HYPNOSIS:
AN EFFECTIVE INTERVENTION FOR
MIGRAINE HEADACHES

by

ROD J. MUNCH

B.A., Simon Fraser University, 1974
A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
in
THE FACULTY OF GRADUATE STUDIES
Department of Counselling Psychology

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA
September, 1988
© Rod J. Munch, 1988
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Counselling Psychology
The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3
Date October 7, 1988
ABSTRACT

The general distribution of the headache worldwide, its widespread occurrence, and its frequency of incidence is well documented. It is a disorder that often goes unreported with pharmaceutical intervention being the most commonly applied remedy. The National Migraine Foundation estimates that 42 million Americans suffer from headaches. Of these 8 to 12 million Americans are afflicted by the migraine headache. This study examined the effectiveness of hypnotherapy as an intervention for migraines.

It was a single case holistic study in which a 23 year old female migraineur provided the single unit of analysis. Assessments of self concept; stress; headache frequency, duration, and intensity; and consumption of pharmacological substances were made prior to treatment, during treatment, and following treatment. The therapy consisted of eight sessions over 2 1/2 weeks and consisted of a relaxation induction and guided imagery of control of physiological responses. An audiotape of the hypnotherapy intervention was also used on a daily basis by the client.

Results from post therapy and follow-up tests confirmed the treatment was effective. This was maintained at the one and two month follow-ups.
# TABLE OF CONTENTS

Abstract .................................................................................................................. 11  
Table of Contents .................................................................................................. 111  
List of Figures ......................................................................................................... v  
List of Tables ........................................................................................................... v11

## CHAPTER ONE  INTRODUCTION TO THE STUDY  
Epidemiology of the Headache .............................................................. 1  
Purpose of the Study ...................................................................................... 3  
Hypotheses Tested ...................................................................................... 10

## CHAPTER TWO  HEADACHES  
History of Headaches .................................................................................. 11  
The Headache: What Is It? ........................................................................ 13  
Classification of Headaches ......................................................................... 14

## CHAPTER THREE  THE MIGRAINE HEADACHE  
History of the Migraine ............................................................................... 19  
A Definition of Migraines ........................................................................... 27  
Sequence of Migraines ............................................................................... 30  
Incidence of Migraines ............................................................................... 30  
Distribution of Migraines ........................................................................... 31  
Influencing Factors and Causes of Migraines ............................................ 31  
Intervention for the Migraine Headache ...................................................... 35

## CHAPTER FOUR  HYPNOSIS  
History of Hypnosis ....................................................................................... 54  
Hypnotherapy ................................................................................................. 61  
Hypnotherapy and Migraines ....................................................................... 62

## CHAPTER FIVE  METHODOLOGY  
Acquisition of Client ....................................................................................... 70  
The Subject ...................................................................................................... 71  
Procedure ......................................................................................................... 74  
Intervention ....................................................................................................... 75  
Instruments ....................................................................................................... 78  
Barber Suggestibility Scale .......................................................................... 78  
Headache Data Form ...................................................................................... 79  
Personal Stressors Scale ............................................................................... 80  
Tennessee Self Concept Scale ...................................................................... 81

## CHAPTER SIX  RESULTS  
Barber Suggestibility Scale .......................................................................... 84  
Headache Data Form ...................................................................................... 84  
Personal Stressors Scale ............................................................................... 90  
Tennessee Self Concept Scale ...................................................................... 105
<table>
<thead>
<tr>
<th>Chapter Seven</th>
<th>Discussion and Conclusions</th>
<th>References</th>
<th>Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Implications of Test Results</td>
<td></td>
<td>APPENDIX A: Diagnostic Criteria for the SUNYA Headache Project</td>
</tr>
<tr>
<td></td>
<td>Internal and External Validity</td>
<td>118</td>
<td>APPENDIX B: Trance Induction and Experiential Phases</td>
</tr>
<tr>
<td></td>
<td>Significance of the Study</td>
<td>120</td>
<td>APPENDIX C: Client's Log</td>
</tr>
<tr>
<td></td>
<td>Limitations of the Study</td>
<td>124</td>
<td>APPENDIX D: Barber Suggestibility Scale</td>
</tr>
<tr>
<td></td>
<td>Summary and Conclusion</td>
<td>127</td>
<td>APPENDIX E: Headache Data Form</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>APPENDIX F: Personal Stressors Scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>APPENDIX G: Tennessee Self Concept Scale</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-1</td>
<td>86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-2</td>
<td>86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-3</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-4</td>
<td>88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-5</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-6</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-9</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-11</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-12</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-13</td>
<td>96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-14</td>
<td>96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-15</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-16</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-17</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-18</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-19</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-20</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-21</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-22</td>
<td>101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 7-1 ......................................................... 114
CHAPTER ONE
INTRODUCTION TO THE STUDY

Epidemiology of the Headache

The headache is probably the oldest and most common ailment and medical complaint in the history of civilized man (Adams, Feuerstein, & Fowler, 1980; Dalessio, 1980; Diamond & Diamond-Falk, 1982; Ryan & Ryan, 1978; Waters, 1986). Raskin and Appenzeller (1980) and Wilkinson (1982) estimate that one in three people in the Western hemisphere suffer from headaches; that is, have at least one or more headaches per year. The National Migraine Foundation (Adams, Feuerstein, & Fowler, 1980) estimates that 42 million Americans suffer from headache and suggests it is almost as widespread as the common cold. In a general population survey, Leviton (1978) discovered 14% of males and 28% of females experienced frequent and/or distressing headaches while severe headaches were afflictions of 31% of males and 44% of females. Diamond and Diamond-Falk (1982) maintain that the disorder is of even greater proportion. They claim as much as half of the world's population suffers from this malaise. Waters (1970, 1974), in a study of communities in Wales, found that 60% to 73% of males and 77% to 80% of females complained of having at least one headache within the past year. Of those interviewed, Waters discovered that 31% of men and 44% of women admitted to
having had one or more severe headaches in the past year and 48% of men and 65% of women had at least one headache per month.

These statistics suggest much disagreement and inconsistency in researcher findings of the frequencies of headache. Why is this so? One possible explanation would posit that symptoms of headache largely go unreported. Leviton (1978) found that the percentage of patients visiting physicians with headache as the presenting problem varies between 1% and 8% with an average of 6.5%. Although it is thought that most people endure headache pain at sometime in their lifetime; because of its perception as a minor ailment, many never visit their family doctors and therefore are not included in the statistics.

In summary; the headache, although considered a lesser disorder when compared with cancer or aids, is a significant malady in terms of its frequency of occurrence. A perception of this disorder as a problem of epidemic proportions which generally goes unreported and thereby untreated, would not be an overstatement.

In response to wide prevalence of the headache disorder, a number of interventions have been initiated and developed. These can be assembled into three therapy approaches; surgical, pharmacological, and behavioural. Surgery, although frequently used in past and dating back to the stone age, has been abandoned due to its irreversible
drastic nature and often ineffective results. Treatment by drugs is the most usual recommendation made by practitioners for relief of headache pain. However their short term benefits, possible side effects, and very often, ineffectiveness often cause physicians and headache sufferers to seek alternative, more efficient means of treatment. Behavioural interventions are relatively more recent treatments. These include biofeedback, acupuncture, relaxation training, cognitive treatment, and hypnosis. Research demonstrates that although the behavioural treatments appear to have the greatest success, they are not always utilized. More often their use is limited to a last resort when treatment by pharmacological methods has been unsuccessful.

Purpose of the Study

It was the intention of this study to assess the efficacy of hypnosis as an intervention to reduce or completely abate the symptoms of the migraine headache. Current research on this form of therapy as an intervention for migraine headache is limited; however, of the studies that have been done, hypnosis has demonstrated success as a treatment adjunct for headaches (Anderson, Basker, & Dalton, 1975; Andreychuk & Skrwrer, 1975; Ansel 1977; Daniels, 1976, 1977; Friedman & Taub, 1982, 1984; Graham, 1975; Stambaugh & House, 1977).
Furthermore, it was the aim of the researcher to produce a study different from all previous experimentation. Firstly, this investigation utilized a single case experimental design, a much superior and stronger basis for making causal inferences and claims of change. This type of design evolved in response to validity criticisms of past case study research and is only beginning in its implementation (Mott, 1985, 1986; Nugent, 1985). Secondly, this report is unique in that it employed a brief, intense intervention period of 8 sessions over a 2 1/2 week period. Finally, this experiment attempted to determine whether therapist knowledge and/or experience are/are not contributing factors to the effectiveness of hypnotherapy with migraine headaches. The researcher had limited experience in hypnotherapy having worked with an established hypotherapist for less than one year.

Because of the uniqueness of the case and the treatment method, the researcher chose to utilize a single case design. This design is of a holistic nature as only one case was examined without presence of any subunits (Yin, 1984). Nugent (1985), in his review of the case studies published in the American Journal of Clinical Hypnosis from 1978 to 1982 found that 90.5% of them were class one designs. These are designs that have weak internal validity as they utilize only anecdotal data and therefore rely solely on researcher opinion as the basis for claims of
change and causal inference. In addition, the anecdotal case study has poor external validity as it is difficult to replicate and thereby generalize the results of the experiment or extend them beyond the conditions of the experiment. These weaknesses of most case studies has been also identified by Hersen and Barlow (1976), Bloom and Fischer (1982), and Kazdin (1982).

Instead, the above researchers suggest use of the single case experimental design - a design that has much greater internal and external validity and is therefore far more powerful and significant in contributing valid results to research. Different from the traditional anecdotal case study where objective measures are non existant and conclusions discussing reasons for change are limited to researcher opinion, the single case experimental design is the preferred design among researchers. This study has made every attempt to fulfill the conditions of a valid case study outlined by Hersen and Barlow (1976), Bloom and Fischer (1982), Kazdin (1982), and Nugent (1985).

Bloom and Fischer (1982) define internal validity as the "validity to claims of causal connection between an intervention and observed change" (page 290). Kazdin (1982) lists history (events occurring at the time of the experiment that could distort the results), maturation (changes of the individual during the intervention) (eg. growing older, getting healthier, etc.), testing (changes of
the measuring instrument), and statistical regression (change of scores in a direction toward the mean at different test times) as the greatest threats to internal validity.

A number of criteria can be used to evaluate the internal validity of case studies. Continuous assessment is agreed by Kazdin (1982), Bloom and Flscher (1982), and Nugent (1985) as one of two primary requirements of single case experimental designs. By observing the subject's performance on several occasions, continuous assessment permits the researcher to investigate the pattern and stability of behaviour prior to intervention and thereby determine whether performance changes correlate with therapy. Nugent (1985) refers to continuous assessment as using repeated measures of the problem during treatment. In this study, continuous assessment was employed on an hourly, daily, and weekly basis depending on the nature of the test. The study was of six weeks in duration, with a two week baseline, two and one-half week intervention phase, and a one and two month follow-up.

The second primary prerequisite needed to maintain internal validity of single case studies is baseline assessment (Kazdin, 1982). This consists of observation of the subject's conduct for a period of time prior to engagement of the intervention. This baseline period not only provides the investigator with information describing
the present level of performance but it also serves to provide a foundation for predicting behaviour patterns in the immediate future if therapy was not to be applied. Nugent (1985) refers to this as stability information. He defines this as "evidence of an extended history, a retrospective baseline, or a current repeated measurement pattern that shows a long-standing, stable, non changing or worsening 'problem'" (page 195). Once stability of performance is identified, when intervention is engaged and behaviour changes, one could conclude the change was a result of the intervention.

As mentioned, this study administered a baseline in advance of treatment. During this period, client data was collected from four tests (i.e. the Barber Suggestibility Scale (BSS), the Headache Data Form (HDF), the Personal Stressors Scale (PSS), and the Tennessee Self Concept Scale (TSCS)). Before therapy, the TSCS was administered once, the PSS twice, and the HDF on a daily basis.

Other criteria necessary in preserving the internal validity of case studies includes the use of objective data. Kazdin (1982) asserts that objective data "provide information that change has in fact occurred" (page 89). Case studies whose conclusions are based on anecdotal data are weak as they merely reflect the opinion of the researcher. This study made use of both objective and subjective data collectors. The objective measurements
Included the first section of the Barber Suggestibility Scale (Appendix C), the duration and frequency headache and pharmacological data of the Headache Data Form (Appendix D), and the Tennessee Self Concept Scale (Appendix F).

Bloom and Fischer (1982) define external validity as the degree to which the case study can be replicated and generalized by other subjects and therapists to problems. Nugent (1985), in his assessment of the external validity of case studies published in the American Journal of Clinical Hypnosis found that only 13.5% of 74 studies could be considered to have attained a sufficient level of external validity. He based his assessment on determining whether sufficient operational information re the intervention (i.e. actions and/or behaviour of therapist and client including order and timing of the actions and/or behaviour) is furnished to allow another therapist to replicate the intervention following a reading of the research. Studies that did not provide a clear and complete statement of the intervention process were judged to have low external validity.

Every attempt was made to be sensitive to replicability in this research. Judgement will be left to the reader.

In addition, this study was formatted after an ABA design which examines the effects of a treatment by interchanging the baseline (A phase) when no treatment is provided with the treatment stage (B phase). Finally the
study returns to the A phase to complete the study (Kazdin, 1982).
Hypotheses Tested

**Hypothesis 1:** There will be a statistically significant difference in scores from objective criteria (Tennessee Self Concept Scales, headache frequency and duration data, and pharmacological use before and after therapy). Following treatment, these change scores will illustrate higher results in self esteem and self-concept, a decrease in self-criticism, and greater consistency and certainty in self perception.

**Hypothesis 2:** There will be a statistically significant difference in scores from subjective criteria (i.e. Personal Stressors Scale and headache intensity) prior to and succeeding intervention. These change scores will reflect a decline in the perception of the degree of headache pain and stress.

**Hypothesis 3:** Brief but intense hypnotherapy is as effective as the same intervention applied over a longer period with longer interval times between therapy sessions.

**Hypothesis 4:** Highly trained therapists with years of experience are not necessarily prerequisites for successful intervention of migraine headaches using hypnosis.
CHAPTER TWO

HEADACHES

History of Headaches

Although the headache can be a symptom of our inability to cope with the pressures of our modern day world, it is not a new phenomena among human beings.

There is some evidence that the headache dates back to the time of the stone age. Anthropologists believe that openings found in stone age skulls were surgically drilled. It is thought that trepanning was practiced in areas of the Mediterranean and South America one to three thousand years before the birth of Christ (Adler, Adler, & Friedman, 1987). Earliest recorded observation of the headache dates back 5000 years to the times of the Babylonian empire. A Sumerian poet complains of his incompacitating pain and writes:

The sick-eyed says not
"I am sick eyed,"
The sick-headed not
"I am sick-headed" (Bille, 1962, p. 14).

It is thought that early man believed that chanting the above verse would alleviate headache pain. The Sumerian chant did not always successfully serve as an antidote to headache as evidenced by the following verse from Babylonian writings at approximately the same period:
Headache roameth over the desert, blowing like the wind,
Flashing like lightning, it is loosed above and below; It cutteth off him who feareth not his god like a reed,
Like a stalk of henna it slitteth his thews.
It wasteth the flesh of him who hath no protecting goddess.
Flashing like a heavenly star, it cometh like the dew;
It standeth hostile against the wayfarer, scorching him like the day,
This man it hath struck and
Like one with heart disease he staggereth,
Like one bereft of reason he is broken,
Like that which has been cast into the fire he is shrivelled,
Like a wild ass...his eyes are full of cloud,
On himself he feedeth, bound in death;
Headache whose course like the dread windstorm none knoweth,
None knoweth its full time or its bond (Lance, 1982, p. 1). Reference to headache pain has been found in the Ebers Papyrus, an ancient Egyptian document discovered between the legs of a mummy in the necropolis of Thebes. Thought to have been transcribed in 1550 B.C. from previous medical
literature, it describes shooting head pains, neuralgia, and migraine (Lance, 1982).

Asclepius was the first major influence on Greek medicine. Greek patients were brought to Ascleplan temples where the powers of suggestion were used to initiate self healing. The client would fall into what was referred to as "the sleep of incubation" (Adler, Adler, & Friedman, 1987). Often the patient would sleep inside the skin of a sacrificed animal and would experience a healing dream. Case number 29 describes how incubation was employed as a cure for headache (Lance, 1982). Inscribed on tablets of stone at Epidaurus, it states; "Agestratos suffered from insomnia on account of headaches... He fell asleep and...thought the god...taught him wrestling. ...He departed cured...competed at the Nemean games and was victor in wrestling" (Adler, Adler, & Friedman, 1987, p.8).

The Headache—What Is It?

What symptoms do most people associate with the headache? Quite simply stated, it is a feeling of pain and/or discomfort in the interior or exterior of the cranial area. The degree of pain can vary from a mild ignorable ache to a totally incapacitating lancination. Also termed cephalalgia, it has been characterized by dizziness, tenseness, unusual sensations, and/or feelings of pressure. It can be a throbbing pain like a series of blows by a hammer or a sharp jabbing pain as if the head was being
The headache itself is a symptom of some functional disorder. That disorder can be twofold in nature. Firstly, it can be a symptom of an individual's incapacity to cope with the stresses of life and thereby would be correctly termed as a thought or behavioural dysfunction. Because of its symptomatic nature, headaches have not been given the attention by the medical field as one might think given its widespread distribution. Secondly, it could be an added dimension to other disorders such as low blood sugar, hangover, fever, allergies, brain tumor or hemorrhage, and diseases associated with the teeth, circulatory and/or glandular systems (Dalessio, 1980).

Medical experts appear to hold stress as the major contributing factor for headaches today (Diamond & Diamond-Falk, 1982; Saper, 1983). Our very busy, complex, and demanding life styles today cause reactions such as tension, anxiety, depression, frustration, and hostility. These are all considered catalysts for the onset of headache pain (Raskin & Appenzeller, 1980).

**Classification of Headaches**

Headaches are classified according to the means by which the pain occurs. The simplest classification separates them into three main groups: vascular headaches - those caused by unusual expansion and/or constriction of the
cerebral arteries; muscle contraction or tension headaches — those that result from contraction of the head, neck, and facial muscles; and traction and inflammatory headaches which are catalyzed by organic diseases of the skull and/or its components (Dalessio, 1980; Diamond & Dalessio, 1986; Diamond & Friedman, 1983).

Those headaches caused by the swelling of the blood vessels in the tissue surrounding the head are called vascular or blood vessel headaches. They tend to be a familial disorder characterized by recurrent attacks. They include the classic and common migraine, the hemiplegic and ophthalmoplegic migraine, the cluster headache, toxic vascular headache, and hypertensive headache. Besides dilation, vasoconstriction may also occur. This is thought to be the cause of the sensory and motor phenomena that sometimes accompany these headaches. Recurrent attacks of the vascular headaches vary in intensity, frequency, and duration. They are characterized by initial unilateral pain and are often accompanied by anorexia. Nausea and vomiting are typical bodily responses. The classic migraine refers to that vascular headache with well defined prodromes or warning signs that are most often visual but can also include sensory, motor, or even speech impairments. "Sick headache" or common migraine is vascular but without sharply defined prodromes. It is not often unilaterally located. The cluster headache occurs in groups, one or more times
daily over a period of weeks and even months. This is followed by an abatement for months and as much as years. They are unilaterally located always occurring on the same side. They are commonly connected with flushing, sweating, excessive mucous secretion from the nose, and abnormal secretion of tears. The hemiplegic and opthalmoplegic migraine are associated with sensory and motor phenomena which are present before and after the headache. Toxic vascular headaches are induced by fever, consumption of alcohol, poisons, or carbon dioxide. Elevation of blood pressure in the systemic arterial system is the chief trait of the hypertensive headache (Diamond & Dalessio, 1986; Diamond & Friedman, 1983).

The second group of headaches; muscle contraction, is the most common kind of headache with 85% to 90% of complaints to physicians being of this type. It is characterized by contraction of the muscles of the head, neck, and face. It is typically described as a tightness or band around the head ("hatband effect") or a pinching sensation in the neck muscles. Tending to be a feeling of pressure rather other pain, 90% of these headaches are centered on both sides of the head. Often wide changes in mood, thought, or behaviour accompanies this headache. It is usually persistent and does not vary in its location. Duration and frequency of these headaches tend to fluctuate
considerably (Diamond & Dalessio, 1986; Diamond & Friedman, 1983).

Individuals that are depressed or succumb easily to stress or anxiety are often recipients of the tension headache. Stress tends to cause one to tighten muscles of the jaw, face, scalp, and neck which results in pain. The pain experienced by this headache is accentuated by a substance called ergotamine tartrate which shrinks the blood vessels. This is unlike other types of headache pain which are relieved by ergotamine tartrate. Again, different from other headaches, alcohol causes the blood vessels to swell and relieve the pain of muscle contraction headaches. In other headaches, alcohol can worsen and actually initiate a headache. The muscle contraction is frequently accompanied by disturbances in sleep, particularly those individuals experiencing depression or anxiety. Analgesics have no effect on the pain of muscle contraction headaches. They tend to be most severe in the mornings and are more frequent on holidays and weekends. They are not familial in nature but can be a "learned" response (Diamond & Dalessio, 1986; Diamond & Friedman, 1983).

Headaches precipitated by organic diseases of the skull or its components (i.e. brain, arteries, veins, eyes, ears, teeth, nose, and sinuses) are of the third category - traction and inflammatory headache. The classification, traction, is used to categorize those headaches that
accompany injuries of the brain such as tumors, abscesses, and edema. Traction and inflammatory headaches are also connected with hemorrhaging of the brain tissues near the spinal cord, meninges inflammatory disease, phlebitis, disease of the sense organs and/or the teeth and with disorders of the neck joints and the jaw (Dalessio, 1980; Diamond & Dalessio, 1986; Diamond & Friedman, 1983).
CHAPTER THREE

THE MIGRAINE HEADACHE

History of the Migraine

Because of the migraine headache's distinctive traits, its history can be more clearly traced. Today's migraineurs can feel some commonality with such historical greats as Julius Caesar, St. Paul, John Calvin, Blaise Pascal, Thomas Jefferson, Edgar Allan Poe, Charles Darwin, Karl Marx, Ulysses S. Grant, and Sigmund Freud who suffered greatly from the migraine malaise (Adler, Adler, & Friedman, 1987). As previously mentioned, archeologists claim the headache disorder was suffered by people living in the stone age. Furthermore, it is commonly thought that many of the openings found in stone age skulls were made by ancient "physicians" to relieve early man of migraine headache pain. There are two reasons for this conclusion. First, it is known that primitive man believed that headache was a sign of possession of evil spirits and therefore the natural treatment was to provide openings in the head to allow the spirits access to leave. Secondly, the openings found in a number of prehistoric skulls were located in positions known to be the usual sites for migraine pain (Speer, 1977).

Migraines were also noted in the Ebers Papyrus. Considered to the oldest medical statement in existence, it
made mention of headache pain as a "sickness of half the head" (Hanington, 1974). The Egyptians thought that the occurrence of the headache was a result of being possessed by the evil spirit "Fire". Following possession by Fire, one was believed to become incapacitated to a degree similar to that of insanity (Diamond & Diamond-Falk, 1982).

Later around 400 B.C., Hippocrates of the ancient Greeks described the prodrome or premonitory symptom of a classical migraine headache as well as its most characteristic side effect--vomiting and visual prodromes (Waters, 1986).

Most of the time (the patient) seemed to see something shining before him like a light, usually in part of the right eye; at the end of a moment, a violent pain supervened in the right temple, then in all the head and neck, where the head is attached to the spine...vomiting, when it became possible, was able to divert the pain and render it more moderate (Diamond & Diamond-Falk, 1982, pp. 9-10).

Referring to this headache as "hemicrania" because of its unilateral location on or in the cranium, Hippocrates (as did all Greeks) believed that the gods had the powers to impose or dismiss disease (Diamond & Diamond-Falk, 1982).

The Roman physician, Cornelius Celsus, also noted the existence of hemicrania. However it was Aretaeus of
Cappadocia (in today's Asiatic Turkey) that has been credited for identifying the migraine headache. In the second century A.D., Aretaeus was first to classify headaches in three groups; cephalagia (a headache of short duration), cephaelea (headaches of several hours or days in length), and heterocranlia (the headache of half the head) (Diamond & Diamond-Falk, 1982; Speer, 1977; Waters, 1986). Aretaeus' description of "heterocranlia" reads as follows:

But in certain cases the parts of the right side, or those on the left solely... the pain does not pass this limit, but remains in the half on the head. This is called heterocranlia, an illness by no means mild...If at any time it sets in acutely, it occasions unseemingly and dreadful symptoms...nausea, vomiting of bilious matters, collapse of the patient, but if...It becomes chronic, there is much torpor, heaviness of the head, anxiety, and weariness. They flee the light; the darkness soothes their disease; nor can they bear readily to look upon or hear anything disagreeable; their sense of smell is vitiated. Neither does anything agreeable to smell delight them, and they also have an aversion to fetid things; the patients moreover, are weary of life, and wish to die... (Diamond & Diamond-Falk, 1982, p. 10).
The Roman physiologist and anatomist, Galen (130-200 A.D.) also recognized the migraine headache. Calling it "hemicrania" or literally, half the head; Galen described it as "a painful disorder affecting approximately half of the head, either the right or left side, and extending along the length of the longitudinal suture" (Diamond & Diamond-Falk, 1982).

Galen claimed hemicrania to be caused by an irritation of the brain as a result of harmful vaporus rising in various parts of the body. His views seemed to dominate and even prevent advances in medical thinking on headaches. His findings greatly influenced physicians in the Byzantine and Arabian empires and continued to dictate during the Middle Ages and the Renaissance (Bille, 1962).

Hemicrania evolved into low Latin as hemigrainea and migrainea and into Italian as emicrania or magrana. It entered Spanish as migrana and Old English as migrim or mygrame. However it was the French translation, migraine, that took prevalence and was accepted into English. The expression "migraneur" is derived from the French migraneux and is presently used as reference to the migraine sufferer (Raskin & Appenzeller, 1980; Speer, 1977). Unfortunately the term is a bit of a misnomer as the unilateral reference is only fitting for less than 60% of all migraineurs (Olesen, 1978).
In the ancient Jewish Talmud, dysentery was the most common malady with headache being the second most prevalent. Consumption of alcoholic beverages such as wine were known to cause headaches in early Jewish times. Furthermore the habit of blowing into the foam of a glass of beer was said to be "damaging to the head" (Pruess, 1978). The Rabbi asserts:

I can tolerate any illness but not intestinal illness, any suffering but not stomach (or heart) troubles (ke'eb leb), any pain but not headache, any evil but not an evil wife. (When the Rabbi) prays to the Lord that He keep evil away from him, it is a supplication for health, that I not suffer from headache or earache or pain in the eyes (Preuss, 1978, p. 304). The Rabbi, after consuming the necessary four cups of wine on Passover, had to place bindings over his temples because of a painful headache from Passover to Pentecost (Diamond & Diamond-Falk, 1982).

It was not until the eighteenth century that the migraine began to be thought to have vascular origins. A migraine sufferer by the name of Fordyce published "De Hemicrania" which investigated the influence of facial shingles on migraine in 1758. In 1760, J.A. Van der Linden published an article which discussed the affects of ovarian activity on migraine. John Fothergill in 1778 wrote "Remarks on That Complaint Known Under the Name of the Sick
Headache" in which he describes the headache as a frequent occurrence but not yet entered in the medical literature of the times. Quoted in Diamond and Diamond-Falk (1982), Fothergill claimed that the headache tended to afflict "the sedentary, relaxed, (and) inactive" (p. 13). He maintained that the remedies used created side effects not much less in degree than the headache itself. He describes the headache as occurring in the morning:

which seldom affects the whole head, but one particular part of it, most commonly the forehead, over one frequently, sometimes above both eyes. Sometimes it is fixed about the upper part of the parietal bone, of one side only, sometimes and infrequently, the occiput as the part affected. Sometimes it starts from one to another of these places. It never goes entirely off from the time it commences, till it wholly ceases, but is sometimes less tolerable (Diamond & Diamond-Falk, 1982, pp. 13-14).

Simon Andre Tissot published a rigorous account of migraine in 1783. He supported the classification theory by claiming that the migraine and the common headache were two distinct entities. Tissot felt that pain experienced by migraineurs was a result of stomach, gall bladder, and/or uterus reflexes (Isler, 1987; Waters, 1986).
C.H. Parry, a physician of Bath and other co-workers were first to assert the theory of a vascular origin of migraine. In his book published in 1788, Dr. William Black claimed that the London mortality reports often overlooked the headache as the cause of death and "its general contentions torture of the human species" (Waters, 1986). Black listed hereditary factors, diet, anxiety, depression, nervousness, caries of the skull and/or teeth, infection, external injuries, and a number of diseases as inducement factors for headaches (Waters, 1986).

In 1873, Dr. Edward Llvelng wrote a detailed book in which he contended migraines, epilepsy, asthma, and neuralgia all share similar symptoms. He concluded that treatments for these diseases should be comparable. Considered a classic; Llvelng's text, "On Megrim, Sick Headache, and Some Allied Disorders" discusses the incurability of migraine and faulty management of a person's life as the probable cause of migraine (Diamond & Diamond-Falk, 1982).

In the next century, Sir william R. Gowers had the greatest influence on medical thought on migraine. In 1845 Gowers wrote:

Migraine is an affection characterized by paroxysmal nervous disturbance of which headache is the most constant element. The pain is seldom absent and may exist alone, but it is commonly
accompanied by nausea and vomiting, and it is often preceded by some sensory disturbance, especially by some disorder of the sense of sight. The symptoms are frequently one sided, and from this character the name is derived, the Greek "hemicrania" (still often employed) furnishing the French "migraine", the German "Migran", and the English "Megrim" (Waters, 1986, p.4).

Gowers' influence has continued up to the present day particularly among physicians who are interested in categorizing the migraine headache separately from other types of headaches.

Perhaps the most important discovery about migraine in the 20th century was made by Harold G. Wolff. He and a group from Cornell University discovered an initial constriction of the internal blood vessels of the head for all migraines. This was followed by a period of internal and external vasodilation of the blood vessels. It was this swelling or expansion of the vessels that Wolff claimed to be the actual cause of headache pain. Wolff is also credited with having discovered that as this process of constriction and expansion of the blood vessels progresses, an infection in the wall of the affected artery occurs. In addition, he posited that headache pain is prolonged by certain humeral substances that are given off. Serotonin, a blood chemical, was also discovered to be greatly reduced
during a headache occurrence (Diamond & Diamond-Falk, 1982; Waters, 1986). More recent studies on migraine will be discussed later in this paper.

A Definition of Migraine

Deciding and agreeing on a proper and useful definition for migraine headache and for that matter, headache in general, is a difficult task, to say the least. Because it is a subjective symptom and tests to assure its presence are nonexistant, it is difficult to separate the headache from other disorders. Also the headache is a functional non-structural malaise which makes it clearly more difficult to pin down identifying characteristics. The numerous attempts by physicians from the time of Hippocrates to the present day present further evidence of the difficulties of obtaining an acceptable definition (Blau, 1987; Waters, 1986).

Since Gower’s long standing unchallenged description an Ad Hoc Committee on Classification of Headache (1962) put forth the following statement. Chaired by Dr. Arnold Friedman, the committee defined migraine headache as:

recurrent attacks of headache, widely varied in intensity, frequency, and duration. The 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 (Ad Hoc Committee, 1962, pp. 717-718). The committee listed a number of different types and descriptions of migraine headache. Named for their specific symptoms, and/or locations, they include the classic migraine, the common migraine, the cluster headache, the hemiplegic migraine, the ophthalmoplegic migraine, and the "lower half" headache.

In April, 1969; the Research Group on Migraine and Headache of the World Federation of Neurology met in London to put forward a definition. Presided by Dr. Macdonald Critchley, the group defined migraine as:

"A familial disorder characterized by recurrent attacks of headache widely variant in intensity, frequency, and duration. Attacks are commonly unilateral and are usually associated with anorexia, nausea, and vomiting. In some cases they are preceded by or associated with, neurological and mood disturbances (World Federation of Neurology, 1970, pp. 181-182).

Classical and non classical migraine, cluster headaches, facial "migraine," ophthalmoplegic "migraine" and "hemiplegic migraine" were the various categories of migraine headache proposed by the committee.

Even though there is much disagreement as to the exact definition of migraine, Waters (1986) found in an extensive
study of its identifying traits that there are three features of the migraine that are commonly agreed upon. Waters asserts "the three features that have usually been stressed are the unilateral distribution of the headache, the presence of a warning—often visual—that the attack is coming, and accompanying nausea sometimes with vomiting" (page 12).

Sufferers of this malady typically describe it as a dull ache which progressively intensifies to a migraine headache with violent throbbing pain (Diamond & Dalessio, 1986; Sacks, 1985). The migraine's periodic nature of attacks is perhaps its most outstanding identifying feature (Diamond & Dalessio, 1986; Eadie & Tyrer, 1985; Geist, 1983; Speer, 1977). Migraine pain has a unilateral focus at first but can become more generalized. Symptoms of the migraine can include nausea and vomiting, sensitivity to light and sound, tenderness of the cranial area, irritability, diarrhea, constipation, restlessness, anorexia, and depression. Distention of the abdominal area; prominence of the frontal, temporal superorbital vessels; coldness and/or swelling of the hands and/or feet; vertigo; tremors; dryness of the mouth; excessive swelling; chilliness and pale urine with a low specific gravity can be accompanying symptoms (Diamond & Dalessio, 1986).
**Sequence of a Migraine Headache**

A migraine headache can often occur in two phases; a pre-headache or prodomal phase, and the actual attack. In the pre-headache stage, feelings of insomnia, lethargy, buoyancy, loquaciousness, tingling of the face and hands, agnosia (inability to recognize sensory stimuli or familiar objects) and prostration, hunger, or tension followed by a very deep sleep can ensue. Dramatic mood swings such as depression, irritableness, unsociability, impulsiveness, hostility, and destructiveness can also characterize the prodomal stage. Also called the "auras" (Sacks, 1985), the migraine can be preceded by visual hallucinations, such as geometric designs, flashes of light, golden balls, stars, or serrations. These visual disturbances are mobile and disrupt clear vision (Geist, 1983; Sacks, 1985).

**Incidence of Migraine**

As previously mentioned, headaches have the distinction of being the most common complaint that physicians are requested to attend to. Of all headache types, the migraine is the most prevalent.

It has been suggested that 8 to 12 million Americans are afflicted by migraine headaches (Diamond & Dalessio, 1986). Sacks (1985) indicated that various studies and estimates place migraine sufferers between 5% and 20% of the

**Distribution of Migraine**

It is generally agreed that migraine can occur during childhood but more often it materializes before the age of 40; most commonly during the third decade of life (Diamond & Dalessio, 1986; Gelst, 1983; Lennox & Lennox, 1960). Distribution by sex indicates that 60% of those afflicted are women (Diamond & Dalessio, 1986).

**Influencing Factors and Causes of Migraines**

Since the occupation of the intracranial area by evil spirits theory put forward by stone age physicians, a number of other possible determinants have surfaced. Aretaeus thought adverse weather conditions in a cold, dry environment instigated the unilateral headache. The Jewish Talmud claimed that all illnesses (including headache) were caused by an excess of blood in the body. The "ascent of vapours (in the body), either excessive in amount or too hot or too cold" (Diamond & Diamond-Falk, 1982, p.11) was thought by Galen to be the cause of headache pain. Fothergill correlated dietary factors with it, particularly consumption of chocolate. Tissot stated that migraines were originated by the reflexes of the stomach, gall bladder, and uterus. Parry and Blade were first to postulate the vascular sources of migraine (Waters, 1986).
Raskin and Appenzeller (1980) sum up the causes of migraine pain quite succinctly. They found that there is considerable evidence that leads one to believe that "migraine is the manifestation of a lowered biologic threshold to a variety of external and internal stimuli" (p. 42).

These precipitating stimuli are thought to include stress and worry; foods containing salt, tryamine, monosodium glutamate, nitrates and nitrites; depression; anxiety; hormonal factors; weather or sudden temperature change; lack or excess of sleep; physical exertion or fatigue; bright light; hereditary factors; and/or change in daily routine (Diamond & Diamond-Falk, 1982; Eadie & Tyrer, 1985; Rose & Gawel, 1979; Waters, 1986; Wilkinson, 1982).

Stress appears to be the most prevalent agitator for migraine (Eadie & Tyrer, 1985; Passchier, 1985). In a study done by Henryk-Gutt and Ries (1973) it was discovered that for 50% of the patients, migraine attacks began during a particularly traumatic period in their lives. However stress alone does not precipitate migraines. Many people cope with high levels of anxiety and never experience headaches. Thus, it appears that it is the level of biological capability to withstand particular stimuli—not the stimuli themselves that appears to be the precipitating variable. Furthermore, it is often not during the peak period of stress that headaches will occur. Rather it is
during the "let down" period of relaxation that causes the "weekend," July (for teachers and students), or May headaches (for tax consultants) (Raskin & Appenzeller, 1980). Spierings (1987) asserts the migraine commonly begins following the period when stress is at its peak and could justifiably be referred to as a headache of relaxation.

Amines, a group of chemical compounds found in the body, play a paramount role in the function of the brain and the circulation of the blood. Certain amines in food substances have been found to cause migraines. Tyramine is an amine located in both the body and substances that have undergone some bacterial decomposition. A substance found in cheddar, stilton, and blue cheese; it is known to be a trigger factor for migraines (Hanlington, 1967). Octopamine from citrus fruits and dopamine, a compound in broad beans, are other highly influencing factors. Chocolate and red wine are other food substances containing large amounts of amines that are known to be contributing substances (Critchley, M. et al, 1975; Sixth Migraine Symposium, 1973; Wilkinson, 1982).

Weather conditions of bright sunshine, cold, thunder, wind and heat were found to influence the degree of pain of headache attacks in a study done by Gomersall and Stuart (1973).
Short intense periods of exercise done by people unaccustomed to regular exercise have been shown to cause migraine (Raskin & Appenzeller, 1980).

Selby and Lance (1960) and Lance and Anthony (1966) found that 50% to 60% of migraineurs had parents who also experienced migraines while only 10% to 20% of non-migraineurs had migraine parents. Dalsgaard-Nellson (1965) found in a study of 100 female migraineurs that 90% had a family history of migraine, 73% had parents with migraine, and 57% had maternal origins while 16% had paternal beginnings. Although hereditary factors do seem to be an influence here, it is not presently known what is actually inherited (Eadle & Tyrer, 1985).

For 70% of female migraineurs, migraines occur during menstruation (Rose & Gawel, 1979). Moreover, most women are relieved of their migraine pain after two months of pregnancy (Diamond & Dalessio, 1986). Estrogen is definitely a facilitating factor in migraine attacks (Diamond & Dalessio, 1986; Kudrow, 1981). Kudrow (1975) found in a study of 239 females with migraine that of the 60 women that began using oral contraceptives and the 87 that were treated with estrogen supplements in a cyclic fashion, headache frequency was significantly increased. When these women terminated the estrogen intake, there was a 70% to 80% improvement in headache frequency.
All of these extrinsic influences such as estrogen, stress, and amines appear to cause the aggregation of blood platelets. These clusters of platelets suddenly release a substance called blood 5-hydroxytryptamine (serotonin) (Dalessio, 1980; Diamond & Dalessio, 1986; Diamond & Diamond-Falk, 1982).

This increase of serotonin causes the constriction of the cerebral arteries in the pre-headache, aura, or prodromal stage of the migraine (Kudrow, 1981). Serotonin is then assimilated by the arteries and surrounding tissues which become inflamed. The level of serotonin is quickly lowered as it is metabolized in the nearby tissues. Hilton and Cummings (1971) found that the serotonin level in the blood platelets show a 40% decrease during a migraine attack. It is this sudden drop of blood serotonin that triggers dilatation of the arteries and constriction of the capillaries. The resultant inflammation and vasodilation of the external and intracranial arteries trigger the headache pain (Anthony, M., Hinterberger, H., & Lance, J., 1967; Diamond & Diamond-Falk, 1982; Kudrow, 1981).

**Intervention For The Migraine Headache**

Migraine therapy is thought to date as far back as the Stone Age. As earlier mentioned ancient physicians are perceived to have drilled holes in the craniums of their patients to let evil spirits out. Diamond and Diamond-Falk (1982) report that written recordings dating back to 1700
B.C. recommended use of a mortar compress applied to the head as an effective treatment. In 1200 B.C., the ancient Egyptians recommended binding a clay crocodile to the head of the patient, with herbs being placed in the mouth of the crocodile as treatment for headache (Lance, 1982). Hippocrates in Ancient Greece wrote in his "On Prognostics" that vomiting and treatment by blood letting (phlebotomy) helped to obliterate or at least relieve the pain.

Rubbing the head with oil, vinegar, or wine or drinking rose water with or without vinegar were the remedies extolled by the ancient Jewish Talmud. This ancient Jewish authority decreed that for "partial pain (unilateral) one takes a wild cock and slaughters it with a white zuz (piece of money) over that side of the patient which is painful (so that the blood flows on the head of the patient). One must be careful with the blood, however, in order not to blind the patient's eyes" (Preuss, 1978, p. 305). The beheaded cock was then to be hung beside the door and the patient was to rub his head with the bird when entering or exiting his house.

Galen suggested phlebotomy or application of cold substances to the head as effective treatments.

A. Eulenburg of Germany in 1883 (Diamond & Diamond-Falk, 1982) found that injecting migraine patients with ergot extract was an effective treatment. Later; in the U.S., in 1894, W. H. Thomson discovered that patients
exhibiting some of the initial signs of a migraine attack were able to abort or at least lessen the full effects of the ensuing headache. In 1966, R. Rabkin discovered propranolol to be an effective drug in the treatment of migraines. Since then in 1979, the U.S. Food and Drug Administration endorsed propranolol as a prophylactic treatment for migraine (Diamond & Diamond-Falk, 1982; Waters, 1986).

Since vasodilation of the cranial arteries has been demonstrated to be the catalyst for migraine headaches, one might conclude that any form of intervention that would lessen this dilatation would reduce the headache symptoms. Therapy for the migraine headache has been classified into three major categories: surgical, pharmacological, and behavioural.

Surgical treatment for migraines dates has its beginnings in the stone age when trephining of the skull was utilized. Since then surgical procedures such as temporal artery resection, sympathectomy, tonsillectomy, appendectomy, choleapектomy, thyroidectomy, and hysterectomy have all been used to relieve migraine pain. Surgery on the ganglion (branch) of the 5th cranial nerve (sphenopalatine ganglion) was practiced. More recently however, physicians maintain surgery to be a drastic intervention which can cause traumatic physiological effects as the client attempts to return to a level of homeostasis.
Furthermore, the efficacy of surgery for migraine is highly questionable. Because headaches are thought to be a subjective symptom and not a structural problem, surgery is not usually considered an appropriate form of treatment (Diamond & Diamond-Falk, 1982; Heyck, 1981; Saper, 1983).

Pharmacological intervention appears to be the most commonly used migraine abater. The physician has at his disposal a vast number of drugs including, vasoconstrictors, antidepressants, antiemetics, anticonvulsants, tranquilizers, sedatives, platelet inhibitors, and autonomic blocking agents all of which vary in their effectiveness. The aim of pharmacological therapy is either abortive in nature (to lessen acute pain attacks) or prophylactic (to prevent future attacks). Analgesics are the more widely used abortive drug for mild migraine attack (Hanington, 1974). Simple aspirin or acetaminophen is the most common analgesic. When combined with caffeine, antihistamines, decongestants, stomach buffers, and/or narcotics; analgesics such as Bufferin, Excedrin, Anacin, and Vanquish take on a more specialized form of treatment. Acetaminophen blended with the above substances produce greater ability to constrict blood vessels, higher absorption and stimulation capabilities, and additional strength. The use of analgesics has the primary advantage of lessening the feeling of pain by increasing the pain threshold as well as diminishing fevers and inflammation.
Although helpful to some migraineurs who have periodic milder headaches, they are not very helpful to severe chronic migraine sufferers. (Diamond & Diamond-Falk, 1982). In addition, prolonged analgesic use can cause gastric bleeding, ulcers, liver damage, and addiction (Bowdler & Kossmann, 1982; Dalessio, 1980; Diamond & Diamond-Falk, 1982; Holroyd, Schlote, & Zenz, 1982).

Because of its vasoconstrictor capability, ergotamine is thought to be the most effective abortive drug with the greatest prolonged effect for counteracting the migraine symptoms (Diamond & Dalessio, 1986). Derived from a fungus that grows on the stalks of the rye plant, ergot is most efficient when taken during the aura or pre headache stage. Saper (1983) and Diamond and Medina (1981) estimate that in one to two hours, 85-90% of migraineurs who consume it parenterally are relieved, 75-80% who are given the rectal form and 50% of patients who take it orally find it to be helpful. Unfortunately, the use of ergot and other ergot alkaloids is not all positive. Many side effects can result from consuming ergot. Minor reactions include nausea, vomiting, diarrhea, muscle aches, gangrene, angina (Diamond & Dalessio, 1986; Raskin & Appenzeller, 1980; Speer, 1977; Wilkinson, 1988). Five to ten percent of clients experience stomach cramps, chest pain, vertigo and paresthesia of the hands and feet (Saper, 1983). In addition, ergotamine if used frequently, can actually increase the occurrence of
migraines because it can cause rebound headaches. Consequently, ergot is not recommended to be ingested on a daily basis. Also it is not recommended for patients with more than two migraines per week (Heyck, 1981).

Rabkin is credited for discovering propranolol as an effective prophylactic approach to migraines. Today, propranolol, also used in treatment of heart patients, is considered the most effective preventative for migraine attacks (Diamond & Dalessio, 1986; Diamond & Diamond-Falk, 1982; Diamond & Medina, 1981; Rabkin, Stables, & Levin, 1966).

Endorsed by the Food and Drug Administration, propranolol prevents dilation of the cranial arteries by blocking beta receptors (receptors of the nervous system found in the arterioles which when stimulated cause vasodilation). Moreover, it reduces the pumping action of the heart thus lowering blood pressure. It has the advantage over ergot as it does not cause rebound headaches, it is not addictive, and it has relatively few side effects. However, it does have some limitations. It should be used carefully with coronary heart disease patients as it can exacerbate the heart condition. It is not suitable for insulin patients or individuals taking hypoglycemic drugs. Side effects include fatigue, heart and gastrointestinal difficulties, and/or asthma attacks (Diamond & Diamond-Falk, 1982).
Methysergide is often advised if all other drug remedies fail (Curran, 1967). As indicated previously, the serotonin level in the bloodstream of the cranium appears to be correlated to the onset and occurrence of the migraine headache. Methysergide, a preventative drug, has the capability of blocking the serotonin's vasoconstrictive and inflammatory action. Unfortunately, it can have serious side effects, possibly causing fibrotic disorders such as retroperitoneal or endocardial fibrosis. Other milder side effects can include nausea, vomiting, stomach and intestinal pain, diarrhea, drowsiness, dizziness and others (Diamond & Medina, 1981). It is not the purpose of this paper to go into any more depth in discussing other pharmacological treatments of migraine.

Although a review of the literature appears to indicate that drug therapy is the most customary form of intervention and usually the first to be prescribed by physicians, it has a number of serious drawbacks. Firstly, it is a treatment that deals only with the symptom rather than the cause. As a result; a patient gets a headache attack, takes the prescribed medication, and the headache pain is relieved; only temporarily. Consumption of the drug is again required when the next headache attack occurs. This form of treatment does nothing to rid the patient of headache. It serves only to make the painful periods a little more tolerable. Consequently, drugs are most commonly used for
pain management and aborting the acute attacks. Secondly, one cannot ignore the cost factor. Taking prescription drugs on a regular basis can be very expensive. For instance, Blanchard and Andrasik (1985) found from a two year retrospective study on 45 patients, that on an average, headache sufferers were spending from $25 to $2,800 per annum (an average of $478).

Thirdly, as already mentioned, all drugs have side effects; some of which are serious and can actually cause death. Lastly, drugs can cause mild to strong stimulation and can lead to abuse and habituation. Taking more than the suggested dosage does not increase the pain relieving action. Abusing analgesics, for instance, can lead to physical toxicity of the body resulting in nausea, vomiting, diarrhea, kidney damage, ulcers, and/or chronic anemia. Abuse of ergotamine can actually result in an increase of the frequency and intensity of headaches as well as detrimentally affecting the circulation system resulting in coldness and numbness of the extremities and even gangrene.

Clearly, drug therapy is questionable given its potential to provoke much more serious problems of a physical, emotional, and/or financial nature. In view of this, physicians and migraineurs may be better to investigate alternative methods of intervention with less serious drawbacks (Adams, Feuerstein, & Fowler, 1980).
Behavioural therapy can fall into four categories. Of these, biofeedback appears to be the most common form of behavioural intervention. Also referred to as instrument of learning, biofeedback is based on Pavlov's conditioned reflex theory. Combining motion psychology and electrical technology with ancient Eastern practices of the Yogi and Zen masters, it allows the patient to gain conscious self control of various bodily functions that are normally unused or involuntarily controlled. These include heart rate, blood pressure, temperature, and brain wave activity.

Robert Welner, a mathematician, used the term "feedback" to describe a procedure of system control via re-inputing results of past performances into the system. Johannes Schultz of Germany introduced a mind-body training system which he called autogenic training. It involved the patient moving into a relaxed state as a series of "relaxing" phrases were repeated.

Chemically, biofeedback has been most successfully used with headache therapy. Dr. Elmer Green of the Menninger Foundation was first to utilize biofeedback and autogenic training for migraine intervention. A volunteer working with Dr. Green was involved in a training program designed to teach control of brain waves, reduce electromyographic (EMG) capability, and increase blood flow to the hands. The volunteer, while undergoing this training, noticed that she was able to abort her migraine headache by raising the
temperature of her hands. This occurrence was the basis for the later introduction of the "hot hand" theory for migraine treatment by Sargent, Green, and Walters (1973). Sargent and his associates discovered that local peripheral temperatures had a great influence over the amount of blood flow in the area. Sargot's subjects were able to raise the temperature of their hands and in 60% to 70% of cases, reduce the symptoms and even abort a migraine headache. Schultz's autogenic phase and device to measure and record the hand temperature were employed.

As research continued at the Menninger Foundation, Budzynski, Stoyva, and Alder (1970) were concurrently introducing a method of deep muscle relaxation via use of an electromyographic (EMG) monitor. Budzynski's clients would listen to a tone whose frequency was proportional to the muscle's EMG level. The tone would fall if the muscle was relaxed and rise if the muscle was tensed. The subjects were able to relax the frontalis muscle and lower the frequency and intensity of their headaches.

Adler and Adler (1976) did an extensive study of 58 chronically disabled headache patients. Headache types varied from common and classic migraines and muscle contraction to mixed migraine and tension to cluster headaches. Applying biofeedback over a five year period produced 75% to 100% remission by 86% of the patients.
More recently, Diamond (1984) completed a four-year study of 693 headache patients who had undergone biofeedback training. He wanted to test the durability of the treatment. His patients had either migraine, muscle contraction, or a combination of two or more different types. His program consisted of a combination of autogenic phrases, hand temperature control training, progressive relaxation exercises of Wolpe, EMG training, and home practice techniques. After four years, 27% of his patients reported excellent overall improvement; 32%, moderate improvement; 24%, slight improvement; 17%, no improvement; and 1% reported headache activity to be worse after biofeedback treatment.

The purpose of biofeedback is to provide the patient with some voluntary control over specific physiological functions. Researchers suggest that use of temperature training is best for the classic migraine with its prodromal stage. This intervention should be employed during this preheadache stage. For all other headaches, the EMG feedback can be helpful by providing the necessary vehicle for a patient to relax and diminish the duration and intensity of the headache. For combined vascular and muscle contraction headaches, the greatest successes have been found with a utilization of both temperature and EMG training (Diamond & Dalessio, 1986; Diamond & Friedman, 1983; Diamond, S., Diamond-Falk, J. & Largen, J. W., Jr., 1981).
Acupuncture is a second form of behavioural therapy that has had success with migraine headaches. Probably one of the most controversial interventions used in the medical field, acupuncture is also thought to have Stone Age beginnings. Originating in China, early physicians are thought to have used needles of bone, bamboo, or stone in their therapy. Later, these were replaced by bronze needles around 12 B.C., and iron needles about 6 B.C. (Ryan & Ryan, 1978). Even silver and gold needles were thought to have been used. Today, acupuncture is administered with fine stainless steel needles.

Diamond and Dalessio (1986) contend classical acupuncture (use of needles) is predicated on two forces that exist in the universe and the human body; the yin which symbolizes negative forces (e.g. darkness, femaleness, cold, passivity) and the yang which represents the positive forces (e.g. light, maleness, heat, activity). Physical health is only assured if a balance exists between the yin and the yang. This ancient Chinese theory believes that the 12 major organs of the body are divided between the yin (e.g. liver, spleen, heart) and the yang (e.g. gall-bladder, large intestine, and stomach). Beneath the skin are channels or meridians over which life energy flows from organ to organ. There are 14 meridians in total which contain 500 to 800 points. It is at these points that acupuncturists pass
needles through the skin to intervene in physical disorders or disease.

Kadjos (1975) found in a study of 309 migraineurs treated with acupuncture, that 44 percent had very good results while 42 percent demonstrated substantial improvement. Forty-five percent of the subjects did not respond at all.

There is much disagreement over the efficacy of acupuncture in migraine treatment. Although the Chinese claim a 90% success rate in utilizing acupuncture as an anesthetic in surgery and an effective treatment for arthritis, headache, hypertension, and eye disease, they do not believe in rigorously controlled studies. Hence, many of the claims made by the Chinese are viewed with skepticism (Diamond & Dalessio, 1986).

As to how anesthesia by acupuncture is produced, Chinese writings offer little in the way of explaining its working mechanism. Kim (1975) believes that stimulation of the skin by needle insertion injures the surrounding tissue, causes a secretion of histamine, serotonin, bradykinin, and prostaglandins. These secretions in turn cause added secretion of corticosteroids which have an anti-inflammatory and vasoconstrictive effect on the cerebral vessels. Diamond and Dalessio (1986) suggest acupuncture works because it causes a blocking out of sensations of pain via stimulating the skin simultaneously. The effectiveness is
based on the known fact that touch sensations move along the nerve routes to the brain at a much quicker rate than feelings of pain.

The advantages acupuncture offers includes little or no side effects, no development of tolerance to the process, costs are lower than drug therapy, and it is not addictive. In addition, it assists in preventing dysfunctional physiological changes which can occur during surgery. Generally, a patient's blood pressure, pulse, and breathing remain in homeostasis. Healing time following surgical incisions is decreased and internal organ function returns to normal more quickly than in conventional surgery. As a result, it shortens recovery time of a patient following surgery.

Other forms of acupuncture besides the classical use of needles have been suggested as effective treatment for headaches. Kurland (1979) suggests "auto-acupuncture" as a viable alternative to using drugs. His technique is based on applying pressure in a particular way at precise locations on the body. Kurland purports that it has the advantage of being a self treatment method that has been effective for several hundred headache sufferers without the use of needles. All the patient need do is apply pressure by use of his/her thumbs. In a comparison of the needle method and non needle method (use of pressure or electrical nerve stimulation), Camillery (1985) found that 42.8% of his
clients experienced full relief from classical migraine using the needle method and 44.4%, using the non-needle method approach.

A third prophylactic behavioural treatment for migraine is relaxation training. Because migraine headaches are indirectly correlated to an arousal of the sympathetic nervous system, it is felt that training a subject to relax can decrease the degree of sympathetic arousal. Blanchard and Ahles (1981) provide the most detailed definition. They maintain relaxation training to be a combination of a shortened form of Jacobson's (1924) "progressive relaxation training", Benson's (1975) relaxation responses, frontal electromyographic biofeedback training, and hypnosis. This training involves alternately tensing and relaxing the major body muscle groups on cue from the therapist, using EMG biofeedback as a method of relaxation and hypnotic induction. Blanchard and Andrasik (1985) in their "Sunya Headache Project Relaxation Training Program", saw each patient for 10 sessions over an 8 week period. They applied relaxation training to all patients regardless of headache type and found it to be very successful.

The advantage of relaxation training is its simplicity. Expensive and complicated electronic equipment are not needed nor do therapists require sophisticated training. In addition, relaxation training has been shown to be as effective as biofeedback training on a group basis
(Blanchard, 1980; Blanchard, Ahles, & Shaw, 1979; Blanchard & Andrasik, 1982; Sliver & Blanchard, 1978).

Some misgivings on relaxation training include apprehension by clients due to their perception that it is a form of hypnosis. Secondly, increases in anxiety from a mild to a strong attack can occur. Thirdly, muscle spasms may result during the training, especially with males. All of these can interfere with the training and therefore necessitates close monitoring of the patient.

Blanchard and Andrasik (1985) claim the most serious limitation of relaxation training is only 30% of migraineurs receive significant relief; that is, an improvement of 50% or more. When combined with other treatments such as biofeedback, however, they admit it can be much more effective.

The most recent form of intervention for migraine headache is cognitive therapy. It attempts to pick up where other types of therapy have left off. Conventional types of therapy such as biofeedback and relaxation are not effective interventions for many patients as they do not address cognitive, affective, sensory, and behavioural elements of specific stress disorders. Mitchell and White (1976) state that these physiological forms of intervention focus only on the immediate behaviour prior to pain experience (eg. headache symptoms of throbbing, dull, or sharply piercing jabs) and fail to suggest other possible coping strategies.
for stress. In addition, these physiological interventions tend to be inflexible in that they have one set of procedures that are used for all migraineurs regardless of headache type and other individual differences. Cognitive therapy (CT), on the other hand, is much more diverse in its goals as it attempts to furnish the patient with coping and/or problem solving skills specific to a patient's particular situation or stressor that appears to activate headaches. It is initiated with a discussion between client and therapist of the client's thoughts while in the process of suffering a headache. The purpose of CT is to stop any illogical thoughts which intensify head pain distress.

Partly because they are still in the developing stages and partly because they seek to provide specific intervention for an individual's specific needs, cognitive treatments are diverse. They range from a combination of mental and differential relaxation, self-desensitization, and thought stopping to imaginal flooding, projected rehearsal, and a combination of cognitive reappraisal and EMG biofeedback (Blanchard & Andrasik, 1985).

One of the first evaluative studies of cognitive therapy was done by Holroyd, Andrasik, and Westbrook, (1977). Thirty-one community members with tension headache were randomly divided into three groups; a control group, a frontal EMG biofeedback treatment group, and a cognitive stress-coping training group. Subjects in the stress-coping
group were trained to employ three particular cognitive therapies: cognitive reappraisal, attention deployment, and fantasy. Results of the study showed the biofeedback group making moderate improvements in headache activity. Eighty-nine per cent of the cognitive group were able to reduce headache symptoms by over 50%. A two year follow-up displayed similar results to that of the immediate post treatment period for the cognitive group. The biofeedback group however returned to almost the same level of headache activity found prior to intervention.

Knapp and Florin (1981) did a similar study to determine the effectiveness of cognitive therapy. They randomly divided 20 migraineurs among five groups; a wait-list control group, a vasoconstriction biofeedback treatment group, a cognitive stress-coping group, a biofeedback followed by cognitive therapy group, and a cognitive followed by a biofeedback group. Results showed a significant decrease in headache activity from 63% for headache frequency to 87% for pharmacological consumption. Little difference was found between the effectiveness of cognitive therapy and biofeedback.

Currently, cognitive therapy is in the developing stages with research only commencing in the mid seventies. Because of its diverseness and flexibility, it is more complicated than conventional interventions. However it does display promise in areas where these other
Interventions fail. As yet experimentors are still in the initial stages of investigation. Blanchard and Andrasik (1985) for instance, are presently examining a comparison between a cognitive-behavioural intervention (relaxation, thermal biofeedback, and cognitive therapy) and a behavioural therapy alone (relaxation and biofeedback).
CHAPTER FOUR

HYPNOSIS

History of Hypnosis

Hypnosis is thought to have its beginnings as far back as recorded history. Associated with a belief in magic, mysticism, or religious ritual; ancient civilizations were well aware of this phenomena. The priests of ancient Egypt are known to have given therapeutic suggestions to their patients during their sleep. "Sleep temples" were used in ancient Greece and in the British Isles. The Druids or Celtic priests commonly placed individuals with disorders into a state of "artificial slumber". The primitive cultures of North and South America achieved trance induction by means of hallucinogenic drugs and rhythm set by drum action, dancing, and chanting (Ambrose and Newbold, 1980; Cheek and LeCron, 1968).

However, scientific hypnotism or hypnotherapy is considered to have begun with an Austrian physician during the eighteenth century (1734-1815). Mesmer held the belief that the health of an individual depended on a balance with the heavenly bodies. Disease was a result of disruption of this balance. He claimed that a magnet or magnetized object would abrogate physical disorders by means of a fluid which he called "animal magnetism". This fluid would enter the body of the afflicted one and offer a cure. His "therapy"
Involved having his patients sitting around a baquet (a tub filled with water and iron fillings) each grasping an iron rod suspended in the water. Mesmer would walk among his subjects reciting suggestive phrases as he encouraged the movement of the fluid from the tub of iron fillings into their bodies. Unfortunately, the French Academy of Science investigated Mesmer and discredited him by "proving" that his healing methods were based upon imagination and that "magnetism" could be transferred equally as well by use of wooden rods. Although Mesmer died in obscurity in 1815, he is remembered for having initiated hypnotism as a form of therapeutic intervention. Even today mesmerism is often synonymously used with hypnotism (Ambrose & Newbold, 1980; Cheek & LeCron, 1968).

Animal magnetism was abandoned for sometime after Mesmer's death. It wasn't until the 1840's that it again demonstrated it usefulness in therapy. James Braid (1795-1860) attempted to apply the scientific method to mesmerism. He discarded animal magnetism and renamed the process "hypnotism" after the Greek word "hypnos" meaning sleep. Braid claimed that suggestive trance could be established by eye fixation on the glass stopper of a water bottle. He is considered first to recognize that the powers of suggestion lie in successful Induction (DePlano & Salzberg, 1986).
Later hypnotism was found to be effectively used as an anesthetic in surgery. In 1834, John Elliotson (1791-1868), an English surgeon, reported having performed frequent painless surgical operations under mesmeric trance. In 1847, James Esdalle (1808-1859) recorded his observations of over 3000 operations in a book entitled "Hypnosis in Medicine and Surgery". At that time, it was common surgical practice to wash the hands after the operation as opposed to before. Death from infection ranged from 25% to 50%. Esdalle found that the percentage fell to only five per cent when he utilized trance anesthesia. It appeared that hypnotism empowered the subconscious mind to increase the body's resistance to infection (Cheek & LeCron, 1968).

Interest in hypnotism waned again until the 1880's when two schools of thought surfaced - that of Jean Martin Charcot (1835-1893) and of the Nancy Clinic founded by Auguste Liebeault (1823-1904) and Hippolyte Bernheim (1840-1919). Charcot believed that hypnosis had a neurological link and that only individuals with disorders of the nervous system could be aided with trance induction. The Nancy clinic however held the belief that hypnotism's therapeutic capability was based on the influence of suggestion. The Nancy school of thought was much more accurate (Ambrose & Newbold, 1980).

In the 1890's, Sigmund Freud worked with a very successful medical hypnotist; Joseph Breuer (1842-1925).
Together they published a book "Studies in Hysteria" in 1895. Freud however, later abandoned hypnosis for his methods of free association and psychoanalysis. Apparently a great deal of disagreement and rivalry developed between Freud and Breuer because of Breuer's great success with hypnotism and Freud's apparent lack of it. Freud was not very knowledgeable about the field and found it difficult to place his clients into deep trance. He thought this was a necessary pre condition for successful intervention. Because Freud's studies and opinions were held in high esteem among psychotherapists, hypnotism again fell into disrepute (Gravitz & Gerton, 1984; Haley, 1973).

It regained interest following World War I when soldiers were successfully treated for "shell shock" by an English psychologist, William McDougall (1871-1944). Again it fell into discredit until World War II when clinical psychologists found hypnotherapy useful because it offered successful therapy with fewer sessions than conventional psychotherapy at that time. Dentists, who often were without local anesthetics due to conditions of war, found it a useful replacement for painless dentistry (Ambrose & Newbold, 1980; Cheek & LeCron, 1968; DePlano & Salzberg, 1986; Hilgard & Hilgard, 1975; Miller, 1979).

One might conclude that the development of hypnosis was wrought with periods of support and times of disrepute. It appears that those who worked with it, believed in it and
saw its potential in the field of psychotherapy. Supporters maintained their beliefs even if it meant that they would be ostracized and condemned by others in the medical field. This negative, often fearful attitude surely slowed its development and potential for experimentation and use. It was not until 1955, that the British Medication Association officially approved hypnosis as a viable psychotherapy and 1958, when the American Medication Association gave its endorsement. Although today many physicians still view it with skepticism, this attitude is changing as it is becoming recognized as an effective and powerful intervention method (Cheek & LeCron, 1968).

Webster’s Third New International Dictionary (Gove, 1981) defines hypnosis as:

A state that resembles normal sleep but differs in being induced by the suggestions and operations of the hypnotizer with whom the hypnotized subject remains in rapport and responsive to his suggestions which may induce anesthesia, blindness, hallucinations, and paralysis while suggestions of curative value may also be accepted. (p. 1114)

Clarke and Jackson (1983) would state that this definition considers the threefold stages of hypnosis:

1. the induction method or stimulus,
2. the alterations of the mental state or intervention
characteristic, and

3. the increased suggestibility or response facet.

Clarke and Jackson and many other experts (Ambrose & Newbold, 1980; Cheek & LeCron, 1968; Kohn, 1984; Olson, 1984) all attest to the difficulty of defining the Induction stage of hypnosis. Kohn (1984) states that hypnosis theories range from a focus on the physiological processes of the brain to psyche manifestations. Not only is there a lack of agreement as to a meaning of hypnosis, the actual reference of hypnosis as a special state of consciousness is questioned (Olson, 1984). To adequately review the second stage is difficult. In addition, studies of hypnotic intervention have only recently begun to be analyzed (Clark & Jackson, 1983). Because of this general disagreement and lack of clarity in definition of the Induction and Intervention segments of hypnosis, most attempts at definition focus on the third stage or responses to the phenomenon.

Olson's (1984) description of the effects of hypnotism appears to be more succinct. He maintains that hypnosis is a state of consciousness that has been altered. It allows an individual to experience physical and mental relaxation beyond that of a conscious state. This can manifest itself into a feeling of drowsiness and deafness or lightness of the eyes, arms, and legs, and an inability to swallow. In deeper states, catalepsy can occur. During this deep
relaxation, the client is aware and conscious of all that is happening to him/her and in control of what he/she says and does. Other common feelings under hypnosis are floating sensations, fluttering of the eyelids, and tingling sensations of the feet and hands. Hypnosis heightens concentration capability and increases the patient's ability to reframe or modify his/her perception of something. It allows the subject to modify memories. It can be applied to create amnesia or increase memory for a particular incident. Capacity to control physiological responses that are usually involuntary or unmanipulative (e.g. blood pressure and flow, heart rate, and process of healing) is increased. For depression in changing self image, hypnosis enhances the ability to accept logical inconsistencies which would be rejected in a conscious state. Lastly it strengthens the ability to accept suggestions and make them a part of the client's belief system and behaviour.

Mott (1982) adds that hypnosis encourages a client to release repressed or forgotten emotions. The degree and intensity of these emotions can be altered. In addition, under hypnosis, the individual is more receptive to disclosing (repressed) thoughts and memories that may assist the therapist in becoming more aware of the causes of the subject's dysfunction. Also, the therapist-client relationship is strengthened and thereby intensifies the client's feelings of hope and expectations of relief.
Wolberg (1965) and Der (1978) maintain that this state of altered consciousness occurs normally in the period of being awake or conscious while descending into a state of sleep.

**Hypnotherapy**

Hypnotherapy is a combination of hypnosis and psychotherapy. By itself, hypnosis is not a method of treatment. Rather, it is a useful mechanism by which traditional treatment can be shortened and intensified. Hypnotherapy is particularly valuable in the treatment of disorders or dysfunctions with a learned or emotional basis. Called "psychosomatic" in nature, these disorders are diverse in number.

Hypnotherapy has had successful application with children in the treatment of disorders such as bedwetting and/or soiling, asthma, epilepsy, difficulties at school, stuttering, nailbiting, and thumb sucking (Ambrose & Newbold, 1980).

For adults, hypnosis has been an effective treatment for skin disorders such as warts and dermatitis (DePlano & Salzberg, 1986).

Hypnotherapy has also been found useful in behaviour modification. It has had successful habit control use in curbing smoking (Sandford, 1986), insomnia (Cheek & LeCron, 1968), overeating and abuse of marijuana and alcohol (Kelly
& Kelly, 1985), and in the treatment of phobias (Mckeegan, 1986).

Much has been written on the successful management of pain by hypnotic techniques (Tarnowski & Smith, 1986; Wain, 1980). Hypnosis can be used to develop anesthesia without drugs in controlling sensations of pain in surgery and dentistry. It is used to nullify, lessen, redefine, redirect, or displace pain in oncology (study of cancerous tumors), with burn patients, and in obstetrics (Tarnowski & Smith, 1986).

Enhancing the performance of an individual has also been effectively practiced. Jacobs and Gotthelf (1981) found in a overview of a number of studies, that physical and athletic performance can be improved. Forensic application of hypnosis has been favourably employed in many cases (Anderton, 1986). Thakur (1979) has had significant results with anorexia nervosa patients. In his study of 18 female anorexics, average weight gain following treatment for inpatients was 6.04 pounds per week for four weeks and 2.59 pounds for outpatients for ten weeks.

Hypnotherapy and Migraine Headaches

Although little experimentation has been done with the application of hypnotherapy to migraines, it appears to be an effective form of intervention. Miller (1979) found in study of a 58 year old man suffering from severe migraine attacks that apprehension of an upcoming headache can have a
facilitating influence on the acquisition of subsequent headaches. By training the gentlelman in auto hypnosis, he was able to abort a headache as soon as the pre headache stage occurred. Miller noted that when the client realized he was able to control the onset of an attack, his apprehension of future attacks decreased significantly and frequency of attacks also diminished appreciably.

Unfortunately, Miller's study does not include any analysis nor statistical evidence of his results. He maintains that hypnotic suggestion and self hypnosis can very quickly diminish headache symptoms but he provides no empirical data supporting his claim.

Ambrose and Newbold (1980) assert that hypnosis should be used for those migraineurs resistant to pharmacological treatment. They describe a married 35 year old woman who developed migraines during the fourth year of her second marriage. Her first marriage ended in divorce because she became fling with her husband whenever he demanded intercourse. He would lock her up and beat her until she consented. Immediately after her second marriage she developed migraine headaches. Utilizing hypnotic regression methods, it was revealed that when she was seven, she had been caught playing with the genitals of her boyfriend. Her father punished her by beating her. Life became one long "headache" as she associated the sexual act as cruel, savage, and painful. The migraine headaches were a defence
against agreeing to the act. The attacks ended shortly after her childhood trauma had been released. Unfortunately, again no empirical evidence of the study is presented.

Andreychuk and Skriver (1975) wished to determine if degree of hypnotizability was a determining factor in the effectiveness of three treatment procedures. The treatments involved biofeedback training for handwarming, biofeedback training for alpha enhancement, and training for self-hypnosis. Results of the study demonstrated that all three treatments produced significant results. However, those subjects that were found to be highly hypnotic (N=15) showed significantly greater reductions in rate of headache activity than the group (N=13) that were deemed to be low on the hypnotizable scales.

Another case study in the same year (Graham, 1975), demonstrated the effectiveness of hypnosis in conjunction with a hand warming technique as an intervention for migraine. Using the Stanford Hypnotic Susceptibility Scale, Graham found both his subjects to be highly hypnotizable. Both subjects had a migraine history of 10 to 15 years with one of them undergoing three separate unsuccessful surgical operations. The treatment proved to be very successful in reducing the intensity, frequency, and duration of the migraines. One of the subjects was completely relieved of headache pain following treatment while the other subject
with migraine headache. The subject was asked to concentrate on the sensory experiences she underwent while flinging her arms around in a quick, rotational motion. These sensations included a sudden engorgement, warming, and redness of the hands and were used as part of the handwarming technique during hypnosis. Although no specific data was provided, Ansel posited the subject's almost total relief of headache symptoms.

From these studies, it would appear that degree of hypnotizability and ability to elevate temperature of the body extremities are positive influencing factors in the treatment of migraine by hypnosis.

Friedman and Taub (1982) would disagree, however. In a study of 9 high hypnotically susceptible subjects and 14 low susceptible clients, they discovered that all subjects experienced significant reductions in headache activity and ingestion of medication in spite of susceptibility or ability to alter peripheral temperature. This discovery appears to be inconsistent with the previously mentioned research utilizing thermal hypnotic suggestions for migraine relief. It must be realized however that these studies did not attempt to compare the efficacy of treatments involving hypnosis alone and intervention with a combination of hypnosis and handwarming technique. Also, as Friedman and Taub point out, these studies did not report any measurement of temperature. Quite conceivably then, we do not know if
the subjects used in the previous reports had the capacity to alter peripheral temperature or if they did, to what degree could temperature be altered.

In another study; Anderson, Basker, and Dalton (1975) compared the effectiveness of hypnotherapy and a prochlorperazine (tranquilizer) called Stemetil. Forty-seven patients were randomly provided with one of the two treatments. Those clients treated by hypnosis were given six sessions with intervals of ten to fourteen days. The subjects in the non hypnosis group were given Stemetil in five mgm. doses, four times per day in the first month and five mgm. two times per day for eleven months. Improvement was determined by the number of attacks per month, the number who had "grade four attacks" (blinding and totally incapacitating) and those attaining complete abatement. The results of the study demonstrated hypnotherapy was a more effective treatment than therapy using Stemetil. During the last three months of the trial period, 10 of 23 patients treated with hypnosis achieved complete remission while only three of the 24 on prochlorperazine obtained complete relief.

Current research of intervention of migraine by hypnosis contrasts the efficacy of hypnosis with other treatment methods. Stambaugh and House (1977) assessed the success of a variety of pharmacological treatments, biofeedback, relaxation, autogenic, and hypnotic methods.
The subject, a 51 year old Caucasian male, had a 23 year history of migraine headaches which appeared to be exacerabated by the stresses of life. Prior to the intervention of this study, the client had been treated with analgesics and sedatives with little relief. This was followed by treatment with ergotamine and methysergide which produced sporatic relief. Tension reduction biofeedback was next to be attempted which resulted in a temporary decrement of headache severity with no change in frequency of vascular effects. The study utilized an additive treatment method with four reversals. That is, intervention began with relaxation techniques followed by a baseline measurement period, followed by heterohypnosis, autogenic heat transfer, and auto hypnosis, interspersed by a return to baseline measurement. Results of the study illustrated that relaxation intervention had the least effect on headache frequency and duration and consumption of analgesics with no effect on severity of headaches. Of the hypnotic interventions, all three methods demonstrated significant reductions in headache intensity. However, only the introduction of auto hypnosis significantly reduced headache frequency and analgesic use. The latter showed a 96.9% and 99.1% reduction respectively.

More recently, six brief psychological interventions of migraines were compared by Friedman and Taub (1984). Sixty-six subjects were randomly assigned to one of six
groups: group one-highly hypnotically susceptible, group two-highly hypnotically susceptible with the use of thermal imagery, group three-low hypnotically susceptible, group four-low hypnotically susceptible with thermal imagery, group five-biofeedback, and group six-relaxation therapy. All migraineurs were provided with training, were expected to do appropriate daily home practice for one year, and were required to keep daily headache frequency, intensity, and medication data. The results demonstrated significant reduction in headache activity. There was no difference in the effectiveness of the six treatments. Altering peripheral temperature did not significantly change the effectiveness of the treatments. Hypnotic procedures however did prove to be the most cost effective. Interestingly, Friedman and Taub (1985) extended the follow-up of the above study for a three year period. The findings indicated that the original findings of the study were maintained over the extended three years. Seventy-eight percent of the subjects claimed that their headache activity had improved.
CHAPTER 5

METHODOLOGY

Acquisition of Client

As this research was based on a single case experimental design outlined by Kazdin (1982), a single subject was used to test the hypotheses.

An advertisement was placed in the "Coquitlam News", "Burnaby News", and "New Westminster News" newspapers advertising a new method of relaxation therapy for migraineurs. A total of six respondents were recorded of which one could not be reached, one was too ill to meet the necessary meeting time requirements, and two were not going to be available during the chosen baseline and intervention periods.

A number of researchers have alluded to the absolute necessity of establishing an acceptable definition of migraine headaches as a prerequisite to initiating therapy. Because specific interventions are more successful for particular types of headaches (i.e. muscle contraction, cluster, etc.), it is essential that the existence of a particularly defined headache be established before attempting any intervention (Adams, Feurerstein & Fowler, 1980; Waters, 1986).
For the purposes of this study, the researcher chose Blanchard and Andrasik's (1985) diagnostic criteria for the SUNYA Headache project (Appendix A) as it was the most recently developed definition and appeared to be more precise and detailed than previous meanings.

The Subject

The subject (hereafter known as Chris), a 23 year old female, answered the advertisement on the advice of her boyfriend, who saw the notification in the "Coquitlam News". Her boyfriend was very concerned about her as her headaches were affecting their relationship.

Chris was the youngest of two siblings; her brother being four years her senior. Of average weight and height, she had a grade 10 education and was currently employed as a driver for a medical supplies courier business. Neither her parents nor her brother had any history of migraine headaches. In the initial interview, Chris stated that her headaches started in 1982 following the death of her father. She indicated that she had at least one headache per month which could last as long as several days or more. Her headaches were usually accompanied by nausea and sometimes vomiting. She described her headache pain as a throbbing or pulsating sensation which was usually preceded by an intolerance for light. She also experienced visual changes such as seeing stars, blind spots, and/or double vision. Utilizing Blanchard and Andrasik's (1985) diagnostic
criteria, Chris was analyzed as a migraineur by the researcher.

For brief period of six to eight months following her father's death, Chris and her mother drank heavily. She maintained that neither her nor her mother were alcoholics, although when she feels very low, she admitted she does drink a little more than she should.

Chris stated that the stressful parts of her life were centered around three areas:

1. her relationship with her mother,
2. her relationship with her brother, and
3. her job.

Her mother appears to be a very powerful influence in Chris's life. Chris tries to please everyone, feels badly about herself when she is unable to, and feels hurt and guilty when she is chastised for not meeting other's expectations of her. Her mother recognizes her vulnerability and uses it to make her feel guilty and exercise control over her behaviour. Her relationships with her brother and her boyfriend are strongly resented by her mother. As a result, visits to her mother's home are tense — the last visit ended with her mother angrily shouting that she did not want Chris's brother's name even mentioned in her house. Her mother deplores her son because of his past competition with his mother in the business that they had co-owned. It was a family medical courier business whose
The prime function was to deliver medical supplies to hospitals and clinics from local labs. Developed by her father over seven years ago, it had become a lucrative business up to two months before Chris's initial interview. Since her father passed away, Chris and her mother competed over control of the business to the extent that their infighting negatively influenced the performance of the company and effected its eventual collapse. In addition, her mother was upset at her son's lack of respect on her wedding day. Apparently he arrived in inappropriate shabby attire and left early without offering any recognition or congratulations to his mother nor the groom.

Chris's boyfriend, whom she is dating on a steady basis, is also a bit of a problem. He is divorced with two children from a previous marriage and has been generally unemployed since she met him. They had dated quite strongly in the past, broke up for about one year, and now are back together. After pressure by Chris, he claimed that he now has procured a part time job.

Chris's mother also dislikes Chris's boyfriend and thinks that she can do much better. She does not want the boyfriend to visit her (Chris's mother). Chris claimed that her mother did not like any boy that she brought home. She said that she partially understood her mother's feelings because "a mother tends to be overprotective of a daughter".
Since losing the contract, another company took over the business and hired seven of the nine former drivers of which Chris was one. Chris has been working for them for two months. She found the nature of the job very stressful. (i.e. driving in the city during busy rush hours, etc.) Furthermore, she has recently been transferred to a downtown run where she earns less money, drives eight to nine hours per day, and finds the traffic heavy. The stress has become so great that she was planning to quit two days ago had it not been for her boyfriend convincing her to stay. She thought that the company was attempting to get rid of her by making working conditions more unbearable.

Procedure
Intervention of the migraine disorder was organized into three periods; pre, formal, and post treatment times. The pre therapy period lasted two weeks; the intervention, eight sessions of one hour over two and one-half weeks; and the two follow-ups at one month and two months after therapy.

During the pre intervention period, Chris was administered the Barber Suggestibility Scale. She completed the Headache Data Form (HDF) in which she kept a daily log of her headaches on an hourly basis from 8:00 to 24:00. Established as a baseline, Chris documented headache intensity, duration, and frequency. In addition, she recorded the duration of her longest headache and the type and amount of medication consumed to lessen the pain. Chris
also recorded the number of severe headaches (those in category four or five) on a daily basis. Chris continued to document the HDF throughout the therapy sessions and at each of the two follow-ups. On a weekly basis during the baseline and the intervention periods and at each of the post therapy periods, Chris completed the Personal Stress Scale (PSS) designed by the researcher and subject. Chris was also requested to complete the Tennessee Self-Concept Scale (TSCS) during the first week of the baseline, at the culmination of the intervention period, and again at the two month follow-up. The client was requested to listen to an audiotape of the hypnosis sessions on a daily basis during the intervention and follow-up periods.

**Intervention**

During the intervention phase, the subject was provided with eight treatment sessions of one hour's duration over 2 1/2 weeks on consecutive Mondays, Wednesdays, and Fridays. The treatment sessions consisted of a ten minute debriefing, a ten minute pleasant scene, a ten minute red balloon stage, a ten minute physiological response set and a ten minute post hypnotic close. In the course of the induction, the subject underwent progressive relaxation instructions and an experiential stage of forty minutes accompanied by background ocean sounds and light music (Appendix B). Once in a very relaxed state, it was suggested to the subject to imagine herself at a location where she often goes to
experience feelings of content, comfort, and relaxation.
(This "pleasant scene" was described by the client in the initial interview) In Chris's case, she liked to travel to the beach during the stressful periods of her life. During this phase of approximately ten minutes, the researcher reminds the subject of the relaxing feelings she experienced at this place thus placing the subject in a deeper state of relaxation. Chris's attention was then transferred to the red balloon stage (Walch, 1976) where she was asked to picture a large basket positioned on the beach beside her. Inside the basket, she was directed to observe several sheets of paper and a pencil. She was asked to take the paper and pencil out of the basket and on each sheet of paper, she was encouraged to write down an incident, a person, or a problem that causes her to be upset or is stressful for her. As she wrote each item on a piece of paper, she was instructed to crumple it up and throw it into the basket. After she completed this task, she was instructed to observe that the basket was attached to a large, red balloon which was swaying back and forth in the wind. As she watched, the wind picked up the balloon and she observed it being carried away across the ocean taking with it all her "stressors" until it disappeared over the horizon.

Following the red balloon stage, the therapist introduced the physiological response set of the hypnotic
treatment. At this point, Chris was requested to focus on the area inside her cranium where she was asked to envision the arteries as large, red, and throbbing. She was directed to visualize the blood vessels connecting the swollen arteries in her head to her hands. Next, it was suggested that she visualize placing ice on the swollen arteries to contract and cool them. It was instructed that she picture the blood flowing from these cranial arteries to her hands warming them to a high temperature. Finally she entered the post hypnotic stage where it was suggested that whenever she felt headache pain, all she needed to do was to touch her hand to the side of her head and a cooling of the arteries and a warming of her hands would occur thus eliminating the headache pain.

In addition, it was recommended that whenever she heard the researcher's voice or the background music, she would allow herself to go into an even more relaxed state. At this point she was instructed to return to a conscious state.

The four stages of the treatment was prepared on a cassette tape and provided to the subject at the first therapy session. Chris was asked to listen to it at least once daily in the morning, at noon, after work, or prior to going to sleep. This was utilized as it was felt it would intensify the effects of the intervention as well as speed up the process.
Instruments

Four instruments were used to determine the effect of the hypnotic intervention. Data was compiled from the Barber Suggestibility Scale, the Headache Data Form, the Personal Stressors Scale, and the Tennessee Self Concept Scale.

The Barber Suggestibility Scale

The Barber Suggestibility Scale (BSS) was utilized to determine the client's degree of hypnotizability. It was administered once, during the baseline period. A scale designed to provide a measure of the degree of hypnotizability of a subject, the BSS was constructed by T.X. Barber (1969) as an improvement over the Stanford Hypnotic Susceptibility Scale (Appendix D). Capable of being verbally executed or administered via cassette tape, the BSS is comprised of an objective and a subjective section. The objective portion of the BSS is comprised of eight standardized test suggestions which can be administered with or without hypnotic induction and with or without task motivated instructions. These test items were chosen on the basis of their being representative of traditional test suggestions used in hypnosis experiments. The eight test statements include an hallucination item, a post hypnotic response, and an amnesia example. Three challenge items and two imaginative, objective consequence items are also incorporated. Each of the eight items are
scored using objective measurement criteria (e.g., arm lowering—the subject's right arm is extended horizontally and it is suggested that the arm is becoming heavier and moving down). One point is scored for each four or more inch downward movement of the arm.

The second section of the test consists of eight items in which the client subjectively evaluates the degree to which each suggestion was experienced by the client (e.g., when it was suggested that you felt thirsty, you felt; not thirsty (for one point), slightly thirsty (for two points) or very thirsty (for three points)). A maximum of eight points for the objective section and a maximum of 24 points for the subjective section makes 32 the highest possible test score.

Barber (1969) claims that the reliability of the BSS is significant. He did a number of studies which demonstrated a test-retest correlation of 0.80 or higher for both objective and subjective scores. In addition, he maintains that the internal consistency averaged around 0.80.

The Headache Data Form

Composed in booklet form based on the studies of Blanchard, Theobald, Williamson, Silver, and Brown (1978), the headache data form (HDF) was selected to provide data on headache frequency, intensity, and duration as well as client use of medication (Appendix E). A client self-evaluation tool, it provided the researcher with headache
data on an hourly basis 16 hours a day for a two week baseline prior to therapy and for 2 1/2 weeks during therapy. In addition, it was administered for the one month and two month follow-ups. A Likert scale of one to five designed by Epstein and Abel (1977) rated the intensity of the headaches. Borrowed from Blanchard et al.’s (1978) work on migraine headaches, the HDF provided a thorough data base of headache activity prior to, during, and following hypnosis intervention. Hence it furnished evidence of fluctuations of headache activity as well as the use of analgesics.

The Personal Stressors Scale

Designed by the researcher and the subject, the Personal Stressors Scale (PSS) was conducted on a weekly interval: twice during the pre-treatment period, three times during intervention, once immediately following intervention, and once at each of the one and two month follow-ups (Appendix F).

The PSS consists of 22 incidents, people, or activities identified by the subject as being sources of day to day stress. These "stressors" could be events or personages. They could have originated in the past or they could be an issue of the present and/or future. The purpose of the PSS was to specify the particular stressors in the subject’s life. Secondly, it provided a method of observing those areas of constant, extreme stress as well as analyzing
possible changes in level of stress in the course of the baseline, therapy, and follow-up periods. Therefore, it furnished a portion of the baseline data as well as assisted in determining the efficiency of the intervention process as judged by changes in degree of stressfulness.

The stressors were identified by the subject in the initial interview. They are composed of 22 words or phrases (e.g., going to work, relationship with mother) which the subject assessed the degree of stress on a five point scale (i.e., from one (least stressful) to five (most stressful)).

**The Tennessee Self Concept Scale**

A test devised to measure self perception, the Tennessee Self Concept Scale (TSCS) was written by Chris two weeks prior to, immediately following, and two months following intervention (Appendix G). Constructed by William Fitts (1965), it is based on the premise that an individual's self perception was directly correlated to personality and degree of mental health. It is also a powerful determinant of behaviour. Consequently, acquisition of information re a person's thoughts of him/herself was thought to be invaluable as an aid to counselling, diagnosis, assessment, and research. The test is composed of 100 self evaluating statements of which the individual rates describes him/herself on a five point Likert scale from one (completely false) to five (completely true). Ninety of the items are equally divided into
positive and negative statements which assess self-esteem. The final 10 items were borrowed from the Minnesota Multiphasic Personality Inventory (MMPI) and are used to evaluate self-criticism. A measure of the individual's self concept is determined by the P (positive) score. This was procured from an internal and external perspective. The internal frame of reference is decided by assessments of identity, self satisfaction, and behaviour. Perceptions of physical, moral-ethical, personal, family, and social self provide the external frame of reference. A variability score furnishes the degree of inconsistency from one aspect of self perception to another. A distribution score provides an assessment of the pattern of the subject's distribution of responses. This gives insight into the definiteness of self-perception. The true/false ratio is utilized to ascertain an individual's response bias - that is, the tendency to agree or disagree irregardless of the content of the item. Highly correlated with the T/F ratio, the conflict scores measure the degree to which the subject's answers to the positive statements conflict with those of a negative orientation. The empirical scales differentiate between psychiatric and psychotic individuals with personality defects and neurotic, and dysfunctional people from other groups. Finally the number of deviant signs score is a tally of the quantity of deviant characteristics on all other scores.
The test-retest reliability coefficients of the TSCS scores range from 0.60 to 0.92. Content validity was achieved by an unanimous agreement of seven clinical psychologists who classified and judged the positiveness or negativeness of each of the 90 self descriptive items. Further assessments of validity were done by discrimination on the basis of psychological status, group discrimination, and discrimination within patient groups. Correlations with the MMPI, Edwards Personal Preference Schedule, and Izard's Self Rating Positive Affect Scale were made with some of the TSCS's scores. There are two forms of the test; the counselling form and the Clinical and Research Form. The latter was used in this study.
CHAPTER SIX

RESULTS

Barber Suggestibility Scale

The client scored 31 out of a total of 32 points on the BSS. She obtained a 100% result on the objective section of the test, responding correctly to all eight body movement test suggestions. With the exception of one test (i.e. test five, the extent to which the client's throat was stuck), the subject rated the degree of her responses to the suggestions at the highest level making her total subjective score 23 out of 24.

One could conclude therefore, that the subject was highly susceptible to hypnosis.

Headache Data Form

Headache data was recorded by the subject on a daily basis on the HDF. Headache intensity was documented on an hourly basis from 8 A.M. to 12 midnight daily. The type and amount of medication, the duration of the longest headache, and the number of headaches was also noted. To be considered a "different" headache, there had to be a decline of intensity of at least two levels before and after the occurrence of the headache.
The number of headaches per day index (figure 6-1) displayed a stable pattern of two headaches per day for the first four days of the baseline followed by a nine day period of fluctuation from one to two headaches per day. The intervention period illustrated a decline followed by a stable inclination of one headache daily for six days followed by an variable period where headache numbers varied from 0 to 1 for nine days. The final three days of intervention illustrated a stable period where headaches were completely absent. This non headache period was maintained throughout the entire follow-up period (change score from baseline to follow-up = -2).

A similar pattern was found with the headache intensity per day (figure 6-2). The total daily intensity was obtained by taking the sum of the products of the number of hours the patient was experiencing a particular headache and the intensity level of the headache. The baseline period showed a relatively unstable period with an increasing trend and change score of +18. Again with the exception of the 17th and 26th days, the intervention period demonstrated a declining headache intensity with a change score of -13. The follow-up displayed a stable pattern of no headaches.

The analysis of the duration of the longest headache per day (figure 6-3) depicted an overall decline of headache duration from the baseline to the follow-up (change score -16). There were three exceptions to this in the 17th,
NUMBER OF HEADACHES PER DAY

Baseline  Intervention  Follow-up

HEADACHE INTENSITY

Baseline  Intervention  Follow-up

*FIGURE 6-1

*FIGURE 6-2
21st, and 26th days during the intervention period where increases were recorded. From the 28th day on, a stable period of no headaches ensued.

Figure 6-4 illustrated the highest headache intensity per day. This measure was simply the highest headache rating for the day and could be thought to be a measure of the incapacitation of the patient. The baseline opened with a relatively constant period with a rating of 4 being the highest recorded intensity. The intervention period depicted a general decline from scores of 2 to no headaches (with the exception of the 17th and 26th days) with a stable period of a 0 score throughout the entire follow-up (change score -4).

The length of headaches of intensity 2 or greater is displayed in figure 6-5. It was thought by the researcher that headaches with a 1 rating were not clinically significant and only headaches with a 2 or more intensity rating had a meaningful negative impact on the quality of the subject’s life. The baseline portrayed a changing period with an average of 6.5 hours per day and a change score of -3. With the exception of the 16th, 17th, and 26th days, the intervention depicted a declining pattern stabilizing to a zero trend on the 28th day. This zero pattern was maintained throughout the entire follow-up.

The medication Index (figure 6-6) exhibited data on the amount of medication used and its potency. 292’s were the
**DURATION OF LONGEST HEADACHE PER DAY**

- **Baseline**
- **Intervention**
- **Follow-up**

**HIGHEST HEADACHE INTENSITY PER DAY**

- **Baseline**
- **Intervention**
- **Follow-up**

*Figure 6-3*

*Figure 6-4*
LENGTH OF HEADACHES OF INTENSITY 2 OR GREATER

DAYS

HOURS

MEDICATION INDEX

DAYS

*FIGURE 6-5

*FIGURE 6-6
sole type of pharmacological substances ingested. Consisting of 375 mg Acetylsalicylic acid, 30mg caffeine, and 30mg codeine; 292's were rated at a potency of four based on the scale of one to seven formulated by Sargent, Green, and Walters, (1972). The index was constructed by multiplying the number of tablets ingested by the potency rating. The baseline displayed a fluctuating trend varying from an degree of four to eight. The intervention interestingly contained the day with the highest index (16), on the 17th day. This was quickly followed by a stable period of zero use for the remaining 12 days of intervention. This period of non use of medication was continued throughout the follow-up period.

Personal Stressors Scale

As earlier mentioned, the PSS consisted of 22 statements of potential stressors in the subject's life. For each statement, the subject rated the degree of stress she was feeling on a five point scale (zero being no stress to five, extremely stressful). Statement 8, being at home alone, was not included in the data as the results did not show any significant level of stress.

The first statement, going to sleep (figure 6-7), disclosed an accelerating baseline with a score increasing from 1 to 2. There was a stabilization of this increase at a score of 2 in the first two weeks of intervention. However in the final week a second increase was evidenced to
a score of 3. A second period of stability was sustained at a score of 3 up to the 13th week of the study.

Sleep itself, item 2 (figure 6-8), illustrated an opposite trend with a declining stress level. Stress levels dropped from 3 in the baseline to stabilize at 2 in the intervention, post therapy, and follow-up periods.

Stressor 3, going to work (figure 6-9) illustrated a consistent moderately high level of stress with a score of 3. Intervention lowered the score to 1 which was sustained throughout the one and two month follow-ups making the change score = -1.

Figure 6-10 exhibited a similar trend for on the job. This item was particularly emphasized as being a great source of stress by the subject in the initial interview. The two week baseline demonstrated a decelerating slope from a score of 4 to 3. The first week of intervention reduced this item to the lowest stress level of one. From the second week of intervention throughout the follow-up period, the stress level stabilized to 2.

Statements 5, 6, 7, and 13 represented the client's relationship with her mother. Interestingly, all four items demonstrated a similar pattern with high stress levels (3 or more) at the outset establishing the baseline graph, reduced stress levels during intervention, and a return to the original high stress levels during the follow-up. Item 5 (talking to mother over the phone) (figure 6-11) began with
**#1 - GOING TO SLEEP**

- Base-line
- Intervention
- Post therapy
- Follow-up

**WEEKS**

**STRESS SCORE**

- 0.0
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- 3.5
- 4.0
- 4.5
- 5.0

*FIGURE 6-7*

**#2 - SLEEP**

- Base-line
- Intervention
- Post therapy
- Follow-up

**WEEKS**

**STRESS SCORE**

- 0.0
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- 3.5
- 4.0
- 4.5
- 5.0

*FIGURE 6-8*
**3 - GOING TO WORK**

- **Baseline**
- **Intervention**
- **Post therapy**
- **Follow-up**

---

**4 - ON THE JOB**

- **Baseline**
- **Intervention**
- **Post therapy**
- **Follow-up**

---

*FIGURE 6-9*  
*FIGURE 6-10*
a stress score of 4, fell to 1 during intervention, and returned to 2 in the course of the follow-up. Visiting mother alone (figure 6-12) was initiated with a stress score of 3, declined to a 2 rating, and returned to 3. Statement 7, visiting mother with boyfriend (figure 6-13), commenced with an accelerating trend from 4 to 5, stabilized to 4 during intervention, and maintained that level in post therapy. Data on this item was not collected during the follow-up as the boyfriend did not visit Chris's mother during this period. General relationship with mother (figure 6-14) had a typical graph commencing with a consistent score of 3 during the baseline, dropping to 2 during the intervention, maintaining a stress level of 2 during the follow-up. It should be noted that at the time of the last week of intervention, the client had met with her mother over dinner and a long discussion ensued. She felt much more confident in dealing with her mother and was very assertive particularly when her mother attempted her usual method of control by trying to make Chris feel guilty.

Statements 9, 12, 15, and 16 refer to the client's relationship with her boyfriend. Stressor 9, being at home with boyfriend (figure 6-15) began with a moderately low level of stress (score of 2) and was reduced to a 1 score during the first two weeks of intervention, returned to a 2 score at the third week of intervention and maintained it throughout the follow-up. Item 12, (being with boyfriend)
*5 - TALKING TO MOTHER ON THE PHONE

- Figure 6-11

*6 - VISITING MOTHER ALONE

- Figure 6-12
**#7 - VISITING MOTHER WITH BOYFRIEND**

![Graph of stress scores over weeks showing visits to the mother with a boyfriend.]

**#8 - GENERAL RELATIONSHIP WITH MOTHER**

![Graph of stress scores over weeks showing general relationship with the mother.]

*FIGURE 6-13*

*FIGURE 6-14*
(figure 6-16), embarked upon an accelerating slope from a score of 1 to 2 during the baseline fell back to a score of 1 in the third week of intervention and sustained a level of 2 throughout the follow-up. The boyfriend's children (statement 16) (figure 6-17), commenced with an increasing slope, scoring from 3 to 4 in the baseline, shifted between 3 and 4 during therapy, ending at a level of 2 in the third week of intervention; and decreased to a 2 score during the follow-up (change score = -2). General relationship with boyfriend (item 15) (figure 6-18) begins with a moderately low level of stress (2) throughout the baseline. This level is maintained in the course of the intervention and first follow-up until the second follow-up where the stress level fell to 1.

Stress statements 10, 11, and 14 revealed the client's relationship with her brother. All three items: 10, talking to brother over phone (figure 6-19); 11, visiting brother (figure 6-20), and 14, general relationship with brother (figure 6-21) were initiated with a stress level of 3. They declined to a level of 2 during the intervention, decreased again, and were maintained at 1 throughout the post therapy period. Change score from baseline to follow-up was -2.

Trying to make ends meet, item 17 (figure 6-22) disclosed a stable baseline with a high stress score of 5 and a dramatic change of stress level to 3 at the time of
**9 - BEING AT HOME WITH BOYFRIEND**

- **Baseline**
- **Intervention**
- **Post Therapy**
- **Follow-up**

**Stress Score**

- 5.0
- 4.5
- 4.0
- 3.5
- 3.0
- 2.5
- 2.0
- 1.5
- 1.0
- 0.5
- 0.0

**WEEKS**

- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

*FIGURE 6-15*

**10 - BEING WITH BOYFRIEND**

- **Baseline**
- **Intervention**
- **Post Therapy**
- **Follow-up**

**Stress Score**

- 5.0
- 4.5
- 4.0
- 3.5
- 3.0
- 2.5
- 2.0
- 1.5
- 1.0
- 0.5
- 0.0

**WEEKS**

- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

*FIGURE 6-16*
**16 - TALKING TO BROTHER OVER THE PHONE**

- **STRESS SCORE**
- **WEEKS**

- **FIGURE 6-19**

---

**11 - VISITING BROTHER**

- **STRESS SCORE**
- **WEEKS**

- **FIGURE 6-20**
#14 - General Relationship with Brother

**Figures 6-21**

#17 - Trying to Make Ends Meet

**Figures 6-22**
the intervention and the follow-up of 8 weeks (change score -2).

Item 18, feeling guilty (figure 6-23), also had a significant reduction in stress level from a decreasing baseline (scores 5 to 4), to a steep reduction during intervention, followed by a stable post therapy period at a score of 1 (change score -4).

Figure 6-24 depicts stress item 19, feeling vulnerable. Beginning with a declining stress score of 4 to 3 in the baseline and continuing with a reduction in stress score from 3 to 2, the follow-up ends the trend with a stable score of 1. Change score was therefore -3.

Item 20 (figure 6-25), worrying about the future, had a stable moderately high stress level of 3 which was established during the baseline and was maintained throughout the intervention. However in the post therapy period, the stress level dropped to a level 2. This was retained throughout the entire follow-up period. (change score -1)

A summation of the client’s stress scores is disclosed in figure 6-26. A decreasing baseline portrayed a change score of -20 in the last week of intervention. This declining stress level trend continued to the second follow-up (13th week of the study) to a level of 36 with a change score of -29 since the initial baseline.
**#18 - FEELING GUILTY**

![Graph](image)

**#19 - FEELING VULNERABLE**

![Graph](image)
*20 - WORRYING ABOUT THE FUTURE

- FIGURE 6-25

TOTAL STRESS SCORES FOR ALL (PSS)

- FIGURE 6-26
Tennessee Self Concept Scale

Prior to intervention, the TSCS baseline profile (figure 6-27) exhibited a self criticism (SC) score slightly below the mean (T=45). A high and deviant T/F ratio (T=67) was connected to the SC score by a segment that was also deviant. The degree to which the client's answers to positive statements differed from responses to negative items were also high and close to being deviant (T=63). Total conflict was slightly above the mean at T=41. The client's positive scores (1-Identity, 2-self-satisfaction, 3-behaviour, A-physical self, B-moral-ethical self, C-personal self, D-family self, and E-social self) were all below the mean with the exception of D-family self. Two of the positive scores were deviant; behaviour and physical self (T1=40, T2=48, T3=36, TA=39, TB=41, TC=41, TD=50, TE=47). Total positive (P) score, the most important measurement of the TSCS, illustrated the overall degree of self esteem. It was low and close to being deviant (T=41). Variability or inconsistency of responses from one area of self perception to another was slightly below the mean (T=46). The distribution of the client's answers across the five possible choices was also below the mean (T=45) with the 3 response significantly higher than the other '4' responses (T=59). With the exception of Personality Integration Group (PI), all the empirical scales were high, two of which were deviant (i.e. Psychotic Group; T=64.5 and
Neurotic Group; T=64). The Number of Deviant Signs score was a tally of the number of deviant traits on the other scores. It was high and deviant at T=62.

At the final session of the intervention phase (figure 6-28), the TSCS profile displayed a slightly lower self criticism score of T=43, a lowered non deviant T/F ratio of T=54, and net and total conflict scores both at T=54. Total positive score increased to T=50.5. All positive scores except one (family-self) displayed increases with three of them positing scores above the means (T1=48, T2=59, T3=38, TA=43.5, TB=58.5, TC=51.5, TE=48.5). Perception of Family Self diminished to a score of TD=42.5. Total variability decreased to T=41. Total distribution was reduced to T=41.5 with 3 responses again most prevalent and high at T=62. The empirical scales generally waned moving closer to the mean. The Psychotic Group however maintained its high and deviant score at T=66. The number of deviant scores fell appreciably to T=49.

The TSCS at the three month follow-up (figure 6-29) revealed a number of changes. The self criticism score was returned to the pre therapy level of T=45 and the T/F ratio affirmed its post therapy level at T=55. Net conflict was the same at T=55 with the total conflict score falling dramatically, although not deviantly, to T=36.5. Overall self-esteem continued its pattern of increase to T=57. Positive scores continued their increase with all but two,
Tennssee Self-Concept Scale
Profile Sheet

Figure 6-29: TSSS follow-up profile.

Raw Scores
NDS Profile Limits

Note: raw scores are the empirical scores of GM, P, and PI and are presented in reverse order, so that lower raw scores are associated with higher T-scores.
behaviour and family self, locating above the mean within
the normal levels (i.e. $T_1=55$, $T_2=65.5$, $T_3=47.5$, $T_A=55$,
$T_B=56.5$, $T_C=66$, $T_D=48$, $T_E=59$). Total variability continued
to decrease at a score of $T=36$. Distribution rose to the
mean of $T=50$ with all responses (including '3' responses) on
or very close to the mean. The Empirical Scales changed
with two scores falling below the mean (Neurosis Scale and
Personality Integration Scale) and one high, deviant score
(i.e. Defensive Positive Scale) ($T_{DP}=67$, $T_{GM}=49$, $T_{PSY}=53$,
$T_{PD}=52.5$, $T_N=39$, $T_{PI}=47$). The number of deviant scores was
maintained at $T=49$.

Change scores for self criticism were $T=-2$ from pre
therapy to post therapy and $T=+2$ from post therapy to
follow-up. Self esteem change scores were more noteworthy
with $T=+10$ from baseline to intervention and $T=+7$ from post
therapy to the three month follow-up making the total change
score from baseline to follow-up $T=+17$, a significant
improvement. Variability scores fell with a change score of
$T=-11$. Distribution of responses had a change score of
$T=+6$. Number of deviant signs had a change score of $T=-14$. 
CHAPTER SEVEN

DISCUSSION AND CONCLUSIONS

Implications of Test Results

Close scrutiny of the client's pre therapy TSCS profile reveals a self criticism score slightly below the mean. Fltts (1965) indicates this would imply that the client is somewhat defensive. The highly deviant T/F ratio as well as the deviant segment joining the SC and T/F scores suggest the client focuses strongly on "what she is" in formulating self description rather than balancing this with reflecting on "what she is not". This leads one to conclude that the subject has low self-esteem and is not always able to maintain control over her behaviour. These results also indicate that she tends to act out her conflicts and feelings and is easily manipulated by others. Her statements during the initial interview of her behaviour being influenced by her mother's and brother's attempts to make her feel guilty support this conclusion. The client's high net conflict score is highly correlated with the T/F ratio and also suggests she overly emphasizes her positive traits. According to Fltts, her low positive score infers that she has doubts about her self worth; perceives herself as undesirable; often feels sad, depressed, and anxious; and has low self-confidence. Except for her family self score
at the mean, her positive (P) scores are all below the mean. The low P score in Identity, deviantly low P score in Behaviour, and higher but slightly low Self Satisfaction score indicate that although the client has a low opinion of herself, she tends to accept herself as she is. Although she is an attractive young lady, her lowest score (which is also deviant) is her self assessment of her physical self. Her variability scores indicate a mild inconsistency of self perception and some lack of integration from one area to another. Her uncertainty again arises in the distribution of her responses with a high number of 3 responses suggesting a defensive and guarded stance.

The client's empirical scales illustrate several surprises. Except for the Personality Integration Scale, all the empirical scales are high, with two of them at a deviant level. These scores illustrate a profile of a person with a positive self-description resulting from defensive distortions. Some maladjustment is seen in the General Maladjustment Scale. The deviant psychosis and neurosis graph indicate the patient has definite characteristics of psychotic and neurotic groups. Personality defects and weaknesses are also demonstrated by the high Personality Disorder Scale. The number of deviant scores, the best index of psychological disturbance, is clearly deviant at T=63 (Fitts, 1965).
Chris's dysfunctional approach to life prior to therapy is further demonstrated with 12 of the 20 stressors of the PSS rated at level 3 or above with visiting mother with boyfriend, feeling guilty, and trying to make ends meet being particularly stressful.

One of the symptoms of dysfunction can manifest itself in the form of headaches. During the baseline, Chris experienced an average of 1.6 headaches per day with an average daily intensity of 27.5 (Table 7.1). The longest headaches each day averaged 12.46 hours with headaches of 2 level intensity or higher averaging 7.3 hours. The highest headache intensity per day averaged at a 3.15 level with average daily medication use at a strength of 6.46.

Following hypnotic intervention, Chris's test results demonstrated a general improvement. Her total positive score (self esteem) rose to the mean with all positive scores improving and locating within the normal range (figure 7-1). With the exception of the defensive positive and psychotic scales, all of the empirical scales fell within the normal range; closer to the mean. The number of deviant signs demonstrated significant improvement by dropping to the mean at T=49.

Fourteen of the PSSs showed substantial improvement by declining to a level of 3 or lower.
TABLE 7-1: Effects of Hypnosis on Headache Activity, Medication Use, Stress Levels, Self Concept, and Deviant Behaviour

<table>
<thead>
<tr>
<th>% of change</th>
<th>% of change</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Headaches per Day</td>
<td>1.6</td>
<td>0.53</td>
<td>-66.8</td>
<td>0</td>
</tr>
<tr>
<td>Headache Intensity per Day</td>
<td>27.5</td>
<td>11.7</td>
<td>-57.5</td>
<td>0</td>
</tr>
<tr>
<td>Duration of Longest Headache per Day</td>
<td>12.46</td>
<td>6</td>
<td>-51.8</td>
<td>0</td>
</tr>
<tr>
<td>Length of Headache of Intensity 2 or Greater</td>
<td>7.3</td>
<td>2.7</td>
<td>-63</td>
<td>0</td>
</tr>
<tr>
<td>Highest Headache Intensity per Day</td>
<td>3.15</td>
<td>1.35</td>
<td>-57</td>
<td>0</td>
</tr>
<tr>
<td>Medication Use</td>
<td>6.46</td>
<td>2.11</td>
<td>-67</td>
<td>0</td>
</tr>
<tr>
<td>Overall Stress Level per Week (PSS)</td>
<td>64</td>
<td>49</td>
<td>-23</td>
<td>39</td>
</tr>
<tr>
<td>Positive Self Concept (TSCS)</td>
<td>300</td>
<td>347</td>
<td>+15</td>
<td>371</td>
</tr>
<tr>
<td>Deviant Behaviour (TSCS)</td>
<td>15</td>
<td>4</td>
<td>-26</td>
<td>4</td>
</tr>
</tbody>
</table>
Figure 7-1 Pre-therapy, therapy, and follow-up TSSS profiles.
The HDF illustrated a lowered average of 1.6 to 0.53 headaches per day with an average daily intensity decreasing from 27.5 to 11.7 per day. Average length of longest headaches per day dropped from 12.46 to 6 hours daily with headaches of 2 level intensity or higher declining from 7.3 to an average of 2.7 hours per day. Highest headache intensity per day was reduced from a degree of 3.15 to 1.35 with average daily medication use decreasing from a strength of 6.46 to 2.11.

It appears that as Chris began to feel greater self esteem and confidence and become less dysfunctional in her approach to life, the stressful items in her life were diminished. As she gained further control, the headache symptoms began to dissipate.

Overall, the follow-up study illustrated that the most of the gains made during the therapy period were retained. Although Chris’s self criticism score (T=45) remained unchanged, her total positive score rose appreciably (T=57), having a change score of T=+7 (figure 7-1). All positive scores increased with only two of them, behaviour and family self, slightly below the mean at T=48. This would indicate the client’s self esteem had increased to a more acceptable level. The variability scale took a plunge to T=36 indicating greater consistency in her self report. Her empirical scales fell closer to the mean with the exception of the personality disorder and neurosis scales. The PD
scale rose above the mean to $T=67$ indicating basic personality defects and weaknesses. The lowered neurotic scale, $T=39$, indicates a stronger dissociation from the neurotic group. The NDS score was maintained at $T=49$ and indicated a continuation of improvement with decreased overall disturbance (Flitts, 1965).

With the exception of £1 going to sleep, £5 talking to mother over phone, £6 visiting mother alone, £13 general relationship with mother, all other 16 items of the PSS demonstrated a declining trend in amounts of stress and a maintenance of a stress score of 3 or less during the follow-up (figure 6-26). Possible explanation of the increases of stress in £1, £5, £6, and £13 is Chris was beginning to make plans to move to Toronto with her boyfriend. Given the negative attitude of her mother towards her boyfriend and the need on her mother's part to control Chris, the stage is set for renewed conflict and with it, stress. The 12th week follow-up demonstrated the lowest overall stress level for all 20 items with a stress score of 36. This was a change score of -30. The 16th week of follow-up illustrated the beginning of the upward trend of the degree of stress, the score being 40 (figure 7-1).

Headache activity on the HDF was significantly reduced. Although it is not known why activity increased to usually high levels on the 17th and 26th days of the study, on the
24th and 25th days, the client visited her mother and her brother where the usual areas of conflict ensued. For the first time however, Chris was much more assertive with her mother and felt good about herself following the meeting. It is possible that her apprehension prior to the meetings precipitated the increased headache activity. All indexes were self reported at scores of zero by the client on the second week, seventh week, and twelfth week of follow-up. All medication was curtailed during the follow-up period. On the twelfth week of follow-up the client reported that she had not had any headaches since termination of the intervention period. Five months following intervention, the client indicated that she had had only one headache since therapy.

In sum, all of the tests utilized in the study, both subjective and objective, displayed significant improvement in the course of intervention. Follow-up checks at the first and second month periods all indicated a general maintenance of the improved scores with only a few results showing a slight increase.

Internal and External Validity

Kazdin (1982) identifies five major threats to internal validity particular to case studies: history, maturation, testing, instrumentation, and statistical regression. To prevent historical and/or maturation events from being unaccounted for, a log of the client’s reaction and
activities during the intervention was kept (Appendix C). By documenting the significant incidents of the client's life, (such as moving in with her boyfriend, visiting her mother over dinner, etc.), the effects on change in her headache patterns could be taken into account to some degree.

Testing refers to changes that can be associated with the effects of repeated evaluation. It is the tendency for extreme scores to move to the mean during intervention (statistical regression to the mean). Kazdin (1982) states however, that this can be a much greater threat to internal validity in group experiments than in single case studies. He asserts that with single case design although variation of "performance" from one test time to another may be a result of regression, it is not normally a factor that accounts for the pattern of data assessed at a number of occasions over time. Clearly, the results demonstrate that the change over time was significant and more than trivial. This would suggest that something more than regression was at work here.

Instrumentation refers to the possible changes in the testing instrument or evaluation process over time. Mott (1986) refers to this as multiple interventions. When a variety of therapies are applied, it becomes difficult to identify the intervention or interventions which were change producing. He claims that hypnotherapy is particularly
suspect as other supportive psychotherapies are often used in conjunction with hypnosis and are not taken into account. However if we were to respect Clark and Jackson's (1983) earlier described definition of hypnosis and be assured that the only form of intervention used was presented to the subject in a trance state via interviews and use of cassette tape, we could safely assume that intervention was limited to a single form.

Maintaining external validity is more difficult, however, particularly in single case studies. We cannot presuppose that factors such as client motivation and external support systems, the psychodynamics that are subtly applied, and the relationship developed between therapist and client will be the same in a replication. However by providing a detailed client portrayal and diagnosis, a description of the method and type of data collection, and a copy of the narrative description of the trance induction and hypnotic intervention used in the interviews and audiotape, the researcher has made every endeavour to provide the necessary operational information to make this study as replicable as possible.

Significance of the Study

This study was an attempt to present a single case experimental design different from the more traditional and weaker anecdotal case study. In a recent review of articles published in the American Journal of Clinical Hypnosis
between January, 1973 and January, 1983; Nugent (1985) discovered that 42.3% (74 of 175) of them used case studies. Of these, Nugent found that 67 (90.5%) did not use objective measures of change. Instead assessments of behaviour and/or problems of the client, the therapy used, and the change experienced by the client were based solely on anecdotal information or researcher opinion. Of the remaining seven studies, none of them met the criteria of single case experimental design. Furthermore, 64 (86%) did not provide sufficient detail of the intervention to ensure its replicability.

To provide a scientifically valid and reliable report, the researcher was sensitive to the issues and concerns raised by Bloom and Fischer (1982), Kazdin (1982), Mott (1986), and Nugent (1985). By respecting Mott's expectations of a concise but complete history and diagnosis including an introduction with references to recent literature related to the problem and/or the treatment approach uses, the researcher attempted to develop a report that would be a significant contribution to hypnosis literature. Other prerequisites to a noteworthy report that were utilized were Nugent's stated need for reliability of outcome data (objective data), adequacy of treatment information (i.e., evidence of treatment procedure to ensure replicability), pre and post treatment measurement design, repeated objective testing, and stability information. The
latter two were identical to Kazdin's (1982) requests of continuous measurement and baseline assessment. Bloom and Fischer's (1982) planned use of research design, clear measurement rules, explicit measurement processes, clear identification of the intervention program, continuous assessment and a determination of the causal relationship between the therapy and change were also considered.

A second intention of this researcher was to produce a unique study in the use of hypnotherapy. This report was similar to previous research of treating migraine with hypnosis, with two distinct differences. The researcher had only limited experience in the use of hypnosis having worked with a trained and well established hypnotherapist for less than one year. It should be noted the the researcher's limited development of hypnosis skills lends further strength to the degree of external validity as inexperience appears not to affect the success of the study. Secondly, the duration of hypnosis intervention was shorter than all previous literature with the setting of only eight therapy sessions over a 2 1/2 week period. Friedman and Taub's (1984) intervention was extended over a year; Stambaugh and House (1977), 205 days; Daniels (1977), 19 sessions over 5 weeks; Daniels (1976), six sessions one week apart; Andreychuk and Skriver (1975), 10 sessions one week apart; Anderson, Basker, and Dalton (1975), six sessions of
Intervals of 10 to 14 days; and Graham (1975), five sessions one week apart.

A final point to be made here is the significance of the results themselves. The treatment of the client’s migraine headaches by hypnosis proved to be a very effective means of reducing and obliterating headache activity. During therapy the number of headaches per day experienced by the subject was decreased by 66.8%, headache intensity per day was reduced by an average of 57.5%, highest headache intensity per day was lowered by 57%, length of headaches of two or greater per day by 63%, duration of longest headache per day (hours) 51.8%, and use of analgesics per day by 67% (table 7-1). During the follow-up periods of 4 weeks, 8 weeks, and 20 weeks, the headache activity was completely abated with the exception of one headache which occurred in the fourth month of follow-up. In addition, the client’s degree of stress as measured by the PSS was reduced by an average of 23% during treatment and a further 39% during the follow-up. The TSCS indicated an increase of positive self concept by 15%. This is the "most important single score on the Counselling Form" (Flitts, 1965). Deviant behaviour, the TSCS’s best indicator of a client’s psychological disturbance, declined 26% during therapy. A further 23.6% increase of positive self-concept and another 26% reduction of deviant behaviour to within "normal" levels was noted in the follow-up period. The fact that this treatment of a
relatively short duration made such a powerful and enduring change speaks for its significance.

Limitations of the Study

Just as the abbreviated length of this study (baseline and therapy periods) could be considered an asset as judged by its effectiveness in reducing headache activity and its time saving advantage, it could also raise skepticism. Establishment of a baseline as a necessary pre requisite to developing a noteworthy report is well documented (Mott (1986), Nugent (1985), and Kazdin (1982)). Nugent (1985) asserts "if a 'problem' can be shown to have an extended history of stability, whether stable at a fixed level or a stable deterioration, future projections would likely predict continuation of the stable pattern" (pp. 194-195). If however, the baseline period is too short to adequately illustrate a stable pattern of the problem in question, determination of the effectiveness of the intervention as a change agent would be held in question. Similarly, if the intervention period is too brief, can we rightly conclude that the therapy used was the sole independent factor responsible for change?

As earlier mentioned, proper diagnosis of the type of headache being examined is essential since the type of intervention chosen is a function of the type of headache which is identified. Research has demonstrated that
specific therapies have proven to be more successful with particular headaches. If the identification of the type of headache has been incorrect, the type of intervention chosen may not be as effective if an accurate diagnosis had been done initially. As Blau (1987), Passchier and Bonke (1985), and Waters (1986) point out, it is very difficult to correctly diagnose headache type due to its symptom subjectivity and overlap of characteristics. For the purpose of this paper, Blanchard and Andrasik's (1985) criteria for the Sunya Headache Project was employed. It was noted that the client did have some of the traits of tension, muscle contraction, combined migraine and tension, and cluster headaches. The point to be made is the identification of a headache as a particular type does not guarantee that it will not also have characteristics of another headache type. At best, one can offer diagnosis on the basis of having identified more characteristics of a specific type than any other. This was the procedure used in this research.

The client's subjective daily assessments of her headache activity and use of the audiotape could be limiting factors. Did the client consistently evaluate her headaches on an hourly basis as she was instructed to do? Did she score her assessments accurately? Did she listen to the cassette recording on a daily basis? Even though the client may posit that all requests of her had been carried out, the
unsupervised nature of this portion of the intervention makes the results somewhat uncertain. The possibility of a lack of consistency and completeness of the intervention could have serious unknown effects on the results of the study.

As previously mentioned, because of the single case nature of the study, we cannot safely predict the same results will occur with another therapist and migraineur. However, every attempt was made to comply with the external validity guidelines established by Mott (1986), Nugent (1985), and Kazdin (1982).

Finally, although Kazdin (1982) and Hersen and Barlow (1976) recommend the use of an A-B-A-B design which includes an A phase where no intervention is applied, a B phase of intervention, and then a repeat of the A and B phases; this design was not chosen. Instead the weaker A-B-A design was utilized because the intent of the study was to produce an experiment unique in its length and intensity (eight - one hour therapy sessions over 2 1/2 weeks). Although the A-B-A design does have some limitations (Hersen and Barlow, 1976), Kazdin (1982) and Bloom and Fischer (1982) maintain the utilization of repeated assessments prior to and during therapy (an A-B single case design) is the minimum requirement necessary to infer the intervention used was the cause for change.
Summary and Conclusion

The frequency of incidence, the widespread occurrence, and the general distribution of the headache worldwide is well documented. Incidence of this disorder is often unreported. Pharmaceutical intervention is most commonly applied which often only temporarily abates the symptoms if at all and unfortunately, produces unwanted side effects particularly after prolonged use. It was the objective of this study to apply a less conventional behavioural therapy to the migraine headache, a more intense headache capable of high intensity with long periods of duration.

The hypnotherapy employed consisted of a combination of relaxation trance induction, hypnosis, stress management guided imagery, handwarming, and daily use of an audiotape recording of the intervention process.

Different from most hypnosis literature, the present researcher chose the single case experimental design with its strengthened internal and external validity. In anticipation of producing a report of sound outcome data and necessary treatment information, it was hoped that a significant contribution to research and an establishment of hypnosis as a respected treatment approach in scientific circles would be attained.

The subject was a single 22 year old female who had suffered from high levels of stress, low self-esteem, heightened self criticism, and migraine headaches over a
period of five years. She was very motivated having seen several physicians and had tried several pharmacological interventions with little or no success. Testing indicated that she was highly hypnotizable.

Pre therapy observation revealed that the client was suffering from a number of life stressors related to her family, her relationships, and her past (particularly the death of her father). Her coping methods were inadequate as judged by her periods of dysfunction (ie. loss of time at work, spending a lot of time in bed, negatively affecting her social relationships) and the intense symptoms of her migraines.

Upon implementation of therapy, we saw immediate gains in lowering the levels of the subject's stressors. Sixteen of the 20 stress items displayed improvement with three remaining at the same level and one displaying an upward trend. In addition, we saw a decrease in the intensity, duration, and frequency of all migraine activity. A decrease in pharmacological use was noted. Higher levels of self esteem, lowered self criticism and a move away from deviant behaviour were also experienced.

The two follow-up assessments revealed that 14 of the stress items maintained their newly established lower levels, while six of them returned to baseline levels. Although the subject's self criticism score returned to pre therapy level, the most important single TSCS score; self
esteem, continued to manifest improvement. In addition previously deviant behaviour levels were maintained at or near the norm. Headache activity in the follow-ups was completely abated (note: a written letter sent by the subject seven months after therapy indicated that the client had experienced only one headache since the intervention period).

How did hypnosis facilitate therapy? Hypnosis provided the vehicle by which the client was able to adjust physiological responses (ie. blood pressure and blood flow) that are normally uncontrollable. By suggesting to the client that it was in her power to decrease the size of her cranial arterial vessels, to lower her cranial blood pressure by "moving" the blood to the extremities (ie. the hands), and to warm the hands; the adverse effects of the migraine were substantially reduced or eliminated. Hypnosis increased the client's ability to accept suggestion and modify behaviour. This was evidenced in the empowering of the client to lower stress levels. In addition, hypnosis allowed the client to experience a physical and mental relaxation to a degree far greater than could be achieved consciously. Olson (1984) asserts that this deepened relaxation is a powerful agent in reducing pain, anxiety, and tension. The results of this research indicated that all of these parameters were significantly reduced.
Was hypnosis a prerequisite to therapy or was its role more simply, one of facilitator? Given the client's testimony of a five year experience of extreme debilitating migraines, the headache activity documented during the baseline period, and the sudden decrease of headache intensity, duration, and frequency to zero levels which was maintained over a five month follow-up; one would find it difficult not to support the conclusion that hypnosis was the key change agent. We might however, entertain other alternatives. Did some other influence in Chris's life transform her headache symptoms? A log was kept by the researcher during the baseline and therapy sessions in which Chris's comments on what was happening in her life and how she was responding to the hypnotic intervention was recorded. During the baseline period and two weeks into the hypnotic intervention, no changes were recorded in Chris's life. Her frustrations with her job and her relationships continued. However in the last 1/2 week of intervention, Chris announced that she had met with her mother over dinner and discussed her relationship. At this time, she indicated that she was much more direct with her. She stated that although her feelings for her mother were still strong, she wanted "to be her own person" and did not need to depend on her mother as in past. This assertive behaviour was "new" for Chris. She had also met with her brother and resolved some unfinished business with him. These occurrences might lead one to believe that
Chris was responding to the "red balloon" suggestion of "letting go" of all facets of her life that cause her anxiety. One week after the intervention period, Chris moved in with her boyfriend. One month after they moved from her boyfriend's apartment to a house. A month following this, Chris quit her job and moved to Toronto with her boyfriend. As there were no changes in Chris' life until well into and following the intervention period, one might conclude that hypnosis was the prime contributing factor here and the changes in living arrangements and occupation were at least a partial result of the intervention process.

Finally, one might speculate on whether the hypnotizability of the subject was a factor in the success of the intervention. As this was a single case study with a highly hypnotizable client, it would be impossible to compare the results with a client of a lesser degree of hypnotizability. However in view of Olson's (1984) characteristics of hypnosis and Chris's comments following hypnosis such as "I felt numb all over", "I felt like I was floating" and "I feel totally relaxed and energetic" leads one to conclude that degree of hypnotizability could be a factor.

In conclusion, this study supports the findings of Anderson, Basker, and Dalton (1975), Andreychuk and Skriver (1975), Angell (1977), Daniels (1976, 1977), Friedman and Taub (1982, 1984), Graham (1975), Stambaugh and House
Hypnosis is an effective intervention for migraine headaches as evidenced by the data collected and the measurements taken.
REFERENCES

Ad Hoc Committee on Classification of Headache. (1962).


APPENDIX A

Diagnostic Criteria for the SUNYA Headache Project

Migraine Headache

Occurrence of at least one headache per month and the presence of three of the following; (a) Headache onset usually unilateral, (b) headache usually accompanied by nausea and vomiting, (c) headache usually described as throbbing or pulsating, (d) photophobia during headache, (e) one or more first-degree relatives diagnosed as migraine, (f) independent diagnosis of migraine (by another physician), and (g) headache usually preceded by visual changes, hemiparesthesias, transient hemiparesis, or noticeable speech difficulty (Blanchard & Andrasik, 1985).

Researcher's Note:

The client chosen for this study was diagnosed as a migraineur by the researcher. Five of the above characteristics were experienced by the client; namely, (a), (b), (c), (d), and (g).
Trance Induction

Make yourself comfortable. Put your hands on your lap and have your feet flat on the floor. Close your eyes and relax. Now take a deep breath, hold it for a moment...now as you slowly exhale, let out all the tension and discomfort from your body. Do this three times and enjoy the fresh oxygen entering your nostrils and into your lungs. As you exhale, feel the comfort and relaxation in your entire body. Each time you breathe out, allow the muscles in all parts of you to go limp and relaxed and become even more comfortable. Allow any sensations you may feel or any sounds you may hear to become a part of your comfort.

Now follow me in your imagination or in your mind’s eye to the different parts of you. Imagine that all the muscles in your body are completely relaxed. That’s right, just let them go, as if you were a rag doll. Now allow all the muscles in your head and forehead to go limp and loose. Let that relaxation and limp feeling drift down to all the muscles around your face...the eyes, the cheeks, the mouth, and the chin. Now the neck muscles...so limp and comfortable. Let this feeling of relaxation go down the right arm to the elbow, to the hands, and to the finger...
tips. Now relax the left arm in the same way, the elbow, the forearm, the hand, each finger and finger tip. Relax all the muscles around the chest. You are very calm and very relaxed. Let these comforting feelings go down the muscles in your back. Allow the relaxation to go to the stomach muscles and all the way down the right leg, the knee and the foot and the toes. Now do the same with the left leg; relaxing the knee, thigh, ankle, foot, and toes.

Now as I count from five backwards allow yourself to relax even more so that by the time I reach one, your entire body and mind will be in a very deep, relaxed state yet keeping your heart rate and bodily functions in a normal state. Five... relaxing deeper and deeper remembering that when I reach one, your entire body and mind will be in a very deep state of relaxation. Four...Three...deeper and deeper... relaxed...two... more and more limp and relaxed, and one...feeling your entire body in a very deep relaxed state; feeling very comfortable.

Pleasant Scene

Now allow yourself to go to that pleasant place you described earlier. You can imagine this beautiful scene, visualize it, or picture it or just think about it or you can just listen to my voice. You are on the beach sitting on a log looking over the water. Allow the light breeze to cool your forehead...refreshing you, comforting you. As you look over the water, you can see the moon making its
reflection over the water. Just enjoy the peacefulness there, the quietness, the sound of the waves. You are feeling very good and very relaxed. Feel those comforting relaxed feelings as if you were on a beautiful holiday. You are feeling very comfortable and content. Your mind is clear, calm, and peaceful. Except for the waves splashing on to the beach, it is very quiet. With each breath of that fresh air, let it energize you and with each breath let it cleanse your mind and let the freshness of the breeze cool your forehead and relax you.

Red Balloon

I want you to imagine that beside you is a large basket. Inside the basket is a pencil and paper. Pick up the pencil and paper. On one of the sheets of paper write down one thing that is giving you discomfort. It could be an incident, a happening, a certain person or people in your life...anything that causes you to be upset or give you stress. Now after you have written one thing on the piece of paper that gives you discomfort, crumple up the paper and throw it into the basket. Take another piece of paper and write down another thing that causes you stress...crumple up the paper and throw it into the basket. Now as I count from one to ten, continue writing down those items that cause you to be upset and by the count of ten, crumple up each paper and throw them all into the basket. One...two...three... ...nine...ten. Now I want you to throw all the crumpled
sheets with the stressful items written on them into the basket. Now as you look up at the basket, you'll notice that the basket is connected to a big, red helium balloon. You see the huge red balloon moving back and forth in the wind. As you watch, you see a big gust of wind blow on the balloon and raise the balloon and basket into the air. As I count from one to three, I want you to let it lift up, up into the air, drifting higher and higher into the clouds. One...up, up, up...two...drifting away...and three. Now all you can see is a dot in the sky. As the balloon moves higher and higher into the sky and clouds, I want you to breathe in and out three times in full breaths to cleanse your system and let out all the tension and stress from your mind and body. Now I want you to enjoy the peaceful surroundings, the quietness, the beauty, the warmth of this peaceful place as if you were one with this tranquility. And as you breathe each breath, let it cleanse your system. I want you to imagine yourself leaning back in a comfortable position...just enjoying yourself there. Imagine now that each breath you take in will cleanse your system. Your whole body and your entire mind is so very refreshed and relaxed.

**Physiological Response Set**

Now I want you to picture the muscles around your forehead and scalp and imagine that they are relaxed and comfortable. I want you to go inside your head and picture
the arteries in your head as large, red, and throbbing. You can imagine these large throbbing blood vessels, visualize them, picture them, just think about them, or you can just listen to my voice. Now as you relax and become less tense, I want you to picture the blood vessels on your left side flowing from those swollen arteries in your head down through the neck, down your left arm to your hands, and all the way down to your fingers. I want you to picture the blood vessels on your right side flowing from those red, swollen arteries in your head down your right shoulder, down your right arm past the elbow to your right hand and fingers. Now do the same with your left side.

Now as you relax and become less tense each day and as I count from one to three, visualize placing large, icy, blue, cold ice cubes on those swollen, throbbing arteries in your head making them cooler and cooler and smaller and smaller. As your arteries become smaller and cooler, I want you to picture blood flowing faster and faster from your arteries in your head to your head to your hands. As the blood flows from the arteries in your head to your hands, I want you to picture yourself placing your hands over a roaring, hot fire. Feel the heat in your hands as if it were placed in a tub of warm water. (pause) Now as the arteries in your head become cooler and cooler, smaller and smaller and more normal and the blood flows faster and faster from those arteries in your head through the blood
vessels to your hands, you will notice your hands becoming warmer and warmer as if you were placing them over a hot roaring fire as you become less tense and more relaxed each day.

Post Hypnotic Suggestion

So that the next time your unconscious will remember that whenever your arteries in your head begin to get large and swollen, you will need only to touch your right hand to your left side of your head or your left hand to the right side of your head in a natural and gentle way that will immediately cause the swollen arteries to become small and cool and normal and cause the blood to flow from those arteries to your hands without your conscious mind even knowing this and your hands to become very warm without you even being conscious of it.

Now picture the coolness and smallness of your arteries in your head and the warmness of your hands and the blood flowing down the right side to your right hand and down the left side to your left hand so that the unconscious part of you will remember this without you even thinking about it consciously.

And whenever you hear this beautiful, soothing, quiet music and my voice, you will drift even deeper next time and when you listen to this music while you are going to sleep at night, allow the music to relax you even more. Whenever you listen to this music and my voice during the day you can
allow it to relax you even more. When the music ends, you can just count from one to five to yourself and you will feel those contented, relaxed feelings again, and when you reach five, you will awaken feeling refreshed and contented.

And now, as I slowly count from one to five you will begin to awaken feeling relaxed, alert, and calm both physically and mentally and at the count of five you will open your eyes fully awake, feeling very refreshed alert and calm. One...two...beginning to awaken...three...feeling calm, slowly moving your muscles...four...beginning to open your eyes feeling alert and refreshed...and five...eyes open.
APPENDIX C

Client’s Log

Intervention

Session One Chris mentioned that she needed a pillow to rest her head on. She stated that she had difficulty letting things go in the balloon. She wanted to bring back the people she written on the papers she had placed in the basket. However, once they got far enough away, it was easier to let them go. After awhile, she was able to just let them go.

Session Two Following this session, Chris claimed that at times she would just drift away. Sometimes she would not hear the therapist’s voice. When she heard her name, she would come back. She was numb all over. After listening to the audiotape last night, she felt refreshed, better. She was surprised at herself as she got up and did some housework—something she had not done for long time. She felt that she had entered a much deeper trance this time. It was much easier to let things go in the basket.

Session Three Chris commented that she felt like she was floating. Her hands felt closer together than what they really were. When the last number was said, she feels that she goes all the way and nothing could bring her out. She felt her whole body tingling. She felt much better than before today’s session. She felt good. Her head felt
better. When she sat on the log in the pleasant scene, the whole city lit up. She was completely by herself in a very comfortable, relaxed state. Last night, she had slept like a log. This was the first time in a long time. She had suffered sleepless nights for several years. The last two nights she had had no dreams and no headaches. She asserted that she had not slept like this for so very long. She described her sleep periods as dream sleep where she experienced unrestful sleep wrought with many dreams. Following last night's sleep, she did not want to get up.

Session Four Chris indicated that she was not able to unwind and relax this time. There were a lot of distractions as the door was slammed several times as people came in and out of the counselling centre. She felt that a morning session was not as good as later in the day as she just wanted to stretch and get going and not relax. (researcher's note: due to time constraints, this session was held in the morning. All other sessions were scheduled for the early evening.)

Session Five Chris maintained that she had not had a headache for two days. She was listening to the audiotape at lunchtime. She would park her car in a quiet place, recline the seat and use the cassette deck. She stated that her boyfriend had noticed a change in her behaviour. She was not as miserable, not as short tempered. She had had no headaches for two days. Last night she had slept from 18:00
to 20:00 after work. She had not been able to do this for a long time. She had slept soundly which was very unusual for her. Her dreaming had stopped. Usually she would talk in her sleep and wake her boyfriend up. He would tell her then what she had said. Her boyfriend told her this morning that she had not disturbed him with her sleep talk for several nights now. In today’s session, she felt like she was not there. Her whole body felt numb. Sometimes she listened to the therapist’s voice, sometimes she was on the beach, and sometimes she just listened to the music. She thought she had trouble listening to the therapist’s voice at times as she would drift off. She stated that the feeling of numbness and feeling of being free is what she is looking for. This had occurred in every session to date.

Session Six The subject maintained that her headaches had stopped. She was resting well. Her dreams had stopped. She felt relaxed and good all over. She had not taken any medication for five days. When she lays down, she is asleep in minutes. Before therapy, things were racing through her mind and she would toss and turn. It could take hours before she would get to sleep. She listened to the audiotape daily.

Session Seven Chris indicated that she had a few headaches over the weekend. They started when she awoke on Saturday and Sunday mornings. She stated that she had visited her mother on Sunday night. They had had a long
talk. She claimed that she was much more direct with her mother. She told her mother that she still loved her and cared for her but she does not need her as much. She wanted to be her own person. She felt that she had been much more assertive and less passive with her mother. Afterwards, a wonderful feeling had come over her. She felt very alone, very much by herself. She felt a little sad because she wished that the therapist could give the same relief to the people in her life that had been such a problem to her. She had also visited her brother over the weekend and had over a long talk resolved some issues with him that had been bothering her for some time. She was feeling very good about herself and much more confident.

**Session Eight** The client felt good after today's session. Her whole body felt numb when awakening. She felt refreshed and did not feel like she needed a nap. Again she mentioned that she had gone into a much deeper state this time. Yesterday she had spoken with her sister-in-law for the time in months. She stated that over last two weeks she had changed. She refused to feel guilty. She feels much stronger. She knew now that she cannot please everybody. She asserted that she has to be more her own person. If the people in her life do not like that, that is too bad. She could not continue to run her life by trying to please everybody. She noticed now that when she started to get a headache she can turn it off. Today she started to feel
some pain and she listened to a favourite song on the radio and was able to shut it out.
APPENDIX D

The Barber Suggestibility Scale

The Barber Suggestibility Scale can be administered under a variety of experimental conditions: with and without Hypnotic Induction, with and without Task Motivational Instructions, by means of a tape-recording or by oral presentation. Generally the scale has been administered to subjects with their eyes closed.

Eight Test Suggestions

1. Arm Lowering. "Hold your right arm straight out in front of you like this." (Guide the subject to extend the right arm directly in front of body at shoulder height and parallel to the floor). "Concentrate on your arm and listen to me."

   (Begin timing). "Imagine that your right arm is feeling heavier and heavier, and that it's moving down and down. It's becoming heavier and heavier and moving down and down. It weighs a ton! It's getting heavier and heavier. It's moving down and down, more and more, coming down and down, more and more. It's heavier and heavier, coming down and down, more and more, 'more and more.'" (End 30 seconds).

   "You can relax your arm now." (If necessary, ask the subject to lower the right arm).

   Objective score criterion: one point for response of four inches or more. (Response is measured by placing a
ruler near the subject's hand at the beginning of the suggestions and noting the degree of displacement at the end of the 30 second suggestion period).

2. Arm Levitation. "Keep your eyes closed and put your left arm straight out in front of you on the same way. Concentrate on your arm and listen to me."

(Begin timing). "Imagine that the arm is becoming lighter and lighter, that it's moving up and up. It feels as if it doesn't have any weight at all, and it's moving up and up, more and more. It's as light as a feather, it's weightless and rising in the air. It's lighter and lighter, rising and lifting more and more. It's lighter and lighter and moving up and up. It doesn't have any weight at all and it's moving up and up, more and more. It's lighter and lighter, moving up and up, more and more, higher and higher." (End 30 seconds).

"You can relax your arm now." (If necessary, ask the subject to lower the arm).

3. Hand Lock. "Keep your eyes closed. Clasp your hands together tightly, and interlace the fingers." (If necessary, the experimenter states; "Press your hands together, with palms touching." and assists the subject to interlock the fingers and to bring the palms together). "Put them in your lap. Concentrate on your hands and hold them together as tightly as you can."
(Begin timing). "Imagine that your hands are two pieces of steel that are welded together so that it's impossible to get them apart. They're stuck, they're welded, they're clamped. When I ask you to pull your hands apart, they'll be stuck and they won't come apart no matter how hard you try. They're stuck together; they're two pieces of steel welded together. You feel as if your fingers are clamped in a vise. Your hands are hard, solid, rigid! The harder you try to pull them apart the more they will stick together! It's impossible to pull your hands apart! The more you try the more difficult it will become. Try, you can't." (End 45 seconds).

(Five second pause). "Try harder, you can't." (Ten second pause). "You can unclasp your hands now."

Objective score criteria: 1/2 point for incomplete separation of the hands after five second effort; one point for incomplete separation after fifteen second effort.

4. Thirst Hallucination. "Keep your eyes closed." (Begin timing). "Imagine that you've just finished a long, long walk in the hot sun. You've been in the hot sun for hours, and for all that time you haven't had a drink of water. You've never been so thirsty in your life. You feel thirstier and thirstier. Your mouth is parched, your lips are dry, your throat is dry. You have to keep swallowing and swallowing. You need to moisten your lips. (Three second pause). You feel thirstier and thirstier, drier and..."
drier. Thirstier and thirstier, dry and thirsty. You're very, very thirsty! Dry and thirsty! Dry and thirsty!" (End 45 seconds). "Now, imagine drinking a cool, refreshing glass of water." (Five second pause).

Objective score criteria: 1/2 point if the subject shows swallowing, moistening of lips, or marked mouth movements; additional 1/2 point if the subject indicates during the "post-experimental" questioning that he or she became thirsty during this test (e.g. "I felt dry." or "I was parched." or "I felt somewhat thirsty."). (See post experimental questions for final scoring criteria on this test).

5. Verbal Inhibition. "Keep your eyes closed." (Begin timing). "Imagine that the muscles in your throat and jaw are solid and rigid, as if they're made of steel. They're so solid and so rigid, that you can't speak. Every muscle in your throat and mouth is so tight and so rigid that you can't say your name. The harder you try to say your name the harder it becomes. You can't talk! Your larynx has tightened up; your throat and jaw feel as if they are in a vise. Your throat is clamped so tightly that you can't talk; you can't say your name. The harder you try, the harder it will be. It's useless, the words won't come out; you can't speak your name; it's impossible to talk! The harder you try to say your name, the harder it will become. Try you can't!" (End 45 seconds).
(Five second pause). "Try harder; you can't." (Ten second pause). "You can say your name now."

Objective score criteria: 1/2 point if the subject does not say his/her name after a five second effort; one point if subject does not say name after fifteen second effort.

6. Body Immobility; "Keep your eyes closed." (Begin timing). "Imagine that for years and years you've been sitting in that chair just as you are now. Imagine that you've been sitting in that chair so long that you're stuck to it! It's as if you're part of the chair. Your whole body is heavy, rigid, solid and you weigh a ton. You're so heavy that you can't budge yourself. It's impossible for you to stand up, you're stuck right there! Your body has become part of the chair. When I ask you to stand up you won't be able to do it! You're stuck tight. The harder you try, the tighter you'll be stuck and you won't be able to get up. You're heavy in the chair! Stuck in the chair—you can't stand up. You're so heavy and stuck so tight. You can't stand up and you're stuck. Try you can't." (End 45 seconds).

(Five second pause). "Try harder, you can't." (Ten second pause). "You can relax (or sit down) now."

(The subject is considered not standing if he or she rises slightly from the chair without straightening into an erect posture. In this event, the experimenter says, "Try
to stand fully erect. You can't", instead of "Try harder, you can't.")

Objective score criteria: 1/2 point if the subject is not standing fully erect after five second effort. One point if not standing fully erect after fifteen second effort.

7. "Posthypnotic-like Response" (The auditory stimulus consists of tapping once on the metal back of a stop watch with a fountain pen). (Begin timing). "When this experiment is over in a few minutes and your eyes are open, I'll click like this (experimenter presents auditory stimulus) and you'll cough automatically. At the moment I click (experimenter presents stimulus). You'll cough. It will happen automatically. When I click like this (stimulus is presented), you'll cough immediately. I'll click and you'll cough. When your eyes are open, I'll click (stimulus is presented) and you'll cough. When I click you'll cough." (End 30 seconds).

Objective score criterion: one point if the subject coughs or clears throat "postexperimentally" when presented with the auditory stimulus.

8. Selective Amnesia. "Your eyes are still closed but I'm going to ask you to open them in a minute. When they're open I'm going to ask you to tell me about these tests." (Begin timing). "You'll remember all the tests and be able to tell me about them, all except for one. There's one that
you'll completely forget about as if it never happened!
That's the one where I said your arm was becoming lighter
and moving up and up. You'll forget all about that and when
you try to think about it, it will slip even further away
from your mind. You will forget completely that I told you
that your arm was becoming lighter. This is the one test
that you cannot remember! You will remember that I said
your arm was heavy and all the other tests will be perfectly
clear but the harder you try to remember that I told you
your arm was rising the more difficult it will become. You
will not remember until I give you permission by saying.
Now you can remember, and then, and only then, you will
remember that I said your arm was rising!" (End 45
seconds).

Objective score criterion: one point if the subject
does not refer to the Arm Levitation item (Test suggestion
£2 but recalls at least four other items and then recalls
Test suggestion £2 in response to the cue words.

**Scoring**

**Post experimental Objective Scoring of Test Suggestion**
4, 7, and 8.

"Open your eyes, the experiment is over."

**Scoring of Test Suggestion 8**

The experimenter next asks: "How many of the tests can
you remember?" (Pause while client answers). The
experimenter prompts the subject by asking, "Were there any others?" "Can you think of any more?" and "Is that all?", until the subject mentions at least four of the test suggestions. If the subject verbalizes the Arm Levitation item during the recital, he or she receives a score of zero on Test suggestion 8 (Selective Amnesia). If the subject does not include the Arm Levitation item in the enumeration, the experimenter finally states, "Now you can remember," and, if the subject still does not verbalize the Arm Levitation item, "You can remember perfectly well now!"

The subject receives a score of one point on Test suggestion 8 (Selective Amnesia) if he or she mentions at least four of the test suggestions, but does not mention the Arm Levitation item before given the cue words, and verbalizes the Arm Levitation item when given the cue word. "Now you can remember," or "You can remember perfectly well now!"

Final scoring of Test suggestion 4. The objective scoring of Test suggestion 4 is completed when the subject refers to this item during the recital. At this point the experimenter asks: "Did you become thirsty during this test?" If the subject answers, "Yes" to this question, he or she receives the additional 1/2 point on Item 4. If the subject answers, "Yes" but adds a qualifying statement, e.g., "I had been thirsty to begin with", he or she is
asked: "Did the imaginary glass of water help quench your thirst?" If the subject now answers, "Yes", he or she receives the additional 1/2 point.

The maximum objective score obtainable on the BSS is 8 points.

"Revised" Subjective Scores

After the objective scores have been assigned, the subject is given a mimeographed questionnaire which assess subjective responses to the BSS and is worded thus:

Please answer the following questions truthfully. Place a check mark above the most accurate answer.

1. When it was suggested that your right arm was heavy and was moving down, the arm felt: not heavy; slightly heavy; heavy; very heavy.

2. When it was suggested that your left arm was light and was moving up, the arm felt: not light; slightly light; light; very light.

3. When it was suggested that your hands were stuck together and you wouldn't take them apart, the hands felt: not stuck; slightly stuck; stuck; very stuck.

4. When it was suggested that you felt thirsty, you felt: not thirsty; slightly thirsty; very thirsty.

5. When it was suggested that your throat was stuck and you couldn't speak, your throat felt: not stuck; slightly stuck; stuck; very stuck.
6. When it was suggested that you were stuck to the chair, you felt: not stuck; slightly stuck; stuck; very stuck.

7. When the experiment was over, the experimenter clicked his fingers (presented the posthypnotic cue), you felt; not like coughing; slightly like coughing; like coughing; very much like coughing.

8. When the experiment was over and you were recalling the tests, you felt that you remembered the test about the arm resisting (the test the subject was told to forget); with no difficulty; with slight difficulty; with difficulty; with great difficulty (or did not remember at all).

Each of the above eight items receives a score of 0 to 3; 0 for the first answer ("not"), one for the second ("slightly"), and so on. The total subjective scores on the eight items thus range from 0 to 24.
APPENDIX E

Headache Data Form

Day _______  Date _________

<table>
<thead>
<tr>
<th>8:00</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24:00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TIME (hours)
HEADACHE INTENSITY SCALE

0 No headache.

1 Only aware of headache when attention is devoted to it.

2 Mild headache, could be ignored at times.

3 Headache is painful, but person can do his job.

4 Very severe headache, difficult to concentrate, can only do undemanding tasks.

5 Intense, incapacitating headache.

Number of headaches today: ____

Duration of longest headache: ____hours ____minutes

Medication taken today:

1. type ______
   number ______

2. type ______
   number ______

3. type ______
   number ______
### APPENDIX F

**Personal Stressors Scale**

<table>
<thead>
<tr>
<th>Least Stressful</th>
<th>Most Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Going to sleep.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. Sleep.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. Going to work.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. On the job (driving).</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. Talking to mother over the phone.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. Visiting mother alone.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. Visiting mother with boyfriend.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. Being at home alone.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. Being at home with boyfriend.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. Talking to brother over the phone.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11. Visiting brother.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. Being with boyfriend.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13. General relationship with mother.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>14. General relationship with brother.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15. General relationship with boyfriend.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>16. Boyfriend's children.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>17. Trying to make ends meet (paying bills, etc.).</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>18. Relationship with father prior</td>
<td></td>
</tr>
</tbody>
</table>
to his death.

19. Father's death.


22. Worrying about the future.
APPENDIX G

Tennessee Self Concept Scale
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>I am neither too fat nor too thin</td>
</tr>
<tr>
<td>9</td>
<td>I like my looks just the way they are</td>
</tr>
<tr>
<td>11</td>
<td>I would like to change some parts of my body</td>
</tr>
<tr>
<td>25</td>
<td>I am satisfied with my moral behavior</td>
</tr>
<tr>
<td>27</td>
<td>I am satisfied with my relationship to God</td>
</tr>
<tr>
<td>29</td>
<td>I ought to go to church more</td>
</tr>
<tr>
<td>43</td>
<td>I am satisfied to be just what I am</td>
</tr>
<tr>
<td>45</td>
<td>I am just as nice as I should be</td>
</tr>
<tr>
<td>47</td>
<td>I despise myself</td>
</tr>
<tr>
<td>61</td>
<td>I am satisfied with my family relationships</td>
</tr>
<tr>
<td>63</td>
<td>I understand my family as well as I should</td>
</tr>
<tr>
<td>65</td>
<td>I should trust my family more</td>
</tr>
<tr>
<td>79</td>
<td>I am as sociable as I want to be</td>
</tr>
<tr>
<td>81</td>
<td>I try to please others, but don't overdo it</td>
</tr>
<tr>
<td>83</td>
<td>I am no good at all from a social standpoint</td>
</tr>
<tr>
<td>95</td>
<td>I do not like everyone I know</td>
</tr>
<tr>
<td>97</td>
<td>Once in a while, I laugh at a dirty joke</td>
</tr>
<tr>
<td>Item No.</td>
<td>Question</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td>I am neither too tall nor too short</td>
</tr>
<tr>
<td>10</td>
<td>I don't feel as well as I should</td>
</tr>
<tr>
<td>12</td>
<td>I should have more sex appeal</td>
</tr>
<tr>
<td>26</td>
<td>I am as religious as I want to be</td>
</tr>
<tr>
<td>28</td>
<td>I wish I could be more trustworthy</td>
</tr>
<tr>
<td>30</td>
<td>I shouldn't tell so many lies</td>
</tr>
<tr>
<td>44</td>
<td>I am as smart as I want to be</td>
</tr>
<tr>
<td>46</td>
<td>I am not the person I would like to be</td>
</tr>
<tr>
<td>48</td>
<td>I wish I didn't give up as easily as I do</td>
</tr>
<tr>
<td>62</td>
<td>I treat my parents as well as I should (Use past tense if parents are not living)</td>
</tr>
<tr>
<td>64</td>
<td>I am too sensitive to things my family says</td>
</tr>
<tr>
<td>66</td>
<td>I should love my family more</td>
</tr>
<tr>
<td>80</td>
<td>I am satisfied with the way I treat other people</td>
</tr>
<tr>
<td>82</td>
<td>I should be more polite to others</td>
</tr>
<tr>
<td>84</td>
<td>I ought to get along better with other people</td>
</tr>
<tr>
<td>96</td>
<td>I gossip a little at times</td>
</tr>
<tr>
<td>98</td>
<td>At times I feel like swearing</td>
</tr>
<tr>
<td>Item No.</td>
<td>Statement</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>13</td>
<td>13. I take good care of myself physically</td>
</tr>
<tr>
<td>15</td>
<td>15. I try to be careful about my appearance</td>
</tr>
<tr>
<td>17</td>
<td>17. I often act like I am &quot;all thumbs&quot;</td>
</tr>
<tr>
<td>31</td>
<td>31. I am true to my religion in my everyday life</td>
</tr>
<tr>
<td>33</td>
<td>33. I try to change when I know I'm doing things that are wrong</td>
</tr>
<tr>
<td>35</td>
<td>35. I sometimes do very bad things</td>
</tr>
<tr>
<td>49</td>
<td>49. I can always take care of myself in any situation</td>
</tr>
<tr>
<td>51</td>
<td>51. I take the blame for things without getting mad</td>
</tr>
<tr>
<td>53</td>
<td>53. I do things without thinking about them first</td>
</tr>
<tr>
<td>67</td>
<td>67. I try to play fair with my friends and family</td>
</tr>
<tr>
<td>69</td>
<td>69. I take a real interest in my family</td>
</tr>
<tr>
<td>71</td>
<td>71. I give in to my parents (Use past tense if parents are not living)</td>
</tr>
<tr>
<td>85</td>
<td>85. I try to understand the other fellow's point of view</td>
</tr>
<tr>
<td>87</td>
<td>87. I get along well with other people</td>
</tr>
<tr>
<td>89</td>
<td>89. I do not forgive others easily</td>
</tr>
<tr>
<td>99</td>
<td>99. I would rather win than lose in a game</td>
</tr>
<tr>
<td>Item No.</td>
<td>Item</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>I feel good most of the time</td>
</tr>
<tr>
<td>16</td>
<td>I do poorly in sports and games</td>
</tr>
<tr>
<td>18</td>
<td>I am a poor sleeper</td>
</tr>
<tr>
<td>32</td>
<td>I do what is right most of the time</td>
</tr>
<tr>
<td>34</td>
<td>I sometimes use unfair means to get ahead</td>
</tr>
<tr>
<td>36</td>
<td>I have trouble doing the things that are right</td>
</tr>
<tr>
<td>50</td>
<td>I solve my problems quite easily</td>
</tr>
<tr>
<td>52</td>
<td>I change my mind a lot</td>
</tr>
<tr>
<td>54</td>
<td>I try to run away from my problems</td>
</tr>
<tr>
<td>68</td>
<td>I do my share of work at home</td>
</tr>
<tr>
<td>70</td>
<td>I quarrel with my family</td>
</tr>
<tr>
<td>72</td>
<td>I do not act like my family thinks I should</td>
</tr>
<tr>
<td>86</td>
<td>I see good points in all the people I meet</td>
</tr>
<tr>
<td>88</td>
<td>I do not feel at ease with other people</td>
</tr>
<tr>
<td>90</td>
<td>I find it hard to talk with strangers</td>
</tr>
<tr>
<td>100</td>
<td>Once in a while I put off until tomorrow what I ought to do today</td>
</tr>
<tr>
<td>Item No.</td>
<td>Question</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>I have a healthy body</td>
</tr>
<tr>
<td>3</td>
<td>I am an attractive person</td>
</tr>
<tr>
<td>5</td>
<td>I consider myself a sloppy person</td>
</tr>
<tr>
<td>19</td>
<td>I am a decent sort of person</td>
</tr>
<tr>
<td>21</td>
<td>I am an honest person</td>
</tr>
<tr>
<td>23</td>
<td>I am a bad person</td>
</tr>
<tr>
<td>37</td>
<td>I am a cheerful person</td>
</tr>
<tr>
<td>39</td>
<td>I am a calm and easygoing person</td>
</tr>
<tr>
<td>41</td>
<td>I am a nobody</td>
</tr>
<tr>
<td>55</td>
<td>I have a family that would always help me in any kind of trouble</td>
</tr>
<tr>
<td>57</td>
<td>I am a member of a happy family</td>
</tr>
<tr>
<td>59</td>
<td>My friends have no confidence in me</td>
</tr>
<tr>
<td>73</td>
<td>I am a friendly person</td>
</tr>
<tr>
<td>75</td>
<td>I am popular with men</td>
</tr>
<tr>
<td>77</td>
<td>I am not interested in what other people do</td>
</tr>
<tr>
<td>91</td>
<td>I do not always tell the truth</td>
</tr>
<tr>
<td>93</td>
<td>I get angry sometimes</td>
</tr>
<tr>
<td>Item No.</td>
<td>Statement</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I like to look nice and neat all the time</td>
</tr>
<tr>
<td>4</td>
<td>I am full of aches and pains</td>
</tr>
<tr>
<td>6</td>
<td>I am a sick person</td>
</tr>
<tr>
<td>20</td>
<td>I am a religious person</td>
</tr>
<tr>
<td>22</td>
<td>I am a moral failure</td>
</tr>
<tr>
<td>24</td>
<td>I am a morally weak person</td>
</tr>
<tr>
<td>38</td>
<td>I have a lot of self-control</td>
</tr>
<tr>
<td>40</td>
<td>I am a hateful person</td>
</tr>
<tr>
<td>42</td>
<td>I am losing my mind</td>
</tr>
<tr>
<td>56</td>
<td>I am an important person to my friends and family</td>
</tr>
<tr>
<td>58</td>
<td>I am not loved by my family</td>
</tr>
<tr>
<td>60</td>
<td>I feel that my family doesn't trust me</td>
</tr>
<tr>
<td>74</td>
<td>I am popular with women</td>
</tr>
<tr>
<td>76</td>
<td>I am mad at the whole world</td>
</tr>
<tr>
<td>78</td>
<td>I am hard to be friendly with</td>
</tr>
<tr>
<td>92</td>
<td>Once in a while I think of things too bad to talk about</td>
</tr>
<tr>
<td>94</td>
<td>Sometimes, when I am not feeling well, I am cross</td>
</tr>
</tbody>
</table>