STARS

University of Central Florida
STARS

Retrospective Theses and Dissertations

1987

Treatment of Chronic Nightmares Using Progressive Relaxation Training

Jennifer R. Trefonas
University of Central Florida

Find similar works at: https://stars.library.ucf.edu/rtd
University of Central Florida Libraries http://library.ucf.edu

This Masters Thesis (Open Access) is brought to you for free and open access by STARS. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of STARS. For more information, please contact STARS@ucf.edu.

STARS Citation
Trefonas, Jennifer R., "Treatment of Chronic Nightmares Using Progressive Relaxation Training" (1987). *Retrospective Theses and Dissertations*. 4987.
https://stars.library.ucf.edu/rtd/4987

University of Central Florida
STARS
Showcase of Text, Archives, Research & Scholarship

UNIVERSITY OF CENTRAL FLORIDA

OFFICE OF GRADUATE STUDIES

THESIS APPROVAL

DATE: July 13, 1987

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION

BY Jennifer R. Trefonas

ENTITLED "Treatment of Chronic Nightmares Using Progressive Relaxation Training"

BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE

DEGREE OF Master of Science

FROM THE COLLEGE OF Arts and Sciences

Bernard Jensen

Bernard J. Jensen
Supervisor of Thesis

RECOMMENDATION CONCURRED IN:

John M. McGuire
Coordinator of Degree Program

Phillip M. Fell, PhD

Thomas A. Guest PhD

COMMITTEE ON FINAL EXAMINATION

Louis M. Trefonas
Dean of Graduate Studies

TREATMENT OF CHRONIC NIGHTMARES USING PROGRESSIVE RELAXATION TRAINING

BY

JENNIFER RUTH TREFONAS
B.A., University of Florida, 1983
B.A., University of Central Florida, 1985

THESIS

Submitted in partial fulfillment of the requirements for the
Master of Science degree in Clinical Psychology
in the Graduate Studies Program
of the College of Arts & Sciences
at the University of Central Florida
Orlando, Florida

Summer Term
1987

ABSTRACT

This study investigated the effects of progressive muscle relaxation on the frequency of, and the anxiety associated with, chronic nightmares. Three female subjects diagnosed as suffering from an anxiety disorder and who experienced at least two nightmares per week served as subjects. Treatment consisted of practicing progressive relaxation training twice daily with the assistance of a tape-recorded exercise. The first practice occurred prior to 3:00 p.m. and the second practice occurred before retiring at night. Subjects recorded nightmare frequency, intensity, and theme on the Daily Nightmare Questionnaire (DNQ). In addition, nightmare-associated anxiety was measured daily with the State Trait Anxiety Inventory (STAI). Both DNQ and STAI data were collected daily via the telephone. The study utilized a multiple baseline strategy across subjects, and all subjects showed a decline in both nightmare frequency and state and trait anxiety levels. A mean reduction of .96 nightmares per week resulted. This study demonstrated that a basic relaxation exercise, which does not address possible intrapsychic variables, was effective in nightmare reduction through a reduction in levels of anxiety.

TABLE OF CONTENTS

INTRODUCTION

Nightmares, as defined by Kales et al. (1980), are nocturnal episodes of intense anxiety and fear associated with a vivid and emotionally charged dream experience which usually, but not always, results in the spontaneous awakening of the dreamer. Bixler, Kales, Solbatos, Kales, and Healy (1979) have determined that they occur in 5.3% of adults. Nightmares usually occur during the last two-thirds of sleep and are associated with REM sleep. Mean frequency of occurrence for nightmare sufferers appears to be approximately 2½ nightmares per week. Ninety percent of nightmare sufferers report that mental stress will increase this frequency. Eighty-three percent of nightmare sufferers have recurring nightmares which are usually associated with a specific fear (or specific fears) (Kales et al., 1980). Haynes and Mooney (1975) report the distribution of specific nightmare themes as follows: helplessness -- 47%, falling -- 29%, feelings of anxiety -- 21%, death -- 21%, rejection -- 18%, physical assault -- 16%, attack by animals -- 14%, failure -- 13%, injury -- 11%. Chronic nightmares in children have been speculated to result from neurophysiological changes related to the maturing of the brain during specific phases of growth (Mack, 1965). In adults, the persistence of nightmares from childhood may be associated with serious psychopathology. In addition, the spontaneous appearance of nightmares has been correlated with a major life event in 60% of sufferers (Kales et al., 1980).

Clinically, the most common correlates of nightmares are other sleep disorders. Hersen (1971) reports that insomnia is the most

frequently associated sleep disorder (43%), followed by sleeptalking (33%), sleepwalking (17%), and night terrors (7%). Psychophysiologically, Haynes and Mooney (1974) found that these disruptions of sleep patterns including nightmares are associated with above average elevations of resting electromyograms (EMG). These EMG elevations have also been found to be positively associated with elevations on the Manifest Anxiety Scale (MAS) (Taylor, 1953). Psychometric tests other than the MAS have failed to show consistent and unequivocal evidence of any significant pattern of psychopathology in nightmare sufferers. Besides the MAS, other questionnaires administered to nightmare patients have included: the Profile of Mood States (McNair, Lorr, & Droppelman, 1971); Questions Relative to Death (Feldman & Hersen, 1967); Ego Strength Scale (Baron, 1953); and the Fear Scale (Geer, 1967). Miller and DePilato showed evidence of generalized tension/anxiety on the Profile of Mood States among nightmare sufferers, and Hersen (1971) reported that there was a significant relationship between nightmare frequency and conscious concern about death. Likewise, he reported that nightmare sufferers had lower than average ego strengths. There was, however, no significant elevation of fear as measured by the Fear Scale.

A frequently used questionnaire which does not appear to have been administered to nightmare sufferers is the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch & Lushene, 1970). Following a thirteen-year review of the literature, this author was unable to locate any specific measurement of nightmare related anxiety with the STAI. A literature review was also unsuccessful at finding results comparing the STAI and the Manifest Anxiety Scale, the inventory which has been used

to monitor and measure nightmare-related anxiety. Therefore, the STAI appears to be an untested inventory in nightmare research and was the measure of anxiety used in this study.

Not only is the STAI useful as an index of individual anxiety levels, as an aid to clinical screening for anxiety-prone individuals, and as an indicator of current anxiety levels for therapy considerations, it is also a research tool. The twenty-item, paper-pencil inventory tests two aspects of anxiety, state (A-State) and trait (A-Trait). State anxiety may be regarded as a transient state at a given moment in time that exists at a particular level of intensity which is generally situationally influenced (Spielberger, 1970). Trait anxiety, in contrast to transitory A-State, is relatively enduring, is usually acquired during childhood, and is situationally activated (Campbell, 1963). It is, therefore, easy to see how both trait and state anxieties are intertwined on the STAI; the A-State is measured by asking the individual to indicate how they "feel at a particular moment in time," and the A-Trait inquires if such a feeling has persisted over time (Spielberger, 1970).

Since publishing the test manual in 1970, more than 2,000 studies using the STAI have appeared in the literature. They have included research conducted in the fields of medicine, dentistry, education, psychology, and other social sciences (Speilberger, 1983). The field of topics range from participating in experiments involving humans (Mullner & Sebej, 1980), to hypertension, headaches, and locus of control (Sherman, 1982). In this study, the STAI was utilized to measure anxiety prior to and during the treatment of chronic nightmares.

Even though the occurrence of nightmares in psychiatric and non-psychiatric populations has long been a subject of interest and research in psychology (Cason, 1935), surprisingly little research and very few direct attempts at therapeutic intervention have been conducted (Hersen, 1972). Initial therapies were psychodynamic in orientation and involved either traditional psychotherapy or the use of methods such as hypnosis in order to resolve some inferred, often unconscious complex or trauma (Gleitman, 1984). As frequently cited, traditional psychotherapy has intrinsic drawbacks: it is expensive, long in duration, often non-directive in nature, frequently emotionally painful, and quite often no more effective than no treatment at all (Eysenck, 1952).

Besides traditional psychotherapy, a variety of other, often less conventional techniques have been utilized for the treatment of nightmares: drawing therapy for children emphasizing the venting of associated fears (Hunyaby, 1980, 1984); drug treatment with sedatives for nightmares occurring during non-REM sleep (Fisher, Kahn, Edwards, & Davis, 1973); improving family interaction and communication (Farmer & Sanders, 1980); and even increasing the dreamers lucidness so that with awareness the individual is dreaming, they may actually alter the nightmare while sleeping (Halliday, 1982).

The assumption that nightmares are associated with specific or generalized fears or anxieties has prompted the successful treatment of nightmares with behaviorally oriented therapies (Haynes & Mooney, 1975). Geer and Silverman (1967) provided the first published report of the successful treatment of a recurrent nightmare using a modified version of systematic desensitization. Successive parts of a nightmare dream

involving violent attack were incorporated into a hierarchy and the client was instructed to say to himself, "It's just a dream" upon feeling anxious. Subsequently, Silverman and Green (1968) reported the elimination of a falling nightmare by desensitization treatment of a related bridge phobia. Cautela (1968) also employed short-term desensitization in three subjects with disturbing dreams. More recently, Haynes and Mooney (1975) reported the first successful use of implosive therapy in treating four female undergraduates who had disturbing nightmares related to rape, physical aggression, and rejection.

Haynes and Mooney (1975) hypothesize that nightmares have an anxiety-reducing function. That is, nightmares may facilitate the extinction of anxiety experienced during the day through repeated cognitive exposure to the fear-producing stimuli. During a nightmare, the individual is exposed to intense feal-eliciting scenes with accompanying physiological reactions. Therefore, prolonged or intense nightmares involving fear stimuli should effect a reduction in the physiological responses to those stimuli (i.e., anxiety). Cason (1935) reported that nightmares are frequently terminated by the dreamer's awakening before the anticipated or logical conclusion. Although awakening during the nightmare may occur because the elevated physiological arousal accompanying nightmares (Gestant & Broughton, 1965) is incompatible with sleep (Monroe, 1967), awakening may also be conceptualized as an escape-response from the aversive properties of the nightmare. Haynes and Mooney (1975) maintain that awakening would not only prohibit extinction but even have a tendency to increase nightmare

frequency and the associated nervousness/anxiety (physiological arousal) as measured by such scales as the STAI. If nightmares do serve an anxiety-reducing function and through nocturnal awakenings this function is interrupted thus precipitating further anxiety, perhaps a more reasonable treatment avenue would be to reduce the daily anxiety and stress which is displaced at night through dreams. A behavioral procedure which has proved highly successful in treating anxiety and its related ailments is Progressive Muscle Relaxation.

Progressive Muscle Relaxation Training (PRT) was first described by Jacobson in 1929 as a physiologic approach to the treatment of tension and anxiety. Jacobson theorized that since anxiety was usually accompanied by muscle tension, the subjective experience of anxiety might be alleviated by muscle relaxation.

A unique characteristic of PRT is that it enables individuals to exert control over their own symptoms. PRT involves the systematic tensing and relaxing of a number of muscle groups. The purpose of this activity is to provide individuals with the contrasting experience of tension and relaxation, enabling them to discriminate between the two states. Despite many theories, the mechanism of action of PRT is inconclusive. It has been shown to decrease autonomic nervous system activity, skeletal neuromuscular activity, and the subjective experience of anxiety (Rona & Hugh, 1980). It is also associated with an increase in alpha brain wave activity suggesting direct effects on the Central Nervous System (Kymia, 1968). PRT has some clear advantages over pharmacologic approaches to the symptomatic relief of chronic anxiety as

it can be practiced indefinitely without side effects or physiological dependence (Carney, 1983).

Jacobson's original findings were largely ignored until the 1950s, when Joseph Wolpe (1958) isolated muscle relaxation as the physiologic state least compatible with anxiety and developed systematic desensitization for the treatment of phobias. In the late 1960s, adjunctive PRT was developed for those people who suffered from generalized anxiety disorders which did not respond to systematic desensitization. The success of PRT was substantiated with the advent of EMG biofeedback technology (Carney, 1983). PRT appears to be particularly effective for anxiety and stress and those ailments which arise from them. Leboeuf and Lodge (1980) found that PRT was as effective as EMG biofeedback in the reduction of chronic anxiety as measured by the Hamilton Anxiety Scale. deBerry (1981) determined that 10 weeks of PRT was successful in reducing stress related symptoms such as state and trait anxiety, muscle tension, insomnia, nocturnal awakenings, and headaches within a geriatric population.

In stress-related disorders of the circulatory-endocrine systems PRT has also found applications. Lammers et al. (1984) discovered that six weeks of relaxation treatment produced significant decreases in blood glucose in those patients suffering from stress-influenced diabetes. Pender (1984) showed that PRT produced significant decreases in diastolic blood pressure and heart rate in patients with essential hypertension.

Chronic pain has also responded well to PRT. Blanchard (1985) found that PRT in conjunction with EMG and thermal biofeedback resulted

in a 52% reduction of migraine and scalp muscle contraction headaches. Sanders (1983) found that PRT contributed most to overall improvement in patients with chronic lower back pain, and PRT has also been effective in reducing the pain of spasmodic dysmenorrhea (Mathur, 1983).

Insomnia and nocturnal awakenings, two of the most commonly associated features of nightmares have also been reduced through PRT. Borkovec, Kaloupek, and Slama (1975) found that PRT significantly reduced the time for patients to fall asleep and deBerry (1981) was able to produce a reduction in nocturnal awakenings in geriatric patients using PRT. However, following a 15 year search of the literature, the author was unable to isolate research that has utilized conventional PRT specifically for the amelioration of nightmares through the reduction of daily stress. However, as previously mentioned, elements of PRT have been incorporated into forms of systematic desensitization which concentrate upon the dream itself or an accompanying phobia (Cavior & Deutsch, 1975; Silverman & Geer, 1968).

The present study used only PRT to treat nightmares, with the method standardized across subjects. Participants were directly instructed in the method and practiced at home with a pre-recorded exercise (audio-cassette tape). Hillenberg and Collins (1983) clearly showed that patients who practiced PRT at home significantly reduced anxiety and stress over those subjects who merely performed PRT with the experimenter. Likewise, the effectiveness of utilizing a tape-recorded exercise in reducing generalized anxiety and tension was demonstrated by Sherman (1982).

Anxiety which has been successfully treated with PRT has been isolated and quantified with the STAI. Sherman (1983), in his research on tape-recorded PRT, utilized the STAI as a pre-treatment measure in order to isolate stress levels in diabetic males. Blanchard et al. (1985) used the STAI as part of a test battery for isolating tension in chronic headache sufferers.

Nightmare frequence in this study was quantifiably measured with the author-generated, self-recorded Daily Nightmare Questionnaire (DNQ), which is derived from Haynes and Mooney, (1975) and Cellucci and Lawrence (1978). This instrument specifically measured nightmare frequency, intensity, and whether or not the dream resulted in an awakening. An area was also provided for comment on theme. The methodology for this study was a multiple baseline design across subjects with continuous, multi-method assessment.

The case study method is the clinical base for the experimental study of single cases. This method was the primary quasi-experimental design of clinical investigation through the first half of the twentieth century and it retains an important function in present day applied research (Bolger, 1965). An example of the early use of the design was by Watson and Rayner (1920) in their study of an analogue of clinical phobia in a young boy (Little Albert). A successful clinical case study shows that a treatment produced demonstratable effects on an observable behavior disorder (Hersen & Barlow, 1976). A case study can be conceptualized as a simple and direct type of psychological investigation. It is an in-depth examination of a single person to discover specific problems, questions, or issues.

Even though Leitenberg (1973) argues that the case study may not be capable of isolating the therapeutic mechanisms of change and has difficulty in discriminating the critical difference between an uncontrolled case and the experimental study, the design makes important contributions to experimentation. Case studies apply the empirical method to investigate treatment effects. Pre-treatment hypotheses are formed and then tested with repeated measures. These measurements can be made using a pre-existing or newly-generated instrument to obtain objective data. Utilizing a baseline strategy, a subject can serve as their own control. Gentile (1982) argues that single subject repeated measures designs may be more powerful than randomized group studies since they take advantage of psychological "context" and "contrast" effects and provide functional relationships which arise in clinical and educational research. Additionally, the case study is useful in investigating fairly uncommon phenomena (Dukes, 1965). Certainly, the new application of a treatment such as progressive relaxation to chronic nightmares which occur in only 5.3% of the adult population necessitates the use of the case study design.

The two basic types of single case experimental design include: repeated measurement designs and multiple baseline designs. Repeated measurement designs are procedures which involve the sequential introduction and withdrawal of treatments. Ethical and practical issues inherent to sequential withdrawal or reversal case study designs warranted the development of multiple baseline designs first described by Baer, Wolf, and Risley (1968). With this technique, either a number of behaviors are identified and measured over time or in different

settings for a single individual, or one behavior is identified and measured over several individuals. These are referred to as multiple baselines across behaviors, settings, and subjects, respectively. With these baselines established, the experimenter then applies an experimental variable to one of the behaviors or subjects and looks for a change. Once a change occurs in a behavior or subject, the experimenter applies the same experimental variable to another target behavior or subject. Cipani and McLaughlin (1980) argue that multiple baseline studies are promising since they demonstrate client behavior change, validate the efficacy of the treatment procedure, and reduce the gap between the participating clinician and the clinical researcher.

Hall, Cristler, Cranston, and Tucker (1970) used the multiple baseline design across behaviors to assess the effect of an early bedtime contingency on the amount of time spent in extra-curricular activities for a 10 year-old, fourth-grade girl. Allen (1973) successfully utilized the strategy across settings on a minimally brain damaged eight-year-old boy who suffered from bizarre verbalizations. The occurrence of the behavior was measured across four separate summer camp activities prior to and following the introduction of a treatment (ignoring) by the counselors. In addition, Hall, Cristler, Cranston, and Tucker (1970) combined the multiple baseline strategy across settings with the withdrawal design in a fifth-grade student's tardiness following recess.

In a multiple baseline design across subjects, Liberman, Teigen, Patterson, and Baker (1973) increased the amount of rational speech in chronic paranoid schizophrenics through social reinforcement during four

10-minute daily interview sessions with a member of the nursing staff. In addition, the effects of contingent radio music on acceptable levels of classroom noise in seventh and eighth graders was conducted by Wilson and Hopkins (1973).

More recently, the multiple baseline design was utilized by Cuvo (1979) for evaluating the instructional programs used with mentally retarded individuals. Kelly (1980) used the strategy to establish an experimental control group for single group social skills enhancement. McLaughlin (1983) found multiple baselines to be superior to five other single subject designs for research in school settings. Thus, there is ample support for the use of multiple baseline approaches.

A multiple baseline design across subjects was used in this study since progressive relaxation treated only one behavior, chronic nightmares, which occurs only during sleep. Subjects established pre-treatment baselines with the Daily Nightmare Questionnaire and the State Trait Anxiety Inventory. Following baseline stablilization, PRT treatment was initiated for the first subject. Upon responsiveness, the next subject began treatment until all subjects had received treatment.

The specific hypotheses of this study were: 1) Does PRT produce a reduction in STAI scores? 2) Does PRT produce a reduction in nightmare frequency?

METHOD

Subjects

Three female psychiatric patients with a diagnosed anxiety disorder participated in this study. They were solicited from Orlando Regional Medical Center. Perspective subjects were contacted by the experimenter via telephone, and the telephone interview confirmed suitability for participation. Each subject had a previously diagnosed anxiety disorder and was on identical medication (Xanax). Subjects' ages were: 37, 51 and 29, respectively.

Assessment Measures

Nightmare frequency and intensity were recorded on the author-generated Daily Nightmare Questionnaire (DNQ) (Appendix A). The author-generated form specifically measured frequency of nightmares, the associated level of anxiety of the nightmare rated (on a 1 to 10 point scale), as well as whether or not an awakening occurred. A space was also provided for comment on the theme or content of the nightmare.

Anxiety, which is commonly associated with nightmares, was measured daily before, during, and after treatment with the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1970) (Appendix B).

This study utilized both scales of the STAI for the purposes of measuring existing anxiety which may lead to nightmares and to monitor the possible reduction in anxiety which may occur during PRT treatment. Subjects were administered daily STAIs prior to and during PRT training.

Procedure

The initial telephone interview assessed nightmare frequency and explained the nature of the research. The subjects were informed that the treatment was being conducted by a University of Central Florida (UCF) Master's Candidate in clinical psychology; that the method was experimental; that treatment was offered at no cost; that all aspects of the program were confidential; and that participation could be terminated at any time without prejudice.

The subjects then met individually with the experimenter for approximately 90 minutes. The study's nature was reintroduced and the treatment program and assessment measures explained. Subjects were then asked to sign a consent form (Appendix C), and each subject was administered the STAI. During treatment, the STAI was administered daily to subjects via telephone by the experimenter's assistant.

Subject's were each instructed individually in the use of progressive relaxation on two separate occasions within the first week of treatment. Progressive relaxation (PRT), derived from Borkovec (1973), served as treatment. The PRT exercise was recorded on a standard audio cassette tape, and the experimenter evaluated the subject's understanding of the procedure and made corrections when necessary. Each subject received an audio cassette containing the PRT technique for use during treatment.

Subjects were instructed to use the PRT method twice a day: the first prior to 3:00 p.m. and the second before retiring at night. Subjects provided information concerning nightmare frequency and intensity on the DNQ. DNQs were also administered daily via the

telephone (by the experimenter's assistant) along with the STAIs. The duration of the investigation was eight weeks, permitting all three subjects to complete treatment.

RESULTS

State and Trait Anxiety Patterns

Figure 1 shows the levels of state (situational) and trait (general) anxieties evidenced by the three subjects. The time scale is averaged across two-day intervals. For each subject, data was taken for at least a two week pre-intervention period to establish a baseline across subjects. Following PRT intervention, data was continued on each subject for a period of two to six weeks (variation occurred due to the nature of the multiple baseline design and scheduling difficulties).

During the baseline periods, the levels of anxiety for each subject showed varying patterns. For subject 1, both the state and trait anxieties showed a slight rise with a variation of +/-6% (Figure 1). For subject 2, again both state and trait anxiety level have a 5% variation and the state anxiety level shows a 10% variation (Figure 1). In the case of subject 3, the trait anxiety level showed a slight decline with a variation of less than 4%, whereas the state anxiety level varied so randomly that it was impossible to decide on a trend as to assess a percentage level in this pre-treatment section (Figure 1).

Following PRT intervention, all subjects showed a decline in both the state and trait anxiety levels. For subject 1, the state anxiety level paralleled the trait anxiety level although both declines were relatively moderate. For subject 2, a similar decline was observed with the state anxiety level being the more precipitous of the two. The

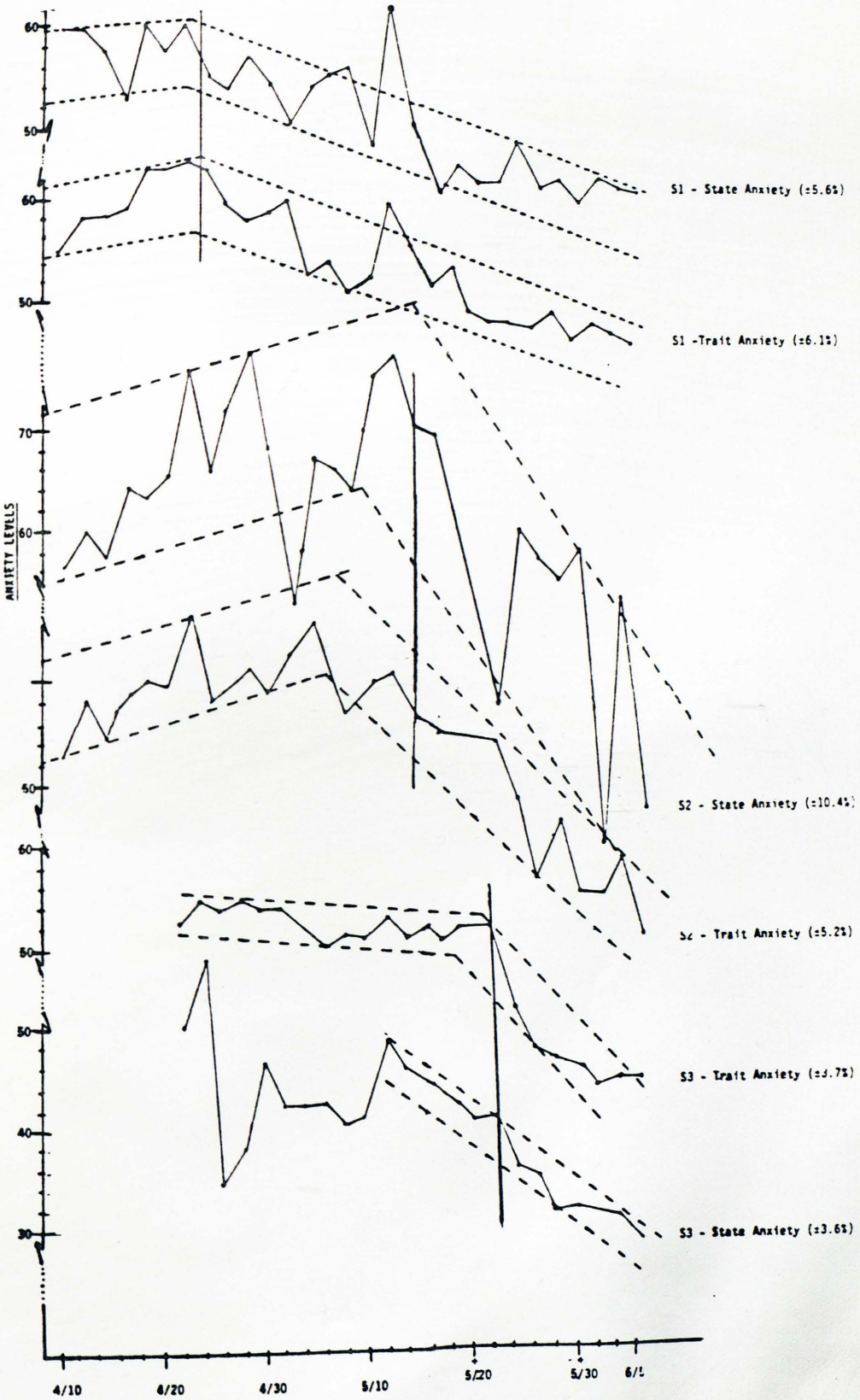

Figure 1. State and Trait Anxiety Levels Based on Trends, Ranges and % Spread for S1-S3.

drops in anxiety for subject 2 were much more pronounced than in subject 1. In the case of subject 3, both anxiety patterns showed a steep decline, however, subject 3's trait anxiety level dropped at a faster rate than did the state anxiety level.

Nightmare and Morning Anxiety Levels

Table 1 summarizes the effects of PRT on the three subjects suffering from chronic nightmares. For each subject, post-treatment data indicated a noticeable drop in the mean frequency of nightmares per week. A 17% drop in the weekly mean frequency of nightmares for subject 1 followed PRT intervention. Subject 2 had a similar response to PRT intervention with a 19% drop in the weekly mean frequency of nightmares occurring. Subject 3 showed the least dramatic response to PRT intervention, displaying only a 6% drop in the weekly mean frequency of nightmares.

An additional measure of treatment effectiveness, wherein subjects reported their anxiety levels upon awakening, was used to corroborate the nightmare data. Table 2 compares the pre- and post-intervention mean weekly levels of anxiety for the three subjects and reinforces the conclusion that a decline of anxiety level occurred in all three cases after PRT intervention. Moreover, the percentage drop when measured this way was much greater than that found in the nightmare data. Subject 1 showed the smallest percentage drop (19%), followed by subject 2 (22%), while the largest percentage drop was shown by subject 3 (42%).

T A B L E 1

NIGHTMARE SUMMARY RESULTS

SUBJECT	NUMBER OF WEEKS	MEAN FREQ. PER WEEK	NIGHTMARE PERCENTAGES
Pre-Treatment	2	6.5	93
S-1			
Post-Treatment	6	5.3	76
Pre-Treatment	5	1.8	26
S-2			
Post-Treatment	2	0.5	7
Pre-Treatment	5	1.4	20
S-3			
Post-Treatment	2	1.0	14

T A B L E 2

MORNING ANXIETY LEVELS

SUBJECT	MEAN WEEKLY LEVELS		PERCENTAGE
	Pre-Treatment	Post-Treatment	IMPROVEMENT
S-1	4.55	3.67	19
S-2	4.76	3.70	22
S-3	4.39	2.53	42

DISCUSSION

The results indicate that the application of PRT intervention techniques to nightmare sufferers can be a useful form of treatment. All three subjects showed a decline in both state and trait anxiety levels following PRT intervention. The number of nightmares suffered by each subject was also reduced. Previous investigators have hypothesized a causal link between anxiety and nightmares. Nightmares have been postulated to have an anxiety-reducing function (Haynes & Mooney, 1975). Conversely, it has been reported that 90% of nightmare sufferers indicate that mental stress increases the frequence of nightmares (Bixler, Kales, Solbatos, Kales & Healy, 1979).

Behaviorally oriented therapies have been used in the past under the assumption that nightmares are associated with specific and/or generalized fears and anxieties (Cautela, 1968; Geer & Silverman, 1975; Haynes & Mooney, 1975; Silverman & Green, 1968). Based on the results of this study, PRT shows promise of being a highly successful behaviorally oriented therapy for the treatment of nightmares.

State and trait anxiety patterns showed the same overall trend for all three subjects following intervention. This is to be expected, since the state anxiety is usually situationally influenced (Spielberger, 1970) and the trait anxiety is situationally activated (Campbell, 1963). However, within each subject a wide variance was observed in comparing the relative rates of decline between state and trait anxieties, post-PRT intervention.

For subject 1, both state and trait anxieties dropped at parallel rates, indicating that for this subject, the STAI questionnaire does not distinguish between transiently induced anxiety (state) and relatively enduring, but situationally activated anxiety (trait).

One can also contrast the individualistic variations in the patterns for subject 2 and subject 3. From these results, comparisons regarding the effect of PRT intervention on both mean weekly anxiety frequencies and morning nightmare anxiety levels can be made and the results can be compared on the basis of behavioral variations within each subject.

For subject 2, state anxiety dropped at a noticeably steeper rate than did trait anxiety. Subject 2 also had a rising anxiety level (by both modes of measurement) during baseline, or pre-intervention testing. Such an individual thus seems to be more susceptible to anxieties generated by the immediate situation. One would predict that PRT would have the most pronounced effect on nightmares (a daily occurrence) in this type of subject. The drop in percentage of nightmares per week (from 26 to 7) supports this prediction. On the other hand, since the transient anxiety (state) is most heavily influenced, one would predict that anxiety levels measured over a longer term (mean weekly levels) would not show a pronounced improvement level (22% improvement level found).

For subject 3, on the other hand, post-PRT intervention trait anxiety dropped at a much faster rate than did state anxiety. During the baseline period, long-term and deep-seated anxieties show a gradual decline, perhaps in anticipation of the proposed and forthcoming PRT

intervention. State anxiety levels, on the other hand, fluctuated until shortly before intervention (approximately 10 days), and then, in a placebo-like response, began the decline rate which continued after intervention.

For this type of an individual, one would predict that PRT would have the most pronounced effect on long-term anxiety levels. The mean weekly anxiety levels for subject 3 showed a 42% improvement (in contrast to 22% for subject 2). The potentially daily occurrences, the nightmares, which should be affected to a lesser degree showed a drop in percent of nightmares per week from 20% to 14% (in contrast to a 26% to 7% drop for subject 3).

Thus, it was discovered that a tremendous amount of individual variation existed in the STAI results. Before effectiveness can be completely concluded, future investigators should involve a larger number of subjects. In the present study, all three subjects showed pronounced individual variations. These individual variations need to be more clearly delineated and the number of types of individuals more specifically defined. Furthermore, a follow-up study on the three subjects involved should be made to see if post PRT intervention improvement progresses, stabilizes, or regresses.

Improvements on this multiple baseline study should be developed which could accurately predict into what type of category each subject could be placed. Results could then be predicted as to post-PRT responsiveness.

However, despite the individual variability in response to treatment, all subjects demonstrated a similar reduction in anxiety

levels and in nightmare frequency suggesting that PRT was a successful intervention method in the treatment of nightmares and their related anxieties.

APPENDIX A

DAILY NIGHTMARE QUESTIONNAIRE

WEEK _____

_____ (Day)	_____ (Month)	_____ (Year)	NIGHTMARE		RECURRENT		AWAKENING	
			___ yes	___ no	___ yes	___ no	___ yes	___ no

Anxiety Level at Awakening

1	2	3	4	5	6	7
none	very little	a little	some	much	very much	extreme

BRIEF DESCRIPTION OF CONTENT _____

_____

APPENDIX B

SELF-EVALUATION QUESTIONNAIRE

Developed by C.D. Spielberger, W. L. Gorsuch and R. Lushene

STAI Form X-1

NAME_____DATE_____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate block to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Some what	Moder-ately so	Very much so
1. I feel calm	[ ]	[ ]	[ ]	[ ]
2. I feel secure	[ ]	[ ]	[ ]	[ ]
3. I am tense	[ ]	[ ]	[ ]	[ ]
4. I am regretful	[ ]	[ ]	[ ]	[ ]

	Not at all	Some what	Moder-ately so	Very much so
5. I feel at ease	[ ]	[ ]	[ ]	[ ]
6. I feel upset	[ ]	[ ]	[ ]	[ ]
7. I am presently worrying over possible misfortunes	[ ]	[ ]	[ ]	[ ]
8. I feel rested	[ ]	[ ]	[ ]	[ ]
9. I feel anxious	[ ]	[ ]	[ ]	[ ]
10. I feel comfortable	[ ]	[ ]	[ ]	[ ]
11. I feel self-confident	[ ]	[ ]	[ ]	[ ]
12. I feel nervous	[ ]	[ ]	[ ]	[ ]
13. I am jittery	[ ]	[ ]	[ ]	[ ]
14. I feel "high-strung	[ ]	[ ]	[ ]	[ ]
15. I am relaxed	[ ]	[ ]	[ ]	[ ]
16. I feel content	[ ]	[ ]	[ ]	[ ]
17. I am worried	[ ]	[ ]	[ ]	[ ]
18. I feel over-excited and "rattled"	[ ]	[ ]	[ ]	[ ]
19. I feel joyful	[ ]	[ ]	[ ]	[ ]
20. I feel pleasant	[ ]	[ ]	[ ]	[ ]

APPENDIX C

Consent Form

I consent to participate in this research project on nightmare reduction. I understand that treatment is experimental; will be conducted by Jennifer Trefonas, a Master's Candidate in Clinical Psychology; and will be supervised by Bernard J. Jensen, Ph.D. (275-2974), with other members of the Psychology Department faculty.

I understand that treatment involves the following requirements:

1. The twice daily practicing of the progressive relaxation procedure (once before 3:00 p.m. and once before retiring at night), which will take approximately 20 minutes per practice session.
2. Daily monitoring of nightmares on the Daily Nightmare Questionnaire.
3. Completion of a daily State Trait Anxiety Inventory form (with the aid of the experimenter's assistant who will read the form to the subject via telephone and record the data), which will take no more than five minutes per day.

I understand that the experiment will last no longer than six weeks; that the results obtained will be completely confidential; and that I may discontinue participation at any time without prejudice.

Following my participation, the experimentor will provide a more complete description of the expected findings and respond to any remaining questions. In addition, a complete copy of this research

project will be available for your inspection at the University of Central Florida library.

_____ _____

(Witness) (Signature)

REFERENCES

Allen, G.F. (1973). Case study: Implementation of behavior modification techniques in summer camp settings. Behavior Therapy, 4, 570-575.

Baer, D., Wolf, M., & Risley, T. (1968). Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis, 1, 91-97.

Baron, G. (1983). The relationship between dreaming and learning. Unpublished master's thesis, Boston College.

Bixler, E., Kales, A., Solbatos, C., Kales, J., & Healy, S. (1979) Prevalence of sleep disorders in the Los Angeles metropolitan area. American Journal of Psychiatry, 136, 1257-1262.

Bolger, H. (1965). The case study method handbook of clinical psychology. New York: McGraw-Hill, 28-39.

Blanchard, E. (1985). Behavioral treatment of 250 chronic headache patients: A clinical replication series. Behavior Therapy, 16, 308-327.

Borkovec, T., Kaloupek, D., & Slama, K. (1975). The facilitative effect of muscle tension-release in the relaxation treatment of sleep disturbances. Behavior Therapy, 6, 301-309.

Campbell, D., (1963). Social attitudes and other acquired behavior dispositions. Psychology: A study of a science, 6, New York: McGraw-Hill, 94-172.

Carney, R. (1983). Clinical applications of relaxation training. Hospital Practice, 3, 83-94.

Cason, H. (1935). The nightmare dream. Psychological monographs, 46, 209.

Cautela, J. (1968). Sleep disorders: Disorders of arousal? Science, 159, 433-435.

Cavior, N., & Deutsch, A. (1975). Systematic desensitization to reduce dream-induced anxiety. Journal of Nervous Disorders and Mental Disease, 161, 1070-1078.

Celluci, A. & Lawrence, P. (1978). Individual differences in sleep variable correlations among nightmare sufferers. Journal of Clinical Psychology, 3, 34.

Cuvo, A. (1979). Multiple-baseline design in instructional research: Pitfalls of measurement and procedural advantages. American Journal of Mental Deficiency, 84, 219-228.

deBerry, S. (1981). An evaluation of progressive muscle relaxation on stress related symptoms in a geriatric population. International Journal of Aging and Human Development, 14, 255-269.

Dukes, W.F. (1965). N=1. Psychological Bulletin, 64, 74-79.

Eysenck, H. (1952). The effects of psychotherapy: An evaluation. Journal of Consulting Psychology, 16, 319-324.

Farmer, E., & Sanders, S. (1980). The effects of family contingency contracting on disturbed sleeping behaviors in a male adolescent. Journal of Behavioral Therapy and Experimental Psychiatry, 11, 235-237.

Feldman, M. & Hersen, M. (1967). Attitudes toward death in nightmare subjects. Journal of Abnormal Psychology, 72, 421-425.

Fisher, C., Kahn, E., Edwards, A., & Davis, D. (1973). A psychophysiological study of nightmares and night terrors. Archives of General Psychiatry, 28, 252-259.

Gastant, H., & Broughton, R. (1965). A clinical and polygraphic study of episodic phenomena during sleep. Recent Advances in Biological Psychiatry, 8, 221-225.

Geer, J., & Silverman, I. (1967). Treatment of a recurrent nightmare using behavior modification procedures: A case study. Journal of Abnormal Psychology, 72, 188-190.

Gentile, J. (1982) Significance of single-subject studies. Educational Psychology, 17, 54-60.

Gleitman, H. (1981). Psychology. New York: W. W. Norton and Company, Inc., 468-469.

Hall, R., Cristler, C., Cranston, S., and Tucker, B. (1970). Teachers and parents as researchers using multiple baseline designs. Journal of Applied Behavior Analysis. 3, 247-255.

Halliday, G. (1982). Direct alteration of a traumatic nightmare. Journal of Perceptual and Motor Skills, 54, 413-414.

Haynes, S., & Mooney, D. (1975). Nightmares: Etilogical, theoretical, and behavioral treatment considerations. The Psychological Record, 25, 225-236.

Hersen, M. (1973). Personality characteristics of nightmare sufferers. Journal of Nervous and Mental Diseases, 153, 27-31.

Hersen, M. (1972). Nightmare behavior. Psychological Bulletin, 78, 37-48.

Hillenberg, J., & Collins, F. (1983). The importance of home practice for progressive relaxation training. Behavior Research and Therapy, 21, 633-642.

Hunyaby, H. (1980). A report on a drawing therapy for children's nightmares. Journal of Evolutionary Psychology, 5, 129-30.

Jacobson, E. (1928). Progressive Relaxation. Chicago: University of Chicago Press.

Kales, A., Solbatos, C., Caldwell, A., Charney, D., Kales, J., & Markel, D. (1980). Nightmares: Clinical characteristics and personality patterns. American Journal of Psychiatry, 137, 1197-1201.

Kelly, J. A. (1980). The simultaneous replication design: The use of a multiple baseline to establish experimental control in single group social skills treatment studies. Journal of Behavior Therapy and Experimental Psychiatry, 11, 203-207.

Lammers, C., Naliboff, B., & Straatmeyer, A. (1984). The effects of progressive relaxation on stress and diabetic control. Behavior Research and Therapy, 22, 641-650.

Leboeuf, A., & Lodge, J. (1980). A comparison of frontalis EMG feedback training and progressive relaxation in the treatment of chronic anxiety. British Journal of Psychiatry, 137, 279-284.

Liberman, R., & Smith, V. (1972). A multiple baseline study of systematic desensitization in a patient with multiple phobias. Behavior Therapy, 3, 597-603.

Liberman, R., Teigen, J., Patterson, R., & Baker, V. (1973). Reducing delusional speech in chronic paranoid schizophrenics. Journal of Applied Behavior Analysis, 6, 57-64.

Lietenberg, H. (1973) The use of single-case methodology in psychotherapy research. Journal of Abnormal Psychology, 82, 87-101.

Mack, J. (1965). Nightmares, conflict, and ego-development in childhood. International Journal of Psychoanalysis, 46, 403-428.

Mathur, C. (1983). A study of progressive muscle relaxation on the treatment of dysmenorrhea. Indian Journal of Clinical Psychology, 10, 379-380.

McLaughlin, T. (1983). An examination and evaluation of single subject designs used in behavior analysis research in school settings. Educational Research Quarterly, 7, 35-42.

McNair, D., Lorr, M., & Droppelman, L. (1971). Manual for the Profile of Mood States. San Diego: Educational and Industrial Testing Service.

Monroe, L. (1967). Psychological and Physiological differences between good and poor. Journal of Abnormal Psychology, 72, 255-264.

Mullner, J., & Sebej, F. (1980). Influence of trait anxiety on state anxiety prior to a psychological experiment. Studia Psychologica, 22, 171-175.

Panyan, M., Boozer, H., & Morris, N. (1970). Feedback to attendants as a reinforcer for applying operant techniques. Journal of Applied Behavior Analysis, 3, 1-4.

Pender, N. (1984). Physiologic responses of clients with essential hypertension to progressive muscle relaxation training. Research in Nursing and Health, 7, 197-203.

Sanders, S. (1983). Component analysis of a behavioral treatment program for chronic low-back pain. Behavior Therapy, 14, 697-705.

Sherman, R. Home use of tape recorded relaxation exercises as initial treatment for stress related disorders. Military Medicine, 147, 1062-1066.

Silverman, I., & Geer, J. (1968). The elimination of a recurrent nightmare by desensitization of a related phobia. Journal of Behavior Research and Theory, 6, 109-111.

Spielberger, C., Gorsuch, R., & Lushene, R. (1970). Manual for State-Trait Anxiety Inventory: STAI ("Self-evaluation questionnaire"), Palo Alto: Consulting Psychologists Press.

Watson, J., & Rayner, R. (1920). Conditioned emotional reactions. Journal of Experimental Psychology, 3, 1-14.

Wilson, C., & Hopkins, B. (1973). The effects of contingent music on the intensity of noise in junior high home economic classes. Journal of Applied Behavior Analysis, 6, 269-275.