1

OF/DE

1

MicroD

National Library
of Canada

Bibliothèque nationale
du Canada

Canadian Theses Service

Service des thèses canadiennes

Ottawa, Canada
K1A 0N4

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

THE EFFICACY OF RESPONSE-BASED IMAGERY STRATEGIES IN THE

TREATMENT OF CHRONIC MIGRAINE/TENSION HEADACHE

by

AMBER A. HAYWARD

A Thesis submitted to
the Faculty of Graduate Studies and Research
in Partial Fulfillment of
the Requirements for the degree of

MASTER OF ARTS

Department of Psychology

Carleton University
OTTAWA, CANADA

June 7, 1989

Copyright
1989, A. A. Hayward

LIST OF APPENDICES

Appendix A - Headache History and Symptoms.....	50-51
Appendix B - Headache History and Telephone Interview.....	52-55
Appendix C - Headache Rating Cards.....	56
Appendix D - Pill.....	57-60
MC-SDS.....	61
RSE.....	62
Vividness of Mental Imagery.....	63-64
Appendix E - Carleton University Responsiveness to Suggestion Scale.....	65-70
Appendix F - In-Session Rating Cards.....	80
Appendix G - Protocol for Treatment Sessions - Hypnosis and Imagery Groups.....	81-87

The undersigned recommend to the Faculty of Graduate Studies
and Research acceptance of the thesis

"The Efficacy of Response-Based Imagery Strategies in the
Treatment of Chronic Migraine/Tension Headache"

submitted by

Amber A. Hayward

in partial fulfilment of the requirements for
the degree of
Master of Arts

Thesis Supervisor

Chair, Department of Psychology

Carleton University
September, 1989

LIST OF APPENDICES

Appendix A - Headache History and Symptoms.....	50-51
Appendix B - Headache History and Telephone Interview.....	52-55
Appendix C - Headache Rating Cards.....	56
Appendix D - Pill.....	57-60
MC-SDS.....	61
RSE.....	62
Vividness of Mental Imagery.....	63-64
Appendix E - Carleton University Responsiveness to Suggestion Scale.....	65-79
Appendix F - In-Session Rating Cards.....	80
Appendix G - Protocol for Treatment Sessions - Hypnosis and Imagery Groups.....	81-87

ACKNOWLEDGEMENTS

The opportunity for further education is a privilege that I value greatly. Many are responsible for affording me this opportunity, many which I cannot formally acknowledge, but they do not go unappreciated.

Of those that I will mention, I wish to thank Dr. N. P. Spanos who enabled me to pursue my academic goals. The two years that I spent in his lab I consider foundational to my academic career thus far.

I wish to acknowledge my family, especially my mother, who instilled within me the desire to learn and to achieve my goals. Without her encouragement and financial support I would not have succeeded.

I also wish to thank Dr. Bob Nolan, as one of my research partners and friend, his guidance and assistance throughout the project was appreciated.

TABLE OF CONTENTS

Title Page.....	i
Acceptance Sheet.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Table of Contents.....	v
List of Tables.....	vi
List of Appendices.....	vii
Classification of Headaches.....	1-3
Current Research in Headache.....	3-6
Chronicity of Headache.....	7
A New Treatment Trend.....	7-8
Types of Behavioral/Cognitive Paradigms.....	8-12
Cognitive Strategies.....	12-13
Hypnosis and Pain Management.....	14-18
Rationale for Current Research.....	18
Method.....	18-22
Hypotheses.....	22
Dependent Measures.....	23-25
Results.....	26-38
Discussion.....	38-41
References.....	42-49
Appendices.....	50-87

LIST OF TABLES

TABLE 1 - Headache Activity Across Trials for Hypnotic and Non-hypnotic Imagery Subjects.....	28
TABLE 2 - Headache Activity Across Trials for Imagery vs Monitoring Subjects.....	30
TABLE 3 - Post Hoc Comparisons of Mean Daily Medication Usage over Trials.....	33
TABLE 4 - Summary Table for Mixed ANOVAs on Within-session ratings of Treatment Induced Effects.....	35
TABLE 5 - Within-session Ratings of Treatment Induced Manipulations for Response-based Imagery Subjects.....	36
TABLE 6 - Correlations between Hypnotic Susceptibility and Personality Traits with Headache Reductions.....	38

LIST OF APPENDICES

Appendix A - Headache History and Symptoms.....	50-51
Appendix B - Headache History and Telephone Interview.....	52-55
Appendix C - Headache Rating Cards.....	56
Appendix D - Pill.....	57-60
MC-SDS.....	61
RSE.....	62
Vividness of Mental Imagery.....	63-64
Appendix E - Carleton University Responsiveness to Suggestion Scale.....	65-79
Appendix F - In-Session Rating Cards.....	80
Appendix G - Protocol for Treatment Sessions - Hypnosis and Imagery Groups.....	81-87

CHRONICITY OF HEADACHE

The occurrence of chronic pain has been considered one of the most prevalent and costly national health problems known today (Turner and Chapman, 1984). In the past twenty-five years there has been an increasing interest in the medical treatment of chronic pain, especially that of headache (Blanchard and Andrasik, 1985). Researchers have come to classify the occurrence of headache as a "major-minor" health problem in which 6-7% of the medical consultations sought (USA) are due to the complaint of headache pain (Leviton, 1978). Furthermore, studies indicate a high occurrence of headache pain among the college student population. It has been estimated that approximately 13.1% of males and 62.9% of females (Ogunyemi, 1984) experience substantial amounts of headache pain. A recent study by Attanasio & Andrasik (1987) confirmed that although headache occurrence was not as high as Ogunyemi (1984) reports, headache occurrence among the college population is high enough to warrant concern.

A NEW TREATMENT TREND

As headache occurrence appears to be increasing headache sufferers seem to be shifting away from the traditional medical therapies (i.e. pharmaceutical treatments), (Turner and Romano, 1984) and toward therapies that involve a behavioral or cognitive

attacks are commonly unilateral in onset; are usually associated with anorexia and, sometimes, with nausea and vomiting; in some, are preceded by or associated with, conspicuous sensory, motor, and mood disturbances; and are often familial. Evidence supports the view that cranial arterial distension and dialation are importantly implicated in the painful phase but cause no permanent changes in the involved arteries...

2) Muscle Contraction Headache (MCH)- Ache or sensations of tightness, pressure, or constriction, widely varied in intensity, frequency, and duration, sometimes long-lasting, and commonly suboccipital. It is associated with sustained contraction of skeletal muscles in the absence of permanent structural change, usually as part of the individual's reaction during life stress. The ambiguous and unsatisfactory terms "tension," "psychogenic," and "nervous" headache refer largely to this group.

3) Combined Headache: Vascular and Muscle-Contraction- Combinations of vascular headache of the migraine type and muscle contraction headache predominantly coexisting in an attack..." (pg 127-28)

Although the committe distinguished headache type according to qualitative differences, this third group is a combination of the two purer forms. Despite increasing evidence suggesting similarities between migraine and MCH the Ad Hoc Committee failed

to modify their classification definitions (e.g. Takeshima and Takahashi, 1988).

CURRENT RESEARCH IN HEADACHE

The above classification system although problematic with respect to the mixed migraine and muscle-contraction category reflects the dominant view that tension and migraine headache are associated with qualitatively different symptoms. Current research suggests an alternative view that emphasizes the similarities between migraine and MCH. The following research summary indicates these similarities:

1) Clinical Symptoms and characteristics: MCH and migraine have overlapping symptoms. Evidence suggests that MCH and migraine symptoms correlate with reported headache severity rather than specific headache patterns (e.g. Saper, 1982; Featherstone, 1985).

2) Electromyographic studies (EMG): Muscle tightness and contraction once thought to be a major symptom only in MCH has also been confirmed in migraine patients. In fact, EMG and muscle tenderness have been found to increase more often in migraine than in MCH (e.g. Cohen, 1978). The findings of studies by Budzynski, 1978; Blanchard, Andrasik, Ahles, Teders and O'Keefe, 1980; and Diamond, Diamond Falk, and DeVenio, 1978 indicate that

stress/tension can effect muscle contraction leading to headache in both migraine and MCH subjects.

3) Platlet and Serotonin studies: Abnormality of platlets and serotonin have been well documented in the pathogenesis of migraine (Gawel, Burkitt and Rose, 1979; D'Andrea, Toldo, Cortelazzo and Milone, 1982). However, decreases in platelets and increased plasma serotonin have also been reported in MCH subjects (Rolf, Weile and Burne, 1981; Takeshima, Shimomura and Takashashi, 1987).

4) Autonomic Nervous system studies: Both migraine and MCH patients have shown sympathetic hypofunction in the autonomic nervous system (Faciullacci, 1979; Rubin, Graham, Pasker and Calhoun, 1985).

5) Personality studies: Personality differences between migraine and MCH patients have not been consistently demonstrated. (Sternbach, Dalessio, Kunzel and Bowman, 1980).

6) Heredity studies: Concentrations of migraine in families has been documented but there is evidence to suggest that both migraine and MCH history is evident in both types of family histories (e.g. Shimomura, Nishikawa and Takashashi, 1986).

7) Efficacy of drugs: Studies indicate that both migraine and MCH

patients can benefit or fail to benefit from the use of medications ranging from aspirin, tricyclic antidepressants and non-steroidal anti-inflammatory agents (Graham, 1979; Holroyd, 1986). Again results are inconsistent.

8) Biofeedback: Evidence suggests that both migraine and MCH patients can benefit from forms of biofeedback training (Cohen, 1978; Werder, Sargent and Coyne, 1981; Blanchard and Andrasik, 1985). Thermal biofeedback for tension and vascular headache (Diamond, Diamond-Falk and DeVeno, 1978) and EMG biofeedback for MCH or tension headache (Budzynski, 1978) have been reported as effective.

9) Relaxation: Relaxation procedures like biofeedback help the headache patient to alter muscle contraction. However, the relaxation procedures do not rely on the aid of expensive biofeedback machinery. Blanchard, Andrasik, Ahles, Teders and O'Keefe, 1980, have suggested that relaxation training alone when compared to frontal EMG biofeedback alone, and combination of frontal EMG biofeedback and relaxation training all yielded similar results and reduced headache activity in clinical patients by approximately 60%.

These studies taken together call for a new understanding of the headache classification system. Sufferers of both migraine and MCH often report the same types of symptoms. The above research

indicates that vascular symptoms are often associated with severe muscle contraction symptoms (Holroyd, 1986). Moreover, Oleson (1978), found that about 50% of migraineurs reported experiencing headaches that were so diffuse that they were indistinguishable from MCH. These observations suggest that the symptoms of migraine and MCH are not qualitatively different but are more adequately described as syndromes that lie at different points along a continuum of severity (e.g. Bakal, 1982).

The majority of psychological intervention studies have attempted to alter headache activity by modifying abnormal physiological responses with either relaxation or biofeedback therapy. Although these types of treatments are helpful for some patients, others do not improve. Meichenbaum (1976) commented that the failure of some individuals to benefit from relaxation or biofeedback may be due to the narrow focus of the treatments. Both biofeedback and relaxation fail to take into account the cognitive, affective, sensory, and behavioral components of particular stress disorders (of which headache is one). Interventions which simply focus on symptom reduction fail to be successfully transferable to a stressful environment. While such treatments offer some reduction in headache activity they fail to provide the patient with alternative behaviors for coping with stressful features of chronic headache.

CHRONICITY OF HEADACHE

The occurrence of chronic pain has been considered one of the most prevalent and costly national health problems known today (Turner and Chapman, 1984). In the past twenty-five years there has been an increasing interest in the medical treatment of chronic pain, especially that of headache (Blanchard and Andrasik, 1985). Researchers have come to classify the occurrence of headache as a "major-minor" health problem in which 6-7% of the medical consultations sought (USA) are due to the complaint of headache pain (Leviton, 1978). Furthermore, studies indicate a high occurrence of headache pain among the college student population. It has been estimated that approximately 13.1% of males and 62.9% of females (Ogunyemi, 1984) experience substantial amounts of headache pain. A recent study by Attanasio & Andrasik (1987) confirmed that although headache occurrence was not as high as Ogunyemi (1984) reports, headache occurrence among the college population is high enough to warrant concern.

A NEW TREATMENT TREND

As headache occurrence appears to be increasing headache sufferers seem to be shifting away from the traditional medical therapies (i.e. pharmaceutical treatments), (Turner and Romano, 1984) and toward therapies that involve a behavioral or cognitive

approach. Both traditional treatment ineffectiveness and the high cost of medical therapies has justified this shift. These non-pharmacuetical techniques range from the use of EMG for muscle and thermal biofeedback to the use of relaxation involving cognitive and imagery training. Such interventions have been associated with reductions in the experience and frequency of chronic pain attacks (Ciccone and Genest, 1984; Blanchard and Andrasik, 1985; Turk and Genest, 1979; Fordyce, 1976). Nevertheless there still remains uncertainty as to which treatments are most effective and which psychological factors are involved in their therapeutic effectiveness.

TYPES OF BEHAVIORAL/COGNITIVE PARADIGMS

The most popular of the non-pharmacologic treatments for chronic headache have been thermal or EMG biofeedback training. These treatments have been shown to reduce headache activity either by themselves or when combined with some form of relaxation training (e.g. Blanchard and Andrasik, 1985). A review by Blanchard, Andrasik, Ahles, Teders and O'Leefe (1980) indicated that for chronic migraine headaches thermal biofeedback training, with relaxation, thermal biofeedback alone, relaxation training, and medication placebos (administered in double blind trials) resulted in mean headache percentage reductions of 65.1%, 51.8%, 52.7%, and 16.5% respectively. There were no significant differences in headache reduction among the three treatment

groups, but each of the treatments were associated with significantly greater headache reduction than the placebo treatment.

Follow-up studies on behavioral interventions indicate reduction in headache activity was maintained at least 50% for MCH, migraine, and combined migraine/MCH groups at a five year follow-up interval (Blanchard, Applebaum, Guarneri, Morrill and Dentinger, 1987). Blanchard, Appelbaum, Guarnieri, Neff, Andrasik, Jaccard and Barron, 1988; and Blanchard, Andrasik, Guarnieri, Neff and Rodichok, 1987, found similar results for different samples at two and four year follow-ups.

Although these studies indicate effectiveness in the reduction of headache activity, problems arise in generalizing the results. These studies do suggest long term treatment efficacy for behavioral treatments, but it must be pointed out they include only those subjects who initially found the treatment effective. These studies provide no analysis of headache activity for those who did not find the treatment effective in the initial stages of the studies.

Work reviewed above indicated that a direct relationship between psychophysiologic activity and headache cannot be assumed. Given this, it remains unclear how the behavioral treatments produce therapeutic effects. Basically two views have emerged,

the operant approach (e.g. Budzynski, Stoyva, Adler and Mullaney, 1973) and the cognitive behavioral approach (Michenbaum, 1976; Turk, Michenbaum and Genest, 1983).

The operant model proposes that reductions in headache activity result from the subjects' increased awareness of and control over the suspected physiologic abnormalities that produce headache. This form of treatment teaches subjects to control contraction or constriction of skeletal muscles (MCH) and arteries (migraine), (Sargent, Green and Walters, 1972). Alternatively, the cognitive/behavioral paradigm attributes therapeutic outcome to self-regulatory cognitive processes and not to direct control over physiological processes that contribute to headache (Michenbaum, 1976). For example EMG biofeedback is understood as enhancing self-efficacy and outcome expectations, as well as aiding in the development of coping strategies related to headache stressors. The cognitive-behavioral paradigm does not assume a direct relationship between recurrent headache and physiologic arousal but, alternatively allows for the cognitive aspects that the operant paradigm overlooks.

Andrasik and Holroyd (1980; 1983) obtained support for the cognitive-behavioral paradigm in a study concerning the efficacy of perceived self-control in EMG biofeedback training for 39 MCH subjects. Subjects were randomly assigned to one of three EMG biofeedback groups and one monitoring control group. EMG groups

were informed that they would be taught to reduce frontalis muscle tension over a four week period. Although subjects thought that they were reducing frontalis muscle tension they were actually taught to increase, decrease or maintain their frontalis tension depending upon group assignment. Headache activity was reported at pre-treatment, post-treatment and follow-up (6 weeks and 3 years).

The mean headache activity of each of the three EMG biofeedback groups decreased significantly regardless of whether subjects' actual muscle tension was increased, decreased or maintained. Planned orthogonal comparisons indicated that the post-treatment outcome measures of headache activity did not differ significantly between groups. Between 80-100% of subjects in the three EMG biofeedback groups reduced headache activity by at least 50% at post-treatment and follow-up. At the three year follow-up headache activity was still reduced by at least 50%, while the monitoring group increased headache activity by approximately 7%.

Two conclusions can be drawn from this experiment. First, reductions in headache activity can be effectively produced by enhancing perceived self-control over physiologic processes. Second the enhancing of perceived self-control appears to produce a long term decrement in headache activity. These results suggest that behavioral treatments that teach operant control over the suspected pathophysiologic processes are sufficient but are not

necessary in the reduction of recurrent headache activity. The previous research suggests that cognitive variables are the effective components in behavioral treatments for recurrent headache. It seems that cognitive elements play a part in all types of behaviorally oriented therapies.

COGNITIVE STRATEGIES

Cognitive strategies are generally thought to contribute to pain management by altering the individual's illogical analysis of situational stressors, that would otherwise increase the perception of pain severity, anxiety helplessness and/or depression (Blanchard and Andrasik, 1985; Turner and Chapman, 1982).

The empirical support for the efficacy of imagery, self-statement and attention diversion strategies in reducing pain has traditionally been derived from studies on experimentally induced pain (e.g. Spanos, Ollerhead and Gwynn, 1986; Spanos, Stam, and Brazil, 1981). However, drawing conclusions about clinical pain from experimental pain studies is problematic because of the important differences in the experimental and clinical situations (i.e. expectations of pain duration).

In a recent study, Brown (1984) compared the efficacy of response-based imagery and stimulus-based imagery and a

psychological placebo ("subconscious reconditioning") on migraine headache pain. Brown reported that there were no differences between groups in headache activity at the pre-treatment phase (four week baseline). Subjects in each group attended four treatment sessions. Headache scores decreased significantly more in the two imagery groups than in the placebo control group. The two imagery groups failed to differ from one another in this regard. Headache reductions were maintained at an eight week follow-up period. Brown's study (1984) supports the conclusion that pain management training in either response or stimulus based imagery is efficacious as a treatment for reducing migraine headache activity. Although these conclusions seem promising, some qualifications must be made. Brown's mean pre-treatment headache inclusion criterion was one headache per week. Since her analysis was conducted on percentage of headache improvement, her reductions appear inflated. For instance, reported improvements were 43.69% (response-imagery) and 12.62% (stimulus-imagery) in headache reduction which in actuality only involves 1.7 and .5 fewer headaches over a four week treatment interval. It appears that the inclusion criterion of one headache per week and the way in which the reductions were reported may yield misleading results. Further studies should be expanded to include samples with a higher frequency of headache activity (i.e. a combination of migraine and MCH subjects).

HYPNOSIS AND PAIN MANAGEMENT

During the preanesthetic era (prior to 1840's) hypnosis was a popular treatment for reduction of surgical pain. The earliest claims for hypnotic control of surgical pain were dramatic and suggested that hypnosis was an extremely powerful and mysterious phenomenon (Chaves, 1989). The idea of hypnosis as a powerful and mysterious phenomenon was a precursor to "special-process" theories of hypnotic analgesia (Barber, Spanos, and Chaves, 1974; Spanos, 1989).

Traditional interpretations of hypnotic analgesia (i.e. "special processes" view) (Hilgard, 1975, 1977, 1986; Hilgard and Hilgard, 1983) assume that the patient is passive and that the analgesia results from the operation of such unusual processes as dissociation and amnesic barriers that somehow prevent pain from becoming conscious. According to these hypotheses hypnotic induction procedures facilitate dissociation. Consequently, analgesia should occur more strongly in hypnotic than in nonhypnotic subjects. Therefore, subjects low in hypnotizability should be unable to experience large suggestion induced reductions in pain regardless of whether they are given a hypnotic induction procedure (Hilgard, 1975; 1986).

The available data however, fail to support the dissociation hypothesis. On the contrary these data suggest the

following: suggestions whether preceded by hypnotic induction or not were equally successful in reducing pain experience (Barber and Hahn, 1962; Chaves and Barber, 1974); suggestions designed to encourage the individual's use of cognitive strategies such as imagery and distraction also aide in reducing pain (Spanos, Hornton and Chaves, 1975; Spanos, Stam and Brazil, 1981); subjects will actively engage in cognitive strategies for controlling pain regardless of whether they receive instructions to do so (Spanos, Brown, Jones and Horner, 1981); abilities to cope with noxious stimuli are often influenced by the subjects' expectations regarding the situation and their coping abilities (e.g. Marino, Gwynn and Spanos, in press); under certain experimental conditions low susceptibles reduce pain as much as high susceptibles (Spanos, Hodgins, Stam and Gwynn, 1984; Spanos, Kennedy and Gwynn, 1984; Spanos, Ollerhead and Gwynn, 1986); and correlations between hypnotizability and pain reduction are context dependent and tend to break down when hypnotizability is assessed outside the analgesic context (Spanos, 1988).

The above research suggests a socio-cognitive understanding of hypnotic analgesia in which the individual is an active participant who responds to various situational cues by engaging in cognitive strategies to reduce pain (Chaves, 1989).

The above studies concern hypnotic analgesia in the experimental context, and cannot be generalized to a clinical

situation without further investigation. Current research concerning hypnotic analgesia within the clinical situation is sparse and many methodological problems are evident. As with experimental pain, most clinical studies concerning modification of headache activity also approach the modification of pain by directing research to the control of biological factors such as in the case of thermal and frontalis biofeedback (Friedman and Taub, 1984, 1985; Schlutter, Golden and Blume, 1980).

In reviewing three current studies employing the use of hypnosis with a form of an imaginal treatment for chronic headache it is evident that methodological problems limit any interpretations. Schlutter, et al, (1980) compared hypnosis to EMG biofeedback with and without progressive relaxation in the treatment of chronic headache patients. Although the authors reported that the hypnotic condition produced significant decrements in pain duration and intensity as compared to other conditions, no controls were involved to tease out the unique effects of hypnosis.

Friedman and Taub (1984) compared pre-tested high and low hypnotic susceptibles in the use of handwarming imagery and hypnosis. Both groups were instructed to use hand warming techniques to control migraine. Both high and low susceptibles reported significant decrements in headache frequency, intensity and medication intake. Follow-up indicated that treatment gains

were consistent at 6 months, 1 year and three year periods (Freidman and Taub, 1985). Although this study indicates that hypnosis and imagery are effective, no controls were used to control for expectations and other intervening factors.

One final study was reported by Howard, Reardon and Tosi (1982) in which a migraine subject was given hypnosis treatment and then a rational stage-directed hypnot herapy (RSDH) (after a baseline condition). Howard et al, reported that greater pain decrements were obtained by employing the RSDH (a procedure whereby maladaptive self-statements concerning headache activity are replaced with adaptive (positive) ones during hypnotic induction). Again, one cannot make conclusions based from this research concerning hypnotic effectiveness as faulty methodological designs were used.

The above review suggests that future reserach concerning headache treatment via cognitive paradigms should resolve the conceptual and methodological problems that exist. These include i) distinguishing the contributions of individual cognitive strategies in the treatment of chronic pain (e.g. Rybstein-Blinchik, 1979); ii) determining if there is a generalization of reductions in chronic pain activity to pain related perceptions of stress, anxiety helplessness etc, (e.g. Blanchard, Applebaum, Evans, Myers and Barron, 1986); and iii) using appropriate nonhypnotic control groups to tease out effects

that hypnotic induction may add to the administration of cognitive strategies (Spinhoven, 1988).

RATIONALE FOR CURRENT RESEARCH

The purpose of this study was to examine the efficacy of a specific cognitive strategy, response-based imagery in the self-management of chronic headache. This research extended the findings of Brown (1984) by including a headache population that exhibits a higher frequency of headache activity (namely a migraine-MCH combination group) than did Brown's migraine group. This study compared a hypnotic (response-based imagery) treatment group with an imagery (response-based) alone and a control group (monitoring).

METHOD

Subjects

Subjects were recruited from first year undergraduate classes in psychology. Students completed a questionnaire concerning headache history (Appendix A) during a mass testing session. Students who qualified as suffering from mixed migraine/MCH chronic headache were contacted and asked to participate in a study concerning headache management. Students were offered either experimental credit or monetary payment for their participation.

Initial screening involved the completion of the self-report questionnaire mentioned above. The standard inclusion criteria was as follows: (a) recurrent headaches for at least three months, b) any three of the next features that reflect a migraine/tension combined headache: migraine - prodrome symptoms, nausea or vomiting accompanying headache, unilateral headache, sensitivity to light, throbbing pain, tension headache focused on forehead (although may also be occipital or suboccipital region), pain as a dull persistent ache, headache described as a cap or band around the head, and sensations of tightness or pressure accompanying the headache. The age range for subjects was be from 17-49 years.

Procedure

Screening questionnaires were distributed in a mass testing session to approximately 2000 psychology undergraduates. Potential subjects were informed that the experimenter was surveying the incidence of chronic pain - specifically chronic headache incidence among undergraduate students, and that upon completion of the headache history survey they might be contacted by telephone and asked to participate in a treatment program for chronic pain. Subjects were told that they would receive experimental credit or money for their participation. Details were not released concerning the specific inclusion criteria or

the type of treatment used in the study.

Subjects who met the inclusion criteria were contacted by telephone. The telephone interview presented further questions aimed at verifying the data for the inclusion criteria. Subjects who reported medically related headache conditions were not asked to participate. These conditions include the occurrence of headache-related epileptic seizures, or accident induced headache pain. The interviewer then invited successful subjects to participate in a preliminary "assessment" phase of the study that involved the administration of a questionnaire battery and completion of headache monitoring cards over a two week period. All subjects were informed that there would be a subsequent two week training phase and a six week follow-up period. The treatment phase involved skill acquisition training in pain management. Also subjects were informed that they might be asked to monitor headaches for the duration of the experiment, but would later be offered the pain management session.

Following the assessment of the baseline procedures (questionnaire battery and baseline diaries) subjects were randomly assigned to one of two treatment conditions (imagery or hypnosis) or a control monitoring group. Each of the two treatment groups involved two (45 min) sessions. Following the treatment phase subjects were asked to complete headache diaries for an additional six weeks. When subjects turned in their final

follow-up diaries they were asked to participate in follow-up questionnaires and additional "supplemental assessments" (e.g. measuring hypnotic susceptibility, and vivid imagination). In order to protect against biased reports of headache reduction, hypnotic susceptibility and involvement in vivid imagination, the latter two measures were administered following the final headache study appointment. This was done under two pretexts: (A) that the administration of these measures was part of a separate project that was updating behavioral norms for the CURSS and, (b) the measurements of hypnotic susceptibility and imaginative involvement were not related to the headache project, their participation was voluntary. The experimental outline is indicated below:

Session#	Activity
1.	Administration of initial screening questionnaire (Appendix A).
2.	Telephone screening interview (Appendix B).
3.	Initiation of daily headache diaries for 2 weeks (Appendix C), questionnaire battery, random assignment to experimental conditions.

- 4/5. Treatment sessions 1 & 2 conducted over a two week interval (Appendix G) (monitoring group phoned to ensure completion of headache diaries).
6. Follow-up session, collection of diaries, questionnaire battery, ask to participate as a favour to supervisor in CURSS, and debriefing.
7. Offering of treatment to monitoring group.

HYPOTHESES

1. The imagery and hypnosis groups will not differ significantly on headache index ratings across treatment intervals.
2. The combined migraine/MCH subjects in the imagery and hypnosis groups will demonstrate significantly less headache activity (headache index) across treatment intervals, as compared to the monitoring group.

DEPENDENT MEASURES

1) Headache rating cards (Appendix C) - Standardized diary forms completed four times daily (meals and bed time) were used to assess headache activity (Blanchard & Andrasik, 1985). Headache indexes measured average daily headache intensity over baseline, post-treatment, and follow-up. Headache intensity was rated on a six point scale (0- no headache to 5- extreme, incapacitating headache). Also, subjects indicated any medication consumed for headaches. Medication usage was scored according to Menningers Categories of Analgesic Potency (Blanchard and Andrasik, 1985).

2) Medication Index (Menninger Categories of Analgesic Potency (Blanchard and Andrasik, 1985) - Daily medication usage was measured by the Menninger categories of analgesic potency as found in Blanchard and Andrasik (1985). This assessment was derived from an index of the number of tablets consumed as well as the standardized potency value for each tablet ingested.

3) Pennebaker Inventory of Limbic Languidness (Appendix•D) -This 54 item checklist (PILL) is a trait measure of the propensity to report physical symptoms. Pennebaker (1982) has reported that the PILL has high internal consistency (Cronbach's alpha of .88) and a high test re-test reliability over a two month period ($r=.79$). The PILL is useful in the present investigation as it was used to see if there was any relation between the tendency to report physical

symptoms and the severity of reported daily headache activity.

4) Short Form Marlowe-Crowne Social Desirability Scale -

(Appendix D) This short form scale (Strahan and Gerbasi, 1972) provides information concerning the extent to which subjects are socially defensive. This scale assisted in assessing the extent to which headache information was given accurately. The K-R 20 reliability coefficient for this abbreviated scale is similar to the full length Marlowe-Crowne at .83 and .87 respectively. The total correlation of the scores for these scales was reported as not less than .90.

5) Rosenberg Self-Esteem (RSE) Scale (Appendix D) - The RSE is a ten item scale measuring positive affective functioning. It has a reliability of .92 and a coefficient Alpha of .72. Respondents are asked whether they strongly agree, agree, disagree, or strongly disagree with the ten items.

6) Tellegen's Absorption Scale (Appendix D) - Tellegen's Absorption scale (Tellegen and Atkinson, 1974) is a 40 item trait measure which assesses the disposition to vividly engage in perceptual/imaginative events. This scale is commonly used in investigations of hypnotic behaviour and imagination.

7) Shortened Form of the Bett's Imagery Questionnaire

(Appendix D) - The Bett's questionnaire that has been revised by Shor, Orne and O'Connell, 1966) was used as a trait measure of

imagery vividness. It is comprised of 15 questions scored on a seven point scale. Vivid imaginative ability is tested across several sensory modalities. The test-retest reliability over a seven month interval was .78.

8) CURSS (Appendix E) - The Carleton University Responsiveness to Suggestions scale (CURSS; Spanos, Radtke, Hodgins, Stam and Bertrand, 1983) was used to assess hypnotic susceptibility. It yields three susceptibility scores; an objective (CURRS:O score reflects the number of suggestions to which subjects make the appropriate behavioral response, a subjective (CURSS:S score reflects the intensity of subjective response to suggestions and an objective-involuntariness (CURRS:OI score reflects the number of suggested responses that were experienced as involuntary.

RESULTS

Approximately 2000 introductory psychology students were informed about the headache study and were asked if they would like to participate by completing an initial questionnaire concerning their headache history. Upon completion of the questionnaire eighty eight students met the initial criteria (i.e. displaying features of chronic tension and chronic mixed migraine tension headache symptoms as proposed by Blanchard and Andraisk, 1985) and were further considered for entry into the study.

Medical confirmation of mixed migraine/tension headache profiles were not necessary for this experiment. Although clinically diagnosed subjects were not recruited, all participants were exposed to a series of screening assessments prior to their participation in the study.

Of the initial eighty eight possible subjects, sixty-seven were selected following the telephone screening interview. Fifty-four of the sixty-seven were selected following the completion of a 2 week monitoring of headache activity in which subjects demonstrated at least one headache per week. The subject pool was further reduced to forty-two subjects as eight withdrew due to course commitments and one due to pregnancy. The additional excluded subjects were a result of incomplete data (i.e. failed to participate in all phases of the experiment). The

mean age of the remaining sample of 42 subjects was 21.41 years (SD = 6.58). Participants ranged from 17 to 49 years of age. The proportion of males to females was equivalent across experimental conditions: Hypnotic imagery group (4 males, 11 females); non-hypnotic imagery group (4 males, 11 females); and monitoring control group (1 male and 11 females). This distribution of males to females across conditions produced a non-significant chi-square: $(2) = 1.71, ns$.

The data analyses were organized to examine the following issues: (a) treatment efficacy of hypnotic and non-hypnotic imagery training, (b) treatment effects as assessed by the headache index, (c) medication usage across trials and the relationship between observed treatment effects and cognitive processes.

HYPNOTIC AND NONHYPNOTIC TREATMENTS

The initial assessment of treatment efficacy of response-based imagery training in comparison to the monitoring control group required a comparison of the hypnotic and non-hypnotic imagery groups. A 2 (Condition: Hypnotic/Nonhypnotic imagery training) X 5 (Trials: Baseline/Post-treatment/Follow-up 1/2/3) Mixed Anova on headache index scores demonstrated non-significant findings for the Condition X Trials interaction and the main effect for the Condition factors. Condition X Trials

-- $F(4,112) = 1.22$, ns; Condition -- $F(1,28) = 2.54$, ns. These results indicated that hypnotic and non-hypnotic imagery subjects exhibited equivalent levels of headache activity across trials. Given these results, further analysis combined hypnotic and nonhypnotic imagery subjects into one condition classified as an imagery condition. Headache index means and standard deviations from the above analysis are listed in table 1.

TABLE 1

HEADACHE ACTIVITY ACROSS TRIALS FOR HYPNOTIC
AND NON-HYPNOTIC IMAGERY SUBJECTS

	Response-Based Imagery Groups	
	NONHYPNOTIC (N=15)	HYPNOTIC (N=15)
	M (SD)	M (SD)
Baseline	4.42 (2.49)	3.95 (1.56)
Post-treatment	3.83 (2.28)	2.51 (1.48)
Follow-up 1	3.51 (2.52)	2.56 (1.79)
Follow-up 2	2.65 (2.88)	1.93 (1.44)
Follow-up 3	3.29 (2.62)	2.37 (1.41)

TREATMENT EFFECTS OF HEADACHE INDEX (Treatment vs Control)

A comparison of the imagery and control conditions was conducted by a 2(Conditions: Imagery/Monitoring) X 5 (Trials: Baseline/Post-treatment/Follow-up 1/2/3) Mixed ANOVA. The headache index of the mean daily headache activity served as the dependent measure. This analysis demonstrated a significant Condition X Trials interaction -- $F(4,160) = 2.47, p < .05$. Table 2 illustrates these results.

TABLE 2

HEADACHE ACTIVITY ACROSS TRIALS FOR IMAGERY VS MONITORING SUBJECTS

Trials	Headache Index Ratings	
	Imagery	Control
	M (SD)	M (SD)
Baseline	4.18 (2.06) a	4.04 (1.71) a
Post-treatment	3.17 (2.04) b	3.24 (2.42) a
Follow-up 1	3.03 (2.20) b	4.17 (3.35) a
Follow-up 2	2.79 (2.40) b	4.19 (3.11) a
Follow-up 3	2.83 (2.12) b	3.72 (2.71) a

Note: Within columns, means that share a common subscript fail to differ significantly at $p < .05$.

Analysis of the simple main effects revealed that headache activity for the monitoring control group failed to differ significantly over trials -- $F(4,160)=1.21$, ns. Conversely, the imagery group demonstrated a significant simple main effect for

headache activity across trials -- $F(4,160) = 6.22, p < .001$. Tukey's Least Significant Difference Test (LSD) indicated that headache activity at each post-baseline level was significantly reduced from the baseline level. None of the baseline means differed significantly from one another.

The above analyses indicate that the response-based imagery training was effective in reducing headache activity. Subjects in the imagery group demonstrated a significant lowering of their post-baseline headache activity while subjects in the monitoring control group failed to lower their headache activity across trials.

MEDICATION USAGE

Medication usage across trials was examined in order to determine if changes in headache indexes across trials could be attributed to increased medication usage. A mean daily index of medication usage was calculated for baseline, post-treatment, and each of the three follow-up phases. The formula for computing the medication index was modelled on the headache index measure. A $2(\text{Condition: Imagery/Monitoring control}) \times 5(\text{Trial: Baseline/Post-treatment/Follow-up 1/2/3})$ Mixed ANOVA with the medication index score as the dependent variable resulted in a non-significant Condition $\times$ Trials interaction -- $F(4, 37) = 0.97, ns$, and a nonisignificant main effect for Conditions -- $F(1,40) =$

1.64, ns. A significant main effect for Trials was observed -- $F(4,37) = 2.78, p < .05$. Subsequent post hoc LSD tests (collapsed across conditions) indicated that each Post-baseline medication index was significantly lower than the baseline level.

Comparisons among Post-baseline levels of medication usage resulted in non-significant differences. Results for the above analyses are presented in Table 3.

TABLE 3

Post Hoc Comparisons of Mean Daily Medication Usage over Trials
(Collapsing Across conditions -- N=42)

Trials	Mean Daily Medication Index	
	M (SD)	
Baseline	0.95	(1.04)
	a	
Post-treatment	0.58	(0.77)
	b	
Follow-up 1	0.57	(0.88)
	b	
Follow-up 2	0.53	(0.91)
	b	
Follow-up 3	0.63	(0.90)
	b	

Note: Differing subscript means that usage differ significantly at
p < .05

The above analysis indicates that headache activity reductions were attributable to treatment effects and not to an increased consumption of medication.

TREATMENT INDUCED COGNITIVE PROCESSES

The previous analyses investigated treatment outcome. It was also of interest to examine if the treatments induced cognitive activity during the treatment session that paralleled treatment induced headache reductions. This objective was accomplished by examining subjects' in session ratings concerning the extent to which they experienced the suggested experimental effects. The in-session variables assessed were the mean ratings of relaxation, absorption in imagery, vividness of imagery, percentage of time involved in imagery. Subjects were asked to rate their experiences by use of a seven point Likert scale ranging from "0 - not at all" to "6 - extremely."

In session ratings for relaxation, absorption, vividness and percentage of time involved in imagery were assessed with separate 2 (Condition: Hypnotic/Nonhypnotic imagery) X 2 (Trials: Session1/Session2) Mixed ANOVAs. Results indicated that Condition X Trials interactions and main effects for Conditions and Trials were non-significant. Summary statistics for the above analyses are found at tables 4 and 5.

TABLE 4

Summary Table for Mixed ANOVAs on Within-session Ratings of
Treatment Induced Effects

		ANOVA STATISTICS		
		F	df	p
Relaxation during each imagined scene:				
Cond X trials		0.36	1,28	ns
Condition		0.94	1,28	ns
Trials		0.06	1,28	ns
Percentage of time spent imagining each scene:				
Cond X trials		0.21	1,28	ns
Condition		1.09	1,28	ns
Trials		2.62	1,28	ns
Vividness of each imagined scene:				
Cond X Trials		0.87	1,28	ns
Condition		1.10	1,28	ns
Trials		0.36	1,28	ns
Absorption in each imagined scene:				
Cond X Trials	0.15	1,28		ns
Condition		0.22	1,28	ns
Trials		0.05	1,28	ns

TABLE 5

Within-session Ratings of Treatment Induced

Manipulations for Response-based Imagery Subjects (N=30)

	Trials	
	Session 1	Session 2
Within Session Rating	M (SD)	M (SD)
Relaxation during each imagined scene:	5.03 (0.78)	5.07 (0.70)
Percentage of time spent imagining each scene:	4.52 (0.95)	4.21 (1.21)
Vividness of each imagined scene:	4.33 (1.01)	4.27 (1.25)
Absorption in each imagine scene:	4.42 (0.94)	4.37 (1.15)

The reported means for the above self-ratings ranged between 3.48 and 5.07, indicating that the imagery exercises were vividly experienced.

The final analysis concerned the relationship between treatment induced reduction in headache activity and hypnotic susceptibility (CURSS: Spanos et al., 1983), the ability to engage

in vivid imaginative activity (VMI: Shor et al., 1966), the predisposition to report physical symptoms (PILL: Pennebaker, 1982) and social desirability /defensiveness (MCDS: Strahan & Gerbasi, 1972). Subjects who scored high on any of these measures might demonstrate significant differences in how they reported headache activity (e.g. Brown, 1984).

These above relationships were examined by zero order pearson product moment correlations. The sample size for these analyses ranged from 26 to 30 subjects. A maximum sample would have been 30 subjects from the hypnotic and non-hypnotic combined imagery condition. These numbers were reduced due to missing data and/or subjects's disinterest in participating in "supplemental" assessments. Table 6 demonstrates the correlations between headache reduction and the above assessments:

TABLE 6

Correlations between Hypnotic Susceptibility and
Personality Traits with Headache Reductions:

	Correlation with Headache reduction at follow-up		
	r	N	p
Pill (frequency)	.2078	28	.289
MCDS	-.1650	29	.392
CURSS (S1)	.2514	26	.215
CURSS (O)	.4584	26	.019
ABSORPTION	-.0760	28	.701
VMI	.2267	29	.237

The above correlations indicate that only the objective measure of hypnotizability was significantly correlated with headache improvement at follow-up. These results may suggest that those who report significant decreases in headache activity are more likely to report greater behavioral responses to the suggestions on the CURSS.

DISCUSSION

The most important results indicate that hypnotic and

non-hypnotic forms of response-based imagery are effective in reducing headache activity for chronic migraine and tension headache subjects. The employment of a Monitoring control group confirmed that decreases in headache activity were attributable to treatment effects and not to spontaneous remission.

As hypothesized, Hypnotic and Non-hypnotic imagery groups did not differ significantly across trials on headache activity. Results also confirmed the hypothesis that Hypnotic and Non-hypnotic subjects would significantly reduce headache activity as compared to the Monitoring Control group. Medication analysis indicated that reduction in headache activity among the imagining groups was not due to an increase in medication usage.

The non-significant differences between the hypnotic and non-hypnotic groups called for an investigation into the similarity of the two treatments. Analysis of the within-session ratings indicated that subjects in both the hypnotic and non-hypnotic reported imaginal experiences of equivalent duration and magnitude. These findings are consistent with the hypothesis that hypnotic and non-hypnotic imagery-based treatments achieve their effects through activation of the same cognitive activities.

The lack of significant correlations between headache reduction and social defensiveness (MCDS) and the propensity to

report physical symptoms suggests that the headache reductions reported were valid and not a result of subjects attempting to comply with experimental demands. Results also indicated that headache activity was not related to the ability to engage in vivid imagination (Shor et al, 1966). These findings support those of Brown (1984), who also reported that reductions in headache activity were not related to the ability to engage in vivid imagination. The finding that CURSS behavioral scores correlated with reductions in headache activity is open to several interpretations.

First, these results might indicate that performance on the tests of hypnotic susceptibility may involve similar cognitive skills that subjects were able to previously successfully employ in reducing headache activity. An alternative explanation suggests that despite the effort of the experimenter to present the supplemental assessments as a separate project, subjects may have connected the two incidents and felt pressured to perform consistently across both the headache experiment situation and the hypnotic susceptibility situation. Thus, those who performed well at reducing headache activity were motivated to perform well on the supplemental assessments. A final explanation emphasizes the fact that only the behavioral and not the subjective scores of hypnotic susceptibility correlated with reported headache reductions. This may indicate that subjects who complied on the CURSS without experiencing the hypnotic suggestions were the same

individuals who reported relatively higher reductions in headache activity.

Since cognitive therapy has demonstrated statistically significant decrements in headache activity it is necessary that further studies be conducted to further delineate the practicality of the current headache reductions. This issue must be addressed as the headache measure used in this study reflects a composite headache score that represents not only the number of headaches, but also frequency and intensity. Although this type of headache index is considered to be the most sensitive and ingenious measure to date (Blanchard and Andrasik, 1985) it is not a pure measure of any of the single aspects of headache activity. The results reported in this study reflect statistically significant decrements, but reductions are difficult to interpret practically. A criticism of Brown's (1984) study might also apply to the results presented here in that percentages of difference scores realistically reflect small actual headache reductions. In support of the headache measure used, it might be argued that number of headaches reported is not the only matter of importance, but issues such as intensity and frequency are also important aspects of headache activity.

REFERENCES

Ad Hoc Committee on the classification of Headache. (1962). Journal of the American Medical Association. 179:717-718.

Andrasik, F. & Holroyd, K. (1980). A test of specific and nonspecific effects in the biofeedback treatment of tension headache. Journal of Consulting and Clinical Psychology. 48:575-586.

Andrasik, F. & Holroyd, K. (1983) Specific and nonspecific effects in the biofeedback treatment of tension headache: 3 year follow-up. Journal of Consulting and Clinical Psychology. 51:634-636.

Attanasio, V. & Andrasik, F. (1987). Further Examination of Headache in a College Student Population. Headache. 27:216-223.

Bakal, D. (1982). The Psychobiology of Chronic Headache. New York: Springer, 1982.

Barber, T. & Cooper, B. (1972). Effects on pain of experimentally induced and spontaneous distraction. Psychological Reports. 31:647-651.

Barber, T., Spanos, N. & Chaves, J. (1974). Hypnotism: Imagination and Human Potentialities. New York: Pergamon.

Bernheim, H. (1891). New Studies in Hypnotism. (r. S. Sandor, Translator). New York: International Universities Press.

Blanchard, E. & Andrasik, F. (1985). Management of Chronic Headache: A psychological approach. New York: Pergamon Press.

Blanchard, E., Andrasik, F., Ahles, T., Teders, S. & O'Keefe, D. (1980). Migraine and tension headache: A meta-analytic review. Behavior Therapy. 11:613-631.

Blanchard, E., Applebaum, K., Evans, D., Myers, P. & Barron, K. (1986). Three studies of the psychologic changes in chronic headache patients associated with biofeedback and relaxation therapies. Psychosomatic Medicine. 48:77-83.

Blanchard, E., Applebaum, K., Guarnieri, P., Morrill, B. & Dentinger, M. (1987). Five year prospective follow-up on the treatment of chronic headache with biofeedback and/or relaxation. Headache. 27,580-583.

Blanchard, E., Applebaum, K., Guarnieri, P., Neff, D., Andrasik, F., Jaccard, J. & Barron, K. (1988). Two studies of the long-term follow-up of minimal therapist contact treatments of vascular and tension headache. Journal of Consulting and Clinical Psychology. 56, 3, 427-432.

Blanchard, E., Andrasik, F., Guarnieri, P., Neff, D. & Rodichok, L. (1987). Two-, three-, and four-year follow-up on the self-regulatory treatment of chronic headache. Journal of Consulting and Clinical Psychology. 55:257-259.

Brown, J. (1984). Imagery coping strategies in the treatment of Migraine. Pain. 18:157-167.

Budzynski, T. (1978) Biofeedback in the treatment of muscle contraction headache. Biofeedback and Self-Regulation. 3:409-434.

Budzynski, T., Stoyva, J & Adler, C. & Mullaney, D. (1973). EMG biofeedback and tension headache: A controlled outcome study. Psychosomatic Medicine. 6:509-514.

Ciccone, D. & Grzesiak, R. (1984). Cognitive Dimensions of Chronic pain. Social Science Medicine. 19:12, 1339-1345.

Chaves, J. (1989). Hypnotic control of clinical pain. In N. Spanos & J. Chaves (Eds) Hypnosis: The Cognitive Behavioral Perspective. New York: Prometheus Books, in press.

Chaves, J. & Barber, T. (1984). Cognitive strategies, experimenter modelling and expectation in the attenuation of pain. Journal of Abnormal Psychology. 83:356-363.

Cohen, M. (1978). Psychophysiological studies of headache: Is there similarity between migraine and muscle contraction headaches? Headache. 18:189-196.

D'Andrea, G., Toldo, M., Cortelazzo, S. & Milone, F. (1982). Platelet Activity in Migraine. Headache. 22:207-212.

Diamond, S., Diamond-Falk, J. & DeVeno, T. (1978). Biofeedback in the treatment of vascular headache. Biofeedback and Self-Regulation. 3:383-408.

Edmonston, E., Jr. (1986). The Induction of Hypnosis. New York: Wiley.

Faciullacci, M. (1979). Iris adrenergic impairment in idiopathic headache. Headache. 19:8-13.

Featherstone, H. (1985). Migraine and muscle contraction headaches a continuum. Headache. 25:194-198.

Freidman H, & Taub, H. (1984). Brief psychological training procedures in migraine treatment. American Journal of Clinical Hypnosis. 24:172-182.

Freidman H, & Taub, H. (1985) Extended follow-up study on the effects of brief psychological procedures in migraine therapy. American Journal of Clinical Hypnosis. 28:27-33.

Fordyce W. (1976). Behavioral methods for chronic pain and illness. St Louis: C.V. Mosby.

Gawel, M., Burkitt, M. & Rose, F. (1979). The platelet release reaction during migraine attacks. Headache. 19:323-327

Graham, S. (1979). Migraine Headache: diagnosis & management. Headache. 19:133-141.

Graham, J. & Wolff, H. (1938). Mechanisms of migraine headache and action of ergotamine tartrate. Advances of Neurology and Psychiatry.

Gravitz, M. (1988). Early uses of hypnosis as surgical anesthesia. American Journal of Clinical Hypnosis. 30:201-208.

Hilgard, E. (1975). The alleviation of pain by hypnosis. Pain. 1:213-231.

Hilgard, E. (1986). Divided consciousness: multiple controls in human thought and action. New York: Wiley-Interscience.

Hilgard, E & Hilgard, J (1983). Hypnosis in the relief of Pain. 2nd edition. Los Altos, CA: Willaim Kaufmann.

Holrold, K. (1986). Recurrent headache. In K. Holroyd & T. Career (Eds), Self-management of Chronic Disease: Handbook of Clinical Intervention and Research. New York: Academic.

Howard, I., Reardon, J. & Tosi, D. (1982). Modifying migraine headache through rational stage directed therapy: A cognitive-experimental perspective. International Journal of Clinical and Experimental Hypnosis. 30:257-269.

Kroger, W. (1977). Clinical and Experimental Hypnosis in Medicine. 2nd edition. Los Angeles: J.B. Lippincott.

Leviton, A. (1978). Epidemiology of headache. In B.S. Schoenberg (Ed), Advances in Neurology. (Vol 19, pp.341-352) New York: Raven.

Marino, J., Gwynn, M. & Spanos, N. (1989). Self-efficacy and cognitive strategy type in the reduction of experimentally induced pain. In press.

Michenbaum, D. (1976). Cognitive factors in Biofeedback therapy. Biofeedback and Self-Regulation. 1:201-216.

Ogunyemi, A. (1984). Prevalence of Headache among Nigerian university students. Headache. 24:127-130.

Oleson, J. (1978). Some clinical features of acute migraine attacks. An analysis of 750 patients. Headache. 18:268-271.

Pennebaker, J. (1982). Psychology of Physical symptoms. New York: Springer-Verlag.

Rolf, L., Weile, G. & Burne, G. (1981). 5 - hydroxytryptamine in platlets of patients with muscle contraction headache. Headache. 21:10-11.

Rosenberg, M., (1979). Concerning the Self. New York: Basic Books, Inc.

Rubin, L., Graham, D., Pasker, R. & Calhoun, W. (1985). Autonomic nervous system dysfunction in adult migraineurs. Headache. 25:40-48.

Rybstein-Blinchik, E. (1979). Effects of different cognitive strategies on chronic pain experience. Journal of Behavioral Medicine. 2:93-101.

Sargent, Green, E. & Walters, E. (1972). The use of autogenic feedback training in a pilot study of migraine and tension headaches. Headache. 12:120-124.

Saper, J. (1982). The mixed headache syndrome: a new perspective. Headache. 22:284-286.

Schlutter, L., Golden, C. & Blume, H. (1980). A comparison of treatments for prefrontal muscle contraction headache. British Journal of Medical Psychology. 53:47-52.

Shor, R., Orne, E. & O'Connell, D. (1966). Psychological correlates of plateau hypnotizability in a special volunteer sample. Journal of Personality and Social Psychology. 3:80-95.

Spanos, N. (1986). Hypnotic behavior: A social psychological interpretation of amnesia, analgesia and trance logic. Behavioral Brain Science. 9:489-502.

Spanos, N. (1989). Experimental research on hypnotic analgesia. In N. Spanos & J. Chaves (Eds) Hypnosis: The cognitive-behavioral perspective. New York: Prometheus Books, in press.

Spanos, N., Barber, T. & Lang, G. (1974). Cognition and self-control: Cognitive control of painful sensory input. In H. London & R. Nisbit (Eds). Thought and Feeling: Cognitive alteration of feeling states. Chicago: Aldine.

Spanos, N., Brown, J., Jones, B. & Horner, D. (1981). The effects of cognitive activity and suggestions for analgesia in the reduction of reported pain. Journal of Abnormal Psychology. 90:554-561.

Spanos, N., Gwynn, M. & Stam, H. (1983). Instructional demands and ratings of overt and hidden pain during hypnotic analgesia. Journal of Abnormal Psychology. 92:479-488.

Spanos, N., Hodgins, D., Stam, H. & Gwynn, M. (1984). Suffering for science: The effects of implicit social demands on response to experimentally induced pain. Journal of Personality and Social Psychology. 46:1162-1172.

Spanos, N., Horton, C. & Chaves, J. (1975). The effects of two cognitive strategies on pain threshold. Journal of Abnormal Psychology. 84:677-681.

Spanos, N., Kennedy, S. & Gwynn, M. (1984). The moderating effect of contextual variables on the relationship between hypnotic susceptibility and suggested analgesia. Journal of Abnormal Psychology. 93:285-294.

Spanos, N., Ollerhead, V. & Gwynn, M. (1986). The effects of three instructional treatments on pain magnitude and tolerance, Imagination, Cognition and Personality. 5:321-337.

Spanos, N., Stam, H. & Brazil, K. (1981). The effects of suggestion and distraction on coping ideation and reported pain. Journal of Mental Imagery.

Spinhoven, P. (1988). Similarities & dissimilarities in hypnotic and nonhypnotic procedures for headache control: A critical review. American Journal of Clinical Hypnosis. 30: 183-194.

Sternbach, R., Dalessio, D., Kunzel, M. & Bowman, G. (1980). MMPI patterns in common headache disorders. Headache, 20:311-315.

Shimomura, T., Nishikawa, S. & Takashashi, K. (1986). Hereditary dysrhythmic headache. Headache, 26:33-36.

Takeshima, T., Shimomura, T. & Takashashi, K. (1987). Platlet activation in muscle contraction headache and migraine. Cephalalgia, 7:239-243.

Takeshima, T. & Takashashi, K. (1988). The relationship between muscle contraction headache and migraine: A multivariate analysis study. Headache, 28:272-277.

Tellegen, A. & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotic susceptibility. Journal of Abnormal Psychology, 83:268-277.

Turk, D., Meichenbaum, D. & Genest, M. (1983). Pain and Behavioral Medicine. New York: Guilford Press.

Turk, D. & Genest, M. (1979). Regulation of Pain: The application of cognitive-behavioral techniques for prevention and remediation. In Cognitive-behavioral Interventions: Their Research and procedures. (Ed) P. Kendall & S. Hollon. Academic Press.

Turner, J. & Chapman, C. (1982). Psychological Interventions for chronic pain: A critical review 1. - Relaxation training and biofeedback. Pain, 12:1-21.

Turner, J. & Romano, J. (1984). Evaluating Psychologic Interventions for chronic pain: Issues and recent developments. Advances in Pain Research and Therapy, 7:251-296.

Werder, D., Sargent, J. & Coyne, L. (1981). MMPI profiles of headache patients using self-regulation to control headache activity. Headache, 21:164-169.

Wolff, H., Tunis, M. & Godell, H. (1953). Studies on Headache: Evidence of tissue damage and changes in pain sensitivity in subjects with vascular headaches. Archives of Internal Medicine. 92:478-484.

World Federation of Neurology's Research Group on migraine and Headache. (1969). Hemicrania. 1:3-9.

APPENDIX A

Headache History and Symptoms

Name: _____ Age: _____
Phone #: _____ Male () Female ()

1. How often do you experience headaches?

- ☐ one or less days per month
- ☐ two days per month
- ☐ one day per week
- ☐ two days per week
- ☐ more than two days per week

2. How long have you been experiencing headaches at the rate noted in the previous question?

- ☐ less than three years
- ☐ three to six months
- ☐ six months to one year
- ☐ one to two years
- ☐ two to five years
- ☐ more than five years

3. How would you rate your typical headache?

- ☐ 5 - Excruciating, incapacitating pain - the pain is so intense that you can do almost nothing
- ☐ 4 - Horrible, severe pain - the pain makes concentration difficult, but you can do some undemanding tasks
- ☐ 3 - Distressing pain - you are able to continue at your job or whatever you are doing
- ☐ 2 - Discomforting pain - you are able to ignore pain at times
- ☐ 1 - Mild pain - you are aware of this low level pain only when your attention is devoted to it
- ☐ 0 - No pain

4. What features characterize your typical headaches?

(Check off as many as are applicable)

- ☐ pain on both sides of head
- ☐ pain in the forehead area, though it may sometimes start at the back of the head or neck
- ☐ pain is a persistent dull ache
- ☐ pain feels like a cap or band around head
- ☐ sensations of tightness or pressure accompany headache
- ☐ pain on only one side of the head

- () pain is a throbbing sensation
- () one or more of the following signs precede or accompany headache- parts of visual field disappear temporarily, flashing lights, strange odors, tingling sensations
- () nausea or vomiting usually accompanies headache
- () sensitivity to light accompanies headache

APPENDIX B

HEADACHE HISTORY AND TELEPHONE INTERVIEW

Please check the applicable categories regarding these demographic features.

Name _____ Student ID _____ Age _____

Are you () single () married/living with a common-law spouse
How many years of post-secondary education have you completed?
() none; () 1; () 2; () 3; () 4; () 5 or more

1. At what age (approx) did your headaches begin? _____

At what age did you think of your headaches as a problem? _____

2. Was the onset of your headaches associated with any particular physical event (e.g. illness, injury) Yes () No ()

Please specify event _____

3. What is your personal explanation for the cause of your headaches, name as many factors that you feel are necessary

4. How confident are you that you know the real cause of your headaches?

Select a number from 1 to 10: _____

(0)

(10)

Not at all _____
Confident

Totally _____
Confident

Check here if you do not attribute the cause of your headaches to any particular factor(s) _____

5. Did the onset of headaches occur at the same time as any particular life event? (e.g. graduating or failing a year at

school, etc)

Y () N ()

Please Specify _____

6. Do any members of your natural family experience recurrent headaches? Check all appropriate brackets

☐ Father	☐ Mother
☐ Grandfather(s)	☐ Grandmother(s)
☐ Brother(s)	☐ Sister(s)
☐ Uncle(s)	☐ Aunt(s)

7. Have you ever sought medical attention for headaches?

Y () N ()

At what age was medical attention first sought? _____

Were you referred to a specialist? Y () N ()

Please specify what kind of specialist you saw:

8. What kind of diagnostic work have you received for headaches?

Check every item that is applicable

☐ general physical exam
☐ neurological exam
☐ EEG - electrodes placed on the surface of your head to
 measure cortical activity
☐ brain scan
☐ X-rays
☐ other - please specify _____

9. Have you ever been given a formal headache diagnosis

Y () N ()

If so were you diagnosed by your family physician

Y () N ()

...if yes what was the diagnosis _____

Were you diagnosed by a headache specialist

Y () N ()

...if yes what was the diagnosis _____

10. What kind(s) of treatment have you received for your headaches? check as many that are appropriate

☐ physiotherapy
☐ psychotherapy (by psychiatrist or psychologist)
☐ relaxation training

- ☐ biofeedback training
- ☐ treatment by a Chiropractor
- ☐ counselling from a dietician or nutritionist
- ☐ prescribed medications
- ☐ other - specify : _____

11. What medications do you currently take to control your headaches? Check appropriate category as well as approx dosage:

- ☐ Prescribed medication(s) List all:

- ☐ Non-prescribed medication(s) List all:

- ☐ Alcohol

Specify: _____

12. What do you presently do in order to manage your headaches?

13. List ALL of the features below that characterize your typical headache:

- ☐ pain on both sides of the head
- ☐ pain in the forehead area though it may sometimes start at the back of the head or neck
- ☐ pain is a persistent dull ache
- ☐ pain feel like a cap or band around the head
- ☐ sensations of tightness or pressure accompany headache
- ☐ pain is only on one side of the head
- ☐ pain is a throbbing sensation
- ☐ one or more of the following signs precede or accompany the headache - parts of the visual field disappear temporarily, flashing lights, strange odors, tingling sensations

- ☐ () nausea or vomiting usually accompanies headache
- ☐ () sensitivity to light accompanies headache

14. Do you have any chronic illness/condition that may or may not be associated with your headaches? Y () N ()

If yes please specify:

APPENDIX C

HEADACHE RATING CARDS

Name _____ DATE _____
 Note any key comments on back

AM						PM						AM											
5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Circle your level of pain at breakfast, lunch, supper and bedtime. If you skip a meal circle the time you would have normally eaten.

- 5 = Extremely intense headache, incapacitated
 4 = Severe headache, difficult to concentrate, can do undemanding tasks
 3 = Moderate headache, pain is noticeably present
 2 = Mild headache, could be ignored
 1 = Very mild headache, aware of it only when attending to it
 0 = No headache

Time headache(s)

began Ended

_____ Medication(s)

----- Medication(s)

----- Medication(s)

On the 0 to 5 headache scale, expected score for tomorrow is

Overall stress rating
 for TODAY _____

0-----10
 (not at all (Extremely
 stressful) stressful)

APPENDIX D

PILL

On the following pages several common symptoms or bodily sensations are listed. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among university students. Please respond by checking the appropriate letter for each question.

For example, if your ears tend to ring once every week or so, you would check the brackets for "D" next to item #3.

Never or almost never experience symptom	Less than 3 or 4 times per year	Every month or so	Every week or so	More than once every week
(A)	(B)	(C)	(D)	(E)

	(A)	(B)	(C)	(D)	(E)
1. Eyes water	()	()	()	()	()
2. Itching or painful eyes.	()	()	()	()	()
3. Ringing in ears.	()	()	()	()	()
4. Temporary deafness or hard of hearing.	()	()	()	()	()
5. Lump in throat.	()	()	()	()	()
6. Choking sensations.	()	()	()	()	()
7. Sneezing spells.	()	()	()	()	()
8. Running nose.	()	()	()	()	()
9. Congested nose.	()	()	()	()	()
10. Bleeding nose.	()	()	()	()	()
11. Asthma or wheezing.	()	()	()	()	()
12. Coughing.	()	()	()	()	()
13. Out of breath.	()	()	()	()	()

Never or almost never experience symptom	Less than 3 or 4 times per year	Every month or so	Every week or so	More than once every week
---	---------------------------------------	-------------------------	------------------------	------------------------------------

(A)	(B)	(C)	(D)	(E)
-----	-----	-----	-----	-----

	(A)	(B)	(C)	(D)	(E)
14. Swollen ankles	()	()	()	()	()
15. Chest pains.	()	()	()	()	()
16. Racing heart.	()	()	()	()	()
17. Cold hands or feet even in hot weather.	()	()	()	()	()
18. Leg cramps.	()	()	()	()	()
19. Insomnia	()	()	()	()	()
20. Toothaches	()	()	()	()	()
21. Upset stomach	()	()	()	()	()
22. Indigestion	()	()	()	()	()
23. Heartburn	()	()	()	()	()
24. Severe pains or cramps in stomach	()	()	()	()	()
25. Diarrhea	()	()	()	()	()
26. Constipation	()	()	()	()	()
27. Hemorrhoids	()	()	()	()	()
28. Swollen joints	()	()	()	()	()
29. Stiff muscles	()	()	()	()	()
30. Back pains	()	()	()	()	()
31. Sensitive or tender skin	()	()	()	()	()
32. Face flushes	()	()	()	()	()

Never or almost never experience symptom	Less than 3 or 4 times per year	Every month or so	Every week or so	More than once every week
---	---------------------------------------	-------------------------	------------------------	------------------------------------

(A)

(B)

(C)

(D)

(E)

(A)

(B)

(C)

(D)

(E)

33. Severe itching

() () () () ()

34. Skin breaks out in rash

() () () () ()

35. Acne or pimples on face

() () () () ()

36. Acne or pimples other than face

() () () () ()

37. Boils

() () () () ()

38. Sweat even in cold weather

() () () () ()

39. Strong reactions to insect bites

() () () () ()

40. Headaches

() () () () ()

41. Sensations of pressure in head

() () () () ()

42. Hot flashes

() () () () ()

43. Chills

() () () () ()

44. Dizziness

() () () () ()

45. Feel faint

() () () () ()

46. Numbness or tingling in any
part of the body

() () () () ()

47. Twitching of eyelid

() () () () ()

48. Twitching other than eyelid

() () () () ()

49. Hands tremble or shake

() () () () ()

50. Stiff joints

() () () () ()

51. Sore muscles

() () () () ()

52. Sore throat

() () () () ()

Never or almost never experience symptom	Less than 3 or 4 times per year	Every month or so	Every week or so	More than once every week
---	---------------------------------------	-------------------------	------------------------	------------------------------------

(A)

(B)

(C)

(D)

(E)

(A)	(B)	(C)	(D)	(E)
-----	-----	-----	-----	-----

53. Sunburn

() () () () ()

54. Nausea

() () () () ()

APPENDIX D

M-C SDS

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true (T) or false (F) as it pertains to you. Check the appropriate bracket. Go with your first judgement and do not spend too much time mulling over any question.

	TRUE	FALSE
1. I never hesitate to go out of my way to help someone in trouble.	()	()
2. I have never intensely disliked anyone.	()	()
3. I sometimes feel resentful when I don't get my way.	()	()
4. I like to gossip at times.	()	()
5. There are times when I felt like rebelling against people in authority, even though I knew they were right.	()	()
6. I can remember "playing sick" to get out of something.	()	()
7. There have been occasions when I have taken advantage of someone.	()	()
8. I'm always willing to admit it when I make a mistake.	()	()
9. I always try to practice what I preach.	()	()
10. I sometimes try to get even rather than forgive and forget.	()	()
11. When I don't know something I don't at all mind admitting it.	()	()
12. I am always courteous, even to people who are disagreeable.	()	()
13. At times I have really insisted on having things my own way.	()	()
14. There have been occasions when I felt like smashing things	()	()
15. I would never think of letting someone else be punished for my wrong-doings.	()	()
16. I never resent being asked to return a favor.	()	()
17. I have never been irked when people expressed ideas very different from my own.	()	()
18. There have been times when I was quite jealous of the good fortune of others.	()	()
19. I am sometimes irritated by people who ask favors of me.	()	()
20. I have never deliberately said something that hurt someone's feelings.	()	()

APPENDIX D

RSE

Instructions: Please indicate your degree of agreement or disagreement with each of the following statements by circling the appropriate option of each statement.

SA - strongly agree

A - agree

D - disagree

SD - strongly disagree

1. On the whole I am satisfied with myself.	SA A D SD
2. At times I think I am no good at all.	SA A D SD
3. I feel that I have a number of good qualities.	SA A D SD
4. I am able to do things as well as most other people.	SA A D SD
5. I feel that I do not have much to be proud of.	SA A D SD
6. I certainly feel useless at times.	SA A D SD
7. I feel that I'm a person of worth, at least on an equal plane with others.	SA A D SD
8. I wish I could have more respect for myself.	SA A D SD
9. All in all, I am inclined to feel that I am a failure.	SA A D SD
10. I take a positive attitude toward myself.	SA A D SD

APPENDIX D

VIVIDNESS OF MENTAL IMAGERY

This questionnaire involves imagining certain situations. For each of the following questions please indicate which of the responses in the key below best applies:

- a) perfectly clear, and as vivid as the actual experience
- b) very clear, and comparable in vividness to the actual experience
- c) moderately clear and vivid
- d) not clear or vivid, but recognizable
- e) vague and dim
- f) so vague and dim as to be hardly discernible
- g) no image at all; you only know that you are thinking of it

Please circle one response for each question.

1. When you close your eyes and try to imagine a specific automobile which you have seen many times, how vividly can you imagine it?

a b c d e f g

2. When you keep your eyes open and try to imagine the automobile, how vividly can you imagine it?

a b c d e f g

3. When you close your eyes and try to imagine a color, such as a bright blue, how vivid can you imagine it?

a b c d e f g

4. When you keep your eyes open and try to imagine a patch of the wall becoming a different color, how vivid can you imagine the changed color?

a b c d e f g

5. When you close your eyes and try to imagine your name and address written on a paper before you, how vivid can you imagine seeing the words?

a b c d e f g

6. When you try to imagine hearing a tune, how vividly can you imagine it?

a b c d e f g

7. When you try to imagine yourself running, how vividly can you imagine yourself actually moving? (This refers to the feeling of your muscles in motion, not visually seeing yourself running)

a b c d e f g

8. When you try to imagine your arms as being especially heavy, how vividly can you imagine it?

a b c d e f g

9. When you try to imagine a common odor, such as a fragrant cup of hot coffee, how vividly can you imagine it?

a b c d e f g

10. When you try to imagine a common taste, such as the sweetness of sugar, how vividly can you imagine it?

a b c d e f g

11. When you try to imagine the room as becoming especially warm, how vividly can you imagine it?

a b c d e f g

12. When you try to imagine the room as becoming especially cold, how vividly can you imagine it?

a b c d e f g

13. When you try to imagine yourself stroking fur, how vividly can you imagine the fur? (this refers to the feeling of touching, not visually trying to see it).

a b c d e f g

14. When you imagine how it feels when you have a common stomach ache, how vividly can you imagine it?

a b c d e f g

15. When you try to imagine the room spinning, how vividly can you imagine it?

a b c d e f g

THE CARLETON UNIVERSITY
RESPONSIVENESS TO SUGGESTION SCALE

Name _____

Date _____

Age _____

Sex _____

Occupation _____

Telephone _____

PLEASE DO NOT OPEN this booklet until specifically instructed
to do so.

Now, in your own words please list all of the suggestions you can remember. You have two minutes to do this.

PLEASE DO NOT TURN THIS PAGE until you are specifically instructed to do so.

PLEASE DO NOT RETURN TO PAGE 2.

PLEASE DO NOT TURN THIS PAGE until you are specifically instructed to do so.

PLEASE DO NOT RETURN TO EARLIER PAGES.

Now, in your own words please list all of the suggestions you can remember. You have two minutes to do this.

PLEASE DO NOT TURN THIS PAGE until you are specifically instructed to do so.

PLEASE DO NOT RETURN TO EARLIER PAGES.

Now, in your own words please list all of the suggestions you can remember. You have two minutes to do this.

PLEASE DO NOT TURN THIS PAGE until you are specifically instructed to do so.

PLEASE DO NOT RETURN TO EARLIER PAGES

SECTION ON OBJECTIVE, OUTWARD RESPONSES

Listed below in chronological order are the specific suggestions you were administered following the standard hypnotic induction procedure. We wish you to estimate whether or not you objectively responded to these suggestions, that is, whether or not an onlooker would have observed that you did or did not make certain definite responses by certain specific, predefined criteria. Thus, in this section we are interested in your estimates of your outward behavior and not in what your inner, subjective experience of it was like. Later on you will be given an opportunity to describe your inner, subjective experience, but in this section refer only to the outward behavioral responses irrespective of what the experience may have been like subjectively.

It is understood that in some cases your estimates may not be as accurate as you might wish them to be and that you might even have to guess. But we want you to make whatever you feel to be your best estimates.

Beneath a description of each of the six suggestions are sets of two responses, labeled A and B. Please circle either A or B for each question, whichever you judge to be the more accurate. Please answer every question. Make sure that you do not skip any questions. Please answer every one.

1. Arm Rising (Right Arm)

You were asked to extend your right arm straight out in front of you, and were told that your arm was rising into the air. Would you estimate that an onlooker would have observed that your arm had risen at least six inches (before the time you were asked to replace the arm in your lap)?

- Circle one:
- A. My arm rose at least six inches
 - B. My arm rose less than six inches

II. Arms Moving Apart

You were asked to extend your arms straight out in front of you with the fingers of one hand touching the fingers of the other. You were then told that your arms were moving apart. Would you estimate that an onlooker would have observed that your hands had moved apart by at least six inches (before the time you were asked to replace them in your lap)?

Circle one: A. My hands had moved apart at least six inches

B. My hands moved apart less than six inches

III. Arm Rigidity (Left Arm)

You were asked to hold your left arm straight out in front of you, and were told that the arm was becoming stiff and rigid and that it would not bend. You were then asked to try to bend it. Would you estimate that an onlooker would have observed that there was less than two inches of arm bending (before you were told that your arm was no longer stiff and to replace it in your lap)?

Circle one: A. My arm was bent less than two inches by then

B. My arm was bent two or more inches by then

IV. Arm Heaviness (Right Arm)

You were asked to place your right forearm on the table with your hand facing down. You were then told how heavy your arm and hand felt and asked to try to lift them from the table. Would you estimate that an onlooker would have observed that you did not lift your hand and arm at least one inch up from the table (before being told that your arm was no longer heavy)?

Circle one: A. I did not lift my arm and hand at least one inch by then

B. I did lift my arm and hand an inch or more by then

V. Experiencing Music

You were told that a record player had been brought into the room, that

you would hear it playing Jingle Bells, and that you would move your head to keep time to the tune. Would you estimate that an onlooker would have observed you to make recognizable movements of the head (before you were told that the record player had been turned off)?

Circle one: A. I did recognizably move my head to the tune

B. I did not recognizably move my head to the tune

VI. Experiencing a Kitten

You were told that a kitten was sitting in your lap. Then you were asked to look at the kitten and to pet it with your hand. Would you estimate that an onlooker would have observed you to make a petting movement with your hand?

Circle one: A. I did make a petting movement with my hand

B. I did not make a petting movement with my hand

PLEASE DO NOT RETURN TO EARLIER PAGES

SECTION ON SUBJECTIVE, INNER EXPERIENCES 1

In this section we are interested in your inner subjective experiences instead of your outward behavior. We want to find out about what you experienced during each of the suggestions you were given. Please read each question carefully and answer it honestly. The outward response people make to a suggestion may or may not correspond to their inner experience. For example, take a person who's outward behavior is arm rising when given the suggestion that their arm is light and moving upward. In some cases a person may have experienced his or her arm as feeling light. In other cases, however, the person's arm may have moved upward even though it did not feel the least bit light. The important thing to keep in mind is that one type of experience is no better and no worse than the other. This is a scientific study, and all we are interested in is getting at the truth of what people experience. So please be honest in answering each of the following questions. Please answer every question. Make sure that you do not skip any questions.

For each question choose the one alternative that best describes your experience.

1. Arm Rising (Right Arm)

You were told that your arm was feeling lighter and lighter and was rising in the air. You were asked to imagine that it was like a balloon and was being filled with air.

During this suggestion my arm felt light:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

II. Arms Moving Apart

You were told that your outstretched arms were moving apart, and that they felt like a force was repelling them and pushing them apart.

During this suggestion my arms felt like a force was pushing them apart:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

III. Arms Rigidity (Left Arm)

You were told that your outstretched left arm was becoming stiff, rigid, and unable to bend. You were asked to imagine the arm in a splint.

During this suggestion my arm felt stiff and rigid:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

IV. Arm Heaviness (Right Arm)

You were told that your arm and hand were very heavy, so heavy that you couldn't lift them from the table. You were asked to imagine heavy weights placed on your hand and arm.

During this suggestion my arm and hand felt heavy:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

V. Experiencing Music

You were told that you would hear the song Jingle Bells and that you would move your head in time with the music.

During this suggestion I felt like I was hearing the tune Jingle Bells:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

VI. Experiencing a Kitten

You were told that you would see a kitten in your lap and that you would pet the kitten.

During this suggestion I felt like I was seeing a kitten:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

VII. Forgetting the Suggestions

You were told that you would be unable to remember any of the suggestions you had been given until you heard a tap and the words "Now you can remember everything". You were told that you would be unable to remember the suggestion even when you were asked to try to remember.

During this suggestion I forgot the suggestions:

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

PLEASE DO NOT RETURN TO EARLIER PAGES

SECTION ON SUBJECTIVE, INNER EXPERIENCES II

In this section we are interested in a particular class of subjective, inner experiences. We want to find out about the extent to which you experienced your outward behavior to each suggestion as happening automatically and without a feeling of effort. For example, take a person whose outward behavior is to not bend their arm when they are told that the arm is stiff and unable to bend. Such a person may have felt that his or her arm was unable to bend. For this person it may have felt like the arm became stiff and unable to bend all by itself. In other cases, however, a person may not bend their arm even though they know that they could have bent it if they chose to. This person would have had the feeling of voluntarily choosing not to bend the arm. Remember, one type of experience is no better and no worse than the other. We are equally interested in finding out about experiences that feel automatic and also about those that feel voluntary. All we are interested in is getting at the truth about what people experience. So, please be honest in answering each of the following questions. Please answer every question. Make sure you do not skip any questions. For each question choose the one answer that best describes your experience.

I. Arm Rising (Right Arm)

You were told that your arm was light and rising in the air.

During this suggestion my arm felt like it rose in the air by itself. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: if you chose to lift your arm voluntarily, or if your arm did not feel

II. Arms Moving Apart

You were told that your outstretched arms were moving apart.

During this suggestion my arms felt like they were moving apart by themselves. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If you chose to move your arm voluntarily, or if your arms did not feel like they moved by themselves, you should choose alternative (a).

III. Arm Rigidity (Left Arm)

You were told that your outstretched arm was becoming stiff and unable to bend.

During this suggestion my arm felt like it was unable to bend. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If you chose voluntarily to not bend your arm, or if your arm did not feel unable to bend you should choose alternative (a).

IV. Arm Heaviness (Right Arm)

You were told that your arm and hand were too heavy to lift from the table.

During this suggestion my arm felt unable to be lifted. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If you chose voluntarily to not lift your arm, or if your arm did not feel unable to lift you should choose alternative (a).

V. Experiencing Music

You were told that you would hear the song Jingle Bells.

During this suggestion the tune Jingle Bells seemed to occur automatically, without any effort on my part. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If experiencing the tune seemed to take a good deal of effort on your part, or if you did not experience the tune choose alternative (a).

VI. Experiencing a Kitten

You were told that you would see a kitten in your lap.

During this suggestion the image of a kitten seemed to occur automatically, without any effort on my part. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If getting an image of a kitten seemed to take a good deal of effort, or if you did not get an image at all choose alternative (a).

VII. Forgetting the Suggestions

You were told that you would be unable to remember the suggestion you had been given.

During this time the suggestions seemed to disappear automatically from my memory, they seemed to just go away by themselves. I experienced this

- (a) Not at all
- (b) To a slight degree
- (c) To a moderate degree
- (d) To a great degree

Remember: If forgetting the suggestions seemed to require effort on your part, if you had to "try and forget", or if you felt that you did not forget anything, you should choose alternative (a).

APPENDIX F

INSTRUCTIONS: ON THE FOLLOWING PAGES, PLEASE PLACE AN "X" IN THE SPACES THAT CORRESPONDS TO YOUR ACTUAL EXPERIENCE.

1. During the previous exercise, I felt relaxed.

Not at all		Totally
Relaxed	--- : --- : --- : --- : --- : --- : ---	Relaxed

2. During the previous exercise, I was absorbed in the scene.

Not at all		Totally
Absorbed	--- : --- : --- : --- : --- : --- : ---	Absorbed

3. During the previous exercise, the amount of time in which I was imagining the scene was:

Not		All of
at all	--- : --- : --- : --- : --- : --- : ---	the time

4. During the previous exercise, I experienced the scene as being vivid to the following degree:

Not at all		Totally
Vivid	--- : --- : --- : --- : --- : --- : ---	Vivid

5. From the time that the hypnotic induction procedure ended, to the time that you awoke, how deeply hypnotized were you?

Not at all		Very deeply
Hypnotized	--- : --- : --- : --- : --- : --- : ---	Hypnotized

NOTE: QUESTION FIVE WAS GIVEN TO THE HYPNOSIS GROUP ONLY,
ALL OTHER GROUPS RECEIVED ONLY THE FIRST FOUR
QUESTIONS.

APPENDIX G

Protocol for Treatment Sessions Hypnosis and Imagery Groups

Note: Given that the protocol for the Imagery and Hypnosis group is essentially identical, distinctive features of the hypnosis protocol will be noted in block letters.

We are going to teach you strategies that you can use to reduce the frequency and intensity of your headaches. Previous research has made it clear that stress is somehow related to headaches, and often a person's pain experience is increased by automatically engaging in a set of physical, emotional, and cognitive reactions to the headache. For example, when some people experience a headache coming on they might think to themselves such things as: "Oh God this is awful...I can't take this anymore...it's never going to get better..." Thoughts like these are commonly associated with feelings of being overly burdened with, or emotionally defeated by the headache. A cluster of physical symptoms also accompanies this reaction style. The symptoms are expressed in the form of tension in the skeletal muscles, increased heart rate, blood pressure, rate of breathing, and so on. This automatic reaction pattern can interfere with an individual's ability to carry out regular daily tasks. The result is that daily activities are experienced as being stressful, and this experience can further intensify headache activity. As you might expect, automatic reactions to headaches take on many forms. However, numerous scientific studies have demonstrated that physical, emotional, and cognitive reactions to headaches can be significantly altered through therapies such as the one you are about to learn.

The (HYPNOTIC) procedure you will learn today has been used by physicians and psychologists to help people with a variety of pain syndromes, like back pain, arthritis, as well as headache. PREVIOUS RESEARCH HAS DEMONSTRATED THAT YOUR ABILITY TO BE HYPNOTIZED DEPENDS ENTIRELY ON YOUR WILLINGNESS TO CO-OPERATE. IT HAS NOTHING TO DO WITH YOUR INTELLIGENCE. AS FOR YOUR WILLPOWER, IF YOU WANT TO YOU CAN PAY NO ATTENTION TO ME AND REMAIN AWAKE ALL THE TIME, ON THE OTHER HAND, IF YOU PAY CLOSE ATTENTION TO WHAT I SAY, AND FOLLOW THESE INSTRUCTIONS, YOU CAN EASILY LEARN TO FALL INTO A HYPNOTIC SLEEP. HYPNOSIS IS NOTHING FEARFUL OR MYSTERIOUS. IT IS MERELY A STATE OF STRONG INTEREST IN SOME PARTICULAR THING. IN A SENSE, YOU ARE HYPNOTIZED WHENEVER YOU SEE A GOOD SHOW AND FORGET YOU ARE PART OF THE AUDIENCE, BUT INSTEAD FEEL PART OF THE STORY. YOUR COOPERATION, YOUR INTEREST, IS WHAT I ASK FOR. YOUR ABILITY TO BE HYPNOTIZED IS A MEASURE OF YOUR WILLINGNESS TO COOPERATE. NOTHING WILL BE DONE THAT WILL IN ANY WAY CAUSE YOU THE LEAST EMBARRASSMENT.

Visualization--vividly imagining scenes and events--are part of this treatment. I will soon ask you to practice visualizing some commonplace scenes (WITH THE AID OF HYPNOSIS). Remember, this porcedure is like daydreaming, but I'd like you to bring it more under your control (WITH THE AID OF HYPNOSIS), so that you can imagine specific events for a given period of time. First, find a psoition that is comfortable for you. As you are sitting there, I will ask you to visualize some scenes. Imagine these situations as vividly as you can. Involve yourself fully in the image. I want you to imaginatively participate in each scene that is presented. For example, in the first scene I will ask you to imagine lying on a beach. I want you to imagine how you really feel as you are lying on the beach in this scene. The idea of a vivid image is that you get the feeling of a real, actual experience. You will hear the image described on tape. As you listen to the scene, create the image in your mind, doing exactly what you would do and feel exactly as you would feel in the real situation. When the description is finished, keep imagining the scene until I ask you to stop. Please close your eyes.

NOW I AM GOING TO BEGIN THE HYPNOTIC PROCEDURE. PAUSE-. RELAX COMPLETELY. RELAX EVERY MUSCLE OF YOU BODY. RELAX THE MUSCLES OF YOUR LEGS. RELAX THE MUSCLES IN YOUR ARMS. MAKE YOURSELF PERFECTLY COMFORTABLE. LET YOURSELF BE LIMP. RELAX MORE AND MORE; MORE AND MORE. RELAX COMPLETELY. RELAX COMPLETELY.

YOUR LEGS FEEL HEAVY AND LIMP. HEAVY AND LIMP. YOUR ARMS ARE HEAVY, HEAVY, HEAVY AS LEAD. YOUR WHOLE BODY FEELS HEAVY, HEAVIER, AND HEAVIER. YOU FEEL TIRED AND SLEEPY, TIRED AND SLEEPY. YOU FEEL DROWSY AND SLEEPY, DROWSY AND SLEEP. YOUR BREATHING IS SLOW AND REGULAR, SLOW AND REGULAR.

YOU FEEL PLEASENTLY DROWSY AND SLEEPY AS YOU CONTINUE TO LISTEN TO MY VOICE. JUST KEEP YOUR THOUGHTS ON WHAT I AM SAYING. YOU ARE GOING TO GET MUCH MORE DROWSY AND SLEEPY. SOON YOU WILL BE DEEPLY ASLEEP BUT YOU WILL HAVE NO TROUBLE HEARING ME. YOU WILL NOT WAKE UP UNTIL I TELL YOU TO. AT EACH COUNT YOU WILL FEEL YOURSELF GOING DOWN, DOWN, DOWN INTO A DEEP, COMFORTABLE, A DEEP RESTFUL SLEEP. A SLEEP IN WHICH YOU WILL BE ABLE TO DO ALL SORTS OF THINGS I ASK YOU TO DO...(EXPERIMENTER COUNTS SLOWLY TO TEN).

YOU ARE FELLING COMFORTABLE AND RELAXED, COMFORTABLE AND RELAXED, AND YOU ARE IN A DEEP, SOUND SLEEP--A DEEP, SOUND SLEEP--FULLY PREPARED TO RESPOND TO AND EXPERIENCE WHAT I WILL ASK YOU TO DO...FULLY PREPARED TO RESPOND TO EACH OF THE SUGGESTIONS WHICH I WILL NOW GIVE YOU.

Make sure you are seated comfortably. Relax. Let your breathing take on a slow, deep, easy rythm. Let any problems, worries, or concerns fade into the background. Let these fade away, more and more, every time you easily let out each breath.

I will now introduce the first imagined scene. Let the scene become as vivid as possible, and allow yourself to imaginatively participate in this scene. (Pause 10 seconds).

Response-based Imagery scene #1 (90 seconds).

You are lying on the beach near the ocean. You feel the hot sun on your skin. As you are lying in the sun you hear the ocean waves lapping onto the beach. Their rhythmic sound lulls you to a very quiet, almost drowsy state. You feel the tension draining away from your body. The muscles of your arms and hands feel relaxed. Concentrate on the relaxation in your feet, legs, back, your neck and head. The muscles are completely relaxed ... tension draining away... gone. The muscles in your face, around your eyes, mouth, the back of your head... so relaxed. Think about this feeling of relaxation. Any tension in your body is draining away. Your breathing becomes quiet and slow. You are totally calm... relaxed. You feel wonderful. (Brief pause)

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

1st Treatment Efficacy Rating

Please close your eyes once more. Let your body resume a comfortable position. Allow yourself to (DRIFT EVEN DEEPER INTO HYPNOSIS) become even more relaxed. Relax all the muscle in your body. Let each muscle become heavier and heavier.. any tightness will fade away as your breathing becomes quiet and slow. You are relaxing deeper, and deeper.

We will do another scene in a moment. Remember, I want you to learn how to experience vivid imagery, through your participation in what you (HYPNOTICALLY) imagine. Just as in the previous scene, I want you to include your own actual responses in the imagery that is about to be presented. This will make the image more vivid, that is more like the real experience of the scene I present. Don't worry if the previous scene wasn't very vivid for you. Some people are initially better than others at this, but repetition and practice has been shown in research to help everyone gradually imagine events as if they were really happening.

Please prepare yourself to imagine the scene now. Allow the (HYPNOTIC SUGGESTIONS) instructions to enable you to create the imagined scene in your mind.. doing exactly what you would do in the real situation. When I finish the description, keep imagining the scene until I tell you to stop. Let's do the scene

now.

Repeat Response-based Imagery scene #1

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

2nd Treatment Efficacy Rating

Please close your eyes once more. Let your body resume a comfortable position. Allow yourself to (DRIFT EVEN DEEPER INTO HYPNOSIS) become even more relaxed. Relax all the muscle in your body. Let each muscle become heavier and heavier.. any tightness will fade away as your breathing becomes quiet and slow. You are relaxing deeper, and deeper.

Please prepare yourself to imagine the scene now. Allow the (HYPNOTIC SUGGESTIONS) instructions to enable you to create the imagined scene in your mind... doing exactly what you would do in the real situation. When I finish the description, keep imagining the scene until I tell you to stop. Let's do the scene now.

Response-based Imagery scene #2

You are sitting at home in a comfortable chair. You are sitting near a sunny window. It feels so good to be sitting with nothing to do, no need to rush anywhere... you are feeling so relaxed. You feel a bit warm and perhaps a bit drowsy. Your body sinks back into the chair and you feel as if the chair enfolds you. Your head falls back comfortably against the head rest. You notice that all the muscles in your neck, head, and face feel quite relaxed. Your shoulders, back, legs...no tension at all. They feel limp and relaxed. Concentrate on this feeling... so warm, drowsy, relaxed. Your breathing is quiet and deep. Your mind is completely calm as well. Calm..quiet...relaxed. (Pause 10 seconds)

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

3rd Treatment Efficacy Rating

Please close your eyes once more. Let your body resume a comfortable position. Allow yourself to (DRIFT EVEN DEEPER INTO

HYPNOSIS) become even more relaxed. Relax all the muscle in your body. Let each muscle become heavier and heavier.. any tightness will fade away as your breathing becomes quiet and slow. You are relaxing deeper, and deeper. Please prepare yourself to imagine the scene now. Allow the (HYPNOTIC SUGGESTIONS) instructions to enable you to create the imagined scene in your mind.. doing exactly what you would do in the real situation. When I finish the description, keep imagining the scene until I tell you to stop. Let's do the scene now.

Repeat Response-based Imagery scene #2

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

4th Treatment Efficacy Rating

Please close your eyes once more. Let your body resume a comfortable position. Allow yourself to (DRIFT EVEN-DEEPER INTO HYPNOSIS) become even more relaxed. Relax all the muscle in your body. Let each muscle become heavier and heavier.. any tightness will fade away as your breathing becomes quiet and slow. You are relaxing deeper, and deeper.

Now your task is to (HYPNOTICALLY) imagine a scene of your own choice. The only stipulation is that your scene should be similar in design to the previous scenes. That is, it should help you to actually become relaxed. Most of us have experienced certain moments in which we felt especially calm, relaxed, or peaceful...such as lying on a special couch while reading a favorite book; or strolling down a country road on a pleasant day; or enjoying the solitude of sitting in front of a warm fireplace on a cool evening. You can either imagine a scene that you have previously experienced, or you can imagine an entirely new scene that would help you to feel relaxed. You may also choose to return to one of the scenes that you imagined earlier in this session. Remember, let yourself feel your body actually relaxing during this imagined scene. Enjoy how your breathing will become slow, deep and easy... and how any tightness in your muscles will drain out of them throughout the exercise. Close your eyes, and begin imagining your selected scene now.

Selected scene Visualization (90 seconds)

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen

that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

5th Treatment Efficacy Rating

Please close your eyes once more. Let your body resume a comfortable position. Allow yourself to (DRIFT EVEN DEEPER INTO HYPNOSIS) become even more relaxed. Relax all the muscle in your body. Let each muscle become heavier and heavier.. any tightness will fade away as your breathing becomes quiet and slow. You are relaxing deeper, and deeper.

Now your task is to (HYPNOTICALLY) imagine your selected scene once more. Remember, your scene should be similiar in design to the previous scenes. That is, it should help you to actually become relaxed. Let yourself feel your body actually relaxing during this imagined scene. Enjoy how your breathing will become slow, deep and easy... and how any tightness in your muscles will drain out of them throughout the exercise. Close your eyes and begin imagining your selected scene now.

Repeat Selected Scene (90 seconds)

Now stop imagining the scene. Please open your eyes (BUT REMAIN HYPNOTIZED). Try to not disrupt your general feeling of relaxation. We now want you to report on how vividly you experienced this scene. Please pick up the questionnaire and pen that are at your side. Rate your experience according to the few questions in front of you. Do not talk during this segment.

Please close your eyes once more. Now I am going to help you return to your normal state of alertness. As you follow my instructions you will gradually become more alert.

YOU ARE GOING TO WAKE UP IN A FEW MOMENTS. YOU WILL FEEL REFRESHED, WIDE AWAKE, AND IN A GOOD MOOD. I WILL COUNT FROM ONE TO TEN, AND WITH EACH COUNT YOU WILL FEEL YOURSELF BECOMING MORE AND MORE AWAKE. READY? NOW; 1..BEGINNING TO AWAKE...2...3..MORE AND MORE AWAKE...4....5..STILL MORE AWAKE...6...7..GRADUALLY BECOMING AWARE OF THE SOUNDS IN THE ROOM, AND THE PRESENCE OF OTHERS...8...ALMOST COMPLETELY AWAKE...9...10 WIDE AWAKE AND REFRESHED..OPEN YOUR EYES..WIDE AWAKE. PLEASE REMAIN WHERE YOU ARE FOR THE MOMENT, AND SIT BACK WITH YOUR EYES OPEN. (BREIF PAUSE).

(IMAGERY GROUP ONLY) Begin to notice how refreshed you generally feel. Take note of your relaxed muscles, your rate of breathing, and the relaxed flow of your thoughts. Gradually become aware of the sounds in this room, as well as the presence of others around you. Slowly begin to move your muscles. You may wish to stretch the muscles in your arms or legs. Let your eyes open gradually. Please remain where you are for the moment, and

sit back with your eyes open.

Today I asked you to practice achieving vivid images by becoming (HYPNOTICALLY) involved in each scene - that is, by actually imagining how your muscles feel, breathing, etc. We will continue with the same kind of practice next session.

It is important to use these imagery/HYPNOTIC skills when you have a headache, or when you feel a headache coming on. No matter what you are doing or thinking about just before, or during a headache, take a few minutes out and imagine one of these scenes. Get yourself into a comfortable position, in a quiet place if possible, and imagine a scene or two.

IT WILL BE POSSIBLE FOR YOU TO UTILIZE SELF HYPNOSIS BY SIMPLY ALLOWING YOURSELF TO BECOME RELAXED AND IMAGINATIVELY FOCUSED, JUST AS YOU DID IN THIS SESSION. Remember what you have learned about vivid imagery. You must really put your own responses and feelings into the imagery. Practice it for five or ten minutes everyday. You may find that it takes a while to get into it, but thats okay. Just keep going. Some poeple find it more difficult to do than others, it just takes practice. You'll get better and better at it the more you do it. Try to practice the imagery/SELF HYPNOSIS technique when you have time, in order to become more efficient at using it.

END

1 9 0 9 9 0

FIN