenty-five volunteers were eliminated at this point due to inability or unwillingness to make the necessary time commitment.

Of the 59 subjects who agreed to participate, 14 did not complete the study. Of this group, six completed training, but left the area without sending in their posttest data; all of these women were leaving the area at the time due to the end of the regular school year. Six subjects dropped out during treatment due to time constraints, one dropped out before the treatment began due to a miscarriage. One subject who did complete the treatment became amenorrheic and did not complete the follow-up data.

Demographic data of the 45 subjects who completed treatment are presented in Table 1. Subjects' ages range from 18 to 42 years. Sixty-nine percent of the subjects were either unmarried or divorced

Table 1

Table of Demographic Variables for the Subjects

Who Completed Treatment (N=45)

	Desensitization		Relaxation		Combination		All Groups	
Age	n	(%)	n	(%)	n	(%)	N	(%)
18-22	8	(54)	6	(40)	11	(72)	25	(56)
23-27	2	(14)	3	(20)	1	(7)	6	(13)
28-32	4	(26)	4	(26)	1	(7)	9	(20)
33-42	1	(7)	2	(14)	2	(14)	5	(11)
Marital Status								
Single	11	(73)	9	(60)	10	(66)	30	(67)
Married	4	(27)	6	(40)	4	(27)	14	(31)
Divorced	0		0		1	(7)	1	(2)
Parity								
None	15	(100)	13	(86)	14	(93)	42	(94)
One	0				1	(7)	1	(2)
Three	0		1	(7)			1	(2)
Nine	0		1	(7)			1	(2)
Medications*								
None	7	(47)	10	(66)	6	(40)	23	(52)
Anti-inflammatory agents	3	(20)	3	(20)	2	(13)	8	(18)
Proloid (thyroid replacement)	1	(7)	0		1	(7)	2	(4)
Antihistimines	1	(7)	0		1	(7)	2	(4)
Inderal (anti-hypertensive)	2	(13)	1	(7)	0		3	(7)
Analgesics	1	(7)	1	(7)	2	(13)	4	(9)
Antibiotics	0		0		1	(7)	1	(2)
Antidepressants	0		1	(7)	1	(7)	1	(2)
Asthma medication	0		0		1	(7)	1	(2)
Birth Control								
None/barrier method	13	(86)	13	(87)	13	(86)	39	(87)
B.C. pills	1	(7)	0		1	(7)	4	(9)
I.U.D.	1	(7)	2	(13)	1	(7)	2	(4)

Chief Complaints*	Desensitization		Relaxation		Combination		All Groups	
	n	(%)	n	(%)	n	(%)	N	(%)
Unknown	1	(7)	2	(13)	0	(0)	3	(7)
(Menstrual Symptoms)								
Cramping	10	(67)	8	(53)	12	(80)	30	(67)
Nausea	1	(7)	0	(0)	1	(7)	2	(4)
Abdominal pressure	0	(0)	0	(0)	1	(7)	1	(2)
Menstrual Symptoms Percentage:		(74)		(53)		(94)		(73)
(Premenstrual Symptoms)								
Tension	1	(7)	6	(40)	2	(13)	9	(20)
Headache	2	(13)	0	(0)	3	(20)	5	(11)
Depression	2	(13)	0	(0)	3	(20)	5	(11)
Backache	4	(27)	0	(0)	1	(7)	5	(11)
Bloating	1	(7)	0	(0)	0	(0)	1	(2)
Premenstrual Symptoms Percentage		(67)		(40%)		(60%)		(55)
(Paramenstrual Symptoms)								
Pain at ovulation	0	(0)	1	(7)	0	(0)	1	(2)
Past Training in Relaxation								
None	7	(47)	9	(59)	11	(73)	27	(60)
<1 week	5	(33)	1	(7)	1	(7)	7	(16)
>1 week, <1 month	0		0		1	(7)	1	(2)
>1 month, <6 months	1	(7)	3	(20)	1	(7)	5	(11)
>6 months, <1 year	2	(13)	1	(7)	1	(7)	4	(9)
> 1 year	0		1	(7)	0		1	(2)

*Some subjects gave more than one response, so percentages will not
equal 100%.

and thirty-one percent were married. Ninety-four percent were nulli-
parous and six percent were parous. Eighty-seven percent of the
subjects used either no birth control or a barrier method, nine
percent used oral contraceptives, and four percent used an IUD.
Regarding previous training in relaxation, sixty percent had experi-
enced none; forty percent had experienced some training ranging from
less than one week to more than one year. Fifty-two percent of the
subjects took no regular medications; the remaining forty-eight per-
cent regularly took some medications, which are specifically listed
in Table 1. Seventy-three percent of all subjects complained of
menstrual symptoms, and fifty-five percent indicated difficulty with
premenstrual symptoms.

Table 2 presents the demographic characteristics of the 14 women
who did not complete treatment. Since many were undergraduate
students that had left the area at the end of the school year, it is
not surprising to note that this group is younger, single, more often
nulliparous and less likely to use medication than the group that
completed treatment. This group was also more likely than the group
that completed treatment to complain of menstrual rather than premen-
strual symptoms.

Experimental Treatment

An outline of the study's experimental treatment procedures will
next be presented. Included in each treatment series was a treatment
pretest interview and four treatment sessions.

Table 2

Table of Demographic Variables for the

Fourteen Subjects Who Did Not Complete

Treatment (N=14)

	Desensitization (n=5)		Relaxation (n=4)		Combination (n=5)		All Groups (N=14)	
Age	n	(%)	n	(%)	n	(%)	N	(%)
18-22	4	(80)	4	(100)	4	(80)	12	(86)
23-27	1	(20)			1	(20)	2	(14)
28-32								
33-42								
Marital Status								
Single	4	(80)	4	(100)	3	(60)	11	(79)
Married	1	(20)			2	(40)	3	(21)
Divorced								
Parity								
None	5	(100)	4	(100)	5	(100)	14	(100)
One								
Three								
Medications*								
Motrin/Ponstel	1	(20)			4	(80)	5	(36)
Erythromycin	1	(20)			1	(20)	2	(14)
No medications	4	(80)	4	(100)	2	(40)	10	(71)
Birth Control								
None	4	(80)	3	(75)	5	(100)	12	(86)
B.C. pills	1	(20)	1	(25)			2	(14)
I.U.D.							0	

	Desensitization (n=5)	Relaxation (n=4)	Combination (n=5)	All Groups (N=14)
Past Training				
None	4 (80)	2 (50)	4 (80)	10 (72)
<1 week	1 (20)	1 (25)		2 (14)
>1 week <1 month				
>1 month <6 months		1 (25)	1 (20)	2 (14)
>6 months <1 year				
>1 year				
Chief Complaints*				
(Menstrual Symptoms)				
Cramps	5 (100)	4 (100)	4 (80)	13 (93)
(Premenstrual Symptoms)				
Hot flashes			1 (20)	1 (7)
PM tension			1 (20)	1 (7)

*Some subjects gave more than one response, so percentages will not equal 100%.

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Treatment Pretest Interview

Each pretest interview was conducted by the investigator at the Psychology Department Community Clinic, and lasted approximately 15 minutes. The treatment contract (Appendix A) was read and signed, the subject data sheet (Appendix B) was filled out, the $10 deposit was collected, and the pretest packet consisting of the Physician's Approval Form (Appendix C), the Retrospective Symptom Scale (Appendix D), the Menstrual Semantic Differential (Appendix E), the Menstrual Activities Scale (Appendix F), the Menstrual Behavior Scale (Appendix G), and the Menstrual Symptom Questionnaire (Appendix H) was given to subjects to fill out. The Treatment Rationale (Appendix I) was given to each subject to review. The date of the last menstrual period was reconfirmed, and the first treatment session was scheduled to coincide with the subject's day 3-5 of her own cycle with day 1 constituting the first day of menstrual bleeding. At this point each subject was randomly assigned to one of three treatment groups. These groups were (1) a "Relaxation" group that obtained four sessions of progressive relaxation, (2) a "Desensitization" group who obtained four sessions of self-directed relaxation while being administered scenes from the Standard Menstrual Hierarchy (Appendix L) (Reich, 1972), and (3) a "Combination" group who obtained both relaxation training and desensitization.

Treatment for all subjects was completed in the first 23 days of their respective cycles, and was administered on an individual basis. No attempt was made to control for time of day of treatment, since sessions were arranged at each subject's convenience. A 16-day

treatment schedule, as devised by Cox and Meyer (1978) was used with Session 1 taking place on days 3-5 of an individual subject's menstrual cycle, Session 2, 7 days later (cycle days 11-13), Session 3, 4 days later (cycle days 15-17), and Session 4, 4 days later (cycle days 19-21). An attempt was made to keep treatments to the ideal 16-day schedule outlined above, but due to the Psychology Department's Community Clinic hours, treatments that fell on a weekend day were rescheduled to a weekday time.

The four treatment sessions, each lasting approximately 45 minutes, will be next described. The Combination Group, Desensitization Group, and Relaxation Group treatment outlines are presented in Appendices M through O. In all sessions, the relaxation and desensitization procedures were tape recorded to ensure treatment reliability. An outline of the treatment is presented in Table 3.

Session 1

For both the Relaxation and the Combination Groups, Session 1 consisted primarily of relaxation training of 16 muscle groups, following the procedure outlined by Bernstein and Borkovec (1973). This procedure involves physically tightening and relaxing the muscle groups twice to facilitate discrimination between tension and relaxation states and to induce relaxation. Immediately following relaxation exercises, each subject was instructed to attend to her breathing and self-instruct with the cue word "relax" on each exhalation. Practice of this cued breathing is intended to classically condition the relaxation response (Benson et al., 1974; Cox, 1976) with

Table 3

Outline of Treatments

| Group | Session | | | |
	1 (~Day 4)	2 (~Day 12)	3 (~Day 16)	4 (~Day 20)
Relaxation	16 muscle relaxation training	7 muscle relaxation training	4 muscle relaxation training	Relaxation through recall training
	Cued breathing	Cued breathing	Cued breathing	Cued breathing
Combination	16 muscle relaxation training	7 muscle relaxation training	4 muscle relaxation training	Relaxation through recall
	Cued breathing	Cued breathing	Cued breathing	Cued breathing
		Hierarchy items 1-4	Hierarchy items 5-9	Hierarchy items 10-14
Desensitization	Self-administered relaxation	Self-administered relaxation	Self-administered relaxation	Self-administered relaxation
	Hierarchy items 1-4	Hierarchy items 5-8	Hierarchy items 9-11	Hierarchy items 12-14

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controlled self-instructed breathing to allow the subject an efficient relaxation procedure. As noted before, the relaxation procedure itself was tape recorded and the same for each subject. Following the training, the subject was given a Home Relaxation Sheet (Appendix J) to advise about home relaxation procedures. A Relaxation Monitoring Scale (Appendix K) was given to record levels of relaxation, to monitor possible "unstressing" experiences (Luthe, 1969), and to encourage home practice. Each subject was also given the cassette tape of the recorded relaxation and cued breathing instructions used during the session to use during home practice, and was encouraged to practice with it at least once but preferably twice daily, as outlined by Cox and Meyer (1978). Expecting university student subjects to practice more often than that without pay was considered unrealistic (Chesney & Tasto, 1975b).

For the Desensitization Group, Session 1 consisted of instructing the subject to spend a few minutes relaxing "in the way that is best and most comfortable" for her. After this, the subject was read a hierarchy item from Reich's (1972) Standardized Menstrual Hierarchy scenes (Appendix L) and was asked to signal with her right index finger when she clearly imaged the scene, and to raise her left index finger if and when she experienced anxiety. If anxiety was signaled, the subject was requested to "relax it away in the way that is best and most comfortable" for her, and to signal with the right index finger when this was accomplished. As the procedure was tape recorded, all items were presented twice for a 30-second interval at each presentation. Therefore, this desensitization strategy was very

similar for all subjects.

All of Reich's (1972) items were presented in this manner.
Items 1-4, 5-8, 9-11, and 12-14 were presented in the Desensitization
Group Sessions 1, 2, 3, and 4, respectively. The hierarchy used was
constructed on the basis of questionnaire responses from 100 female
students at the University of New Mexico and was subsequently suc-
cessfully used by Reich in his research (Reich, 1972). Individual
responses to the hierarchy items were noted and recorded on the
Client Data Sheets (Appendix B) via observation through a one-way
mirror. In this way, desensitization data were collected for each
subject. The Home Relaxation Sheet and the Relaxation Monitoring
Scale were distributed to the Desensitization Group subjects in a
manner similar to the other two groups.

Between the first and second therapy sessions, the therapist
telephoned all subjects to discuss home practice questions, to
encourage the suggested twice daily practice sessions, and to recon-
firm the Session 2 appointment.

Session 2

For the Relaxation Group, Session 2 consisted of training
Bernstein and Borkovec's (1973) condensed seven-muscle relaxation
procedure, which consists of combining several of the 16 muscle
groups. Cued breathing again followed immediately after the exer-
cises.

In the Combination Group, the seven-muscle relaxation training
(as outlined above) was followed by cued breathing and items from
Reich's (1972) Standard Menstrual Hierarchy. Following procedures

described by Cox (1976), each subject was read a hierarchy item and
was asked to signal with her right index finger when the scene was
clearly imaged and to raise her right index finger when and if she
experienced anxiety. The subject was requested to relax away any
experienced anxiety with cued breathing and to signal with her right
index finger when this had been accomplished. Each hierarchy item
was presented for 30 seconds, and was presented two times. As with
the Desensitization Group, all of Reich's (1972) 14 standard men-
strual hierarchy scenes were twice presented to the Combination Group
in this manner; scenes 1-4, 5-10, and 11-14 were presented during
Sessions 2, 3, and 4, respectively. As with the progressive relaxa-
tion exercises, these items were tape recorded to ensure treatment
reliability across all subjects. Subjects' signals were observed
through a one-way mirror in an adjoining room and responses were
recorded on the Client Data Sheet (Appendix B).

Session 2 for the Desensitization Group involved self-relaxation
and the administration of hierarchy items 5-8.

The Relaxation Monitoring Scale forms were collected for each
subject at all of the group treatment Sessions 2, 3, and 4, and at
posttest, so that data evaluating number of practices and levels of
relaxation during home practice could be collected and reported.

A telephone call by the therapist to the subject followed
Session 2 to encourage continued home practice of imagery (Desensiti-
zation and Combination Groups) and the seven muscle relaxation train-
ing and cued breathing (Relaxation and Combination Groups), as well
as to confirm the Session 3 appointment.

Session 3

Session 3 for both the Relaxation and the Combination Groups consisted of training in Bernstein and Borkovec's (1973) four muscle group procedure, and cued breathing. In addition, the Combination Group received hierarchy items 5-9.

Session 3 for the Desensitization Group involved self-relaxation and the administration of hierarchy items 9-11.

Session 4

The last treatment session consisted of Bernstein and Borkovec's (1973) "relaxation by recall" procedure and cued breathing for both the Relaxation and Combination Groups. "Relaxation by recall" involves no physical muscular activity but only uses the cognitive recollections of sensations of muscular tension and relaxation sensations.

Along with the "relaxation through recall" procedures and cued breathing, the Combination Group also obtained desensitization hierarchy images 10-14.

Session 4 for the Desensitization Group involved self-relaxation and the administration of the desensitization hierarchy images 11-14.

For all three groups, skin temperature measures were also obtained during Session 4. After the initial homework gathering and instruction part of the session (see Appendices M and N), a skin temperature thermistor was attached to the meaty part of the nondominant hand of the subject. Three minutes of baseline temperature data were obtained, at which point the tape recorded "relaxation through recall" and cued breathing (for the Relaxation and Combination

Groups) and the desensitization hierarchy items (for the Combination and Desensitization Groups) were presented. After the tape, an additional three minutes of baseline data were collected and an additional six minutes of skin temperature monitoring during self-administered relaxation and/or desensitization was obtained. Lastly, three more minutes of baseline skin temperature measurement was made. Skin temperature procedures are outlined in Table 4.

Skin temperature measures were obtained using an Autogen 2000b Feedback Thermometer. Data were compiled with an Autogen 5600 Data Acquisition Center and printed with an Autogen P5000 printer.

Session 4 for all subjects concluded with the distribution of two copies each of the RSS, MAS, MBS, and MSD. One copy of each measure was enclosed in a stamped, addressed envelope with instructions to return the completed forms in three months time. These forms comprised the three-month follow-up data. The remaining forms, along with the final Relaxation Monitoring Scale were requested to be kept and returned at the end of the next menstrual cycle (posttest) to the Community Clinic receptionist.

Forty-one of the subjects were treated by this author. Four of the subjects who completed the study were treated by another female graduate student in psychology. Training sessions for this therapist were rigorous and consisted of role playing, reading Borkovec and Bernstein's Progressive Relaxation Training (1973), learning successful relaxation herself, and familiarizing herself with the specific treatment outlines (see Appendices M, N, and O). The therapist was observed completing actual sessions and was able to successfully (1)

Table 4

Skin Temperature Procedure Used in Session 4

(Tape recorded treatment)

3 min.   "relaxation through recall" and   3 min.
                 cued breathing (R)
                                                         3 min.

BL ⟶ "relaxation through recall, "cued ⟶ BL ⟶ 6 minutes self-administered ⟶ BL
          breathing and hierarchy items 11-14 (C)   relaxation for all groups

#1   self-administered relaxation and   #2   #3
          hierarchy items 11-14 (D)
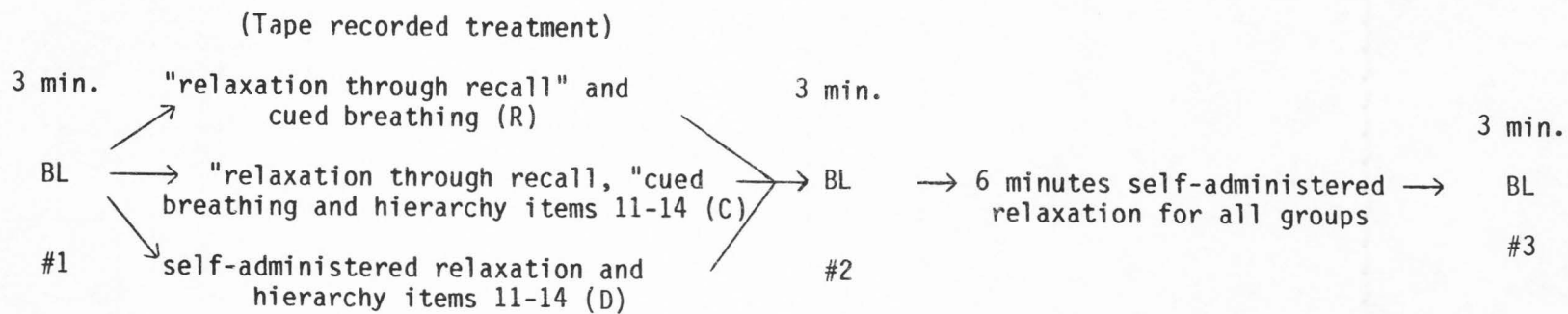
BL = 3 minutes of Baseline

utilize the treatment outlines to present the treatment rationale in a relaxed and comprehensive manner, (2) maintain the order of topics as presented in the treatment outlines, and (3) respond appropriately and knowledgeably to the common types of questions asked by subjects.

Subjects who had recently completed their menstrual periods prior to the pretest interview, but had fewer than 25 days remaining in their cycles (approximately those in days 10-18 of their respective cycles) were asked to fill out one set of the dependent measures (RSS, MAS, MBS, and the MSD) for their recently completed cycle and were given another to fill out at the end of their upcoming menstrual period. These subjects were told that a woman's menstrual experience could vary from month to month, and gaining data about two particular cycles would give the researcher more information about how their particular menstrual experience varied. Except for filling out two sets of measures prior to treatment, these subjects were treated identically to the remaining subjects.

Measures

Both dysmenorrhea-classifying and discomfort-assessing measures were selected to advance the present study's stated purposes and evaluate the proposed hypotheses comparing the effects of relaxation only, desensitization only, and relaxation plus desensitization on the symptoms of primary dysmenorrhea in relation to type of dysmenorrhea.

Dysmenorrhea-Classifying Measure

As stated above, two types of measures were used in the present study. One type was an instrument designed to assess the kind of dysmenorrhea experienced by the subjects and classify this dysmenorrhea into either a congestive or a spasmodic subtype. The dysmenorrhea-classifying measure used was the Menstrual Symptom Questionnaire (MSQ).

The Menstrual Symptom Questionnaire (MSQ) (Appendix H) is a 25-item, factor analyzed questionnaire that loads on two factors: spasmodic and congestive dysmenorrhea. Twenty-four of the 25 items are statements about symptoms, with five response choices reflecting the degree to which the symptom is experienced by the respondent. Twelve of the 24 items are characteristic of spasmodic and 12 characteristic of congestive dysmenorrhea. The final item consists of two paragraphs describing each type of dysmenorrhea. The subject is asked to select the paragraph which most accurately reflects her condition. The more a score is below 77, the more congestive the dysmenorrhea it reflects; the more a score is above 77, the more spasmodic the dysmenorrhea. Total score test-retest reliability is reported to be .78 (Chesney & Tasto, 1975a). Classification of subjects on this dimension was predictive of systematic desensitization effectiveness for dysmenorrheic women in one study (Chesney & Tasto, 1975b) and not predictive in others (Balick et al., 1982; Hart et al., 1981; Webster et al., 1979).

In the present study, the Menstrual Symptom Questionnaire score for each subject was calculated. Test score range was 29-125;

scores for subjects of the present study ranged from 55-94. Scores from 29-76 are classified by Chesney and Tasto (1975a) as scores reflecting congestive dysmenorrhea, and scores from 78-125 reportedly reflect spasmodic dysmenorrhea.

MSQ scores for the subjects are presented in graph form in Figure 1. Of the forty-five subjects, thirty-four scored in the congestive range, nine scored in the spasmodic range, and two subjects scored at the test midpoint (77) and were therefore unclassifiable. Because of this range of scores, the Spasmodic vs. Congestive hypothesis could not be statistically evaluated due to the discrepancy in the number of subjects suffering from each type of dysmenorrhea.

It is noteworthy to refer back to Table 1 and recall that 73% of all subjects completing treatment complained of menstrual symptoms, while the MSQ only classified 20% of subjects as suffering from spasmodic dysmenorrhea. Such results cast continued skepticism on the reliability of the MSQ to classify dysmenorrhea sufferers.

Discomfort-Assessing Measures

The second type of instrument used in the present study measured the intensity and duration of pain and discomfort associated with subjects' dysmenorrhea experience. A series of four instruments were used to determine amount and intensity of the subjects' discomfort. The measures used are the Retrospective Symptom Scale (RSS), the Menstrual Semantic Differential (MSD), the Menstrual Activities Scale (MAS), and the Menstrual Behavior Scale (MBS). These "discomfort-

NUMBER
OF SCORES

Scores on Menstrual Symptom Questionnaire
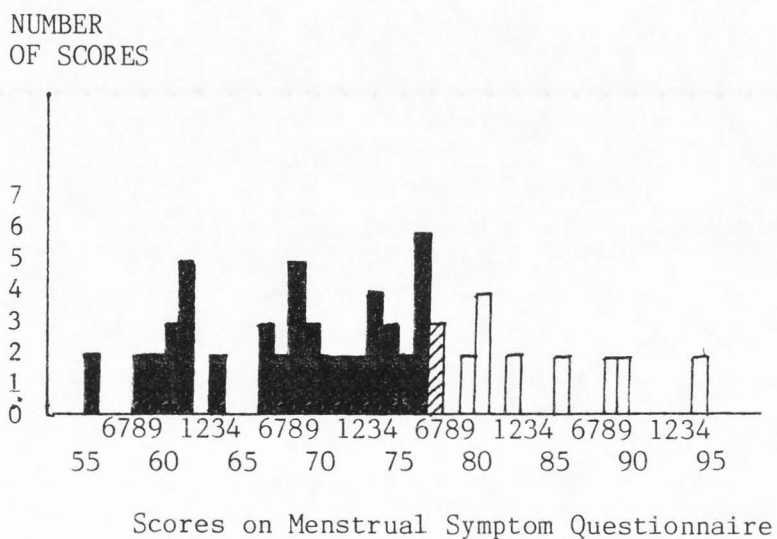
Figure 1. Distribution of subjects' scores on the Menstural
Symptom Questionnaire.

■ indicates congestive type symptoms.
□ indicates spasmodic type symptoms.
▨ indicates neither symptom type.

Note: The possible range in test scores was 29 to 125, with a mid-
point of 77. The actual range in test scores was 55 to 95,
with a median of 72.5, and a mode of 76.

assessing measures" were also used to assess the change in amount of dysmenorrhea that was experienced by the subjects over time, and were administered prior to treatment, after treatment, and at three-month follow-up.

The Retrospective Symptom Scale (RSS) (Appendix D) lists 18 symptoms: the first symptom is cramping, the next 14 symptoms are systemic somatic complaints, and the last three are emotional indicators. Each symptom receives a frequency and a severity rating. The frequency scale on the RSS reflects the interval of the flow period. The scale also records medication usage and hours of bed rest due to menstruation. The RSS gives a global retrospective index of distress and was used by Tasto and Chesney (1974), Chesney and Tasto (1975b), Cox (1976), and Duson (1977). A decrease in scores reflects a decrease in dysmenorrhea symptoms.

The Menstrual Semantic Differential (MSD) (Appendix E) is a semantic differential with seven-point scales between seven polar adjectives such as "good/bad" and "clean/dirty." The subject is asked to indicate the degree of feeling she has concerning her last menstrual period. The scales were developed by Mullen (1968) and discriminated change in his study and in Cox and Meyer's (1978) but did not reflect change in Tasto and Chesney's (1974) study.

The Menstrual Activities Scale (MAS) (Appendix F) was constructed by Chesney and Tasto (1975b) for the purpose of assessing the extent to which a woman's experience of menstrual pain and discomfort alters her characteristic behaviors. The scale consists of six questions for which five responses are: (1) very often, (2) to

an extent, (3) sometimes, (4) not very often, (5) never. The MAS was used in the present study to determine the degree to which dysmenorrhea interferes with subjects' normal activities. The scoring of this scale is reversed so that a decrease in scores on all scales consistently indicates a positive change.

Reliability data for the Retrospective Symptom Scale, the Menstrual Semantic Differential, and the Menstrual Activities Scale are provided by Chesney and Tasto (1975b), when the three scales were administered ten weeks before treatment, immediately before treatment, and two months following treatment. When t-tests were performed on the data, no significant differences were found between scores on the first and second administrations, suggesting test-retest reliability for all three scales. Duson (1977) similarly noted that correlations between administrations six weeks apart on these scales were .74 for the Retrospective Symptom Scale, .75 for the Menstrual Semantic Differential, and .97 for the Menstrual Activities Scale.

The Menstrual Behavior Scale (MBS) (Appendix G) was constructed by Duson (1977) to supplement the MAS. The scale lists ten behaviors, each of which is rated on the extent to which the subject's last menstrual period led her to engage in that activity. Behaviors included are pain responses such as staying in bed, taking aspirin, and crying. Items are rated on a five-point scale. Duson (1977) reported that scores on this scale were highly correlated ($V = .80$) with scores on the MAS. Test-retest reliability on this scale was .85 (Duson, 1977).

Hypotheses Tests

Experimental Treatment hypothesis. To test the hypothesis that there is no difference in the degree of experienced distress of primary dysmenorrhea between experimental groups exposed to four sessions of either (a) individual relaxation training, (b) individual desensitization training, or (c) individual relaxation plus desensitization training, the posttest score means of the three experimental treatment groups were compared. A one-way analysis of variance was calculated. The alpha level for testing the hypothesis was set at .05.

Time hypothesis. To test the hypothesis that there is no difference in the degree of experienced distress of primary dysmenorrhea in experimental groups exposed to four treatment sessions prior to treatment compared to after exposure to the four treatment sessions, t-tests for correlated means were conducted on the posttest scores of all of the dependent measures (RSS, MSD, MBS, MAS, medication units consumed, and invalid hours), to compare pretest with posttest means. To determine if symptom improvement was maintained at three-month follow-up, t-tests for correlated means were conducted on the follow-up scores on the dependent measures to compare posttest with follow-up means. The alpha level for testing the hypothesis was set at .05.

Spasmodic vs. Congestive hypothesis. As noted above, this hypothesis could not be evaluated statistically due to the discrepancy in the number of subjects reporting spasmodic-type dysmenorrhea

anl those reporting congestive type.

Adlitional Analysis

Treatment component data were tested by computing one-way anilyses of variance to compare treatment group differences in (a) number of home practices, (b) levels of relaxation achieved while pricticing, and (c) skin temperature measures during Session 4. For al analyses the alpha level was set at .05.

Data collected during the desensitization procedures adminis- teied to the Desensitization and the Combination Groups during treat- melt were analyzed using the chi-square test of significance. The alpha level for this analysis was also set at the .05 level.

Lastly, data of the subjects who were tested twice prior to treatment were analyzed using one-way analyses of variance for each of the four dependent variables, for invalid hours, and for medica- tion units consumed to determine the significance of any observed differences among means. The t-test for correlated means were con- ducted on the Pretest 1 and Pretest 2 scores of all of the dependent measures to compare mean scores of this group during the pretreatment interval.

Results of these analyses will be presented in Chapter IV.

CHAPTER IV

RESULTS

The purpose of this study was to compare the effects of relaxation only, desensitization only, and relaxation plus desensitization on the symptoms of primary dysmenorrhea in relation to type of dysmenorrhea. Hypotheses were then presented to forward the study's stated purpose. The results of the analyses which tested these hypotheses will next be presented.

For organizational purposes, each hypothesis and the accompanying statistics used for data analysis will be presented separately. Finally, additional analyses of data collected during treatment will be reported. These treatment components include: (a) skin temperature measures, (b) reported practice data, including number of practices and level of relaxation achieved, (c) desensitization training data, and (d) data of subjects tested twice prior to treatment.

Experimental Treatments

The experimental treatment hypothesis posits no difference in the degree of experienced distress of primary dysmenorrhea between experimental groups exposed to four sessions of either (a) individual relaxation training, (b) individual desensitization training, or (c) individual relaxation plus desensitization training.

This hypothesis was tested using one-way analyses of variance.

The four dependent measures used to test this hypothesis are discussed separately in the following sections.

A.   Retrospective Symptom Scale (RSS)

Analysis was made by conducting a one-way analysis of variance that used the RSS posttest scores as the dependent variable and the three treatment conditions as the independent variable.

Before this analysis was conducted, the comparability of RSS scores for each group was determined. The RSS scores at pretest appeared to be discrepant (see Table 5) (Desensitization Group Mean 75.1, Relaxation Group Mean 78.4, Combination Group Mean 68.3). An analysis of variance was calculated to determine if pretest scores were statistically different from each other. Results of analysis of variance on pretest RSS scores indicated that the three groups were comparable at pretest before intervention began [F (2,37) = 0.24, p > .8].

Posttest means were then analyzed, and are presented in Table 6. Results indicate no differences at posttest among the three treatment groups [F (2,38) = 0.5, p > .6].

The experimental treatments hypothesis, which postulated that there would be no differences among the means of the treatment groups on the RSS, was confirmed. The analysis of variance results indicated that the differences among the means were not statistically significant at the .05 level. This hypothesis was accepted for the RSS measure.

Medication units. The RSS includes an item that evaluates the number of pills of any type consumed by subjects as a result of menstrual distress. Analysis of this item was made by conducting a one-way analysis of variance that used the posttest report of medica-

Table 5

Retrospective Symptom Scale Pretest, Posttest and

Follow-up Means and Standard Deviations by Treatment Group

| | Groups | | |
	Desensitization	Relaxation	Combination
Pretest Mean	75.1	78.4	68.3
(Standard Deviation)	(31.3)	(29.0)	(25.4)
n	15	14	15
Posttest Mean	44.5	52.5	49.8
(Standard Deviation)	(32.7)	(31.9)	(26.1)
n	14	14	15
Follow-up Mean	38.4	30.3	53.9
(Standard Deviation)	(30.4)	(18.5)	(32.5)
n	13	11	9

Table 6

Retrospective Symptom Scale Analysis of Variance

of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	956.6	2	478.3	0.5	0.605 (n.s.)
Error	35733.2	38	940.3		
Total	36689.8	40			

tion units consumed as the dependent variable and the three treatment conditions as the independent variable. Posttest means analyzed, and results presented in Table 7, indicate no differences at posttest among the three treatment groups (p = .439). Table 8 presents means and standard deviations for all groups at pretest, posttest, and at follow-up. The group means scores at pretest were extremely similar. (Desensitization Group mean = 5.4, Relaxation and Combination Groups means = 5.5). Posttest mean scores were less similar with the Relaxation Group mean 4.3 compared to the Desensitization Group mean of 2.0 and the Combination Group mean of 2.8.

Invalid hours. The final item on the RSS evaluated the reported number of extra hours spent in bed due to dysmenorrheic symptoms.

Table 9 presents the means and standard deviations for the three treatment groups on this measure. Pretest means indicates a possible discrepancy among groups on this measure at pretest (Desensitization Mean = 6.1, Relaxation Mean = 3.1, Combination Mean = 3.1). An analysis of variance was calculated to determine if pretest invalid hour scores of the three treatment groups were statistically different from each other. Results of this analysis of variance on pretest item scores revealed that the three groups were comparable at pretest before intervention began [$F(2,36) = 2.39$, $p = 0.106$]. Results of the analysis of variance on posttest scores also indicate no differences among groups (p = .214). These results are presented in Table 10.

The experimental treatments hypothesis, which postulated that there would be no differences among the means of the treatment groups

Table 7

Reported Medication Units Consumed Analysis of

Variance of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	42.2	2	21.1	.84	0.439
Error	1053.9	42	25.1		
Total	1095.9	44			

Table 8

Reported Medication Units Consumed Pretest, Postest, and

Follow-up Means and Standard Deviations by Treatment Group

	Groups		
	Desensitization	Relaxation	Combination
Pretest Mean	5.4	5.5	5.5
(Standard Deviation)	(4.5)	(3.5)	(5.9)
n	14	15	15
Posttest Mean	2.0	4.3	2.8
(Standard Deviation)	(2.5)	(7.2)	(4.2)
n	15	15	15
Follow-up Mean	3.8	3.3	3.3
(Standard Deviation)	(3.5)	(2.5)	(2.9)
n	12	11	9

Table 9

Reported Invalid Hours Pretest, Posttest and Follow-up

Means and Standard Deviations by Treatment Group

| | Groups | | |
	Desensitization	Relaxation	Combination
Pretest Mean	6.1	3.1	3.1
(Standard Deviation)	(5.9)	(2.1)	(2.6)
n	14	14	15
Posttest Mean	3.3	1.9	1.1
(Standard Deviation)	(4.1)	(2.0)	(1.3)
n	15	15	15
Follow-up Mean	2.5	1.3	3.2
(Standard Deviation)	(2.6)	(1.3)	(6.4)
n	13	11	9

Table 10

Reported Invalid Hours Analysis of Variance

of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	19.2	2	9.6	1.60	0.214
Error	226.7	38	6.0		
Total	245.9	40			

on the invalid hours measure, was confirmed. The analysis of vari-
ance results indicate that the differences among the means were not
statistically significant at the .05 level. This hypothesis was
accepted for the invalid hours item on the RSS.

B.   Menstrual Behavior Scale (MBS)

Analysis was made by conducting a one-way analysis of variance
that used the MBS posttest scores as the dependent variable and the
three treatment conditions as the independent variable. Results of
this analysis are presented in Table 11, and indicate no significant
differences among treatment groups (p = .818). Pretest, posttest,
and follow-up means and standard deviations of this measure across
the three groups are presented in Table 12. This table reflects the
homogeneity of the MBS scores across the three groups at pretest,
posttest, and follow-up. The largest mean difference between groups
in the table is noted at follow-up; even this difference is less than
2 points (Desensitization Group Mean = 14.9, Relaxation Group Mean =
15.2, Combination Group Mean = 16.4). A decrease in the MBS score
reflects a decrease in the extent to which subjects reported engaging
in pain-mitigating behaviors.

The experimental treatments hypothesis, which postulated no
differences among the means of the treatment groups on the MBS, was
confirmed. The analysis of variance results indicated that the
differences among the means were not statistically significant at the
.05 level. This hypothesis was accepted for the MBS measure.

Table 11

Menstrual Behavior Scale Analysis of Variance

of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	7.9	2	3.9	0.20	.818 (n.s.)
Error	740.9	38	19.5		
Total	748.8	40			

Table 12

Menstrual Behavior Scale Pretest, Posttest, and

Follow-up Means and Standard Deviations by Treatment Group

| | Groups | | |
	Desensitization	Relaxation	Combination
Pretest Mean	23.8	23.2	22.4
(Standard Deviation)	(5.5)	(6.7)	(5.5)
n	14	15	14
Posttest Mean	16.7	16.1	15.7
(Standard Deviation)	(5.0)	(4.6)	(3.4)
n	15	15	15
Follow-up Mean	14.9	15.2	16.4
(Standard Deviation)	(3.0)	(3.0)	(4.0)
n	13	11	9

C.   Menstrual Semantic Differential (MSD)

Analysis was made by conducting a one-way analysis of variance that used the MSD posttest scores as the dependent variable and the three treatment conditions as the independent variable. Results of this analysis are presented in Table 13, and indicate no differences at posttest among the three treatment groups (p = .769). The means and standard deviations for the three treatment groups are presented in Table 14. It should be noted that a reduction in score means reflect a reduction in negative attitudes.

The experimental treatments hypothesis, which postulated no differences among the means of the treatment groups on the MSD, was confirmed. The analysis of variance results indicated that the differences among the means were not statistically significant at the .05 level. This hypothesis was accepted for the MSD measure.

D.   Menstrual Activities Scale (MAS)

Analysis was made by conducting a one-way analysis of variance that used the MAS posttest scores as the dependent variable and the three treatment conditions as the independent variable. Results of this analysis are presented in Table 15, and indicate no differences among treatment groups (p = 0.60). Pretest, posttest, and follow-up means and standard deviations are presented in Table 16.

The experimental treatments hypothesis, which postulated no differences among the means of the treatment groups on the MAS, was confirmed. The analysis of variance results indicated that the differences among the means were not statistically significant at the .05 level. This hypothesis was accepted for the MAS measure.

Table 13

Menstrual Semantic Differential Analysis of Variance
of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	42.0	2	21.0	0.26	.769 (n.s.)
Error	3019.5	38	79.5		
Total	3061.5	40			

Table 14

Menstrual Semantic Differential Pretest, Posttest, and
Follow-up Means and Standard Deviations by Treatment Group

	Groups		
	Desensitization	Relaxation	Combination
Pretest Mean	33.3	36.2	33.6
(Standard Deviation)	(7.2)	(10.4)	(8.6)
n	15	15	14
Posttest Mean	27.0	27.8	25.6
(Standard Deviation)	(8.7)	(8.3)	(10.6)
n	15	13	14
Follow-up Mean	23.6	25.4	23.6
(Standard Deviation)	(7.5)	(8.6)	(11.0)
n	11	11	9

Table 15

Menstrual Activities Scale Analysis of Variance

of Posttest Scores by Treatment Groups

	Sums of squares	df	Mean squares	F ratio	Probability level
Groups	40.5	2	20.2	0.67	0.516 (n.s.)
Error	1143.3	38	30.1		
Total	1183.8	40			

Table 16

Menstrual Activities Scale Pretest, Posttest, and

Follow-up Means and Standard Deviations by Treatment Group

| | Groups | | |
	Desensitization	Relaxation	Combination
Pretest Mean	18.6	20.3	18.6
(Standard Deviation)	(5.6)	(4.9)	(5.0)
n	14	15	15
Posttest Mean	14.5	14.9	13.9
(Standard Deviation)	(5.7)	(5.2)	(6.0)
n	15	15	15
Follow-up Mean	13.6	13.7	14.8
(Standard Deviation)	(4.8)	(2.8)	(4.7)
n	13	11	9

Time

The time hypothesis posits no difference in the degree of experienced distress of primary dysmenorrhea in experimental groups exposed to four treatment sessions prior to treatment compared to after exposure to four treatment sessions.

This hypothesis was tested using t-tests for correlated samples. The four dependent measures used to test this hypothesis are discussed separately in the following sections.

A.   Retrospective Symptom Scale (RSS)

t-tests of significance for correlated samples were conducted to compare pretest to posttest means of the RSS to examine if subjects reported reduced symptomatology after treatment intervention. On the RSS, as on all the dependent measures, a decrease in mean scores reflects a decrease in reported symptoms. t-test results are presented below in Table 17. Even though there were no differences among groups, all treatment groups experienced a decrease in reported symptoms as measured by the RSS. The Relaxation Group obtained the highest pretest mean (i.e., more and/or more severe symptoms). Although starting with more reported distress at pretest, at posttest Relaxation Group score means were similar to that of the Combination Group (p = .020). The Combination Group scored the lowest on the RSS at pretest (i.e., fewer and/or less severe symptoms). Their posttest scores indicated the least amount of improvement and posttest score mean were similar to that of the Relaxation Group (p = .013). The Desensitization Group pretest score means were midway between the

Table 17

<u>t-test for Correlated Means Conducted</u>

<u>on Pretest and Posttest Means by Treatment</u>

<u>Group on the Retrospective Symptom Scale</u>

	<u>Groups</u>		
	Desensitization	Relaxation	Combination
Mean Differences	26.3	29.4	18.5
(Probability level)	(.001)*	(.020)*	(.013)*

* = p $\leq$ .05

Combination and the Relaxation Groups (e.g., moderate number and/or moderate levels of symptoms). Posttest scores indicated the most improvement in symptoms (p = .001) for this group. These findings will be further discussed in Chapter V.

Posttest to follow-up t-tests for correlated samples were then conducted to determine whether or not subjects maintained symptom reduction three months later. Results of these analyses are presented in Table 18, and indicate no differences in mean scores from posttest to follow-up on the RSS, thus indicating that symptom reductions were maintained three months later. The Relaxation Group obtained the highest pretest mean, and scored the lowest follow-up mean, thus indicating the highest and/or most severe symptoms at pretest, and the most amount of symptom improvement at follow-up (Mean = 30.3, p = .141). The Combination Group, who obtained the lowest pretest mean, scored the highest mean scores at follow-up, thus suggesting the lowest amount of symptom improvement at follow-up (Mean = 53.9, p = .681). The Desensitization Group scored between the other two groups at pretest and at follow-up, thus indicating moderate initial levels of symptomatology and moderate improvement at follow-up (Mean = 38.4, p = .160). Some group attrition is noted at follow-up on the RSS (Desensitization Group = 13, Relaxation Group = 11, Combination Group = 9). These results will be further discussed in Chapter V.

The time hypothesis, which postulated that there would be no differences between means of any of the treatment groups on the RSS, from pretest to posttest, was rejected. The t-test for correlated

Table 18

t-test for Correlated Means Conducted

on Posttest and Follow-up Means by Treatment

Group on the Retrospective Symptom Scale

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	8.2	13.7	2.6
(Probability level)	(.160)	(.141)	(.681)

samples results indicated that the differences between the means in all three treatment groups from pretest to posttest were statistically significant at the .05 level. This hypothesis was rejected for the RSS measure.

Medication units. The RSS includes an item that evaluates the number of pills of any type consumed by subjects as a result of menstrual distress. Analysis of this item was made by conducting t-tests of significance for correlated samples to compare pretest to posttest means of medication units consumed to determine if treatment intervention reduced medication consumption. These results are presented in Table 19. Even though there were no differences among groups, both the Desensitization and the Combination Groups experienced a decrease in medication units consumed (i.e., extra medications required to manage dysmenorrheic symptoms) after treatment intervention. The Relaxation Group did not experience a similar decrease in extra medications required (p = .555). The results of these analyses will be further discussed in Chapter V.

Finally, posttest to follow-up t-tests of significance for correlated samples were conducted to determine if (in the case of the Desensitization and the Combination Groups) decreased medication units consumed was maintained at three-month follow-up. For the Relaxation Group, this statistic was calculated to determine if the number of medication units consumed at posttest was maintained at follow-up. Results of these analyses are presented in Table 20, and indicate no differences in mean scores of medication units consumed from posttest to follow-up for the Desensitization and the Relaxation

Table 19

t-test for Correlated Means Conducted

on Pretest and Posttest Means by Treatment

Group on Medication Units Consumed

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	3.8	1.1	2.7
(Probability level)	(.006)*	(.555)	(.039)*

* = p ≤ .05

Table 20

t-test for Correlated Means Conducted

on Posttest and Follow-up Means by Treatment

Group on Medication Units Consumed

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	-2.2	-1.6	.6
(Probability level)	(.123)	(.008)*	(.686)

* = p ≤ .05

Groups (p = .123 and .686, respectively). At three-month follow-up, the Relaxation Group had increased the units of medications consumed; that is, had worsened on this index of disability from posttest to follow-up. This result will also be further discussed in Chapter V.

As with the other measures, group attrition at posttest is noted on this measure (follow-up "n's" range from 9 to 12 subjects). These results will be further discussed in Chapter V.

The time hypothesis, which postulated no differences between the means of any of the three treatment groups on medication units consumed from pretest to posttest, was rejected. The t-test for correlated samples results indicated differences between means in the Desensitization and the Combination Groups at posttest were statistically signficant at the .05 level. The time hypothesis was accepted for the reported medication units consumed measure for the Relaxation Group, and rejected for the Desensitization and the Combination Groups.

Invalid hours. The final item on the RSS evaluated the reported number of extra hours spent in bed due to dysmenorrheic symptoms.

To evaluate the time hypothesis, t-tests of significance for correlated samples were conducted to compare pretest to posttest means of the invalid hours measure for each treatment group. Results of the t-test are presented in Table 21. Even though there were no differences among groups, all groups experienced a decrease in extra hours spent in bed due to symptoms (p = .007, .042, and .002, respectively. As noted in Table 21, mean differences among the three groups were varied, ranging from 3.4 (Desensitization Group) to 1.3

Table 21

t-test for Correlated Means Conducted

on Pretest and Posttest Means by Groups

on Reported Invalid Hours

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	3.4	1.3	2.0
(Probability level)	(.007)*	(.042)*	(.002)*

* = $p \leq .05$

(Relaxation Group). These mean differences reflected the initial differences noted at pretest (Desensitization Group Mean Score = 6.1, Relaxation Group Mean Score = 3.1, Combination Group Mean Score = 3.1). These findings will be further discussed in Chapter V.

Posttest to follow-up t-tests of signficance for correlated samples were also conducted to determine whether or not subjects scored differently on the invalid hours measure from posttest to three-month follow-up. Results of these analyses are presented in Table 22, and indicate no differences in mean scores from posttest to follow-up on the invalid hours measure. These results indicate that symptom reduction was maintained for all treatment groups at three-month follow-up. As in the RSS, group attrition is noted at follow-up, with the Combination Group losing the most subjects (Combination Group = 9, Relaxation Group = 11, Desensitization Group = 13). These results will be further discussed in Chapter V.

The time hypothesis, which postulated that there would be no differences between the means of any of the treatment groups on the invalid hours measure from pretest to posttest, was rejected. The t-test for correlated sample results indicate that the differences among the means were statistically significant at the .05 level. This hypothesis was rejected for the invalid hours item on the RSS.

B. Menstrual Behavior Scale (MBS)

Analysis was made by conducting t-tests of significance for correlated samples to compare pretest to posttest means of the MBS to examine if subjects reported a reduction in engaging in pain-miti-

75

Table 22

t-test for Correlated Means Conducted

on Posttest and Follow-up Means by Groups

on Reported Invalid Hours

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	0.5	-3.0	-2.2
(Probability level)	(.570)	(.689)	(.355)

* = p $\leq$ .05

gating behaviors after treatment. Results of the t-tests are presented in Table 23. Clearly, even though there were no differences among groups, all treatment groups experienced a decrease in the number of pain-mitigating activities in which they engaged (Desensitization Group p = .000, Relaxation Group p = .004, Combination Group p = .001). Mean differences from pretest to posttest were also similar for all three treatment groups (Desensitization Group = 6.9, Relaxation Group = 7.1, Combination Group = 6.8). These findings will be further discussed in Chapter V.

Lastly, posttest to follow-up t-tests of significance for correlated samples were conducted to determine whether or not treatment groups maintained a decrease in their report of pain-mitigating activities. Results of these analyses are presented in Table 24 and indicate no differences in mean scores from posttest to follow-up on the MBS, thus indicating that the reduction in pain-mitigating behaviors was maintained three monthe later (Desensitization Group p = .212, Relaxation Group p = .513, Combination Group p = .656).

The time hypothesis, which postulated no differences between the means of the treatment groups on the MBS from pretest to posttest, was rejected. The t-test for correlated samples results indicated that the differences between the means were statistically significant at the .05 level for all three treatment groups from pretest to posttest. The time hypothesis was rejected for the MBS measure.

C.   Menstrual Semantic Differential (MSD)

Analysis was made by conducting t-tests of significance for correlated samples to compare pretest to posttest means of the MSD,

Table 23

t-test for Correlated Means Conducted

on Pretest and Posttest Means by Treatment

Group on the Menstrual Behavior Scale

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	6.9	7.1	6.8
(Probability level)	(.000)*	(.004)*	(.001)*

* = p $\leq$ .05

Table 24

t-test for Correlated Means Conducted

on Posttest and Follow-up Means by Treatment

Group on the Menstrual Behavior Scale

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	1.2	-0.7	0.7
(Probability level)	(.212)	(.513)	(.656)

to examine if subjects reported a reduction in negative attitudes toward menstruation after treatment. It should be noted that a decrease in score means reflects a reduction in negative attitudes. Results of the t-test are presented in Table 25, and reflect a significant decrease in negative orientation toward menstruation after treatment for all three treatment groups. The Relaxation Group obtained the highest pretest mean (i.e., more and/or more pronounced negative attitudes toward menstruation). This group also reflected the highest posttest mean, although the posttest mean was very similar to that of the Desensitization Group (Relaxation Group posttest mean 27.9, p = .017; Desensitization Group posttest mean 27.0, p = .021). The Combination Group scored midway between the other two treatment groups at pretest (35.4 vs. 33.3 and 34.2). However, their posttest score was nearly two points lower than the other two treatment groups (25.7, p = .006).

Posttest to follow-up t-tests of significance for correlated samples were also conducted to determine whether or not subjects maintained a reduction in negative attitudes toward menstruation at a three-month follow-up. Results of these analyses are presented in Table 26 and indicate no difference in mean scores from posttest to follow-up on the MSD. These results give indication that negative attitude reduction was maintained at three-month follow-up. Group means at follow-up were extremely similar for the Desensitization and the Combination Groups (Mean = 23.6). Relaxation Group mean was slightly higher at follow-up (Mean = 25.7). Some group attrition is noted at follow-up (Desensitization Group = 11, Relaxation Group = 9,

Table 25

<u>t-test for Correlated Means Conducted</u>

<u>on Pretest and Posttest Means by Treatment</u>

<u>Group on the Menstrual Semantic Differential</u>

	<u>Groups</u>		
	Desensitization	Relaxation	Combination
Mean Differences	6.3	7.5	8.5
(Probability level)	(.017)*	(.021)*	(.006)*

* = p $\leq$ .05

Table 26

<u>t-test for Correlated Means Conducted</u>

<u>on Posttest and Follow-up Means by Treatment</u>

<u>Group on the Menstrual Semantic Differential</u>

	<u>Groups</u>		
	Desensitization	Relaxation	Combination
Mean Differences	3.1	0.9	4.0
(Probability level)	(.154)	(.780)	(.213)

Combination Group = 9). These results will be further discussed in Chapter V.

The time hypothesis, which postulated no differences between the means of the treatment groups on the MSD from pretest to posttest, was rejected. The t-test for correlated samples results indicated that the differences between the means in all three treatment groups from pretest to posttest were statistically significant at the .05 level. This hypothesis was therefore rejected for the MSD measure.

D.   Menstrual Activities Scale (MAS)

Analysis was made by conducting t-tests of significance for correlated samples to compare the three treatment group means from pretest to posttest on the MAS. Results of the t-tests are presented in Table 27, and reflects a decrease in the extent to which subjects altered their usual behavior in response to menstruation. Reduction in scores (as noted in Table 27) reflect a reduction in the extent that subjects reported deviating from their characteristic behavior because of their menstrual cycles. The Relaxation Group, which scored slightly higher at pretest, also scored slightly higher than the other two treatment groups at posttest (pretest mean - 14.9, p = .003). Both the Desensitization and the Combination Groups scored similarly at pretest and postest (pretest mean for both = 18.6, p = .003).

Posttest to follow-up t-tests for correlated samples were conducted to determine whether or not subjects maintained treatment gains (in this case, a maintained reduction in the modification of

Table 27

t-test for Correlated Means Conducted

on Pretest and Posttest Means by Treatment

Group on the Menstrual Activities Scale

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	4.5	5.4	4.7
(Probability level)	(.003)*	(.003)*	(.003)*

* = p $\leq$ .05

characteristic behaviors due to menstrual cycle) at three-month follow-up. Results of these analyses are presented in Table 28 and indicate no differences in mean scores from posttest to follow-up on the MAS. These results indicate that the treatment gains were maintained. Group mean scores at follow-up were similar for the Desensitization and the Relaxation Groups (Mean 13.6 and 13.7, respectively). Combination Group scored slightly higher at posttest (Mean = 14.8). Some group attrition was also noted in follow-up (Desensitization Group = 13, Relaxation Group = 11, Combination Group = 9). These results will be further discussed in Chapter V.

The time hypothesis, which postulated no difference between the means of any of the treatment groups on the MAS from pretest to posttest, was rejected. The t-test for correlated samples results indicated that the differences between the means in all three treatment groups from pretest to posttest were statistically significant at the .05 level. The time hypothesis was rejected for the MAS measure.

Spasmodic vs. Congestive Dysmenorrhea

The spasmodic vs. congestive hypothesis posits no difference in the degree of experienced distress of primary dysmenorrhea between a group experiencing spasmodic dysmenorrhea and a group experiencing congestive dysmenorrhea.

As noted in the previous chapter, the discrepancy between the number of subjects in each of the two conditions precluded the calculation of either a two-way analysis of variance statistic or a chi-square statistic to test the hypothesis. When the three treatment

Table 28

t-test for Correlated Means Conducted

on Pretest and Posttest Means by Treatment

Group on the Menstrual Activities Scale

	Groups		
	Desensitization	Relaxation	Combination
Mean Differences	0.5	0.6	0.0
(Probability level)	(.647)	(.745)	(1.0)

groups were divided into spasmodic and congestive types, only three spasmodic dysmenorrhea subjects were classified in each group. Table 29 presents these data in tabular form.

This hypothesis, which postulated no difference between the dependent variables' means for the congestive-type dysmenorrhea group and the spasmodic-type dysmenorrhea group, was therefore not testable.

Skin Temperature Measures

As reported in Chapter III, subject skin temperature was measured during Session 4. These measures of skin temperature were averaged throughout Session 4 over three-minute units of time. The first three-minute unit constituted the baseline skin temperature (BL_1). At this point the taped relaxation and/or desensitization training commenced. The tape recorded training varied in length among the groups, from 9 minutes (Desensitization Group) to 21 minutes (Combination Group). All subjects' skin temperature data continued to be averaged over three-minute units of time during the taped training.

After the tape recorded training, a second three-minute baseline skin temperature measure was made (BL_2). Following BL_2, each subject was instructed to self-administer the relaxation and/or desensitization procedures outlined in the tape for six minutes $(SA_{1 \& 2})$. Lastly, the third and final three-minute baseline skin temperature measure was collected (BL_3).

Table 29

Subject Type of Dysmenorrhea by Treatment Group

Type of Dysmenorrhea	Group		
	Desensitization	Relaxation	Combination
Spasmodic	3	3	3
Congestive	12	12	12

These skin temperature measures were obtained for the purpose of determining whether a non-subjective measure of relaxation correlated with subjective reports of relaxation (Luthe, 1969).

Means and standard deviations for these data are presented in Table 30. Skin temperature means by treatment group at Baseline 1 are similar. (Desensitization Mean = 91.03, Relaxation Group Mean = 90.00, Combination Group = 89.69.) No treatment group exceeded a 1° F change at any point in Session 4, although all groups reported some slight increase in temperature during their respective taped treatment sessions.

Skin temperature means were analyzed using one-way analyses of variance. The three-minute averaged skin temperature means at $Baseline_1$, Treatment Segment 3, $Baseline_2$, Self-Administration, and $Baseline_3$ served as the dependent variable and the three treatment conditions as the independent variables. None of these analyses were significant, thus indicating no differences among the three treatment groups. These results are presented in Table 31. t-tests of significance for correlated samples were then conducted to compare the baseline means to each other and to treatment 3 to determine if skin temperature increased in a particular group over time in Session 4. The temperature comparisons that were made were:

(a) Baseline 1 to Baseline 2

(b) Baseline 1 to Treatment 3

(c) Baseline 2 to Baseline 3

Results of these analyses are presented below in Table 32. There were no differences between Baseline 1 and 2 in any of the three

Table 30

Session 4 Skin Temperature Means and

Standard Deviations by Groups

	Group								
	Desensitization			Relaxation			Combination		
	Mean	(Standard Deviation)	n	Mean	(Standard Deviation)	n	Mean	(Standard Deviation)	n
Baseline$_1$	91.03	(3.88)	12	90.00	(5.91)	12	89.69	(4.77)	14
Treatment Segment 1	91.50	(3.88)	12	90.02	(6.08)	12	90.20	(5.66)	14
Treatment Segment 2	91.76	(3.99)	12	90.17	(6.27)	12	90.37	(5.40)	13
Treatment Segment 3	91.15	(4.07)	12	90.39	(6.10)	11	90.47	(5.26)	13
Treatment Segment 4				90.37	(6.15)	11	90.39	(5.15)	13
Treatment Segment 5				90.39	(5.82)	9	90.45	(5.34)	13
Treatment Segment 6							90.50	(5.46)	13
Treatment Segment 7							90.22	(5.43)	13
Baseline$_2$	91.40	(3.13)	12	90.34	(5.96)	11	89.94	(4.85)	14
Self-Administration Segment 1	90.97	(3.04)	12	90.06	(5.78)	11	89.55	(4.99)	13
Self-Administration Segment 2	90.63	(3.17)	12	90.48	(6:12)	11	89.23	(5.06)	12
Baseline$_3$	90.42	(3.13)	12	90.21	(5.86)	11	89.07	(5.06)	12

Table 31

Skin Temperature Means Analysis of

Variance F Ratios and F Probabilities

Time	F Ratio	Probability
Baseline 1	.259	.773
Treatment 3	.077	.926
Baseline 2	.328	.723
Baseline 3	.275	.762

Table 32

Skin Temperature Means T-Tests for

Correlated Means

Times		Groups		
		Desensitization	Relaxation	Combination
Baseline 1 to Baseline 2	Mean Differences	-.37	.160	-.26
	(Probability level)	(.700)	(.726)	(.660)
	n	12	11	14
Baseline 1 to Treatment 3	Mean Differences	-1.17	1.00	-8.00
	(Probability level)	(.898)	(.783)	(.277)
	n	12	11	13
Baseline 2 to Baseline 3	Mean Differences	.98	.13	.72
	(Probability level)	(.026)*	(.650)	(.001)*
	n	12	11	12

*p $\leq$ .05

treatment groups. Although all groups showed a slight warming trend from Baseline 1 to Baseline 2, these differences were not significant. t-tests of significance comparing Baseline 1 mean skin temperature scores to Treatment segment 3 scores also reflected no differences in mean skin temperature scores over time in any of the three treatment groups.

On comparison three, which compared Baseline 2 to Baseline 3, skin temperature means for each of the three treatment groups, both the Desensitization and the Combination Groups evidenced a decrease in skin temperature means over time. The Relaxation Group had no change in skin temperature means from Baseline 2 to Baseline 3. These results will be further discussed in Chapter V.

Practice Measures

As outlined in Chapter III, each subject was given a Relaxation Monitoring Scale (RMS) after each of the four treatment sessions to record her home practice experience and was collected at each successive session and at follow-up. Both the number of times a subject reported practicing at home and the reported level of relaxation achieved were recorded on this scale. These data are presented below, along with results of the statistical analyses performed. "Practice Segment #1" refers to those home practices between Sessions 1 and 2, "Practice Segment #2" refers to those between Sessions 2 and 3, "Practice Segment #3" refers to those practices between Sessions 3 and 4, and "Practice Segment #4" refers to those practices between Session 4 and posttest. The RMS was collected from each subject at Sessions 2, 3, 4, and at posttest.

The mean number of practices and standard deviations by treatment group are presented in Table 33. To analyze these data, four one-way analyses of variance were performed to test for differences among the groups in number of practices after Sessions 1, 2, 3, and 4. The mean number of practices were used as the dependent variable and the three treatment conditions were used as the independent variable.

Results indicate no differences in number of practices among the three groups in each of the practice segments (p = .403, .612, .695, and .690). For the Desensitization Group, the highest mean practices were after Session 1 (x = 9.9) but was also quite similar to mean practices in Segment #4 (x = 9.3). For the Relaxation and Combination Groups, the largest number of practices were in Segment #4, which was after Session 4 and before posttest (x = 10.1 and 8.3, respectively). Segment #1 mean practices were slightly fewer (Relaxation Group = 8.9, Combination Group = 8.1). Mean practices were somewhat lower for all groups after Sessions 2 and 3 and reflect the shorter length of time in these practice segments. Time during Segment #1 was 7 days; three days of practice were reflected in Segments #2 and #3. Segment #4 length varied by subject, but appeared to average about 6 days. These results will be further discussed in Chapter V.

Home practice level of relaxation. Individual reports of level of relaxation achieved by subjects were on a 5-point scale ranging from "very tense" to "extremely relaxed" (see Appendix K). These five levels of relaxation were assigned numbers on a 1 to 5 point

Table 33

Number of Home Practice Units by Treatment

Group for Each Practice Segment

Practice Numbers		Desensitization	Relaxation	Combination	Probability Level of the Conducted ANOVA
Practice Segment #1	X (SD) n	9.9 (4.1) 15	8.9 (3.3) 14	8.1 (2.7) 14	n.s. .403
Practice Segment #2	X (SD) n	7.6 (4.1) 15	6.9 (3.0) 15	6.5 (2.1) 15	n.s. .612
Practice Segment #3	X (SD) n	7.5 (3.0) 15	8.4 (3.2) 15	7.6 (3.4) 15	n.s. .695
Practice Segment #4	X (SD) n	9.3 (6.4) 15	10.1 (5.1) 14	8.3 (4.0) 13	n.s. .690

scale. Mean levels of relaxation for each practice segment were calculated for each subject by summing the levels of relaxation reported and dividing the sum by the number of completed practices subjects reported. The level of relaxation mean and standard deviation data by treatment group are presented in Table 34. Four one-way analyses of variance were then performed using the mean level of relaxation as the dependent variable and the three treatment conditions as the independent variable. These analyses were made to determine if there existed any differences among the groups in the level of relaxation reported during any of the four practice segments.

Results of these analyses indicate no differences among the groups in the level of relaxation achieved during home practice for practice Segments #1 and #2 (p = .360 and .216, respectively). For practice Segments #3 and #4, these analyses indicated differences among the three treatment groups in the level of relaxation achieved during home practice (p = .053 and .013 for Practice Segments 3 and 4). To determine which of the three treatment group means were different, multiple range tests were computed using the Scheffé procedure. As recommended in Ferguson (1976), a .10 alpha level was used to determine significance. Results of these tests are presented in Table 34.

As can be observed from this table, in Practice Segment #3, there was a difference between the reported level of relaxation between the Desensitization Group and the Combination Group, with the Combination Group reporting a deeper level of relaxation. In Practice Segment #4, it was the Relaxation Group that reported a deeper

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Table 34

Mean Level of Home Relaxation by Treatment

Group for Each Practice Segment

Practice Segments		Desensitization	Groups Relaxation	Combination	Probability Level of the Conducted ANOVA
Practice Segment #1	X (SD) n	4.5 (1.6) 15	4.7 (1.0) 14	5.1 (1.0) 14	.360
Practice Segment #2	X (SD) n	4.9 (1.3) 15	5.3 (1.2) 15	5.6 (0.9) 15	.216
Practice Segment #3	X (SD) n	4.7** (1.6) 15	5.5 (1.6) 15	5.9** (0.5) 15	.053
Practice Segment #4	X (SD) n	4.3** (2.1) 15	6.0** (1.1) 14	5.4 (1.1) 13	.013

**indicates means significantly different from each other as indicated by multiple range test.

level of relaxation than the Desensitization Group. These results
will be further discussed in Chapter V.

Visualization Data

As outlined in Chapter III, both the Desensitization and the
Combination Groups were exposed to 14 menstrual imagery items as part
of their respective treatments (Reich, 1972). Finger-signal systems
were established with each subject so that data were collected on
each subject's reported ability to (a) imagine the items, (b) expe-
rience tension, and (c) successfully relax away the tension. The
purpose of collecting these data was to determine if there were any
differences between the two treatment groups' reported experience of
this desensitization process.

Each of the 14 hierarchy items was presented twice to each
subject. For each of the 28 presentations, data were collected to
determine:

1. whether or not the subject successfully visualized the
   image;

2. if the subject visualized the item, whether or not the
   subject experienced tension; and

3. if the subject experienced tension, whether or not the
   subject successfully relaxed the tension away in the length
   of time provided (approximately 1 minute).

Responses for the 28 presentations were summed and put into
three 2 x 2 tables with group membership as one classification and
presence or absence of the three reports as the other classification.

The chi-square statistic was calculated (Ferguson, 1976) to determine
if there existed differences between the Desensitization and Combina-
tion Groups in the experience of visualization, the experience of
tension while visualizing, and the ability to successfully relax the
tension away. The results of these calculations are presented in
Table 35, and reveal no differences between groups in the reported
experience of the desensitization process. The number of times
subjects reported experiencing tension between the two treatment
groups approached but did not reach statistical significance ($p >$
.06). These results will be further discussed in Chapter V.

Subjects Tested Twice Prior to Treatment

As previously noted, subjects who were contacted on approximate-
ly day 10-18 of their respective menstrual cycles were asked to fill
out one set of the dependent measures (RSS, MAS, MBS, and the MSD)
for their recently completed cycle, and were given another set to
fill out at the end of their upcoming menstrual period. Therefore,
these subjects were administered the pretest measures on two occa-
sions, these being approximately two weeks apart, and both prior to
treatment. These "twice tested" subjects were randomly distributed
into the three treatment groups. These subjects were asked to com-
plete these forms twice in an attempt to maintain their interest in
participating in the study during the two or so weeks of lag time
before their treatment could begin.

Six one-way analyses of variance were calculated using pretest
scores on the four dependent measures, invalid hours, and medication

Table 35

Visualization, Experience of Tension, and

Experience of Relaxation During Desensitization

by Treatment Group

Visualize

		Group	
		Desensitization	Combination
Experienced	Yes	396	350
Visualization	No	23	32

$$N = 801$$
$$X^2 = 2.605, p > .10$$

Experience Tension

		Group	
		Desensitization	Combination
Experienced	Yes	139	114
Tension	No	148	164

$$N = 565$$
$$X^2 = 3.15, p > .06$$

Relax Tension Away

		Group	
		Desensitization	Combination
Experienced	Yes	109	87
Relaxation	No	139	104

$$N = 439$$
$$X^2 = 0.115, p > .70$$

units consumed as the dependent variables and the "twice tested" group, and the remaining subjects in the three treatment conditions as the independent variable to determine if this "twice tested" group were different from the remaining group members in each of the three treatment groups. Results of these analyses are presented in Tables 36-41. No differences between these "twice tested" subjects and the remaining subjects were found. F ratio levels of significance ranged from .2 to .8.

Lastly, t-tests for correlated samples were calculated to determine if there existed any differences in the scores between the first and the second pretest administration for these subjects. These results are presented in Table 42. No differences between the two pretest administration were noted, so these "twice tested" subjects were no longer considered a unique group. These results will be further discussed in Chapter V.

Table 36

Retrospective Symptom Scale Analysis of Variance

of Pretest Scores Comparing "Twice Pretested" Subjects

with Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	956.56	2	478.28	0.509	0.605 n.s.
Error	35733.19	38	940.35		
Total	36689.75	40			

Table 37

Menstrual Behavior Scale Analysis of Variance

of Pretest Scores Comparing "Twice Pretested Subjects

with Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	7.87	2	3.9	0.202	0.818 n.s.
Error	740.91	38	19.50		
Total	748.78	40			

Table 38

Menstrual Semantic Differential Analysis of Variance

of Pretest Scores Comparing "Twice Pretested" Subjects

with Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	42.03	2	21.02	0.264	0.769 n.s.
Error	3019.48	38	79.46		
Total	3061.51	40			

Table 39

Menstrual Activities Scale Analysis of Variance

Pretest Scores Comparing "Twice Pretested" Subjects

with Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	40.49	2	20.25	0.673	0.516 n.s.
Error	1143.26	38	30.09		
Total	1183.75	40			

Table 40

Invalid Hours Analysis of Variance of Pretest

Scores Comparing "Twice Pretested" Subjects with

Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	19.19	2	9.60	1.609	0.214 n.s.
Error	226.71	38	5.97		
Total	245.90	40			

Table 41

Medication Units Consumed Analysis of Variance of

Pretest Scores Comparing "Twice Pretested" Subjects

with Remaining Subjects in the Three Treatment Groups

	Sum of squares	Df	Mean squares	F ratio	Significance level
Group	42.18	2	21.09	0.841	0.439 n.s.
Error	1053.73	42	25.09		
Total	1095.91	44			

Table 42

t-tests of Significance Comparing $Pretest_1$ and

$Pretest_2$ of "Twice Tested" Subjects

Measure	Mean difference	T-value	2-tailed probability
RSS	-4.47	-0.78	0.449 n.s.
MBS	2.33	1.34	0.200 n.s.
MSD	0.53	0.22	0.829 n.s.
MAS	1.89	1.48	0.161 n.s.
Invalid Hours	0.57	0.69	0.500 n.s.
Medication Units	-0.69	-0.52	0.611 n.s.

CHAPTER V

DISCUSSION

Limitations

A number of limitations exist that affect the interpretation of
these data, and will be discussed first. Generalization of this
study's findings should be tempered by a discussion of the study's
threats to internal and external validity.

First, like most other studies, the results were obtained pri-
marily with a college population of volunteers who responded to a
"free treatment program" offered by the Psychology Department. This
group cannot be assumed to be representative of all dysmenorrheic
women on two counts, (1) they are volunteers, and (2) they are
college women. Although an attempt was made to broaden this pool of
subjects by inclusion of some individuals from a mental health center
population, the fact of their "volunteerism" status remains.

The persuasiveness of the follow-up data to suggest the main-
tenance of treatment gains after three months should be tempered by
the knowledge that experimental mortality had reduced the groups'
sizes. There is no way to determine if the reports from these non-
reporting subjects would have been the same as those reporting the
maintenance of therapeutic gains. A second related factor is that
the loss of subjects across treatment groups was not equal. There is
no way to determine if this differential attrition was due to the
differential treatments.

The third area of experimental mortality possibly affecting the
study's results involves the 14 subjects who either did not complete

treatment or did not complete posttesting. Again, there exists no way to determine if their response to treatment would have been the same as those subjects that did complete their participation.

Probably the major threat to internal validity involves the fact that, except for the skin temperature data, all other measures were of a self-report nature, and therefore subject to all the biases to which this type of data is heir. Treatment results may be simply due to therapist attention inherent to this treatment. A second rival hypothesis involves attributing the results to an attempt of subjects to please the researcher. All of these factors could have more strongly been ruled out with the use of a placebo treatment and/or a delayed-treatment control group.

The study also would have been strengthened by the use of a delayed treatment control group to control for other events besides the experimental treatment that occurred for subjects between the pretest and posttest administrations. Without such a control group, possible history effects influencing the study's results cannot be completely ruled out. However, since data were collected over the course of 12 months, the effect of any one event affecting the treatment results can be ruled out.

The present study was proposed to include such a delayed-treatment control group to control for changes due to the passage of time and/or test taking. Due to this writer's ill-fated attempt to treat her control group as quickly as possible, the individuals who were to constitute this control group were instead treated exactly the same as the other subjects with the exception of their contact with the

measures on two separate occasions prior to treatment. The delayed treatment strategy has been previously labeled as an ethically sound research technique; however, this writer responded strongly to the discomfort of her subjects and their interest in the alleviation of their discomfort. By attempting a solution in which they would obtain their treatment as quickly as any other subjects while she obtained her "control group data," this writer erred. However, due to her error, the scientific design of this study was affected.

After this writer realized the import of her error, the possibility of collecting this control group data after the treatment group's data had been collected was entertained. This solution was dismissed due to the major history problems that this solution engenders. The recent surge of interest in PMS-related symptoms in the popular press (Kingston, 1983; Witzleben, 1983) is an example of such possible history effects.

Previous research in this area utilizing delayed treatment control groups and/or placebo treatment groups (Duson, 1977; Chesney & Tasto, 1975b; Reich, 1972) have all resulted in no posttreatment changes in symptoms for the pseudotreatment or no treatment groups. These results lend some support to the minimal effects of time, test taking, and attention/placebo to treatment results in past literature, and suggest that the effects of these threats to internal validity may be negligible in the present study as well. However, such effects cannot be ruled out in the present study due to the lack of a control group. Therefore, the results of the present study may possibly be due to attention and/or placebo effects and may not be

unique to these treatments.

The fact that some subjects were "twice-tested" at pretest also raises the possibility that the contact with the dependent measures on two occasions somehow influenced these subjects to respond to the treatment intervention in a different manner than the rest of the subjects. However, the effect of this possible pretest/treatment interaction is equalized since these subjects were randomly assigned across the three treatment groups, so that any possible effects would be randomized across treatment groups. Despite this randomization, the possibility continues to exist that these "twice tested" subjects might have responded to the treatment in a different way than the other subjects due to their differential treatment. Not only might they have reacted to treatment in a different manner due to being tested twice, but their posttest scores may also reflect a regression toward the mean.

With these limitations in mind, the findings of the present study will be next presented.

The experimental treatments hypothesis was accepted. As presented in Chapter IV, on all dependent measures there existed no differences at posttest among the treatment groups in the amount of primary dysmenorrhea experienced. These results suggest that none of the three treatment groups were either more or less effective than the others in reducing subjects' degree of experienced distress of primary dysmenorrhea.

Although there were no differences among treatment groups, results indicated that all three treatment groups were equally effec-

tive in reducing symptoms, negative attitudes, pain-mitigating behaviors, and invalid hours. On all of these measures, the time hypothesis was rejected. On only one measure, that of medication units consumed, were any differences noted among the groups in possible treatment efficacy. On this one measure, both the Desensitization and the Combination Groups decreased the ingestion of medication units after treatment; the Relaxation Group did not. Also, at the three-month follow-up, the Relaxation Group consumed _more_ medication units than at posttest, while the remaining two treatment groups maintained the decrease in medication units consumed that was observed at posttest.

It is difficult to ascertain if the noted superiority of the Desensitization and the Combination Groups over the Relaxation Group posttreatment in this one measure reflects any real difference among groups in total treatment effectiveness. Rather than using this result as reason to consider the Relaxation Group treatment as _less_ effective than the other two treatments, it appears that these data can instead suggest that the Relaxation Group treatment should not be considered to be _the_ behavioral treatment of choice of the three. Without this finding, practicality might suggest that the relaxation-only treatment would be the treatment of choice in a clinical setting, since it is as easy as the desensitization treatment to administer but has the added advantage of apparent utility for subjects in other stress and pain-related areas of their lives. However, because of the lack of any decrease in medication units consumed by the Relaxation Group, the desensitization-only treatment instead appears

to be the treatment of choice. This treatment is far shorter time-wise than the Combination Group treatment, and is apparently as equally effective.

As outlined in Chapter III, it is important to remember that, although termed "desensitization," the treatment condition titled as such is not a technically pure desensitization treatment, since the original specifications required training in progressive muscle relaxation, and the construction of individualized hierarchies (Wolpe, 1958). The "desensitization" treatment used in the study might be more realistically termed a "flooding" or "implosion" therapy.

The reduction of symptoms as measured by the RSS in the treatment groups of 40% (Desensitization), 33% (Relaxation), and 27% (Combination) fall somewhere midrange to the 28% reduction reported by Tasto and Chesney (1974), the 32% reduction of Chesney and Tasto (1975b), and 23% reported by Hart et al. (1981), the 42% reduction noted by Reich (1972) and the 52% noted by Cox and Meyer (1978). These results tend to support the growing body of literature supporting the effectiveness of behavioral strategies in the treatment of dysmenorrhea.

One of the most important findings of the present study was that the apparent improvement of dysmenorrheic symptoms was not dependent upon training in relaxation per se. The group exposed to no training in relaxation improved posttreatment as much as a group exposed to relaxation or a combination treatment.

Although not a necessary condition, relaxation training also appears to be a sufficient treatment in and of itself as well, since similar improvements were noted in the relaxation only group that were observed in the other two treatment groups. As noted previously, the only measure that did not support the equality of the relaxation training to the other two treatments was the measure of medication units consumed.

Ancillary Analyses

Skin temperature. As outlined in Chapter IV, the improvement in dysmenorrhea symptoms of the three treatment groups at posttest was not correlated to skin temperature changes. While some temperature changes over the course of Session 4 were significantly different (see Table 30), the overall increase was most generally less than one and one-half degrees. Therefore, statistical significance did not translate into any clinically appreciable increases in skin temperatures. Since many biofeedback researchers indicate that a hand temperature increase of at least 2^0 F is necessary to infer significant hand warming control (Luthe, 1969), these results support previous findings (Balick et al., 1982; Cox & Meyer, 1978; Hart et al., 1981) of no link between physiologic measures of relaxation and decrease in dysmenorrhea symptomatology.

There exist two other possible hypotheses to explain the skin temperature findings. First, the lack of significant hand warming may be due to a ceiling effect. Since the hand temperatures were initially so warm (e.g., 90^0 F), a significant increase in hand temperature would have been more difficult to accomplish as compared

to if subjects' hands had been cooler (e.g., 82° F). Secondly, the lack of correlation of skin temperature to the improvement in dysmenorrhea symptoms might suggest the possibility that the wrong parameter was sampled. The possibility of utilizing EMG measures should instead be entertained, although in at least one study (Balick et al., 1982), EMG measures were also not correlated to a decrease in dysmenorrhea symptoms.

Visualization data. No differences between the Desensitization and the Combination Groups on the ability to visualize, experience tension, and relax the tension away during desensitization training was noted. Apparently, whether or not subjects are exposed to training in relaxation does not appreciably affect the desensitization process as measured by these reports.

Practice data. Analyses calculated to determine if there existed any differences in either the numbers of, or the level of relaxation in the home practice sessions among treatment groups found:

1.   There existed no differences in the number of home practices among groups in each of the four practice segments, and

2.   During practice segments 1 and 2, there were no differences in the levels of relaxation achieved among the three treatment groups during home practice. Practice Segment #3 revealed that the Combination Group reported experiencing a deeper level of relaxation during home practices than the Desensitization Group. In Practice Segment #4, the Relaxation Group reported experiencing a deeper level of relaxa-

tion than the Desensitization Group.

These results indicate that neither the type of home practice nor the length of the home practice sessions affected the number of home practices completed. (The three groups' tape-recorded home practices varied in length quite a bit, with the Combination Group tapes about 30% longer in duration than the other two groups.)

Treatment strategies adopted from Cox (1976) made explicit efforts to encourage daily home relaxation practice for all treatment groups. Strategies involved providing tape recorded home relaxation instructions, requesting daily monitoring of relaxation experience (see Appendix K), and therapist phone calls to subjects between Sessions 2 and 3, and 3 and 4 (see Appendices M, N, and O). Since daily home practices were strongly recommended by the researcher, the fact that all of the three treatment groups averaged one practice a day during each of the four practice segments is considered an indication of success in the motivation of subjects to consistently practice. Although subjects were encouraged to practice twice daily, practicing once daily was considered adequate for the study's purposes, since symptom improvement had been previously noted by Cox and Meyer (1978) using a similar practice schedule.

Regarding the level of relaxation achieved during home practices, results suggest a trend toward the two groups trained in relaxation (e.g., the Relaxation and Combination Groups) to report deeper levels of relaxation during home practice than the Desensitization Group during the last two practice segments. Two separate conclusions are suggested by this finding. Firstly, as noted before,

these data support the previous conclusion presented regarding the
nonessential nature of the experience of relaxation to the successful
behavioral treatment of dysmenorrhea. Secondly, these data give some
indication that the two groups being taught relaxation were in fact
taught to relax. These data, as presented in Figure 2, suggest a
positive trend toward deeper relaxation in the Relaxation and the
Combination Groups over the course of the four practice segments, but
no trend toward deeper relaxation in the Desensitization Group.

The present study did not utilize any reliability measures to
confirm if the subjects' self-report home practice data were, in
fact, reliable. This writer assumed that such measures were unneces-
sary since there appeared to be little reason for subjects to simu-
late these data. However, future research utilizing such self-report
data could benefit from reports of significant others to confirm
subjects' self-reports.

Practical Significance

The question of the clinical significance of any behavioral
program is imperative to address. Statistical significance is of
only passing interest if clinical significance is not also observed.

The present study is a partial replication of the Cox (1976)
study, also outlined by Cox and Meyer (1978). Cox's "Distressed
Group" treatment is essentially the same as the present study's
Combination Group treatment. As outlined previously in Chapter III,
Cox compared his Distressed Group at pretreatment and at posttreat-
ment to a group of specifically "nondistressed" women (Nondistressed
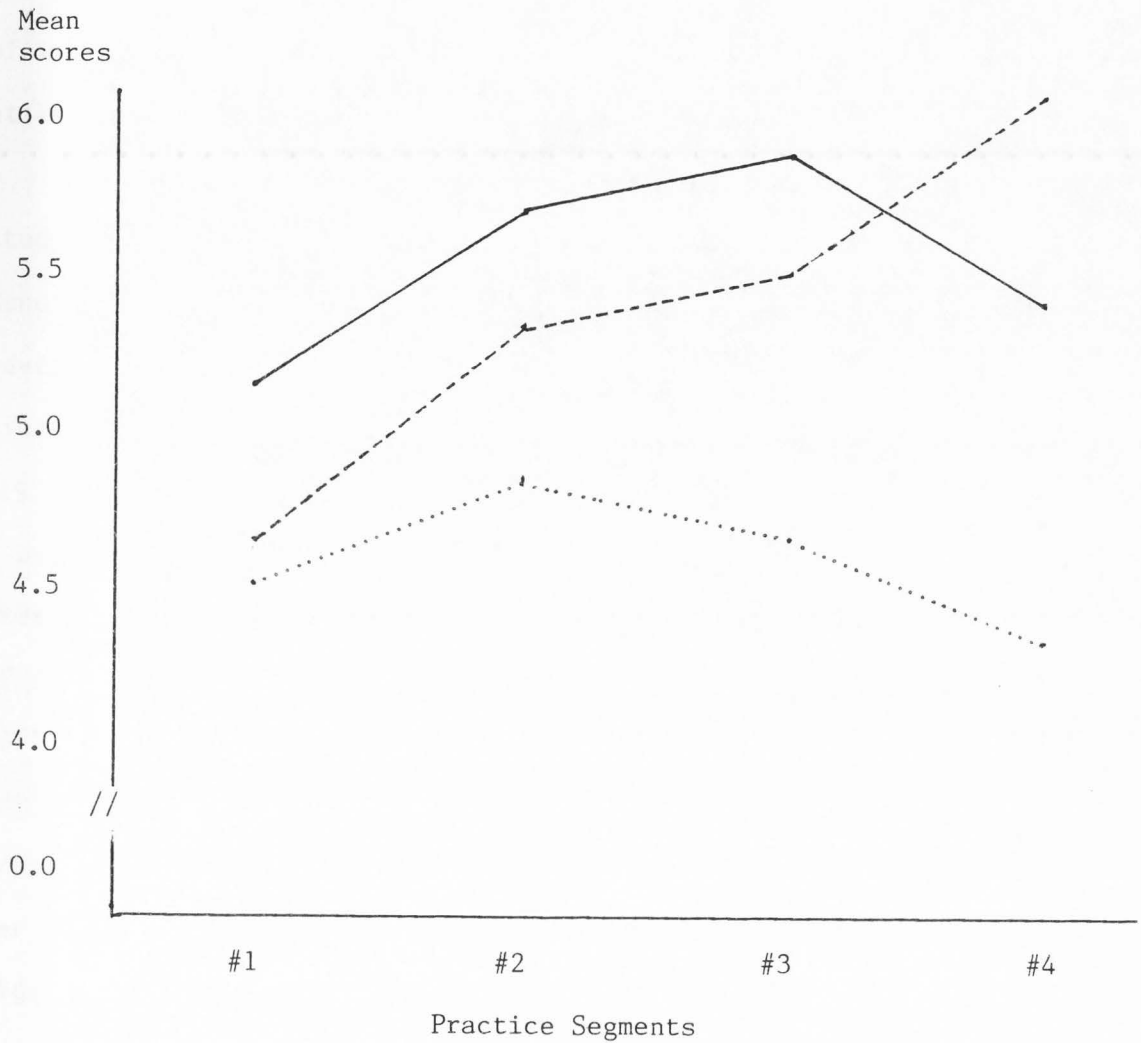
Figure 2. Treatment group mean scores achieved during home practice on Relaxation Monitoring Scale for practice segments 1, 2, 3 and 4.

.... indicates desensitization group.
- - - - indicates relaxation group.
_____ indicates combination group.

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Group) and a group of women thought to include a random distribution of women so as to assess an "average" distribution of symptoms (Normative Control Group).

Figure 3 presents a visual comparison between the present study's Combination Group MSD scores and Cox's (1976) Distressed, Nondistressed, and Normative Control Group scores. Visual inspection reveals that the present study's mean score at pretest for the Combination Group was similar to but somewhat lower than that of Cox's (1976) Distressed Group. This lower mean score at pretest reflected a possible lower level of initial negative attitudes toward dysmenorrhea reported by the present study's Combination Group. This trend of slightly less negative attitudes as measured at pretest was also reflected in the present study's Desensitization Group scores as compared to Cox's Distressed Group, as presented in Figure 4. The present study's Relaxation Group MSD score at pretest was very similar to Cox's Distressed Group scores; these data are presented in Figure 5. Posttest mean scores for the three treatment groups were extremely similar to that of Cox's Distressed Group, indicating a decrease across all groups in negative attitudes. Follow-up scores for the present study's three treatment groups were somewhat lower than those of Cox's Distressed Group. These results suggest a successful replication of the Cox study by the present study's Combination Group MSD data, and extremely similar results to Cox's Distressed Group for both the Desensitization and Relaxation Groups.

These data also indicate that the mean MSD scores for all of the present study's three treatment groups were significantly higher at

Figure 3. A comparison of combination group MSD scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates combination group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.- indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

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Figure 4. A comparison of desensitization group MSD scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates desensitization group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

Figure 5. A comparison of relaxation group MSD scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates relaxation group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

pretest than both Cox's Nondistressed Group and Normative Control Group. Construct validity of the MSD measure to differentiate attitudes toward menstruation between groups of women experiencing pronounced dysmenorrhea symptoms, "average" levels of symptoms, and few to no symptoms is thus suggested.

At posttest, all three of the present study's treatment group mean scores were similar to Cox's Normative Control Group scores, but still higher than his Nondistressed Group score means. These results are again similar to Cox's (1976) Distressed Group results, which were highest pretreatment, but similar to the Normative Control Group scores posttreatment. However, even after treatment, Cox's Distressed Group's mean scores were still higher than the Nondistressed Group mean scores. Such a trend suggests that his behavioral treatment resulted in improvement for his distressed subjects into the "average" range of attitudes toward dysmenorrhea, but not improvement to the point of cessation of all symptoms. A similar conclusion is also suggested by the present study's data.

The similarities in mean scores between the present study's three treatment groups and Cox's Distressed Group on the RSS are far less obvious than on the previously discussed MSD measure. Again, as noted above, the present study's Combination Group is a replication of Cox's Distressed Group treatment. A comparison of the Combination Group data with Cox's data is presented in Figure 6. The present study's Combination Group mean score at pretest is similar to that of Cox's Distressed Group, thus suggesting a similar level of distress pretreatment. After treatment, Cox's Distressed Group means are (as
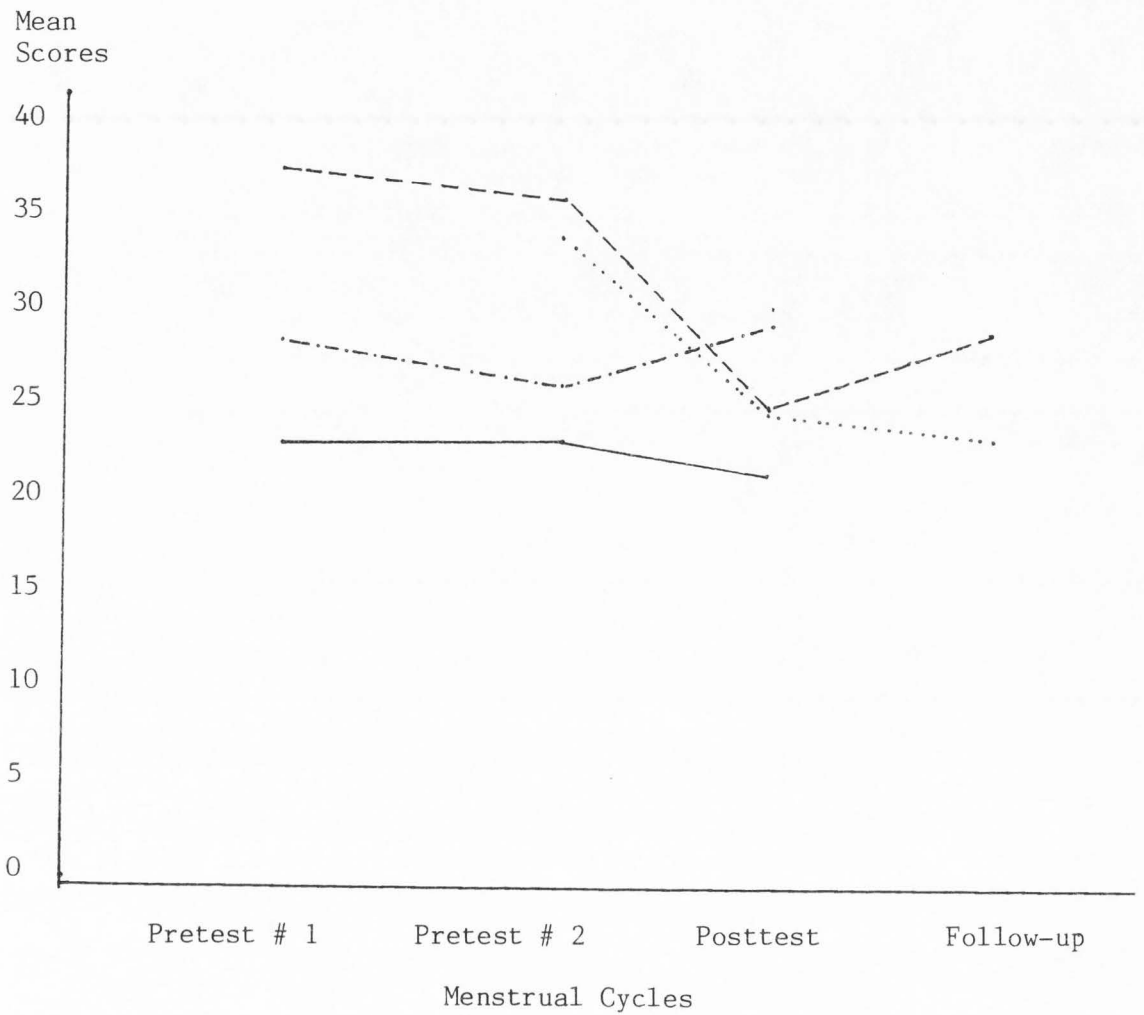
Figure 6. A comparison of combination group RSS scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates combination group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

on the MSD measure) reduced to the point of equality with his Norma-
tive Control group, again suggesting a reduction in scores into an
"average" range of discomfort reported by a group of women judged
"typical." However, the present study's Combination Group scores
reflect a reduction in reported discomfort but not to an equivalent
level of reduction as Cox's Distressed Group. The Combination Group
scores are not reduced into an "average" range of discomfort.
Instead, the mean score at posttest is approximately 16 points higher
than Cox's Distressed Group scores at posttest.

Similar trends are noted for the Desensitization and the Relaxa-
tion Group RSS mean scores at pretest and posttest as compared to
Cox's Distressed Group scores. Again, scores are similar to the
Distressed Group scores at pretest, but are not reduced to the Norma-
tive Control Group range at posttest. These data are presented in a
graph form in Figures 7 and 8.

These analyses of the RSS scores give less support to the clini-
cal validity of the present study's treatments than do the MSD
scores. Although a steady (and significant) reduction in symptoms is
noted, the reduced level in reported discomfort after treatment is
still higher than that of "typical" women.

Therefore, RSS scores reflect a less successful replication of
the Cox study by the present study's Combination Group mean scores.
A decrease similar to that of the Combination Group for the Desensi-
tization and Relaxation treatment groups was also noted. These
reductions in symptoms did not reduce distress scores to Cox's Norma-
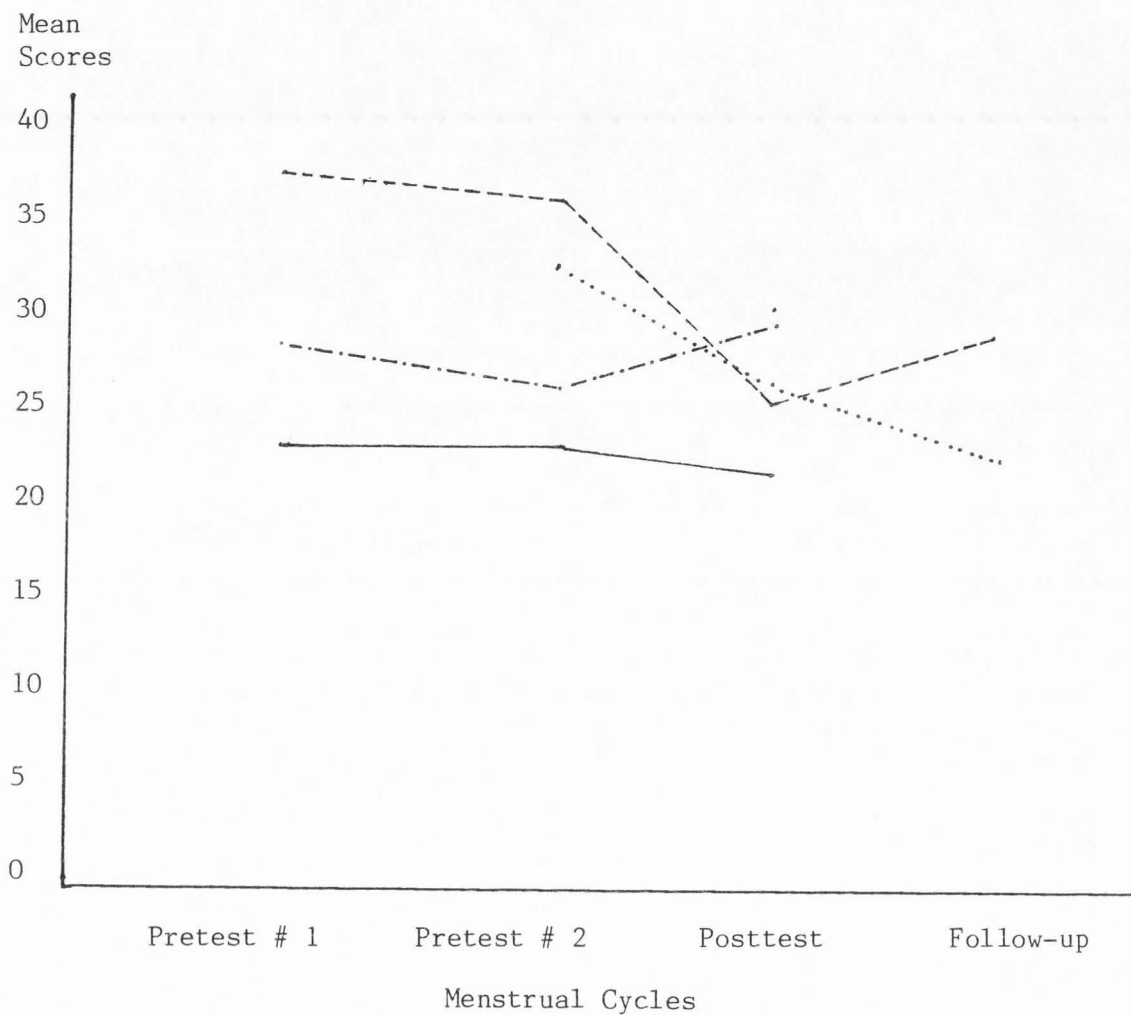tive Control Group's "typical" range of distress. However, RSS

Figure 7. A comparison of desensitization group RSS scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates desensitization group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

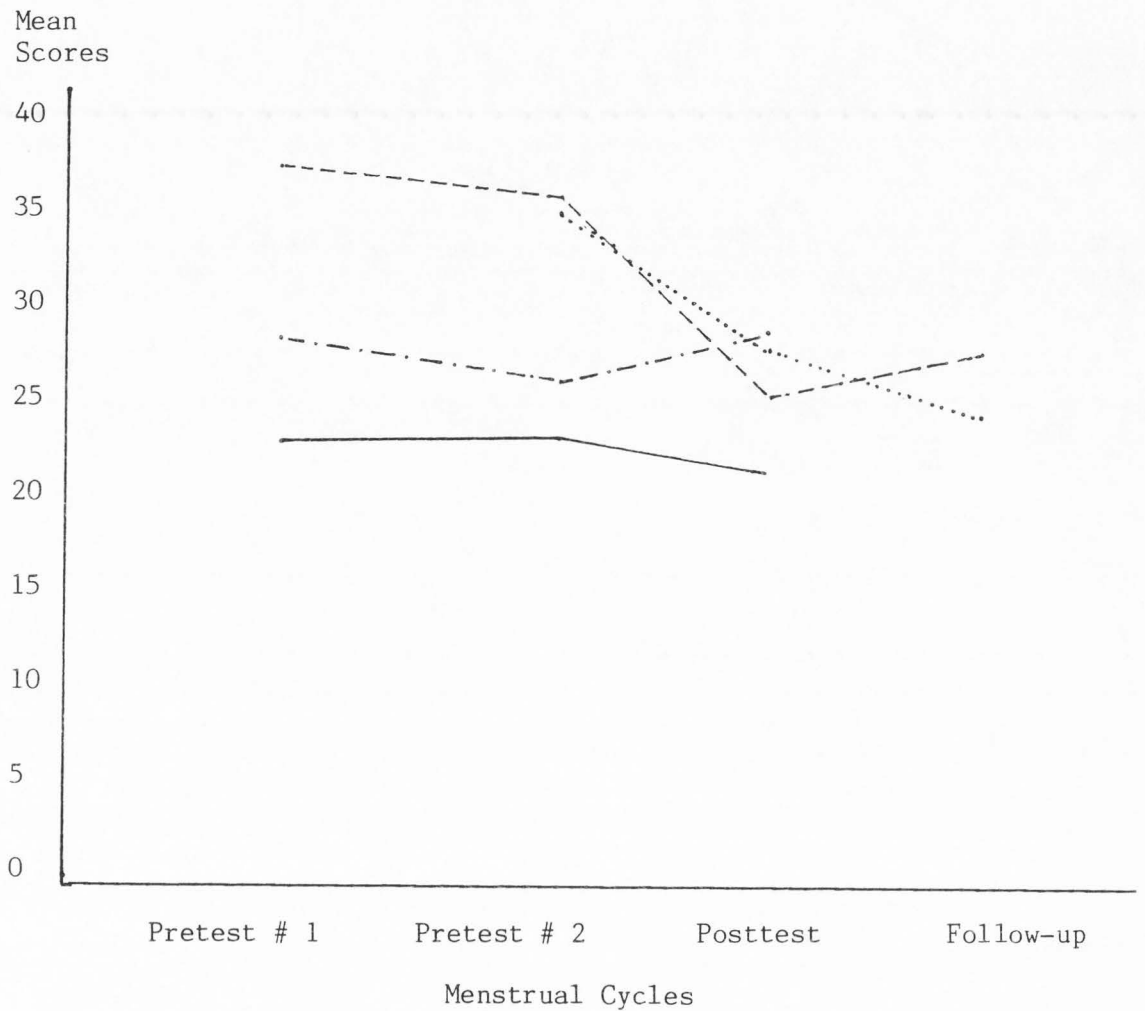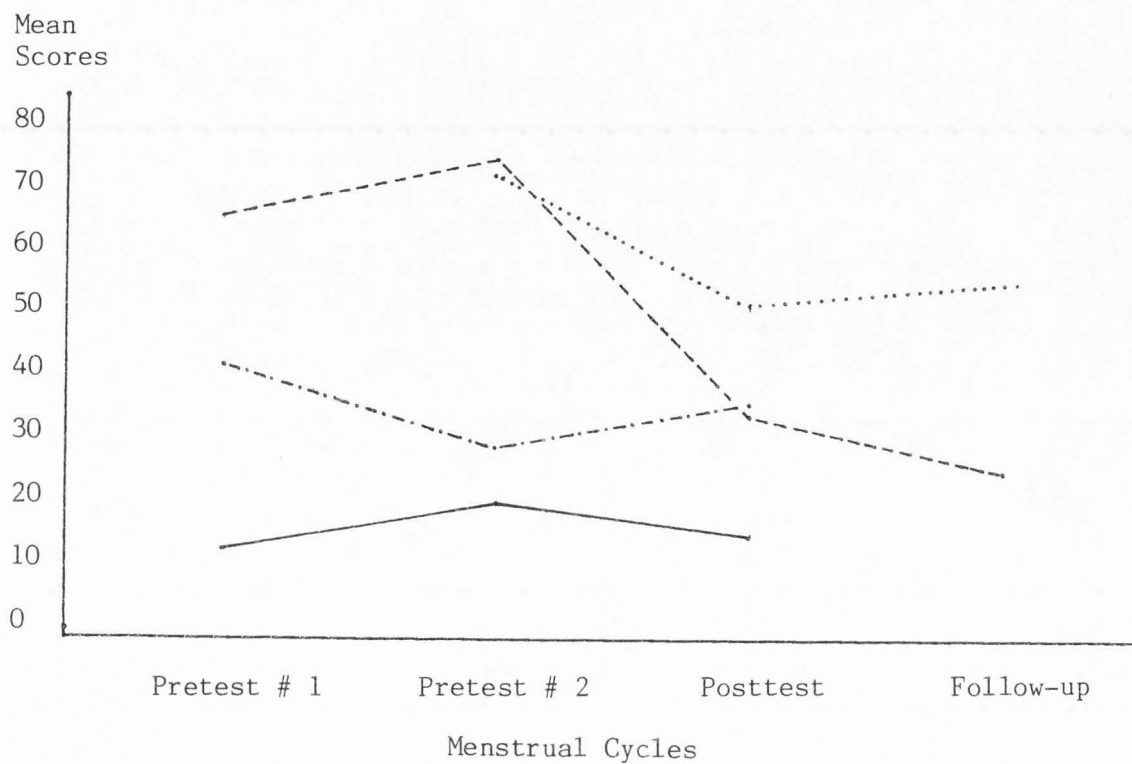Figure 8. A comparison of relaxation group RSS scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates relaxation group.
– – – – – indicates Cox's (1976) distressed group.
.–.–.–.–. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

scores did suggest the construct validity of the RSS measure to successfully differentiate levels of menstrual distress between groups of women experiencing pronounced symptoms, "average" levels of symptoms, and women with few to no symptoms.

Spasmodic vs. Congestive Dysmenorrhea

The hypothesis comparing types of dysmenorrhea was not evaluated. As discussed in Chapter IV, this situation was due to the wide discrepancy between the number of subjects who experienced spasmodic dysmenorrhea and those who experienced congestive dysmenorrhea as measured by the MSQ. The discrepancy was so large that tests of significance could not be calculated. Basic assumptions for both the chi-square test and the analysis of variance statistic were not met; therefore neither of these tests was conducted.

Chesney and Tasto's (1975a) reported dichotomous distribution of college women's responses on the MSQ that ranged either below a score of 69 or above a score of 81 was not supported by this study. In the current study, 51% of the 45 subjects obtained an MSQ score between 69 and 81. The more normally distributed nature of this current sample adds support to the continuing questioning regarding the MSQ's validity (Cox, 1976; Webster et al., 1974). These results again suggest that primary dysmenorrhea has a continuous spasmodic-congestive dimension, with the majority of women experiencing both types of symptoms. Also, as noted previously in Chapter III, while 73% of all subjects complained of menstrual symptoms (most commonly that of menstrual cramping), only 20% of subjects were classified as suffering from spasmodic dysmenorrhea. This study concurs with many others

regarding the continued validity problems with the MSQ (Balick et al., 1979; Cox, 1978; Golub et al., 1959; Rosenthal, 1978), and adds to the growing body of research strongly indicating that the time is ripe for a revamping of the MSQ scoring system.

Possible interactions between type of dysmenorrhea (as measured by the MSQ) and treatment group was a fourth hypothesis which this writer had initially planned to address in the present study. However, the reported inappropriateness of using a test of significance to test the spasmodic vs. congestive hypothesis precluded the investigation into interactions between type of dysmenorrhea and type of treatment.

Although the congestive vs. spasmodic data could not be statistically analyzed, these data are presented in visual form. Mean scores for the congestive (n=36) and the spasmodic (n=9) subjects from all three treatment groups were computed for the RSS and the MSD. They are presented in graph form in Figures 9-12, again in comparison to Cox's Distressed, Nondistressed, and Normative Control Groups. Pretest RSS scores for the spasmodic group are much higher than that of the congestive group (97 pts. vs. 66 pts.). The congestive group pretest RSS mean score is more similar to Cox's Distressed Group mean score than that of the spasmodic group. At posttest, both the congestive and the spasmodic group mean scores are higher than that of Cox's Nondistressed Group. Both spasmodic and congestive groups continue symptom reduction from posttest to follow-up in a similar manner to Cox's Distressed Group.
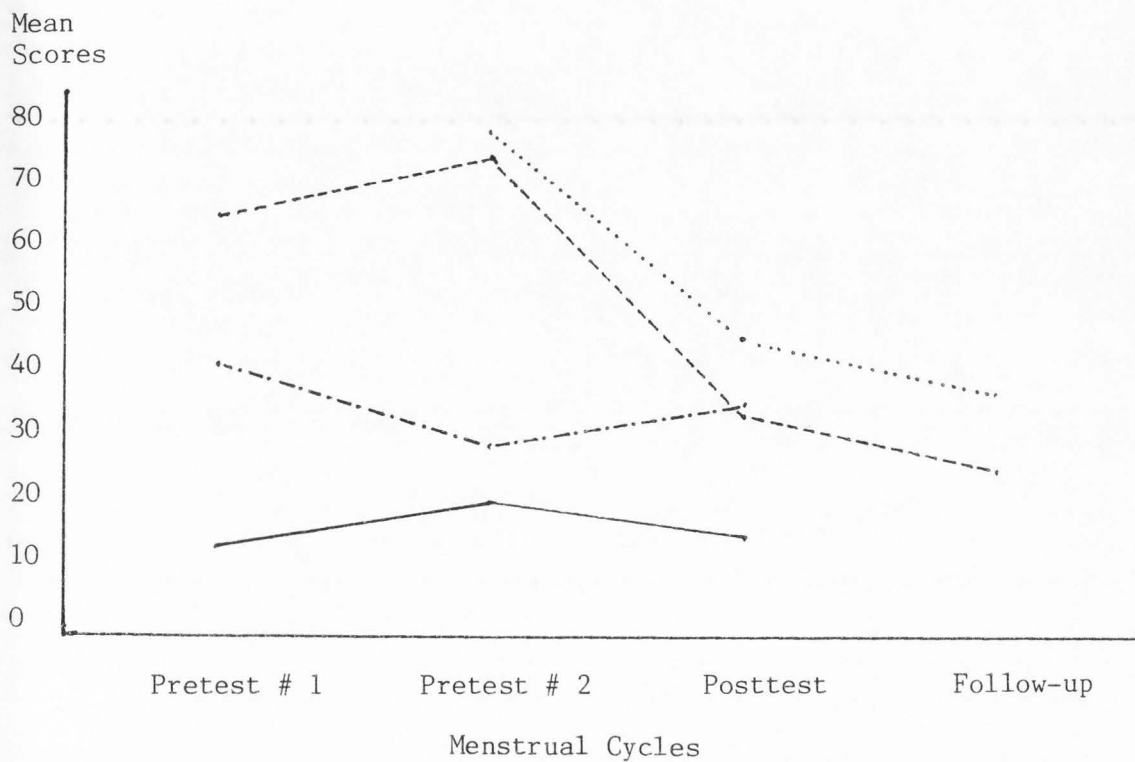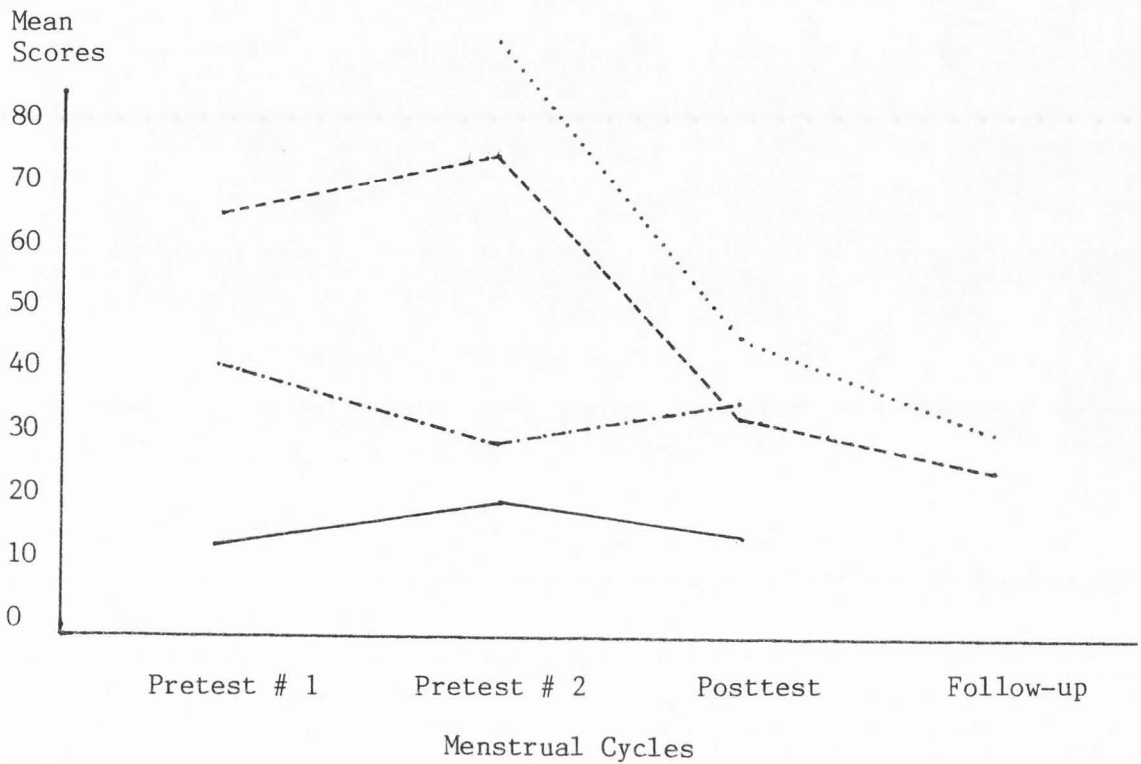
Figure 9. A comparison of spasmodic group RSS scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates spasmodic group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
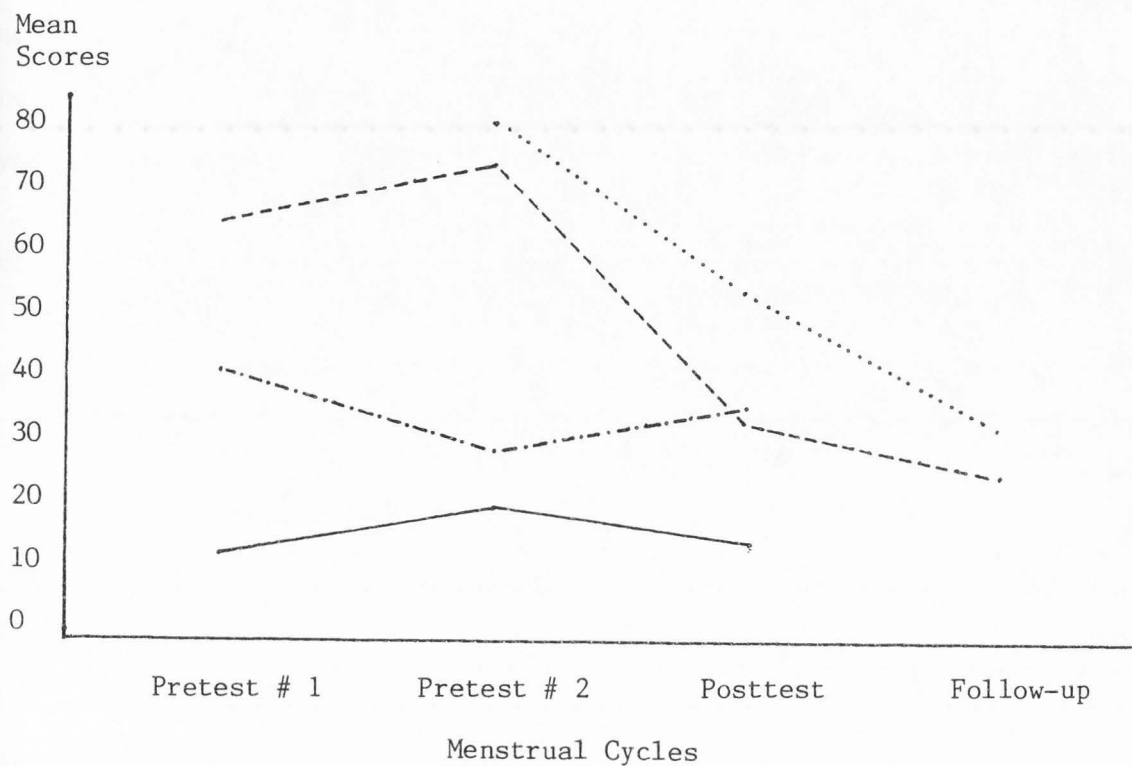_____ indicates Cox's (1976) nondistressed group.

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Figure 10. A comparison of congestive group RSS scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates congestive group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

Figure 11. A comparison of spasmodic group MSD scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates spasmodic group.
– – – – – indicates Cox's (1976) distressed group.
.–.–.–.–. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

Figure 12. A comparison of congestive group MSD scores and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates congestive group.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-. indicates Cox's (1976) normative control group.
_____ indicates Cox's (1976) nondistressed group.

A similar overall trend is noted in the congestive and spasmodic group MSD mean scores. The congestive group score at pretest is somewhat lower than Cox's Distressed Group. The spasmodic group scored somewhat higher than the Cox group at pretest. At posttest, the scores are also similar to Cox's Distressed Group, with the spasmodic group still registering a slightly higher posttest mean score than the Cox group. Follow-up mean scores for the two dysmenorrhea groups are also similar.

These results suggest that Cox's Distressed Group did, in fact, contain both types of dysmenorrhea sufferers as he indicated, since visual inspection suggests that the Cox Distressed Group pretest means are generally somewhere between the present study's congestive and spasmodic group means.

These results also suggest the possibility that spasmodic dysmenorrhea sufferers may be more responsive to treatment than congestive sufferers. An inspection of the graphed score means of the spasmodic sufferers appear to reflect more of a reduction from pretest to posttest than those of the congestive group. An alternative hypothesis to account for these findings is that the RSS and the MSD measures are more sensitive to spasmodic symptoms, so that the dramatic decrease in the spasmodic group mean score at posttest may be at least partly due to an artifact of the RSS measure. Possible future research might involve an exploration of these two alternative hypotheses.

Subjects Tested Twice Prior to Treatment

Subjects in the present study who were contacted on day 10-18 of their respective menstrual cycles, and who were asked to fill out the dependent measures on two occasions prior to treatment were tested on these two occasions only two weeks apart. This constituted their Pretest 1 and Pretest 2 testings. The Cox (1976) subjects were sampled four weeks apart at Pretest 1 and Pretest 2. Despite this important difference, and while keeping the caveat in mind that the "twice test" subjects do not represent a control group, the "twice-tested" group data for the RSS and the MSD from the present study were compared to Cox's (1976) Distressed Group, Nondistressed Group, and Normative Control Group scores. These are presented in Figures 13 and 14. The "twice-tested" group RSS scores appear extremely similar to the Pretest 1 and Pretest 2 scores of Cox's Distressed Group. Both reflect a slight increase in reported symptomatology from Pretest 1 to Pretest 2; this increase has been observed previously and has been hypothesized to be due to subject anticipation regarding the treatment's possibilities (Balick et al., 1982; Chesney & Tasto, 1975b; Tasto & Chesney, 1974).

The "twice tested" group MSD mean score is somewhat (i.e., 10 points) lower than that of Cox's Distressed Group. However, these lower scores are most probably reflective of the present study's previously discussed generally lower MSD scores of all three treatment groups as compared to Cox's Distressed Group scores.

In conclusion, although sampled only two weeks apart, the present study's "twice tested" subjects' data appear to be similar to
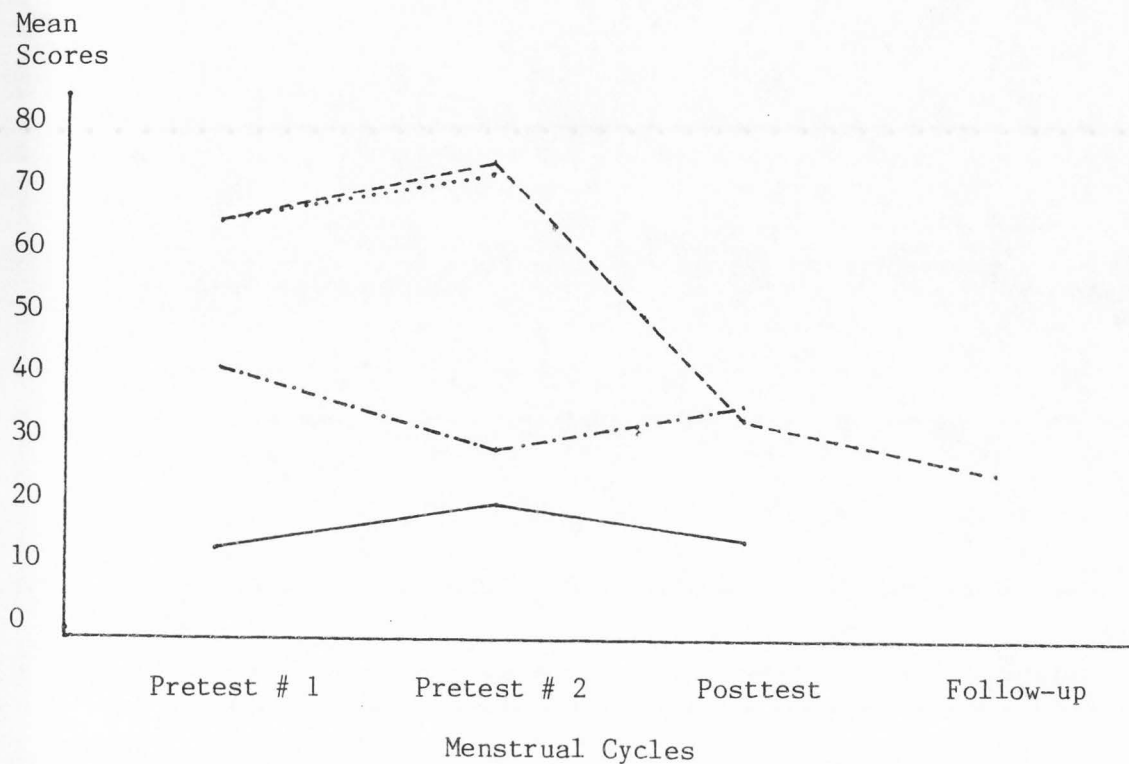
Figure 13. A comparison of the RSS scores of subjects administered the pretest on two occasions, and ꟷox's (1976) distressed, non-distressed and normative group scores at pretest, postest and follow-up.

.... indicates subjects administered the pretest on two occasions.
- - - - - indicates Cox's (1976) distressed group.
.-.-.-.-. indicates Cox's (1976) normative control group.
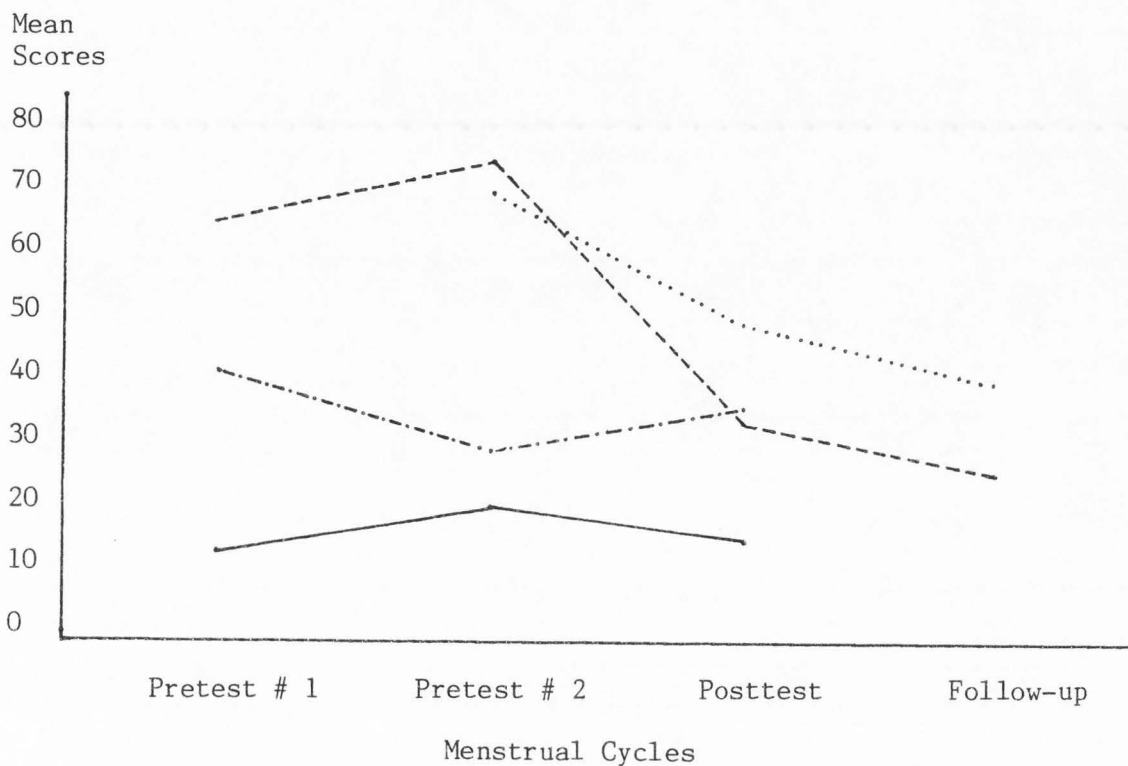_____ indicates Cox's (1976) nondistressed group.

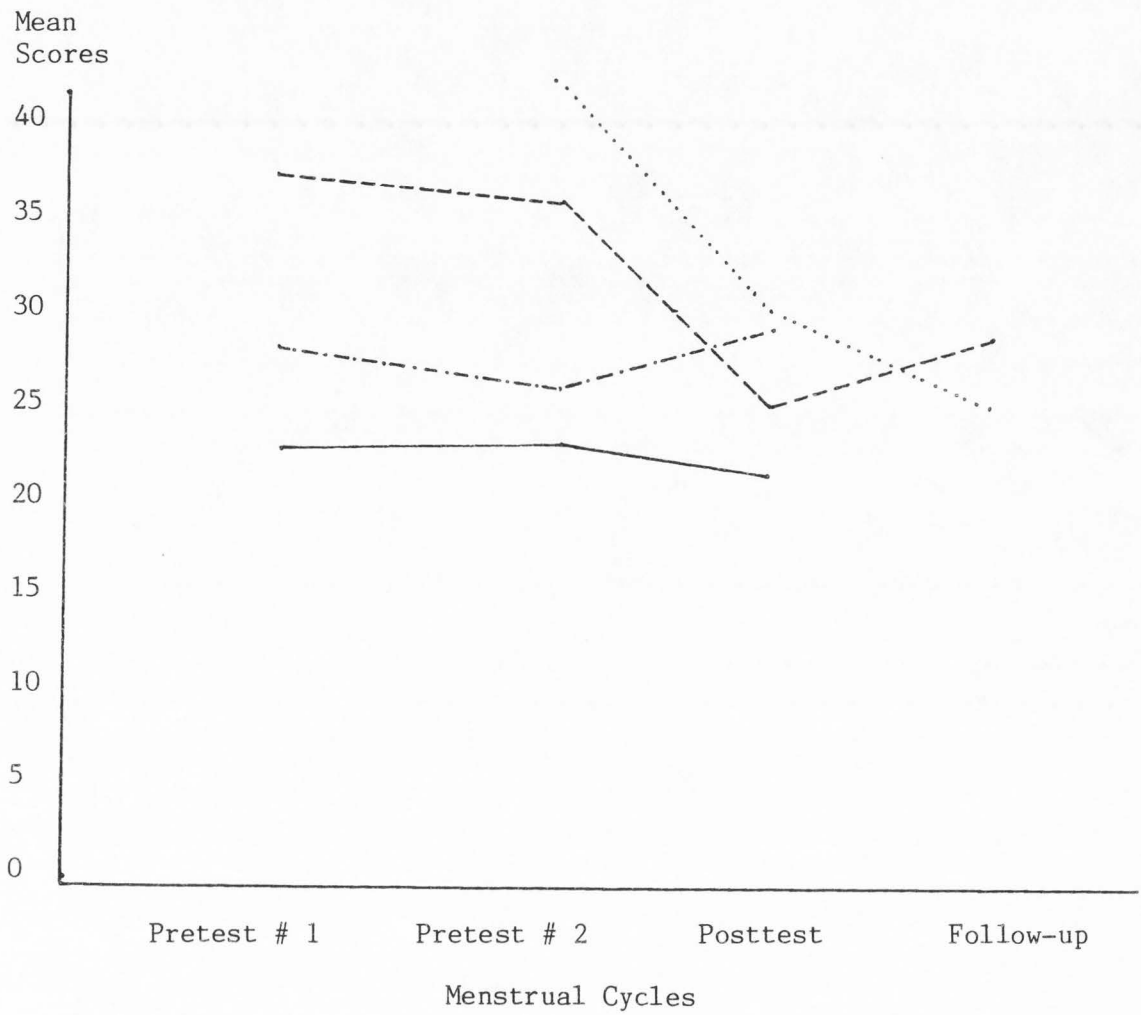Figure 14. A comparison of the MSD scores of subjects administered the pretest on two occasions, and Cox's (1976) distressed, nondistressed and normative group scores at pretest, posttest and follow-up.

.... indicates subjects administered the pretest on two occasions.
– – – – – indicates Cox's (1976) distressed group.
.–.–.–. indicates Cox's (1976) normative control group.
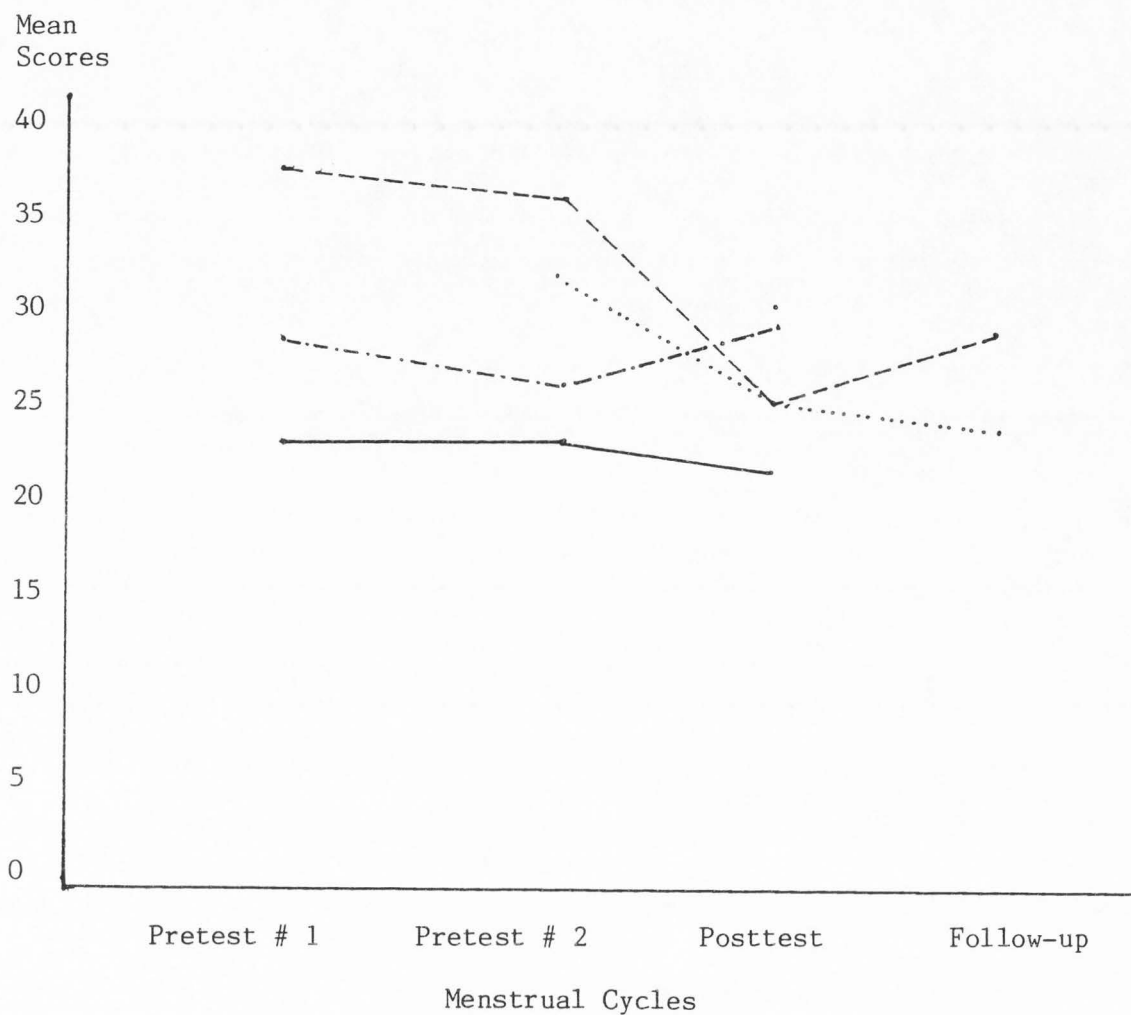_____ indicates Cox's (1976) nondistressed group.

Cox's (1976) more appropriately termed "control group" data. The noted increase in RSS scores at Pretest 2 is a treatment artifact most probably related to subject anticipation (Balick et al., 1982; Chesney & Tasto, 1975b; Cox, 1976; Tasto & Chesney, 1974).

Hypotheses of Treatment Response

The study was successful in producing a modest but measurable decrease in paramenstrual discomfort in subjects of all three treatment groups. The study was not successful in shedding new light on the theoretic locus of treatment effectiveness these results demonstrate. Apparently, a desensitization-only treatment is effective, thus supporting the phobic model of Cox and Meyer (1978). Similarly apparent is that a relaxation-only treatment is also effective, which fits the increased sense of self-control theory of Hart et al.(1981).

What is the most apparent is that perhaps these two (supposedly different) theories both reflect a basic change in subject attitude toward dysmenorrhea. This change in attitude can apparently be a result of a decrease in subject anxiety or an increase in subject sense of mastery. Theoretically, such a change in attitude could also stem from types of treatments (such as a straightforward educative program, or even the body awareness engendered by sports such as gymnastics) that are quite different from the ones explored in the present study. Perhaps future research in this area might focus on experimental ways of manipulating subject attitudes while controlling placebo effects.

Recommendations for Further Research

It is recommended that future research in the behavioral treatment of dysmenorrhea involve the use of other types of data than self-report data. Benson et al. (1974) suggests that measures such as oxygen consumption may be a more appropriate measure of relaxation than localized skin temperature readings. Perhaps reports from "significant others" regarding subjects' behavioral changes due to menstrual cycle and reliability measures for practice data can replace some of the self-report measures used in this study. Lastly, the idea of measuring subjects' prostaglandin levels during treatment to determine if a correlation exists between a decrease in hormones and a decrease in reported discomfort should be strongly entertained (Lamsden, Kelly, & Baird, 1983).

Finally, further research in this area might focus on the development of measures that are established to be as sensitive to premenstrual symptoms as they are to menstrual. Since all of the MAS items refer specifically to cramps, the inappropriateness of this instrument to congestive dysmenorrhea symptoms is apparent. The RSS may be equally sensitive to both types of dysmenorrhea; however, it is recommended that this assumption be further evaluated by research methods before it is again assumed to be true. What we are presently learning about PMS symptoms may result in necessary changes to the self-report measures used in dysmenorrhea research (Halbreich, Endicott, Schacht, & Nee, 1982). In fact, research in this area may be best served by the careful exploration into specific subtypes of the congestive-spasmodic dysmenorrhea continuum.

In conclusion, this study suggested the effectiveness of behavioral treatments to reduce menstrual distress, identified possible weaknesses in the present study, reconfirmed procedures to encourage home practice, and discussed possible questions for future research to answer.

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APPENDICES

Appendix A. Treatment Contract

I hereby consent to treatment by the Psychology Laboratory of Utah

State University for dysmenorrhea.

1. I understand that this is an experimental study, and that no
    guarantee is made for success of treatment. I understand that
    the results of the study will be used in preparing a disserta-
    tion and will be published in other professional articles. I
    also understand that I will not be identified in any way by name
    in any of the above published materials.

2. I realize that considerable effort has been made to provide this
    treatment to me free of cost. I agree to deposit ten dollars
    ($10) with the clinic as a sign of my good faith, of which five
    dollars ($5) will be refundable upon completion of the four
    treatment sessions, and an additional five dollars ($5) will be
    refunded at the conclusion of a three-month follow-up. The
    return of the deposit is contingent only upon completion of the
    project, and not on the degree of improvement which I might
    make. A two dollar ($2) deduction from the refundable deposit
    will be made for each session missed by myself. However, in the
    event that I desire to drop out of the project, I may do so via
    consultation with the experimenter with the full ten dollar
    ($10) refund being returned.

3. The treatment has been described to me to my satisfaction. I
    understand that if I have any further questions about the study
    at any later date, I may request a consultation with the
    researcher.

4. I understand the importance of following the instructions of my
    personal physician with regard to my physical health and the use
    of prescribed medication. I am also aware that as a student, I
    am able to contact the Student Health Center should any physical
    problems occur during the course of the study. I understand
    that I will in no way be deterred from seeking medical assist-
    ance if deemed necessary at any time during this study.

5. I am aware of the daily practice commitment required for the
    study and am willing to accommodate to this schedule. I am
    further aware that the benefit to me that may be reasonably
    expected from my participation in the study will be the ability
    to produce a relaxation response when desired.

Date: _____   Signature: _____

                          Witness: _____

                          Witness: _____

Appendix B. Client Data Sheet

Home: Phone #:   Address:

Age: Marital Status: Parity:

Regularly taken medications: IUD or pill?

Past training in relaxation: Chief complaint:

Session # Date	Scene #	Visualized ?	Tension ?	Relaxed Away?	Behavioral Notes:
1 A					Session #1
B					Date
2 A					
B					
3 A					
B					
4 A					
B					
5 A					
B					
6 A					
B					
7 A					
B					
8 A					
B					
9 A					
B					
10 A					
B					
11 A					
B					
12 A					
B					
13 A					
B					
14 A					
B					

Appendix C. Physician's Approval
Form

My signature below indicates that my physician has classified my

menstrual distress as Primary Dysmenorrhea. Additionally, my

physician is aware of and agreeable with my participation in the Pain

Control Study currently being conducted at the Utah State University's

Psychology Laboratory.

Date: _____   Signature: _____

                               Witness: _____

                               Witness: _____

Appendix D. Retrospective Symptom
Scale

Name: _____   Date: _____

Please rate each of these conditions for frequency of and severity of
occurrence, on the basis of your experiences of your last menstrual
period. Total frequency refers to the total amount of time you ex-
perienced a condition during your last period, while average severity
refers to the average level of pain or distress of the condition when it
did occur.

Total Frequency Ratings

0. Did not occur
1. Lasted less than 3 hours
2. Lasted 3-to-7 hours
3. Lasted an entire day
4. Lasted several days

Average Severity Ratings

0. Not noticeable
1. Slightly bothersome
2. Moderately bothersome
3. Severely bothersome
4. Very severely bothersome

Condition	Frequency Rating	Severity Rating
cramps		
nausea		
vomiting		
loss of appetite		
headaches		
backaches		
leg aches		
dizziness		
weakness		
diarrhea		
facial blemishes		
abdominal pain		
flushing		
sleeplessness		
general aching		
depression		
irritability		
nervousness		

How much additional time did you spend in bed because of menstrual problems over the duration of your last period? Give estimated total number of hours: _____ hours

Considering the number of pills (any kind) taken for menstrual relief and the number of days you take such medication, how many pills did you take last menstrual period?

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Appendix E. Menstrual Semantic
Differential

Name: _____   Date: _____

Below are several pairs of words which can be used to describe men-
struation. Place an "X" on each line indicating the degree of feeling
you have concerning your last menstrual period.

1. Good   ___ ___ ___ ___ ___ ___ ___ Bad

2. Happy   ___ ___ ___ ___ ___ ___ ___ Sad

3. Healthy   ___ ___ ___ ___ ___ ___ ___ Sick

4. Pleasure ___ ___ ___ ___ ___ ___ ___ Pain

5. Clean   ___ ___ ___ ___ ___ ___ ___ Dirty

6. Relaxed   ___ ___ ___ ___ ___ ___ ___ Tense

7. Nice   ___ ___ ___ ___ ___ ___ ___ Awful

Appendix F. Menstrual Activities
Scale

Instructions: Answer the following questions as they relate to your last
menstrual period by placing a check in the appropriate
space.

1. Do cramps hinder your daily activities?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

2. Do cramps change your eating habits?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

3. If you eat, do you ever vomit once you finish a meal?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

4. Do cramps hinder your sleep?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

5. Do you get cramps more often than one time during the 7 days?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

6. Do cramps ever cause a change in your emotional behavior?

_____ _____ _____ _____ _____
Never   Not very often Sometimes   To an extent   Very often

Appendix G. Menstrual Behavior Scale

Instructions: Place a check in the space which indicates the extent to
which your last menstrual period led you to engage more
than you normally would in the following behaviors:

1. Taking aspirin

Not at all   A little   Some   Much   Very much

2. Taking Painkillers (stronger than aspirin)

Not at all   A little   Some   Much   Very much

3. Drinking alcohol

Not at all   A little   Some   Much   Very much

4. Resting in bed

Not at all   A little   Some   Much   Very much

5. Taking meals in bed

Not at all   A little   Some   Much   Very much

6. Sleeping

Not at all   A little   Some   Much   Very much

7. Using a heating pad or hot water bottle

Not at all   A little   Some   Much   Very much

8. Crying

Not at all   A little   Some   Much   Very much

9. Arguing

Not at all   A little   Some   Much   Very much

10. Losing your temper

Not at all   A little   Some   Much   Very much

Appendix H. Menstrual Symptom
Questionnaire

Name: _____   Date: _____

Please circle the best answer

	Never	Rarely	Sometimes	Often	Always
	(1	2	3	4	5)
1. I feel irritable, easily agitated, and am impatient a few days before my period.	N	R	S	O	A
2. I have cramps that begin on the first day of my period.	N	R	S	O	A
3. I feel depressed for several days before my period.	N	R	S	O	A
4. I have abdominal pain or discomfort which begins one day before my period.	N	R	S	O	A
5. For several days before my period I feel exhausted, lethargic or tired.	N	R	S	O	A
6. I only know that my period is coming by looking at the calendar	N	R	S	O	A
7. I take a prescription drug for the pain during my period.	N	R	S	O	A
8. I feel weak and dizzy during my period.	N	R	S	O	A
9. I feel tense and nervous before my period	N	R	S	O	A

	Never (1	Rarely 2	Sometimes 3	Often 4	Always 5)
10. I have diarrhea <u>during</u> my period.	N	R	S	O	A
11. I have backaches several days <u>before</u> my period.	N	R	S	O	A
12. I take aspirin for the pain <u>during</u> my period.	N	R	S	O	A
13. My breasts feel tender and sore a few days <u>before</u> my period.	N	R	S	O	A
14. My lower back, abdomen, and the inner sides of my thighs <u>begin</u> to hurt or be tender on the first day of my period.	N	R	S	O	A
15. <u>During</u> the first day or so of my period, I feel like curling up in bed, using a hot water bottle on my abdomen, or taking a hot bath.	N	R	S	O	A
16. I gain weight <u>before</u> my period.	N	R	S	O	A
17. I am constipated <u>during</u> my period.	N	R	S	O	A
18. <u>Beginning</u> on the first day of my period, I have pains which may diminish or disappear for several minutes and then re-appear.	N	R	S	O	A
19. The pain I have with my period is not intense; but a continuous dull aching.	N	R	S	O	A
20. I have abdominal discomfort for more than one day <u>before</u> my period.	N	R	S	O	A

	Never	Rarely	Sometimes	Often	Always
	(1	2	3	4	5)

21. I have backaches which <u>begin</u>
    the same day as my period.   N   R   S   O   A

22. My abdominal area feels bloated
    for a few days <u>before</u> my period.   N   R   S   O   A

23. I feel nauseous <u>during</u> the first
    day or so of my period.   N   R   S   O   A

24. I have headaches for a few days
    <u>before</u> my period.   N   R   S   O   A

TYPE 1

The pain begins on the first day of menstruation, often coming within an hour of the first signs of menstruation. The pain is most severe the first day and may or may not continue on subsequent days. Felt as spasms, the pain may lessen or subside for awhile and then reappear. A few women find this pain so severe as to cause vomiting, fainting, or dizziness; some others report that they are most comfortable in bed or taking a hot bath. This pain is limited to the lower abdomen, back and inner sides of the thighs.

TYPE 2

There is advanced warning of the onset of menstruation during which the woman feels an increasing heaviness, and a dull aching pain in the lower abdomen. The pain is sometimes accompanied by nausea, lack of appetite, and constipation. Headaches, backaches, and breast pain are also characteristic of this type of menstrual discomfort.

The type that most closely fits my experience is TYPE _____.

Appendix I. Treatment Rationale

Why Cramps and Menstrual Distress?

Below is the current physiological explanation for menstrual distress and
the rationale for this treatment's effectiveness.

1. As the menstrual cycle approaches, production of the hormone "estrogen"
    decreases which allows

2. Increased production of progesterone from the overies that

3. Begins to accumulate in the uterus at the beginning of the period which

4. Stimulates production of the hormone "postaglandin" by the inner layer
    of the uterus which

5. Stimulates the muscular layer of the uterus to contract which results in

6. Constriction of the blood vessels in the uterine wall which

7. Reduces the blood and oxygen supply to the uterus and

8. The result of this temporary uterine muscle contraction and decreased
    blood and oxygen supply is momentary sensations interpreted as pain that

9. The brain registers as unpleasant and consequently starts up the "fight
    or flight" reflex which

10. Results in the tightening of the major muscle systems throughout the body
    and reduced shallow breathing that stimulates multiple chain reactions:

11. First, it initiates production of adrenalin which encourages the continued
    production of postaglandin (return to Step 4); second, the reduced breath-
    ing lowers oxygen consumption throughout the body; and third, the general
    increased muscle tension and lowered oxygen consumption produces general
    disruption of the entire body which produces such side effects as nausea,
    vomiting, backaches, headaches, sleeplessness, etc., depending on the
    person's system.

12. This general disruption interferes with your control of the uterus and
    other body systems and encourages more cramping and distress.

13. The more cramping and general distress triggers the brain to press
    harder for the "fight or flight" response.

14. The distress feeds upon itself and may progressively become worse over
    time until some link in this chain reaction is broken. This occurs when
    progesterone production (Step 2) is prevented with the use of birth con-
    trol pills, when analgesic medication is able to prevent the initial

temporary pain (Step 8), or the prevention of the "fight or flight" brain's reaction to the pain.

Treatment Objective:

As a consequence of four weeks of intensive relaxation training, you will be able to recognize the earliest signs of menstrual distress and then automatically turn on your relaxation response. In this way you will interrupt the chain of Steps 9 and 10 and prevent any persistent and extreme local or general discomfort.

This will reliably occur given two conditions: First, you must be dedicated in your exercises so that you do become skilled in bringing on immediate relaxation response. This will require twice daily practice sessions. Second, it will require that you begin the relaxation response at the earliest signs of menstrual distress. The early recognition of these menstrual signals and subsequent immediate relaxation depends on how proficient you become with the relaxation response. Again, proficiency comes only with conscientious practice.

Appendix J. Home Relaxation Sheet

The purpose of home practice is: 1) to enhance awareness of your own internal sensations that signal different degrees of tension and relaxation, and 2) to develop skills in producing profound levels of relaxation. This is not accomplished by either magic or engaging in some ritual for the sake "of just getting it out of the way"; rather, it is achieved through frequent (twice daily) and conscientious practice involving careful passive observation of those bodily sensations, mental images and thoughts experienced when tense and relaxed.

The success of your treatment depends on how effective you become in producing the relaxation response. Acquiring this skill is a sequential process requiring mastery of each step before moving on to the next. Consequently, continued quality practice is essential for final success. This is doubly important since training will only span an approximate 21-day period...allowing no time for slacking up.

In addition to frequent conscientious practice, effectiveness will in-crease as care is taken to provide suitable conditions as suggested below:

1.   Have all parts of your body comfortably supported; you may con-sider using a pillow under your head to prevent rolling of the neck.

2.   Ensure minimal distractions: dim the lights, take the phone from the hook, inform people not to disturb you, remove any contacts, or tight-fitting clothes and attempt to prevent any distracting noises.

3.   Do your exercise when you are not pressed for time, be sure that you have enough time to complete the exercises without worrying about doing something else.

4.   Do the exercises alone.

5.   If you find yourself thinking "busy thoughts," try to replace them with thoughts of currently experienced sensations of relaxation.

Appendix K. Relaxation Monitoring
Scale

```
          |
Extremely |
Relaxed   |
          |
Moderately|
Relaxed   |
          |
Slightly  |
Relaxed   |
          |
Unchanged |
          |
Tense     |
          |_____
            A B   A B   A B   A B   A B   A B
             1     2     3     4     5     6
```
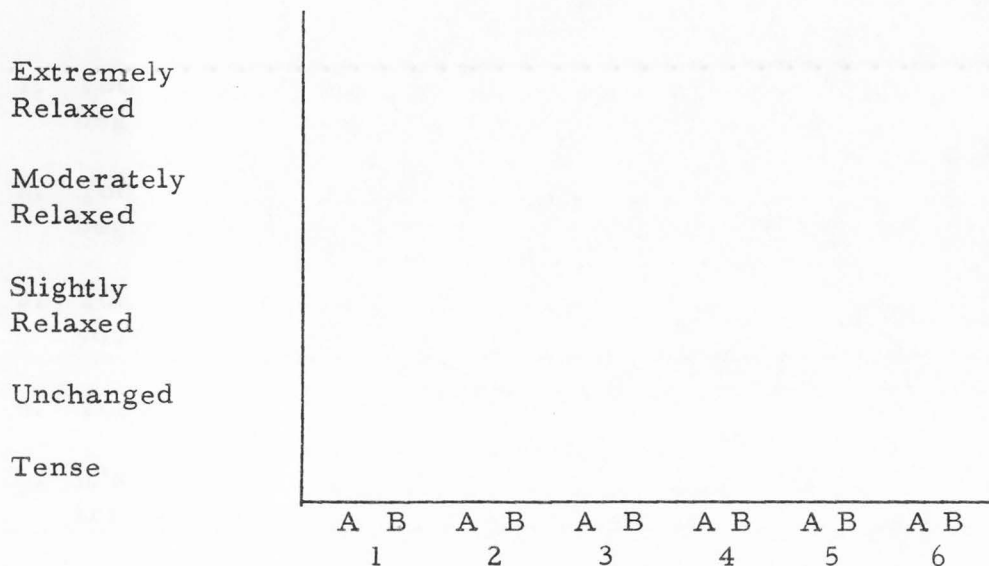
1. A. Sensations: _____
        Images: _____
        Thoughts: _____
        Conditions: _____
    B. Sensations: _____
        Images: _____
        Thoughts: _____
        Conditions: _____
2. A. Sensations: _____
        Images: _____
        Thoughts: _____
        Conditions: _____
    B. Sensations: _____
        Images: _____
        Thoughts: _____
        Conditions: _____
3. A. Sensations: _____
        Images: _____
        Thoughts: _____
        Conditions: _____
    B. Sensations: _____
        Etc.

Appendix L. Standard Menstrual
Hierarchy

1. You look at the calendar and you realize that your period is due to begin in ten days.

2. You look at the calendar and you realize that your period is due to begin tomorrow.

3. You know that your period is coming soon and at least one day of your month is going to be unpleasant.

4. Your period is coming soon and you are beginning to feel bloated.

5. It's the day before your period and you are beginning to feel irritable.

6. Because of your period, you are beginning to have a dull, tired feeling.

7. Because of your period, you feel aching in your neck and back.

8. Due to your period, you feel hot and perspired.

9. You are feeling nauseated because of your period.

10. You are bothered by the odor of menstrual blood.

11. You are changing your Kotex or Tampon, see the blood, and realize you are flowing heavily.

12. You are wondering if you've stained your clothing, and are embarrassed by the thought.

13. You notice the first sensation of mild cramping.

14. You begin to feel severe pain and cramping.

Appendix M. Combined Group Treatment
Outline

In the blank spaces marked S1, S2, & S3, check when each step has been
completed; e.g., S1 _X_

I.   Session 1

     A.   Treatment Rationale

          1.   Treatment Rationale Sheet -- any questions?

          2.   Application--breaking the chain
               a. Elevate pain threshold via natural analgesic effect.
               b. Preventing "fight or flight" reflex with the conscious
                   Relaxation Response.
                   S1 __   S2 __   S3 __

          3.   Objectives
               a. Increase sensitivity to internal sensations, especially
                   biosignals of muscle tension and relaxation.
               b. Learn instantaneous Relaxation Response.
               c. Today I'm going to teach you how to relax.
                   S1 __   S2 __   S3 __

     B.   Relaxation Training

          1.   Tennis analogy:
               a. Initially demanding a lot of practice.
               b. Initially requiring conscious attention to what is
                   happening; it's not magical exercises.
               c. With time and effort, it becomes automatic.
                   S1 __   S2 __   S3 __

          2.   Specific relaxation exercise explanation.
               a. Initially tighten and relax 16 muscles.
                   i.   Accents sensations of tension and relaxation.
                   ii. Pendulum analogy; i.e., excessive tension allows
                        excessive relaxation.
               b. Familiarization with internal signals to allow pin-
                   pointing tension, recognition of earliest tension signs
                   to signal subsequent relaxation, and confirmation of
                   the relaxation response.
               c. Four sessions to sharpen relaxation experience; pro-
                   vide overlearning; condense efforts from 30 minutes
                   of practice to one minute; moving from very conscious
                   to automatic response.
                   i.   Only possible with conscientious and frequent
                        practice.
                   S1 __   S2 __   S3 __

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C.   Muscle tightening procedure

    1. R. lower arm-fist
    2. R. upper arm-elbow
    3. L. lower arm
    4. L. upper arm
    5. forhead upper scalp--raise eyebrows
    6. eyes and nose--squint and wrinkle
    7. jaws, cheeks, and tongue--grind, corners of mouth back,
        tongue to roof
    8. neck--counterpose
    9. shoulders, upper back, chest--hold breath and shoulders
        back
    10. abdomen--upper and lower areas
    11. R. upper leg--counterpose
    12. R. lower leg--toe to face
    13. R. foot--toe out, rotate in and curl
    14. L. upper leg
    15. L. lower leg
    16. L. foot
    17. Answer questions and assure understanding
        S1 __ S2 __ S3 __

D.   General Instructions

    1. Release muscle tension all at once.
    2. Keep rest of body relaxed while tensing a specific part.
    3. Starting with the shoulders, inhale while tensing and
        exhale while releasing.
    4. Identify cue "now" and "relax".
    5. Encourage avoidance of unnecessary movement.
    6. Explain cued breathing.
    7. Explain countdown.
    8. Prepare S (bathroom, shoes off, contact lenses, gum, etc.)
    9. Adjust volume of tape and lights. Both should be low.
    10. Answer questions and assure understanding.
    11. Leave room, ask for closed eyes, turn on tape.
        S1 __ S2 __ S3 __

E.   Relaxation Exercises

    1. Combined tape.
    2. Debrief on sensations, images, thoughts, individual exercises.
        (e.g., "How did it go?")
    3. Explain home relaxation sheet and distribute.
    4. Inform about telephone call.
    5. Encourage home practice, twice daily, at least 3 hours apart.
    6. Establish next appointment in seven days. Schedule room.
    7. Distribute Relaxation Monitoring Scale, Home Relaxation
        Sheet, and C I Tape.
        S1 __ S2 __ S3 __

II. Phone Contact; 2 days following first appointment

  A. Review frequency--resolve problems that prevent home practice.

  B. Review conditions--resolve any contextual conditions that disrupt home practice.

  C. Review--sensations, images and thoughts; home relaxation sheets.

  D. Encourage continued practice, emphasize its essential contribution to subsequent training and final outcome.

  E. Reaffirm next appointment.
      S1 __ S2 __ S3 __

III. Session 2

  A. Review Home Practice

    1. Consider context: time, setting, distractions, i.e. facilitating and disruptive conditions.
    2. Consider circumstances that prevented practice and remediate.
    3. Review use of cued breathing.
    4. Encourage continued practice.
    5. Collect sheets and return to file
        S1 __ S2 __ S3 __

  B. Explain D imagery

    1. Rationale
        a. "We are adding a new component so you can practice your relaxation skills in potentially tension producing situations."
        b. To disrupt automatic habitual tension associations with these events; and
        c. To practice use of cue-conditioned relaxation in potentially menstrual pain-producing situations.
            S1 __ S2 __ S3 __

    2. Procedure
        a. "After the relaxation exercises the tape will continue on with some instructions that tell you to....."
        b. Vividly try to imagine scenes.
        c. Use of cued breathing at first sign of tension (i.e. saying "relax" to self while exhaling).
        d. "I want to set up a communicaiton system so I know how you're doing."
        e. Signal when: 1) clear (R-I), tense (L-I), and relaxed away (R-I). Review this.
        f. Home practice-similar imagining and use of cued breathing will be practiced at home.
            S1 __ S2 __ S3 __

  C. "We are combining the 16 muscle groups into 7 so I want to go over these with you." Establish seven muscle groups and tensing procedures

    1. R. arm-fist clenched, elbow at 45°

    2. L. arm
    3. Face-frown, squint, curl corners of mouth, tongue, grind
    4. Neck
    5. Shoulders, chest and abdomen
    6. R. leg
    7. L. leg
    8. Answer questions and assure understanding
    9. Prepare client, lights and tape.
       S1 __ S2 __ S3 __

  D. Exercies

    1. Combination Tape (CII)
    2. Observe finger signals. Record
       S1 __ S2 __ S3 __

  E. Debrief:

    1. Ability to:
      a. imagine
      b. experience tension
      c. reduce tension
    2. Sensations of relaxation with seven muscles--inform S
       that with dedicated practice they will become as skilled
       with 7 as they are with 16.
       S1 __ S2 __ S3

  F. Home Practice

    1. Encourage use of exercises, cued breathing, and images
       twice daily.
    2. Encourage use of cued breathing before meals for in vivo
       practice and facilitate digestion. (e.g. "Think 'relax'
       paired with 10 exhales before meals.")
    3. Distribute home relaxation sheets and explain; Combination
       Tape II.
    4. Inform about telephone call.
    5. Establish next session date and time, 4-5 days hence.
       S1 __ S2 __ S3 __

IV. Home Phone Call: (2 days later)

  A. Discuss Relaxation Practice.
  B. Discuss D. imagery and cued breathing.
  C. Discuss use of cued breathing at meal time.
  D. Reaffirm next appointment.
     S1 __ S2 __ S3 __

V. Session 3

  A. Review Home Practice.

    1. Context
    2. Frequency of practice

   3. Review home relaxation sheets
   4. Review home D
   5. Review cued breathing at meal time; what can facilitate
       remembering doing this?
   6. Collect sheets, put in file.
       S1 __   S2 __   S3 __

   C. Relaxation Exercises

       1. ("This time we combine the 7 muscle groups into 4.")
       2. Establish exercises
           a. arms
           b. face and neck
           c. torso
           d. legs
       3. Combination Tape III (C-3)
       4. Debriefing
           S1 __   S2 __   S3 __

   D. Self Directed Relaxation Exercises

       1. ("Try doing your relaxation right now without a tape.
           Use your own countdown. I'll be back in 5 minutes to
           debrief.")
       2. Debrief
           S1 __   S2 __   S3 __

   E. Home Practice

       1. Twice daily exercises and images, one with and one without
           tape.
       2. Cued breathing at
           a. meal time
           b. times of tension-somatic and affective.
       3. Establish next appointment.
       4. Distribute home practice sheets, Combination Tape 3.
           (no phone call)
           S1 __   S2 __   S3 __

VI. Session 4

   A. Review home practice
       1. Exercises
       2. Images
       3. Mealtime cued breathing
       4. Tension associated cued breathing
       5. Collect sheets, put in file

   B. Place skin temperature probe on S's R hand

       1. Rationale

2. Procedure ("In this process I'm asking you to just focus on the tension in your body and relax it away, recalling what it was previously like to release the tension in the various muscle groups.")
   S1 ___ S2 ___ S3 ___

C. Exercise

   1. Combination Tape IV (C-4)
   2. Debrief ("Well, how was it?")
   3. Have S self-administer conditioned relaxation and D images. ("Do it by yourself now without the tape. Do 1 or 2 images.")
   4. Debrief
      S1 ___ S2 ___ S3 ___

D. Encourage continued mealtime cued breathing
   S1 ___ S2 ___ S3 ___

E. Application of cued breathing with menstrual distress

   1. Use at initial signs of distress.
   2. Interpret initial signs of distress as "relaxation signals" as cues for relaxation instead of pain. Recall we did this on the tape, and there will be a carry-over effect.
   3. Anticipate some failures.
   4. Anticipate improved skills with practice.
   5. If possible, used cued breathing instead of medication.
   6. Imaginative practice in evening of previous day's tensions and relax it away.
      S1 ___ S2 ___ S3 ___

F. Distribute home practice sheets, C-4 tape, and posttest packet.
   S1 ___ S2 ___ S3 ___

Appendix N. Desensitization Group
Treatment Outline

In the blank spaces marked S1 and S2, check when each step has been completed; e.g., S1 _X_ .

I. Session 1

   A. Treatment Rationale: S1___ S2___ S3___
      1. Application--breaking the chain.
         a. Elevate pain threshold via natural analgesic effect.
         b. Prevent "fight or flight" reflex with the conscious relaxation response.
      2. Objectives: S1___ S2___ S3___
         a. Increase sensitivity to internal sensations.
         b. Practice relaxation.

   B. Explain Desensitization imagery: S1___ S2___ S3___
      1. Rationale:
         a. to disrupt automatic habitual tension associations with these events; and
         b. to practice use of cue-conditioned relaxation in potentially menstrual pain-producing situations.
      2. Procedure:
         a. Follows self-relaxation.
         b. Attempts to vividly imagine scenes.
         c. Signal when: (1) clear (R-I), tense (L-I), and relaxed away (R-I). (Use hierarchy form to keep track of responses, therapist.)
         d. Avoid unnecessary movement.
         e. Countdown.
      3. Home practice-similar imagining will be practiced at home, but won't need to signal at home.
         a. Answer questions and assure understanding.
         b. Review signals.

   C. Desensitization Exercise: S1___ S2___ S3___
      1. Desensitization Tape I
      2. Countdown.
      3. Debrief on sensations, images, thoughts, individual experience.
      4. Explain home practice sheet and distribute.
      5. Inform about telephone call.
      6. Encourage home practice.
      7. Establish next appointment in seven days.
      8. Distribute Relaxation Monitoring Scale, Home Relaxation Sheet, and Desensitization Tape I.

Desensitization Group
Page 2

II. Phone Contact; 2 days following appointment:
   S1___ S2___ S3___S3___

   A. Review frequency--resolve problems that prevent home
      practice.
   B. Review conditions--resolve any contextual conditions that
      disrupt home practice.
   C. Review sensations, images, and thoughts; home practice
      sheets.
   D. Encourage continued practice, emphasize its essential con-
      tributions to subsequent training and final outcome.

III. Session 2

   A. Review Home Practice: S1___ S2___ S3___
      1. Consider context: time, setting, distractions, i.e.,
         facilitating and disruptive conditions.
      2. Consider circumstances that prevented practice and
         remediate.
      3. Encourage continued practice.
      4. Review finger signal.
      5. Adjust volume of tape.

   B. Desensitization Exercise: S1___ S2___ S3___
      1. Desensitization Tape II
      2. Self-administered relaxation
      3. Imagery
      4. Countdown
      5. (Therapists, be sure to keep track of responses on the
         hierarchy form.)

   C. Debrief: S1___ S2___ S3___
      Ability to:
      1. imagine
      2. experience tension
      3. reduce tension

   D. Home Practice: S1___ S2___ S3___
      1. Encourage practice with imagery twice daily.
      2. Distribute home practice sheets and explain. Distribute
         Tape II.
      3. Inform about telephone call.
      4. Establish next session date and time.

VI. Home Phone Call: S1___ S2___ S3___

   A. Discuss practice sessions.
   B. Reaffirm next appointment.

Desensitization Group
Page 3

V. Session 3

    A. Review Home Practice: S1___ S2___ S3___
        1. Context
        2. Frequency of practice
        3. Review home practice sheets
        4. Review home desensitization

    B. Desensitization Exercises: S1___ S2___ S3___
        1. Desensitization Tape III
        2. Self-administered relaxation
        3. Images
        4. Countdown

    C. Debriefing: S1___ S2___ S3___

    D. Self-administered Desensitization (5 min.)

    E. Home Practice: S1___ S2___ S3___
        1. Encourage twice daily practice with images, with and
           without tape.

    F. Establish next appointment: S1___ S2___ S3___

    G. Distribute home practice sheet and Tape III.

VI. Session 4

    A. Review home practice: S1___ S2___ S3___

    B. Desensitization Exercises: S1___ S2___ S3___
        (Therapist: place skin temp probe on S's hand.)
        1. Tape IV
        2. Self-administered relaxation
        3. Imagery
        4. Countdown
        5. Debriefing
        6. Have S self-administer images

    C. Application of desensitization with menstrual distress:
        S1___ S2___ S3___
        1. Use at initial signs of distress.
        2. Interpret initial signs of distress as "relaxation
           signals" instead of pain.
        3. Anticipate some failures.
        4. Anticipate improved skills with practice.

    D. Distribute home practice sheets, posttest packet.

Appendix O. Relaxation Group
Treatment Outline

In the blank spaces marked S1 and S2, check when each step has been
completed; e.g., S1 _X_ .

I. Session 1

   A. Treatment Rationale: S1___ S2___ S3___
       1. Application--breaking the chain
           a. Elevate pain threshold via natural analgesic effect.
           b. Preventing "fight or flight" reflex with the con-
               scious Relaxation Response.
       2. Objectives: S1___ S2___ S3___
           a. Increase sensitivity to internal sensations, espe-
               cially biosignals of muscle tension and relaxation.
           b. Learn nearly instantaneous Relaxation Response.

   B. Relaxation Training
       1. Tennis analogy: S1___ S2___ S3___
           a. Initially demanding a lot of practice.
           b. Initially requiring conscious attention to what is
               happening; it's not magical exercises.
           c. With time and effort, it becomes automatic.
       2. Specific relaxation exercise explanation:
           S1___ S2___ S3___
           a. Initially tighten and relax 16 muscles.
               i. Accents sensations of tension and relaxation.
               ii. Pendulum analogy; i.e., excessive tension allows
                   excessive relaxation.
           b. Familiarization with internal signals to allow pin-
               pointing tension, recognition of earliest tension
               signs to signal subsequent relaxation.
           c. Four sessions to sharpen relaxation experience; pro-
               vide overlearning; condense efforts from 30 minutes
               of practice to one minute; moving from very con-
               scious to automatic response.
               i. Only possible with conscientious and frequent
                  practice.

   C. Muscle Tightening Procedure: S1___ S2___ S3___
       1. D. lower arm-fist
       2. D. upper arm-elbow
       3. N.D. lower arm
       4. N.D. upper arm
       5. forehead upper scalp--frown
       6. eyes and nose--squint and curl
       7. jaws, cheeks, and tongue--grind, corners of mouth back,
           tongue to roof
       8. neck--counterpose

Relaxation Group
Page 2

        9. shoulders, upper back, chest--hold breath and shoulders back
      10. abdomen--upper and lower areas
      11. R. upper leg--counterpose
      12. R. lower leg--toe to face
      13. R.D. foot--toe out, rotate in and curl
      14. L. upper leg
      15. L. lower leg
      16. L. foot
      17. Answer questions and assure understanding.

  D. Relaxation Exercise: S1___ S2___ S3___
     1. Relaxation Tape
     2. Cued breathing
     3. Countdown
     4. Debrief on sensations, images, thoughts, individual exercises.
     5. Explain home relaxation sheet and distribute.
     6. Inform about telephone call.
     7. Encourage home practice.
     8. Establish next appointment in seven days.
     9. Distribute Relaxation Monitoring Scale, Home Relaxation Sheet, and Relaxation Tape I.

II. Phone Contact; 2 days following first appointment:
    S1___ S2___ S3___

  A. Review frequency--resolve problems that prevent home practice.
  B. Review conditions--resolve any contextual conditions that disrupt home practice.
  C. Review--sensations, images, and thoughts; home relaxation sheets.
  D. Encourage continued practice, emphasize its essential contribution to subsequent training and final outcome.

III. Session 2

  A. Review Home Practice: S1___ S2___ S3___
     1. Consider context: time, setting, distractions, i.e., facilitating and disruptive conditions.
     2. Consider circumstances that prevented practice and remediate.
     3. Review use of cued breathing.
     4. Encourage continued practice and use of cued breathing practice at home.

Relaxation Group
Page 3

   B. Establish seven muscle groups and tensing procedures:
       S1___ S2___ S3___
       1. D. arm-fist clenched, elbow at 45°
       2. N.D. arm
       3. Face-grown, squint, curl corners of mouth, tongue, grind
       4. Neck, shoulders, chest, upper back
       5. Abdomen: upper, lower, and sides
       6. R. leg
       7. L. leg

   C. Relaxation Exercise: S1___ S2___ S3___
       1. Relaxation Tape
       2. Cued breathing
       3. Countdown

   D. Debrief: S1___ S2___ S3___
       1. Sensations of relaxation with seven muscles--inform S
           that with dedicated practice they will become as skilled
           with 7 as they are with 16.

   E. Home Practice: S1___ S2___ S3___
       1. Encourage use of exercises and cued breathing twice
           daily.
       2. Encourage use of cued breathing before meals for in vivo
           practice and facilitate digestion.
       3. Distribute home relaxation sheets and explain;
           Relaxation Tape II.
       4. Inform about telephone call.
       5. Establish next session date and time.

IV. Home Phone Call: S1___ S2___ S3___

   A. Discuss Relaxation Practice.
   B. Discuss use of cued breathing at meal time.
   C. Reaffirm next appointment.

 V. Session 3

   A. Review Home Practice: S1___ S2___ S3___
       1. Context.
       2. Frequency of practice.
       3. Review home relaxation sheets.

   B. Review cued breathing at meal time: S1___ S2___ S3___
       1. What can facilitate remembering doing this?

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Page 4

  C. Relaxation Exercises: S1___ S2___ S3___
    1. Establish exercises.
     a. arms
     b. face and neck
     c. torso
     d. legs
    2. Relaxation Tape II
    3. Cued breathing
    4. Countdown

  D. Debriefing: S1___ S2___ S3___

  E. Self-directed relaxation exercises: S1___ S2___ S3___

  F. Home practice: S1___ S2___ S3___
    1. Twice daily exercises with and without tape.
    2. Cued breathing at
     a. meal time
     b. times of tension-somatic and affective.

  G. Establish next appointment: S1___ S2___ S3___

  H. Distribute home practice sheet, Practice Tape III.

VI. Session 4

  A. Review home practice: S1___ S2___ S3___
    1. Exercises
    2. Mealtime cued breathing
    3. Tension associated cued breathing
     (Therapist, place skin temperature probe on S's hand)

  B. Relaxation through recall (Chapter 8): S1___ S2___ S3___
    1. Rationale
    2. Procedure
    3. Implementation (Tape IV)
    4. Summary
    5. Review
    6. Cued breathing
    7. Countdown
    8. Debreifing
    9. Have S self-administer conditioned relaxation

  C. Mealtime cued breathing: S1___ S2___ S3___

  D. Application of cued breathing with menstrual distress:
    S1___ S2___ S3___
    1. Use at initial signs of distress.

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2. Interpret initial signs of distress as "relaxation signals" instead of pain.
3. Anticipate some failures.
4. Anticipate improved skills with practice.
5. If possible, use cued breathing instead of medication.
6. Imaginative practice in evening of previous day's experiences.

Distribute home practice sheet.

SUSAN JONES CARCELLI
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Brigham City, Utah 84302

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Home: (801) 734-9345

Education   UTAH STATE UNIVERSITY

9/76 to   Ph.D. awarded June, 1985 in American Psychology Asso-
1/85   ciation approved program in Professional-Scientific
                 Psychology. M.S. awarded June, 1979. Program
                 includes courses in psychological testing and assess-
                 ment, diagnosis, statistics, research design, neuro-
                 psychology, clinical and consultation skills, and has
                 a strong emphasis in practica experience. Cumulative
                 GPA: 4.0. Dissertation title: A Comparison Between
                 Desensitization and Relaxation Training in the Treat-
                 ment of Primary Dysmenorrhea.

                 UNIVERSITY OF CALIFORNIA, DAVIS

3/72 to   Undergraduate major: Psychology. Strong background
3/76   in behavioral, social, and comparative psychologies.
                 B.A. (with honors) awarded March, 1976. Extracurric-
                 ular activities included: residence hall advising,
                 pregnancy counseling (Planned Parenthood), research.

Experience   ASSOCIATE PSYCHOLOGIST, BEAR RIVER MENTAL HEALTH SERVICES,
                 INC., BRIGHAM CITY, UTAH

10/82 to   Clinical duties involve outpatient individual, mari-
present   tal, family, and group psychotherapy, psychological
                 evaluations, social skills building class for chron-
                 ically mentally ill, liaison work with inpatient unit,
                 24-hour crisis intervention. Serve on multi-agency
                 incest and sexual abuse team. Present speeches to
                 community groups, articles to local newspapers. Rural
                 mental health setting allows for broad range of clini-
                 cal and professional experiences. Was selected to
                 participate in three-week training program at Foun-
                 tainhouse, New York, to develop a vocationally-based
                 program for the long-term mentally ill.

                 EXTERN, BEAR RIVER MENTAL HEALTH CENTER, LOGAN, UTAH

9/81 to   Performed outpatient psychotherapy for individuals,
9/82   couples, and groups. Team member of chronic popula-
                 tion treatment program. Provided educative presenta-
                 tions to community/ religious groups, media, center
                 staff. Participated in staff peer reviews and treat-
                 ment goals development; 25 hours per week.

SUSAN JONES CARCELLI - Page 2

INTERN, UNIVERSITY OF ARIZONA COLLEGE OF MEDICINE, TUCSON, ARIZONA

7/80 to
6/81

Duties involved four rotations: (1) inpatient (4 months) included primary responsibility for 3-5 inpatients, participation in team management of ward; (2) outpatient (4 months) included psychotherapy with 8-11 adult outpatients/week, participation in interdisciplinary case conference; (3) child (4 months) included family therapy, participation in interdisciplinary diagnostic clinic, consultation with pediatric ward and outpatient clinic; (4) community (8 months concurrent with outpatient and child) included program evaluation and consultation with community mental health facilities. Provided psychiatry consultation for medical center emergency room physicians (10 months).

TEACHING ASSISTANT AND LECTURER, PSYCHOLOGY DEPARTMENT, UTAH STATE UNIVERSITY, LOGAN, UTAH

7/79 to
6/80

Developed and implemented new curriculum for undergraduate developmental psychology course. Taught the course winter and spring quarters, 1980. Average enrollment per quarter: 60 students; 25 hours per week.

INTERN, COUNSELING CENTER, UTAH STATE UNIVERSITY

10/78 to
6/79

Performed University Counseling Center duties, including individual and group personal counseling, career counseling, and crisis counseling; 20 hours per week.

THERAPIST AND MILIEU STAFF, HILLSIDE SCHOOL, LOGAN, UTAH

7/77 to
9/78

Demonstrated ability in group and individual psychotherapy with emotionally disturbed adolescents in a private behaviorally-oriented residential school; 10 hours per week.

PRACTICUM STUDENT, CLINICAL SERVICES, EXCEPTIONAL CHILD CENTER, UTAH STATE UNIVERSITY

10/77 to
3/78

Obtained training on and ultimately served as case coordinator of a multi-professional team involved in diagnosis and assessment of children with emotional, developmental, and academic problems; 10 hours per week.

SUSAN JONES CARCELLI - Page 3

COUNSELOR, CAMP WEDIKO, HILLSBOROUGH, NEW HAMPSHIRE

6/76 to
8/76

Performed counseling duties fifteen hours daily in an intensive therapeutic milieu. Wediko is a therapeutic summer camp for emotionally disturbed boys, ages eight to eighteen, and is affiliated with the Judge Baker Guidance Center, Boston, Massachusetts.

Papers

A comparison between desensitization and relaxation training in the treatment of congestive and spasmodic dysmenorrhea. Paper presented at the Biofeedback Society of America, Fifteenth Annual Meeting, Albuquerque, New Mexico, March, 1984.

Awards

Phi Kappa Phi, 1979
Outstanding Young Woman of America, 1979
Utah State University Research Fellowship, 1976
American Field Service Scholarship (New Zealand), 1971-72
Fountainhouse Training Award, 1984

Organizations

American Psychological Association
Utah State University Alumni Association
National Organization for Women
Box Elder County Association for Psychotherapists

References

Provided upon request.