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**THE COGNITIVE BEHAVIORAL TREATMENT OF CHRONIC HEADACHE:
GROUP VERSUS INDIVIDUAL TREATMENT FORMAT**

The Ohio State University

PH.D. 1985

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THE COGNITIVE BEHAVIORAL TREATMENT OF
CHRONIC HEADACHE:
GROUP VERSUS INDIVIDUAL TREATMENT FORMAT
DISSERTATION

Presented in partial fulfillment of the requirements
for
the Degree of Doctor of Philosophy in the Graduate
School of the Ohio State University

By
Patrick R. Johnson, B.A., M.A.

The Ohio State University
1985

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To my wife and son:
Neither the first nor the last family
to sacrifice and make the seemingly endless series
of compromises necessary for this particular
goal to be reached.
I am grateful and indebted,
and to you this work is fondly dedicated.

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Chapter One: Introduction

Finding effective approaches to the treatment of chronic pain is a particularly cogent and difficult problem for clinical researchers. It is a costly disorder (Koenig, 1973; Chapman, 1973) which affects millions of people (Paulley & Haskell, 1975; Clark, Gosnell & Shapiro, 1977), and in most instances defies traditional medical treatment (Sunderland, 1978; Bresler, 1979; Melzack & Wall, 1983). Moreover, as Melzack and Wall (1983) point out, the experience of chronic pain is multifaceted and complex, and tends to vary according to situational factors. (See also Beecher, 1959; Fordyce, 1976.)

A growing body of literature suggests that the discomforts associated with chronic pain can be significantly ameliorated by the individual's belief system, and particularly by his/her self-statements concerning the pain. Based on a type of therapy originally described by Meichenbaum (1977) within the context of stress inoculation training (see also Meichenbaum, 1976b; Meichenbaum & Turk, 1976; and, Genest & Turk, 1979), a three step process of cognitive restructuring for pain

clients has recently been outlined by Turk, Meichenbaum and Genest (1983).

The first stage of this treatment process involves a reconceptualization on the part of the client as to the nature of the pain, how it may be differentially perceived and which treatments may be effectively applied. Typically, pain clients interpret their discomfort primarily in terms of physiological sensations and processes (Sternbach & Rusk, 1973) and, either because of ignorance or resistance rooted in secondary gain, psychological interventions are seldom understood or initially welcomed. Working to overcome that resistance by supplying information which maximizes the degree of fit between the client's expectations and the nature of the treatment being offered is the core of the first step of this treatment approach (Turk, et al., 1983). This is achieved by presenting to the client a combination of didactic material and information regarding his/her own pain behaviors and cognitions. This serves as a basis upon which clients can begin to talk to themselves differently about their response to pain, and thus may help to develop a positive attitude regarding the psychological help being offered.

In step two of the treatment process, specific skills (e.g. cognitive strategies) are acquired and rehearsed. As a collaborator with the therapist, the client is taught to alter his/her appraisal of pain situations, and often to shift attentional focus away from the pain itself. By and large, such changes in everyday cognitive and emotional responses to pain are facilitated by initial changes in behavior (Fordyce, 1976; Bandura, 1977; Meichenbaum, 1977; and, Mahoney, 1979).

In the third phase of treatment, clients learn to consolidate acquired skills with a view towards generalization to daily life and long term maintenance. Typically, this process is enhanced to the degree that clients are aware of the necessity for general lifestyle changes. Also, and perhaps more importantly, knowing to anticipate and be prepared for intermittent relapses will facilitate maintenance of treatment gains.

Overall, the efficacy of this type of cognitive behavioral (CB) treatment has not been conclusively established. Available data which describe the use of CB techniques in controlled outcome studies are sparse but encouraging. In a recent review, Tan (1982) concludes that there is "some support, albeit tentative, for the efficacy

of multifaceted cognitive-behavioral treatment regimens for the control of clinical pain . . ." (p. 215). However, since so few well controlled, clinically relevant studies have been done, he urges that more experiments be carried out, especially involving attention-placebo and no-treatment controls. These suggestions are echoed in reviews by Sanders (1979), Linton (1982), Turner and Chapman (1982b) and Turner and Romano (1984).

Since most of the treatment outcome studies cited in these reviews used an individual therapy format, a significant question can be posed regarding the relative effectiveness of CB therapy presented in a group setting. The data available to address this question are once again far from conclusive (see Genest & Turk, 1979; Turk & Kerns, 1982; Holroyd & Andrasik, 1978; Rybstein-Blinchik, 1979; and, Turner, 1982). To the extent that extrapolations can be made from treatment data for clinical problems other than pain, there is evidence that CB group treatment is often at least as effective as that offered to individuals. For example, Beck, Rush, Shaw and Emery (1979) report that depression can be successfully treated using this mode of therapy. Similar claims are made by Meichenbaum and Genest (1977) regarding the treatment of anxiety. Taken together

with the available pain data (reviewed in detail in the following chapter) support is offered for the claims of Turk, et al. (1983) that group treatment is more efficient in terms of therapist time; that it can combine nicely with other modes of therapy in cases where unique individual problems need to be worked out; and, that it "can capitalize upon group processes such as self-disclosure, the growth of group cohesiveness, group pressure, and public commitment" (p. 185), in a way that individual therapy presumably cannot.

Statement of the Problem

While a variety of researchers have reported success in treating chronic pain in a group setting (see Chapter Two), to date no direct comparisons of individual to group treatment have been reported in the literature. The present study seeks to fill this void by reporting data collected in a controlled clinical outcome study aimed at evaluating the relative efficacy of group versus individual CB treatment of chronic headache. Specifically, two hypotheses were tested: 1) that CB treatment of chronic headache is effective; and 2) that group therapy is at least as effective as individual therapy.

Findings in support of the first hypothesis were anticipated, based on prior research. Since there are no empirical data bearing on the second hypothesis, outcome was difficult to predict. It was felt that findings in support of this hypothesis would suggest that group CB therapy represents the treatment of choice over individual therapy, since it is ultimately more time and cost efficient.

Summary of the Present Study

To test these hypotheses, chronic headache sufferers with mixed diagnoses were recruited to participate in the study through newspaper advertisements in the local (Columbus, Ohio) and campus (Ohio State University) newspapers, or were referred by physicians in the area. In order to be included in the study, individuals had to have either constant headaches or at least three episodes per week, for a minimum of six months. In addition, they could have no history of psychiatric treatment or hospitalization.

Four males and eighteen females participated in the study, ranging in age from 21 to 47 years (mean = 32.14 years). Eleven subjects were married and the total number

of years of education across subjects ranged from 12 to 20 years (mean = 15.5 years). The average duration of headache symptoms was 11.17 years (range = six months to 30 years).

Measures used. The following measures were used to assess each subject's experience of their pain problem prior to treatment, and/or their response to the program:

1. The Structured Pain Evaluation. This is a structured protocol consisting of questions concerning general demographic information and medical history, and items drawn from the West Haven Yale Multidimensional Pain Inventory (Kerns, Turk & Rudy; manuscript in review). It served as the therapist's initial source of information regarding pertinent aspects of the subject's pain, and was administered once, prior to the beginning of treatment.

2. McGill Pain Questionnaire (MPQ). Originally developed by Melzack and Torgerson (1971), this instrument is purported to measure pain along the three experiential dimensions -- sensory, affective and evaluative -- predicted by the gate control theory of Melzack and Wall (1965). It was administered pre- and posttreatment, and at one, three and six months follow-up.

3. Brief Symptom Inventory. This is the short form

of the Symptom Check List-90 (SCL-90; Derogatis, Rickels & Rack, 1976), and is described in the manual as "a 53-item self-report symptom inventory, designed to reflect the psychological symptom patterns of psychiatric and medical patients as well as non-patient individuals" (Derogatis & Spencer, 1982; p. 6). Its items load on nine primary symptom dimensions, four of which were considered to be of interest in this study: somatization, anger/hostility, depression and anxiety.

The BSI was administered prior to beginning treatment, at the start of each therapy session, and immediately posttreatment.

4. Self-Monitoring (SM) Cards: SM cards similar to those described by Gray, Lyle, McGuire and Peck (1980) and Haynes, Griffin, Mooney and Parise (1975) were used throughout the duration on the study. Subjects were asked to record the intensity of their headaches every day on an hour by hour basis using a visual analog scale anchored at zero (no pain) and five (incapacitating pain). These data were also used to calculate frequency and duration of discrete headache episodes. In addition, subjects were asked to record sleep and medication data each day.

5. Posttreatment Evaluation. This is a second

structured protocol developed for use in this study. Subjects were asked to rate the degree of change, if any, they had experienced in terms of pain level, medication intake, ability to control their headaches, ability to relax, etc., as a result of their participation in the study. It was administered immediately posttreatment.

A version of this same protocol called the Follow-up Questionnaire was also used at each of the follow-up telephone contacts.

Procedure. Of the 43 subjects who met the initial screening criteria, 33 attended a general orientation meeting during which the goals and requirements of the investigation were explained. Ultimately, 22 of them completed the treatment phase of the study, and eighteen were available at all three follow-up contacts. During the meeting, each subject signed a standard consent form and a statement verifying that, to the best of their knowledge, their participation in this program was not contraindicated by any aspect of their prior medical history or treatment. Afterwards, SM cards were administered with instructions to begin self-monitoring the following morning. Subjects were

notified within one week as to the starting date for treatment.

Subjects were randomly assigned to one of three treatment conditions: Group 1 -- the group treatment format (GRP; N = 7); Group 2 -- the individual treatment format (IND; N = 7); and, Group 3 -- the delayed treatment group (DEL; N = 8). The treatment package offered to all subjects was identical in both form and content, except that subjects in the IND condition were seen singly and those in the GRP and, ultimately, the DEL conditions were treated simultaneously as a group. All subjects, including those in the DEL group, self-monitored their headache activity from the day following the orientation meeting until the conclusion of treatment.

The treatment format consisted of five weekly 90 minute sessions, which were divided into three segments. These included administration of the BSI and a review and discussion of the pain activity recorded on the SM cards for the prior week; didactic information regarding the nature of chronic headache, and/or the development and practice of cognitive coping strategies; and, finally, relaxation training.

One week following the last treatment session,

subjects attended a posttreatment evaluation during which the various posttreatment measures were administered. Subjects were encouraged to discuss their response to the program and their feelings about termination, and to offer constructive criticism as to how therapy might be improved in the future. Follow-up data were collected during telephone interviews at approximately one, three and six months following the posttreatment evaluation.

Results and Interpretation

The following significant findings emerged, based on analyses of the pre- and posttreatment data:

1. Collapsed across treatment groups, subjects' pain ratings on the McGill Melzack Pain Questionnaire changed over the course of treatment and follow up. There was a drop in scores immediately after the completion of the program relative to pretreatment levels, but by six months posttreatment, they were again approaching pretreatment levels.

2. A similar pattern was noted on subjects' Brief Symptom Inventory scores, suggesting that their overall sense of wellbeing was enhanced by participation in the

program.

3. Based on responses to the Posttreatment/Follow-Up Questionnaire, subjects rated some behavioral changes related to treatment as more significant than others. These included decreased pain overall, decreased medication use, an increased sense of control over pain, and generally being more relaxed.

4. Subjects reported a significant decrease in their average number of daily medication events across treatment sessions.

5. A comparison of the posttreatment BSI and SM data for subjects in the GRP and IND conditions to the same data for DEL subjects at the completion of baseline and prior to starting treatment revealed no statistically significant differences between groups.

There were no differences among groups at the start of treatment in terms of age, headache duration or pretreatment scores on the MPQ. Also, no significant differences among groups were observed in any of the posttreatment analyses performed.

These results offer support for the hypothesis that cognitive behavioral therapy is an effective and useful

approach to the treatment of chronic headache. Subjects reported improvements along a number of dimensions, and many of these improvements endured through the first six months posttreatment. Importantly, no group effects were noted on any of the measures used, indicating that there is no substantial advantage in offering this mode of therapy on an individual basis. Possible advantages of group therapy are discussed, as well as hypothesized cognitive mechanisms underlying response to treatment and directions for future research.

Chapter Two: Review of the Literature

Psychologic Approaches to the Treatment of Chronic Headache

In a recent review of the literature evaluating the prophylactic use of medications in the treatment of chronic headache, Saper (1983) noted that this traditional approach is effective in some patients. Based upon current etiological models of chronic headache, the prescription of beta-blockers and ergot compounds appear to have much to recommend them, including relative ease of administration (Diamond & Dalessio, 1982). Their use is not without complication however. For example, many medications are not well tolerated by some patients, especially with repeated administrations. Moreover, they sometimes lose their effectiveness altogether as patients become tolerant to their effects (Adams, Feuerstein & Fowler, 1980). In addition, lengthy clinical trials can be costly and for some patients the beneficial effect of medications proves to be minimal.

The limited effectiveness of pharmacotherapy is in part based on a very incomplete understanding of the

pathophysiology and etiology of even the most common headache problem. Traditionally, medical diagnosticians have classified most chronic headaches as either vascular or muscular in origin, according to a precedent set by the Ad Hoc Committee on Headache Classification (1962) of the American Medical Association.

According to the committee's criteria, migraine headache is characterized by recurring attacks of pain which vary widely in intensity, frequency and duration, and are usually unilateral at onset. Attacks may be preceded by and/or associated with conspicuous sensory, motor and mood disturbance; anorexia, and sometimes and nausea and vomiting are also common during attacks. Migraines which are preceded by prodromal symptoms such as dizziness, visual aura, photo- or phonophobia, and perception of flashing lights are called classic migraines. All others are called common migraines. Both kinds often develop along familial lines.

By comparison, tension headaches are described by the Ad Hoc Committee (1962) as aches or sensations of tightness, pressure and/or constriction which again vary

widely in terms of intensity, frequency and duration. They are sometimes long lasting, and are commonly suboccipital in origin.

In acknowledging the importance of accurate diagnosis in designing effective and appropriate treatment programs, psychologists have adopted these diagnostic criteria for use in their own clinical research endeavors. While this practice may be convenient and is certainly consistent with a well established precedent, recent findings suggest that the vascular/muscular dichotomy is perhaps more of a rather simplistic construct than a reflection of what really happens inside the head of a headache sufferer. Briefly, data have been collected which suggest that it may be more accurate to conceptualize all headache activity as occurring along a continuum with vascular and muscular involvement at the poles (Featherstone, 1985; in press). The implications of this idea for psychologic treatments are significant and should be addressed as research in this area proceeds.

Since the etiology of most headache problems is unclear, and because pharmacotherapy is not always effective, it is appropriate to study alternative approaches to the treatment of headache which are based

upon something other than biochemical manipulation. The first such approach to appear in the psychological literature involved using biofeedback aimed at reducing frontalis tension levels for the treatment of so-called "tension" headaches (Budzynski, 1970). Numerous other psychologic approaches to the treatment of chronic headache have since emerged, and the relative efficacy of each has been recently reviewed (Adams, Feuerstein & Fowler, 1980; Beaty & Haynes, 1980; Blanchard, Ahles & Shaw, 1979; Blanchard & Andrasik, 1982; Blanchard, Andrasik, Ahles, Teders & O'Keefe, 1980; Nuechterlein & Holroyd, 1980; Turk, Meichenbaum & Berman, 1979).

Two of the more comprehensive of these reviews (Blanchard and Andrasik, 1982; Blanchard, et al., 1980) used a meta-analytic comparison technique which is not widely accepted by all researchers (see Gallo, 1978; Glass, 1978; Glass & Smith, 1978; Mansfield & Busse, 1977; Presley, 1978; Turner & Romano, 1984). In meta-analysis, the average degree of improvement for an entire group of subjects treated in a particular fashion is the unit of analysis, so that potentially important differences among several outcome studies involving the same treatment approach (e.g. relaxation training) are ignored in favor of

calculating a global measure of efficacy across studies. Unfortunately, not all outcome studies report data which may be transmuted into an overall percent improvement score, so that some of the significant papers in the headache treatment literature could not be included in these reviews. For that reason, the results of several of the most recent reviews, including those using meta-analysis, will be summarized by treatment modality below.

Frontal Electromyographic (EMG) Biofeedback. For tension headache, most reviewers agree that EMG biofeedback of frontalis muscle activity is as effective as relaxation training used alone, or the two approaches used in combination (Blanchard & Andrasik, 1982; Turner & Chapman, 1982a). Both procedures are more effective than no treatment controls and, according to Blanchard, et al. (1980), there appears to be little to be gained by carrying out further direct comparisons of the efficacy of the two.

It appears that procedural variations in terms of muscle site (e.g. trapezius versus frontalis) or instructions to subjects to simply maintain rather than decrease tension levels, have little effect on outcome (Turner & Romano, 1984). Furthermore, it has been amply

demonstrated that, across studies, there appears to be almost no correlation between muscle activity and the onset or course of a headache. This will be addressed below.

Regarding the treatment of vascular headache, frontalis EMG biofeedback has been found to be as effective as thermal biofeedback (i.e. finger warming) used alone , and more effective than headache monitoring controls (Lake, Raney & Papsdorf, 1979). It has also been found to be both more effective (Cohen, McArthur & Rickles, 1980) and less effective (Bild & Adams, 1980) than cephalic vasomotor biofeedback. Clearly, this is an application of EMG biofeedback which would benefit from more well controlled research.

Relaxation Training. Across studies, this treatment modality has been found to be consistently better than most other psychologic approaches to chronic headache. As noted, it is on par with frontalis EMG in the treatment of tension headache; the same is true of the combination of thermal biofeedback and autogenic training, the apparent behavioral treatment of choice for migraine (Blanchard & Andrasik, 1982; see Table 1, adapted from the text, p. 866). As suggested by Blanchard (Blanchard, et al., 1980; Silver & Blanchard, 1978), relaxation may actually be the

Table 1. Relative efficacy of treatment approaches to headache based on a review of the literature employing a meta-analytic comparison technique (Blanchard & Andrasik, 1982). Approaches that did not differ in effectiveness at the $\alpha \leq .05$ level share an underline.

Auto- genic feed- back	Relax- ation	Vaso- motor feed- back	Ther- mal feed- back	Psycho- logical Placebo	Head- ache moni- toring	Drug Placebo

"final common pathway" by which most psychologic treatment approaches have their effects. This notion is consistent with more recent hypotheses regarding the etiology of both tension and vascular headaches, discussed below.

Biofeedback for Vascular Headache. When combined with autogenic training, thermal biofeedback for the treatment of migraine headache (i.e. hand warming) has been found to be as effective as relaxation training, and more effective than any other approach (Sargent, Green & Walters, 1972). Used alone, its efficacy decreases dramatically. According to Blanchard & Andrasik (1982), vasomotor biofeedback of temporal artery activity is as effective as relaxation training, thermal biofeedback used alone and psychological placebo; is more effective than medication placebo and simple monitoring of headache symptoms; but, is less effective than the combination of thermal biofeedback and autogenic training (see Table 1).

However, as is the case with tension headaches, there appears to be no consistent relationship between migraine activity and psychophysiological measures of cephalic blood flow and muscle activity (Turner & Romano, 1984). Once again, more well controlled outcome research in this area

is needed.

Cognitive Behavioral Techniques. In general, treatment outcome data regarding the use of CB therapy appear quite promising, but findings are far from conclusive (Tan, 1982). Data bearing on the treatment of headaches in particular are especially sparse, and in many instances cannot be reduced to the type of global index of improvement which would allow them to be included in the meta-analysis described above. Nonetheless, Blanchard and Andrasik (1982) offer the conclusion that further comparisons of CB to other behavioral approaches are indeed warranted.

A review of several representative studies suggests the following regarding the use of CB therapy for chronic headache: (1) it appears to be more effective than EMG biofeedback used alone in the treatment of tension headache (Holroyd, Andrasik & Westbrook, 1977), and its efficacy is enhanced by combining it with EMG biofeedback (Reeves, 1976); (2) coping skills training used alone appears to be as effective as relaxation training for tension headache (Anderson, Lawrence & Olson, 1981), and is also effective

for migraine when combined with EMG biofeedback (Bakal, Demjen & Kaganov, 1981); and, (3) teaching stress coping strategies either alone or in conjunction with biofeedback seems to be more effective than no treatment (Kremsdorf, Kochanowicz & Costell, 1981).

Certainly, much more work remains to be done in this area. CB techniques need to be further refined and standardized, and their specific mechanisms of action elucidated (Turner & Romano, 1984). In that vein, Turner and Chapman (1982b) suggest that research involving CB techniques would be significantly enhanced by the use of objective methods of assessing pain (e.g. observations of pain behaviors, medication intake data, health care utilization, return to work), and the routine collection of follow-up data. This comment is especially cogent in light of Holroyd and Andrasik's (1982) findings that CB therapy appears to contribute to the maintenance of treatment gains, and may actually help to ameliorate related symptoms (e.g. dysphoric mood, GI distress) over time.

Miscellaneous Psychologic Treatment Approaches. Hypnosis has been used in the treatment of chronic headache with

apparently good result. Harding (1967) reported that 60% of his patient sample got "good" relief of migraine symptoms which persisted through follow-up. In other studies, hypnosis has been compared to thermal imagery training (finger warming) with migraineurs (Friedman & Taub, 1982); to EMG biofeedback with tension headache sufferers, both with and without relaxation training (Schlutter, Golden & Blume, 1980); and to Stage Directed Hypnotherapy -- a sort of mix between CB therapy and hypnosis -- in a single N case study (Howard, Reardon & Tosi, 1982). In reviewing these studies, Turner and Romano (1984) and Turner and Chapman (1982b) all conclude that not enough well designed research has been done to either establish or refute the value and efficacy of hypnosis as a treatment for chronic pain problems, including headache.

Similar interpretive problems apply to the other miscellaneous treatment approaches which have been described in the literature. These include a combination of systematic desensitization, assertion training and relaxation training (Mitchell & Mitchell, 1971), assertion training used alone (Lambley, 1976), and RET combined with biofeedback (Lake, Rainey & Papsdorf, 1979), all focused on the treatment of migraine. Despite various internal

weaknesses in each of these studies, Blanchard and Andrasik (1982) suggest that, "All of these approaches appear promising enough to warrant further research and possible replication" (p.865).

Summary. Various psychologic approaches now in use for the treatment of chronic headache are clearly effective to a greater or lesser degree. Relaxation training appears to be the most efficacious mode of treatment overall, and likely plays a central role in many other techniques. This is consistent with the notion that all headaches are somehow related to sympathetic activation (see Sovak, et al., 1981).

Various forms of biofeedback have also been found to be quite efficacious in treating chronic headache, though, as noted, the basis for their effectiveness has not been elucidated (Andrasik & Holroyd, 1980a; Holroyd & Andrasik, 1982a; Lazarus, 1975; Meichenbaum, 1976). It may be that non-specific factors such as the general effects of relaxation training combine with a subtle restructuring of the individual's sense of self-efficacy and/or expectancy set during feedback sessions, and so contribute more to clinical outcome than do the putative effects of learning

to control one's psychophysiological response patterns (Holroyd & Andrasik, 1982a).

Various CB approaches to the treatment of headache have also been developed which appear to be quite promising. To date, not enough well controlled studies have been carried out to effectively establish the mechanism(s) by which modifications of attitude, expectancies, beliefs and behaviors may contribute to the reduction of headache symptoms. In addition, it is unclear at this writing which CB approaches are most effective with which patients and which types of headaches. Clearly, much more well controlled outcome research is needed in this area.

Group Treatment of Chronic Pain Problems Including Headache

In order to address the question raised in the preceding chapter regarding the relative effectiveness of group versus individual therapy for chronic pain, a brief review was done of all the studies since 1976 which in one way or another involve the use of a group therapy format in treating clinical pain. A significant number of these

(35%) are not treatment outcome studies (i.e. they do not report objective measures of treatment efficacy) and they will be reviewed first.

Non-Outcome Reports. Of the papers included in this group, two simply describe treatment programs for chronic pain in which some form of group therapy is used as one component of a larger treatment package. In outlining the treatment program developed at the King/Drew Pain Center in Los Angeles, Jacobs (1983) noted that although a team approach is commonly used which employs a wide variety of eclectic procedures (e.g. TENS, biofeedback, epidural block, behavior modification, etc.) group therapy in conjunction with anti-depressant medication is especially effective for chronic pain patients. In this instance, group therapy included psychodrama, role playing, and Gestalt therapy, all aimed at: 1) fostering a sense of commonality among patients; 2) allowing them to ventilate their anger; and, 3) helping them to see that a productive life is still possible even for someone who suffers chronic pain. As support for these claims, the author cites the work of Hall and Gardner (1979), reviewed below.

In a similar paper, Skevington (1981) asserts that, in

conjunction with other techniques (e.g. relaxation training, distraction) pain support groups can be somewhat successful in increasing pain tolerance. This is especially true of what she terms "mixed groups", in which better "copers" can model appropriate pain behaviors for the benefit of less successful patients, as well as those groups in which members engender feelings of success in one another by reinforcing appropriate pain behavior.

Of those studies which focus exclusively on group intervention as the vehicle for therapy, three describe treatment protocols which use psychotherapeutic techniques only. Following a somewhat detailed description of another ongoing pain program, Pinsky (1978) concludes that group psychotherapy is the treatment of choice for chronic pain sufferers because it addresses psychodynamic, motivational and behavioral factors inherent in pain problems. Specifically, intensive short-term inpatient therapy (a total of sixty hours spread over a seven week period) designed to facilitate introspection is claimed to be successful at improving the overall quality of patients' lives. This conclusion is based on patients' own reports and ratings of their therapists; a quantitative evaluation of these treatment effects is not presented.

Schwartz, Marcus and Condon (1978) also suggest that group discussion among chronic pain sufferers (in this case rheumatoid arthritis sufferers) facilitates a variety of therapeutic gains. These include enhanced communication among patients, their families, and physicians, which allows for the broaching of uncomfortable topics; having social needs met; and reducing the number of arthritic flare-ups relative to pretreatment levels. These claims are similar to those made by Gluck (1980) in a description of a treatment program which involved discussions of negative feelings and inner conflicts related to the experience of chronic pain. She suggested that patients in group therapy learn to handle stress and anxiety, to trade sick role for well role behavior, and to enjoy a heightened sense of independence and thus increased self-esteem.

In contrast to claims of therapeutic success based predominantly on the use of insight oriented psychotherapy, Genest and Turk (1979) describe a group treatment program which derives from a cognitive behavioral (CB) approach to clinical problems. Briefly, they suggest that self-monitoring of relevant cognitions, analysis of clients' response to mild acute pain and the presentation of clear a conceptualization of the role of cognitions in the

experience of pain, may all be helpful in teaching clients to better tolerate pain and thus improve the quality of their lives. Several very specific and potentially useful points are made regarding the instrumentation of such a program. These will be reviewed in greater detail below.

Summary: Studies reviewed of the use of group therapy in treating chronic pain which are not clinical outcome studies are, with one exception, non-specific descriptions of either proposed or ongoing treatment programs. By and large, these programs lack a clear conceptual basis for the treatments being offered, and instead are rather loosely based on a sense of "what seems to work". Moreover, although claims are consistently made by the authors of these papers for the efficacy of their respective treatment approaches, empirical substantiation is lacking in every case.

The unique paper in this group is Genest and Turk's (1979) proposed model of CB group therapy for chronic pain. This report has more heuristic value than the other papers reviewed in this section, primarily because the authors present a clear and very well developed conceptual framework for their suggested treatment approach, and because several issues are raised regarding the CB group

treatment of chronic pain which are empirically testable. Moreover, unsubstantiated claims for the clinical worth of their treatment regimen are avoided in favor of more conservative suggestions regarding techniques which might be usefully employed in a CB treatment format.

Clinical Outcome Studies. For convenience, the studies in this section are divided into two sub-sections: those which report pre/post changes within a single group, and those which report the results of controlled group comparisons. Of the pre/post studies, only two involve a single treatment approach administered in a group setting. The remainder describe the results of a variety of multi-modal therapies. Each of the pre/post studies was carried out with a patient population which had varied etiologies and pain histories.

The earliest of these studies was done by Swanson, Swenson, Maruta and McPhee (1976a), who reported that of an initial sample of 50 chronic pain patients, 34 completed a multi-modal treatment program involving behavior modification, physical measures, medication management, family member participation and "other psychologic approaches" which included discussion groups. Of the

patients who completed treatment, 27 (79%) showed moderate to marked improvement regarding change in attitude, reduction in medication use and increased physical functioning. Regarding the effectiveness of the group therapy aspect of the program, the authors report that group interaction appeared to have a major impact on individuals' progress, even though the group had consistent problems remaining oriented to the goal of learning to cope with pain more effectively. At six month follow-up, the success rate among the 34 finishers had dropped to 50% (see Swanson, Swenson, Maruta & McPhee, 1976b). Criteria for success immediately posttreatment and at follow-up were outlined vaguely however, making it difficult to evaluate the efficacy of this treatment program. In addition, it is not possible to determine the relative contribution of group therapy to the overall treatment effect. In a later study, Swanson, Maruta and Swenson (1979) evaluated the same treatment program using a larger sample (n=200). Not surprisingly, the results are virtually the same, and the same interpretive problems apply.

In reporting the effectiveness of a "behavioral" pain management program which included physical exercise, biofeedback, hypnotic analgesia and weekly pain groups,

Tyre and Anderson (1981) noted that all of the first 13 patients to complete treatment achieved success, measured as reduced medication use, lowered MMPI scale scores on depression, hysteria and hypochondriasis, and decreased self ratings of pain. Though the dependent measures used in this study were better specified than those in the papers by Swanson, et al. (1976 a & b), there is still no way to ascertain the relative effect of the group component of the program. This is also true for a very similar study, carried out with a much larger sample (n=121) by Cinciripini and Floreen (1982).

As an alternative to multimodal treatment, Herman and Baptiste (1981) attempted to enhance the coping ability of 75 outpatients using group therapy only. Specifically, groups met for three hours per week for nine weeks and sessions were divided into three phases: 1) educational, aimed at helping patients to reinterpret their pain and understand pain behavior; 2) interactive, involving role playing, assertiveness training, cognitive restructuring, etc.; and, 3) relaxation training with imagery, autosuggestion and/or systematic desensitization. The authors report positive results, defined as amelioration of depressive symptoms and decreases in both perception of

pain and medication use. They also noted a general increase in rates of return to work, all of which suggests that group treatment may well be effective. However, it is unclear which aspect(s) of treatment may have had the greatest effect and which the least. In addition, outcome data were not subjected to any statistical analyses, so that conclusions about them can only be offered tentatively.

In contrast to outcome studies involving multimodal treatment regimens, studies of single treatment approaches are easier to interpret. This is true even when the treatment used is somewhat nonspecific. For example, Hendler, Viernstein, Shallenberger and Long (1981) concluded that outpatient psychotherapy, described as "a mixture of educational and free interaction group therapy with occasional psychodramas" (p. 337) represented an efficient and productive use of the physician's time when dealing with chronic pain outpatients. Though the sample upon which these assertions was based was relatively small ($n = 23$), and the analysis of the dependent measures was limited to a report of the proportion of patients who evidenced some therapeutic gain, the authors' interpretation of the outcome of the study was strengthened

by the fact that the treatment approach was relatively pure. .

This advantage was also present in a study reported by Turk and Kerns (1982) involving the CB treatment of outpatients in groups. By virtue of the care exercised by the authors in developing the conceptual basis for the study, and the use of a very clear treatment outline and appropriate dependent measures, this study represents the most interpretable of all the pre- versus posttreatment evaluation research reviewed. Statistical analyses of the data indicated significant decreases in subjects' use of the health care system, reductions in perceived pain intensity and general suffering, and changes in the perception of self-control.

Thus, each of the papers discussed so far has reported positive results along some dimension(s) of the experience of chronic pain. However, these results are difficult to evaluate critically. In the worst cases, multimodal treatment packages were offered which included various combinations of individual and group therapies, so that evaluating the specific contribution of the group experience to observed treatment successes was impossible. Limiting all therapies to a group format (e.g. Herman &

Baptiste, 1981) represents a mild improvement in interpretability; simply offering a single treatment mode to clients is even better. However, within-group pre/post evaluation designs suffer from the major logical flaw of not having appropriate alternative treatment groups or non-treatment controls against which to make necessary comparisons (see Cook & Campbell, 1979; Kazdin, 1980). For that reason, none of the studies cited thus far can be considered really adequate as tests of the efficacy of group treatment for chronic pain.

The earliest controlled experiment involving the group treatment of chronic pain (Holroyd & Andrasik, 1978) looked at the differential effects of cognitive self-control, cognitive self-control with relaxation, simple group discussion and symptom monitoring (control) on muscle contraction headache. Results indicated a decrease in headache symptoms for subjects in all three treatment groups relative to control, an effect maintained at six weeks follow up. There were no differences among the treatment groups however, which the authors felt was due to a tendency for subjects in the discussion condition to generate their own cognitive coping strategies. In their words, "It may be less crucial to provide clients with

specific coping responses than to insure that they monitor the insidious onset of symptoms and are capable of engaging in some sort of cognitive or behavioral response incompatible with the further exacerbation of symptoms" (pp. 1043-1044).

In another study looking at cognitive strategies, Rybstein-Blinchik (1979) found that teaching subjects to reinterpret the experience of pain (e.g. admitting feeling ticklish or numb but not in pain) was more effective than teaching them to simply divert their attention from it or to focus on associated bodily sensations. Dependent measures used in this study included responses to the McGill Pain Questionnaire (Melzack, 1975) taken pre- and posttreatment, multiple assessments of pain behavior (e.g. grimacing, talking about pain), and information gleaned from nursing notes. The authors also made an attempt to control for expectancy effects by administering an expectancy of change measure (Borkevec, 1972) prior to treatment session one. (No group differences were observed at the end of treatment on this measure.)

This study was strengthened by a tight design and a good discussion of the conceptual issues underlying the hypotheses being tested, but was weakened in other ways.

First, no follow-up data were collected. Second, additional dependent measures might have been used, for example self-monitoring of pain events and medication data, which might have strengthened the author's conclusions. Third, it is unclear why the Duncan method of comparing all possible pairs of means was preferred in the data analysis over a repeated measures analysis of variance. Related to that, reporting group means on the dependent measures would have been helpful.

In an exceptionally well designed study, Turner (1982) compared group relaxation training to group CB therapy for chronic low back pain subjects. Relative to subjects in a wait-list control group, those in both treatment groups demonstrated improvements in terms of their pain, depressive symptomology, disability and significant other's ratings of physical and psychosocial dysfunction. Subjects in the CB group also reported improvements in pain tolerance and participation in normal activities. At one, 18 and 24 months follow-up, treatment gains were being maintained, especially in terms of decreased health care use, with some suggestion that the CB group was doing slightly better.

In a somewhat similar study, Cohen, Heinrich,

Nabiloff, Collins and Bronebakker (1983) found that group administered behavioral therapy and physical therapy both resulted in improvements in pain as measured by a wide variety of outcome measures. However, though these measures were extensive, in many cases their validity was not well established. Also, in contrast to Turner (1982) no non-treatment control was used and follow-up data were not collected. Moreover, it appears that the two treatment approaches being compared were not as well distinguished from one another as might have been the case. For example, both groups were exposed to relaxation training, problem solving skills training, and expectations that they would increase their physical activity and develop more of a sense of personal responsibility regarding their progress. This confounding of treatment modalities represents a major flaw in the design of this study and almost surely accounts for the authors' observation that the hypothesis of differential outcomes across groups was at best only weakly supported.

Only one of the studies reviewed even remotely addresses the question of whether a group treatment format offers any advantages over, or is even as efficacious as, individual treatment. Hall and Gardner (1979; cited in Hendler, et al., 1981) found that group psychotherapy in

conjunction with the use of tricyclics was more effective than supportive individual therapy, analytically oriented therapy, or management by a surgical specialist prescribing narcotics and anti-depressants, in reducing depression associated with chronic pain as measured by scores on the Zung rating scale.

Summary. Taken together, the results of these controlled group outcome studies offer the best available support for the efficacy of a group treatment approach to chronic pain. Because of design weaknesses inherent in many of the studies reviewed however, several significant questions have not been adequately answered. For example, the active ingredients in group therapy need to be elucidated, particularly in terms of the possible contribution of group process effects to treatment outcome. Related to that, more controlled outcome research needs to be done in order to further evaluate the efficacy of group CB therapy for the treatment of chronic pain in general. Finally, it is clear that a rigorous study comparing group to individual treatment of chronic pain is called for, in which a standardized treatment protocol is used for all subjects and appropriate dependent measures are clearly specified.

Chapter Three: Methodology

Subjects. Participants in this study were recruited by advertisements in the local (Columbus, Ohio) and campus (Ohio State University) newspapers, or were referred by physicians in the area. In order to be included in the study, individuals had to be over eighteen years of age and had to have either constant headaches or at least three episodes per week, for a minimum of six months. In addition, they could have no history of psychiatric treatment or hospitalization.

Of an initial pool of 63 respondents to the advertisements, twenty did not meet at least one or more of these criteria. Twenty-two of the remaining 43 respondents ultimately participated in the study, at least through the posttreatment session. One subject did not complete any of the follow-up measures, and two others were lost after the three month follow-up contact. Eighteen percent ($N = 4$) of the subjects were male and 82% ($N = 18$) were female, which is consistent with the reports of other researchers that females represent the majority of patients presenting for treatment of headache (DeLozier & Gagnon,

1975; Saper, 1983).

Subjects ranged in age from 21 to 47 years (mean = 32.14 years). Eleven subjects were married and the total number of years of education across subjects ranged from twelve to twenty years (mean = 15.5 years). The average duration of headache symptoms was 11.17 years (range = 6 months to 30 years). Based on the diagnostic criteria suggested by the Ad Hoc Committee on Classification of Headache (1962), six subjects had a pattern of symptoms consistent with a diagnosis of tension headache, two had migraines, and fourteen appeared to have some symptoms consistent with both diagnoses and were thus considered to have mixed headaches.

Measures.¹

Pretreatment

The following measures were used prior to the beginning of treatment:

The Structured Pain Evaluation. This is a structured protocol consisting of questions concerning general demographic information and medical history, and items

¹ Copies of all measures used are included in Appendix A.

drawn from the West Haven Yale Multidimensional Pain Inventory (Kerns, Turk & Rudy; manuscript in review). It served as the therapist's initial source of information regarding pertinent aspects of the subject's pain. These include information regarding the onset and course of the headache problem; the subject's present experience of the physical, cognitive and emotional aspects of the pain; and, a self-report of the effects of the pain on relationships, work and social activities, and attitudes in general.

McGill Pain Questionnaire (MPQ). The MPQ was developed by Melzack and Torgerson (1971) and then refined by Melzack (1975a). The instrument is purported to measure pain along the three experiential dimensions -- sensory, affective and evaluative -- predicted by the gate control theory of Melzack and Wall (1965). It has been used by a variety of researchers to qualitatively evaluate pain in a general way (see Agnew & Merskey, 1976; Bailey & Davidson, 1976; Bakal & Kaganov, 1976; Graham, Bond, Gerkovich & Cook, 1980; Prieto, Hopson, Bradley, Byrne, Geisinger, Midax & Marchisello, 1980; and, Reading, 1979a) and to address specific experimental and clinical issues (see Catchlove & Ramsey, 1978; Melzack & Perry, 1975; Rybstein-Blinchik, 1979; Gracely, 1978; and Dubuisson & Melzack,

1976).

While the reliability, validity and objectivity of the MPQ appear to be acceptable (Bradley, Prokop, Gentry, Van der Heide & Prieto, 1981), the pureness of the factor structure has been questioned (Crockett, Prkachin & Craig, 1977; Leavitt, Garrison, Whisler & Sheinkop, 1978). At least one report supports Melzack and Torgerson's (1971) original conceptualization of pain (Prieto, et al., 1980), and there seems to be a concensus that the MPQ is a useful clinical and research tool in its present form (Turk, et al., 1983; Bradley, et al., 1981).

Brief Symptom Inventory (BSI). This is the short form of the Symptom Check List-90 (SCL-90; Derogatis, Rickels & Rack, 1976), and is described in the manual as "a 53-item self-report symptom inventory, designed to reflect the psychological symptom patterns of psychiatric and medical patients as well as non-patient individuals" (Derogatis & Spencer, 1982; p. 6). Its items load on nine primary symptom dimensions, four of which -- somatization, anger/hostility, depression and anxiety -- were considered on the basis of clinical judgement to likely pertain to the experience of chronic headache. Changes in scores on the remaining five dimensions (obsessive-compulsive tendencies,

interpersonal sensitivity, phobic anxiety, paranoid ideation, and psychoticism) were not used in this study.

To date, only one study has been published that uses the longer SCL-90 as a treatment outcome measure with headache patients (Cox & Thomas, 1981). While a significant decrease in depression scores was found over treatment, the authors failed to report scores on any other symptom dimension. In the present study, data pertaining to each of the four symptom dimensions listed above were analyzed, in an effort to begin to assess the utility of the shorter BSI for evaluating the overall response of headache patients to this mode of treatment.

Self-Monitoring (SM) Cards. SM cards similar to those described by Gray, Lyle, McGuire and Peck (1980) and Haynes, Griffin, Mooney and Parise (1975) were used throughout the duration of the study. Subjects were asked to record the intensity of their headaches every day on an hour by hour basis using a visual analog scale anchored at zero (no pain) and five (incapacitating pain). These data were then used to calculate an index of headache activity which is a mathematical analog derived from frequency, intensity and duration of headache episode.²

Subjects were also asked to record the total number of

hours they slept each day, including naps, and the number of times they took some form of medication for headache symptoms. This approach to recording medication data represents a departure from the usual practice of monitoring the kinds and amounts of medications used and then attempting to equate them for analgesic effect according to a specific set of formulas, or more simply, of counting the number of pills taken.

The rationale underlying this approach derives from the observation that pain is a highly subjective perceived phenomenon, and that, by extrapolation, response to analgesics is an equally subjective perception that is determined by the interactive effects of many variables at once. To the extent that this is true, it is erroneous to assume that the potency of analgesics can be equated in any meaningful way. For that reason subjects' self-reported medication behaviors were monitored, as indicators of overt attempts to manage their pain.

² It is common in headache research to report results based on separate analyses of duration, intensity and frequency data. Holroyd and Andrasik (1978) suggest however, that headache index is likely a more useful measure, since it is sensitive to changes along multiple dimensions. In this way, interpretive problems are avoided that arise when clinical changes are not observed on all dimensions.

During Treatment

The BSI was administered at the start of each of the five treatment sessions. Immediately following that, SM cards from the previous week were reviewed and progress and problems discussed.

Posttreatment and Follow-Up

Posttreatment Evaluation. This is a second structured protocol developed for use in this study. Subjects are asked to rate the degree of change, if any, they had experienced in terms of pain level, medication intake, ability to control their headaches, ability to relax, etc., as a result of their participation in the study. A version of this protocol called the Follow-Up Questionnaire was also used for the one, three and six month follow-up telephone contacts.

In addition to these instruments, the MPQ and the BSI were re-administered during the posttreatment evaluation session. During follow-up calls, subjects were also asked to endorse those MPQ adjectives which described their typical headaches at that time.

Procedure. Of the 43 subjects who met the initial

screening criteria, 33 attended a general orientation meeting during which the goals and requirements of the investigation were explained. Based on this explanation, each of these individuals elected to take part in the study.

Following a precedent set by Holroyd, et al. (1977) and Holroyd and Andrasik (1978), subjects were given counter-demand instructions not to anticipate significant treatment gains until sometime following the third treatment session. The aim of this tactic is to attempt to control for an initial positive response to treatment that is due primarily to the demand characteristics of the situation, and not to the actual effects of therapy. [See Steinmark & Borkovec (1974) and O'Leary & Borkovec (1978).]

At the conclusion of the general orientation meeting, each subject signed a standard consent form and a statement verifying that, to the best of his/her knowledge, participation in this program was not contraindicated by any aspect of their prior medical history or treatment. (Subjects not certain of this had been advised to contact their physician prior to attending the orientation.) SM cards were then administered with instructions to begin self-monitoring the following morning, and subjects were

advised that they would be notified within one week as to the starting date for treatment. It was explained that, because of limited clinical facilities, some individuals would have to wait four to six weeks to begin the program.

Subjects were randomly assigned to one of three treatment conditions: Group 1 -- the group treatment format (GRP; N = 7); Group 2 -- the individual treatment format (IND; N = 7); and, Group 3 -- the delayed treatment group (DEL; N = 8). The DEL group was included so that the response to treatment of the subjects in the GRP condition could be replicated within the same study. Also, by comparing the SM and BSI data of the DEL subjects at the end of baseline to those of the other two group at the end of treatment, the DEL condition also serves the logical function of a wait-list control group against which to compare the effects of treatment.

Of the original group of 33 subjects, two changed their minds and dropped out within one week following the orientation meeting. Ultimately, three others dropped from each of the three treatment groups, leaving a total of 22 subjects who completed all phases of treatment. Reasons for dropping out of the study were typically non-specific and reportedly of a personal nature.

The treatment package offered to all subjects was identical in both form and content, except that subjects in the IND condition were seen singly and those in the GRP condition were treated simultaneously as a group. Subjects in each of these conditions began treatment approximately two weeks following the orientation meeting. Treatment for the DEL subjects began one week following the final treatment session for subjects in the other two groups, and was identical to that offered to subjects in the GRP condition. All subjects, including those in the DEL group, self-monitored their headache activity from the day following the orientation meeting until the conclusion of treatment.

The treatment format consisted of five weekly 90 min sessions, which were divided into three segments. The first 15 to 20 min was devoted to administration of the BSI and a review and discussion of the pain activity recorded on the SM cards for the prior week. During the following 40 to 45 min, didactic information regarding the nature of chronic headache was presented, and/or information pertaining to the development and practice of cognitive coping strategies. Topics included: the general nature of pain and the gate control theory; coping versus

catastrophizing during particularly severe headaches; how to develop appropriate images and the use of positive self-talk; and how to maintain and generalize treatment gains. The last 25 to 30 minutes was spent teaching relaxation training techniques, which subjects were instructed to practice twice daily between sessions.

Following a suggestion made by Turk (Note 1), the final two sessions were separated by a two week period in order to allow subjects the opportunity to attempt to generalize what they had learned in treatment, and then return to the clinic for a last session devoted to problem-solving difficulties they may have encountered.

One week following the last treatment session, subjects attended a posttreatment evaluation during which the various posttreatment measures were administered. At this time, subjects were encouraged to discuss their response to the program and their feelings about termination, and to offer constructive criticism as to how therapy might be improved in the future. Subjects were also debriefed and given ample opportunity to ask questions regarding any aspect of their participation in the study.

Follow-up data were collected during telephone interviews at approximately one, three and six months

following the posttreatment evaluation. For subjects in the GRP and IND conditions, one month follow-up calls were made by the author. All other calls to all subjects were made by research assistants.

Chapter Four: Results

Pretreatment

As a test of possible differences existing between treatment groups prior to the beginning of treatment, a multivariate analysis of variance (MANOVA) was performed with Treatment Groups as the between subjects factor, and age, duration of headaches, years of education and scores on the MPQ as within subject factors. Groups were not found to differ significantly on any of these measures.

Dependent Measures

Because of the small number of subjects in each group, an effort was made to insure that the homogeneity of variance assumption underlying the use of analysis of variance (ANOVA) was not violated. Cochran's F-Max statistic was applied to those analyses that did not have repeated measures, and the sphericity test of homogeneity of covariance was used with all repeated measures ANOVA's. For each of the analyses reported below, the results of these tests were not significant, indicating that the

homogeneity of assumption had not been violated.

Questionnaire Data

Mcgill Pain Questionnaire (MPQ): Subjects' responses on pretreatment, posttreatment, and three follow-up administrations of the MPQ were subjected to a 3 (Treatment Groups: GRP, IND and DEL) X 5 (Administrations: Pre-, Post-, and one, three and six month Follow-up) X 5 (Factors which comprise the MPQ: Sensory, Affective, Evaluative, Miscellaneous, and Number of Words Chosen) repeated measures analysis of variance (ANOVA). The main effect of Administration was found to be significant, $F_{(4,56)} = 4.06$, $p < .01$, indicating that, collapsed across groups and factors, subjects rated their pain differently across administrations of the questionnaire (see Figure 1).

A Newman-Keuls post hoc analysis comparing differences in the sums of subjects' MPQ factor scores (i.e. S + A + E + M + NWC) across administrations was performed, and it was found that no significant differences existed among these comparisons. This suggests that a complex relationship exists among administration means that can not be expressed in terms of significantly different pairwise comparisons. The general trend in MPQ scores across administrations (see Figure 1) suggests a non-linear pattern to the data. A

Figure 1. Changes in overall MPQ scores across time, collapsed across treatment groups. These values are analog scores derived from the average sum of the four scale scores (Sensory, Affective, Evaluative and Miscellaneous), plus the score for Number of Words Chosen.

test of contrast effects revealed a significant quadratic component, indicating that subjects' overall pain ratings dropped considerably as an immediate result of treatment, but began to rise again somewhat over the six month follow up period. A second contrast comparing pooled posttreatment means to the pretreatment mean across groups was also significant, indicating that overall MPQ ratings were lower as a result of treatment.

The main effect of Factors in the repeated measures ANOVA was also found to be significant, as well as the Factors X Treatment Group interaction. Since the five factors are not scored on the same numerical scale, these effects are simply artifacts related to the scoring procedure, and as such do not have any clinical significance.

The main effect for Treatment Group was found not to be significant.

Brief Symptom Inventory (BSI). Subjects' raw scores on four clinical scales (somatization, depression, anxiety and hostility) and the Global Severity Index (GSI) were converted to T-scores using the non-psychiatric adult norms in the BSI manual. These data were then subjected to separate 3 (Groups) X 3 (Trials: pre-baseline, post-

baseline, posttreatment) repeated measures ANOVA's.

Significant trial effects were observed on subjects' scores on depression ($F_{(2,34)} = 4.04, p < .05$), anxiety ($F_{(2,34)} = 9.06, p < .01$), hostility ($F_{(2,34)} = 5.04, p < .05$), and GSI ($F_{(2,34)} = 8.08, p < .01$). No other significant effects were observed. As a test of the hypothesis that subjects' scores on these four scales were lower following treatment, contrast effects were analyzed which compared the average of the pretreatment means to the posttreatment mean for each scale. Significant t values were observed on anxiety ($p < .01$), hostility ($p < .05$), and GSI ($p < .01$). These findings are summarized in Figure 2.

Posttreatment/Follow-up Questionnaire. Subjects' responses to the first six questions on this protocol administered immediately posttreatment are summarized in Table 2. Subjects were asked to rate positive clinical changes on a scale from +1 to +10, and negative changes from -1 to -10. A zero score indicated no change. As can be seen, ratings tended to be quite high across all three treatment groups on questions pertaining to pain level, medication intake, perceived control over pain, and overall relaxation. Questions regarding changes in mood and

Figure 2. BSI scale scores and GSI averaged across groups X administration. A significant decrease in scores pre-versus posttreatment was seen on all scale scores except Depression, and on the GSI.

Table 2. Mean scores and standard deviations for Pain Questionnaire data collected immediately posttreatment, broken down by groups. Scoring is explained in the text.

Questionnaire Items	Treatment Group	Mean	Std. Dev.
Since beginning treatment . . .			
1. My pain has increased/decreased.	GRP IND DEL	5.60 5.75 6.60	2.41 2.06 2.07
2. I have increased/decreased my use of medications.	GRP IND DEL	5.40 4.25 6.20	3.21 4.92 2.77
3. My relationships are better/worse.	GRP IND DEL	0.20 1.75 3.80	4.82 3.50 0.84
4. My mood overall is better/worse.	GRP IND DEL	2.60 3.50 5.00	1.95 4.12 2.12
5. I have more/less control over my pain.	GRP IND DEL	5.00 6.75 6.20	3.16 1.26 2.68
6. I am more/less relaxed overall.	GRP IND DEL	6.40 5.75 6.00	1.52 2.22 1.87

quality of relationships were answered more moderately.

In order to assess changes in subjects' responses to these questions over time, a 3 (Treatment Groups) X 4 (Administrations) X 6 (Number of items) repeated measures ANOVA was carried out. No significant main effects for Treatment Group or Administrations were observed, indicating that across groups, the initial high ratings of clinical change offered by subjects immediately posttreatment did not diminish significantly over the six month follow up period. There was a significant main effect for Items [$F_{(5,55)} = 7.57, p < .001$], suggesting that subjects rated some behavioral changes as being greater in magnitude than others. A post hoc comparison of mean ratings of items revealed that subjects' overall ratings of pain reduction and increased sense of control over pain were significantly greater than perceived improvements in relationships (see Figure 3).

Self-Monitoring Data. Separate, 3 (Groups) X 2 (Pre-versus Posttreatment) repeated measures ANOVA's were performed on the following measures: (1) average pain intensity between sessions; (2) headache index, an algorithm derived from numerical values for frequency, intensity and duration of headaches across time; (3)

Figure 3. Mean ratings of questions from the Pain Questionnaire collapsed across treatment groups and posttreatment sessions. Scoring is explained in the text.

percent of pain-free waking time; (4) the proportion of time that pain greater than a level of "2" is reported; and, (5) the average number of daily medication events reported by the subject.

There was no significant main effect for group observed in any of these analyses. Similarly, there were no significant trial effects for index, percent pain-free time or proportion of "clinically significant pain". Subjects did however report a significant decrease in their mean number of medication events per day, $F_{(1,18)} = 11.71$, $p < .01$.

Treatment/Non-treatment Comparisons

As a test of the effects of treatment against a non-treatment control, posttreatment SM and BSI data for subjects in the GRP and IND conditions were compared to analogous post-baseline/pre-treatment scores for DEL subjects.

Separate one-way ANOVA's applied to each of the SM measures revealed non-significant differences among groups on all measures. An examination of the data in Table 3 suggests that differences in group means are consistent with the hypothesis that treated subjects would

Table 3. Comparisons of mean ratings of self-monitoring scores immediately posttreatment for subjects in the GRP and IND conditions, and post-baseline/prereatment for DEL subjects. None of these differences were found to be statistically significant.

	Index	% Pain Free Time	Hours of Clinical Pain	Medication Events
GRP (Posttx.)	M = 2782.14 sd = 1589.36	M = 51.64 sd = 30.84	M = 3.10 sd = 2.68	M = 0.95 sd = 0.69
IND (Posttx.)	M = 1994.29 sd = 1975.89	M = 44.98 sd = 36.67	M = 2.12 sd = 2.46	M = 0.62 sd = 0.93
DEL (Pretx.)	M = 3973.75 sd = 4512.92	M = 40.48 sd = 39.85	M = 5.74 sd = 6.85	M = 1.45 sd = 1.32

show improvement on these measures relative to non-treatment controls. It is likely that the large amount of error variance in the data relative to the number of subjects in each condition contributed greatly to these findings.

The results of separate one-way ANOVA's applied to each of the BSI scale scores are summarized in Table 4. The F values refer to the test of overall group differences (GRP versus IND versus DEL), and the t values refer to tests of the hypothesis that the mean of the DEL subjects is significantly different than the average mean of the GRP plus IND subjects, on each scale. These results indicate that subjects score lower on measures of somatization, anxiety, hostility and overall GSI at the conclusion of treatment than do subjects prior to treatment.

Table 4. Summary of comparisons of BSI data of GRP and IND subjects posttreatment to DEL subjects post-baseline/pretreatment. The interpretation of F and t values is given in the text.

BSI Score	F(2,18)	alpha level	t value	two-tailed probability
Somatization	3.845	.041	2.355	.0301
Depression	2.512	.109	1.531	.1413
Anxiety	3.306	.06	2.113	.049
Hostility	2.493	.111	2.161	.044
GSI	5.235	.016	2.783	.012

Chapter Five: Discussion

The aim of this study was twofold, the first goal being to test the hypothesis that CB therapy is effective in the treatment of chronic headache. Since this hypothesis has been supported in prior research, positive findings in the present study serve the important function of replicating earlier work, and thereby helping to establish the clinical utility of this relatively new approach to headache management. As its second and more important goal, this study also attempted to address the question of whether or not differences in overall treatment efficacy existed whenever therapy was delivered in a group versus an individual treatment setting. This is an important question, especially as it relates to the twin issues of time expenditure and cost effectiveness, as balanced against clinical efficacy.

Regarding the efficacy of this treatment program, the data collected confirm that subjects did make clinically and statistically significant treatment gains which persisted through six months posttreatment. Specifically,

they reported significant reductions in medication intake across treatment sessions and in perceived pain level overall, as well as increases in their sense of control over their pain, and their overall feeling of relaxation or comfort. Importantly, these gains did not diminish over the six month follow-up period.

Subjects also reported significant changes in BSI scores, signifying that over the course of treatment, unpleasant psychological events likely associated with their headaches (e.g. depression, anxiety, irritability) were modified to a clinically significant degree. A similar change in overall MPQ scores was also observed, indicating that subjects' ratings of pain along several dimensions changed as a result of their experience in the program. The pattern of scores across administrations of the MPQ was such that the greatest change was seen pre-versus posttreatment. Scores gradually increased over the six month period following completion of the program (see Figure 1), but not to the point that they began to approach pretreatment levels.

As a test of the hypothesis that CB therapy was more effective than no treatment, the posttreatment BSI and SM scores for subjects in the GRP and IND conditions were

compared to those of the DEL subjects at the end of baseline but prior to starting treatment. Thus, the delayed treatment condition also served as a non-treatment control for the other two groups. As noted earlier, none of the differences in SM data were found to be statistically significant. However, an examination of the means for these data (see Table 3) suggests that all of the differences among means were in the direction of clinical improvement on the part of subjects who had been treated, relative to subjects who had not. The significant amount of error variance in subjects' scores may have diluted these effects.

Statistically significant differences were observed in the somatization, anxiety and hostility scales of the BSI, as well as the Global Severity Index. These findings are consistent with the pre- versus posttreatment differences described above, and indicate clinical improvement on the part of treated subjects which was not seen in subjects yet to be treated. This argues against the notion that pre/post differences simply reflect maturation or spontaneous change on the part of subjects, or response to nonspecific attentional variables, and suggests rather that they do indeed derive from the efficacy of the treatment

program. Unfortunately, this statement is based on data from only one set of measures however, and thus can only be offered cautiously. Had the MPQ and the posttreatment questionnaire also been administered to DEL subjects at the end of baseline and prior to starting treatment, this hypothesis could have been tested much more rigorously. That these data were not collected represents a fairly serious flaw in the execution of this study.

Regarding other aspects of the data collected in this study, it is somewhat unusual that so little change was observed over the course of treatment in the SM measures used. Since a single headache index score was favored over the use of separate scores for intensity, duration and frequency of pain episodes, it is conceivable that a treatment effect along one of those dimensions was missed. However, the clinical significance of such an effect might be difficult to interpret (if, for example, the intensity of headaches was diminished, but they continued to be as frequent and longlasting), and for that reason headache index is still considered the measure of choice. Also, other non-significant changes were observed (i.e. increases in percent of pain-free waking time and decreases in the mean number of hours that pain levels were greater than or

equal to $\sqrt{2}$), which are fairly independent of these parameters. It is most likely that changes in all of these data did not reach significance again because of the combined effects of small sample sizes and large error variance.

It is also somewhat puzzling that, within this study, the reported decrease in the average number of daily medication taking behaviors was the only significant SM treatment effect, while significant changes along several different dimensions were reported on the posttreatment questionnaire. This discrepancy may relate to a sort of attributional process which individuals engage when asked to give global estimates of progress, but do not require when recording daily summaries of pain events which are not to be immediately evaluated by others. That is, subjects may actually perceive pain differentially according to their personal sense of the demand characteristics of the situation in which they are required to report their perceptions.

The basis for this process may well be the individual's sense of investment in the success of treatment, as well as a need to be accountable both to a "powerful other" (i.e. the therapist) and to oneself

regarding treatment gains made or not made in therapy. Cognitive dissonance would be reduced as a result of this process, as subjects work to balance the effort expended in therapy against treatment gains made. Note however, that no subterfuge or dissimulation on the part of the subject is implied by this formulation. Moreover, it does not suggest that the clinical gains reported in the present study were exaggerated or innaccurate. The report of clinical pain is a complex phenomenon which is easily and genuinely influenced by a variety of cognitive events, including the need to reduce dissonance and make personal attributions of success.

A final question related to the data collected in this study concerns the choice of dependent measures used. Self-monitoring cards and the MPQ are commonly used in pain treatment outcome studies, and their usefulness has been well established. The Brief Symptom Inventory was used in this study as an experimental measure, with interesting results. It would be valuable to repeat its use with larger samples of subjects, in a variety of treatment settings. Popular measures not used in this study which have been used in other headache treatment trials include the MMPI, Beck Depression Inventory and State Trait Anxiety

Inventory. None of these appears to be particularly sensitive to clinical improvement in terms of suffering related to headache, and no precedent has been established for their use.

As regards the second hypothesis tested in this study, it is clear that there was no appreciable difference in response to treatment across subjects based on their participation in group versus individual therapy. No group effects in any of the analyses reported were statistically significant, indicating that the overall efficacy of CB treatment is in no way offset by being administered to a group of patients rather than to patients singly. In fact, virtually all of the group treatment subjects reported during the posttreatment evaluation session that they felt there was great value in being able to openly share their experiences with other headache sufferers. Typically, they reported feeling support and empathy on the part of the group which exceeded what they felt was usually offered by friends and family members who themselves did not have a headache problem.

These comments notwithstanding however, group therapy was also not found to be in any way superior to individual therapy on the basis of objective measures. After being

debriefed at the conclusion of treatment, no subjects in the individual treatment condition indicated that they were in any way dissatisfied about being treated on an individual basis, or that the overall effectiveness of therapy was in any way diminished. Most in fact felt that they may have benefitted in some way by the personalized attention afforded them in a dyadic therapy relationship, although, once again, no evidence in support of that notion emerged from the data collected.

Because no differences were found in the relative efficacy of these two treatment formats, a strong case can be made that group CB treatment of chronic headaches is actually the method of choice. The basis for this argument is obviously not clinical effectiveness, which is comparable across approaches; rather it is simple economy. In light of rising health care costs and mindful of the many time demands placed on the schedules of most clinicians, those therapy approaches are most preferred which allow for the greatest amount of beneficial change to be wrought in the largest number of clients, in the shortest time and least expensively. The effectiveness of one such approach has been demonstrated in this study.

Altogether, these findings offer several pointers as

to directions that this line of research may take in the future. For example, the more dynamic aspects of group interactions which could potentially contribute to therapy gains were deliberately not developed in this program. A comparison between formal CB therapy and more traditional group psychotherapy would be interesting and potentially quite valuable for patients with chronic headaches.

Also, more work needs to be done in terms of developing dependent measures which are valid and are sufficiently sensitive to the kinds of therapeutic changes typically seen in headache patients. These might include ratings of daily activity levels, direct observations of pain behaviors, and ratings of the degree of discomfort or suffering associated with a pain episode, above and beyond the simple rating of pain intensity. In addition, further attempts should be made to socially validate subjects' self-monitoring scores, since they are relied upon so heavily in this type of clinical outcome research.

As a related issue, it would likely be fruitful to attempt to develop a theoretical model that more accurately describes the cognitive mechanisms which operate differentially in self-monitoring versus global posttreatment reports. A better understanding of these

processes would no doubt contribute greatly to our larger understanding of the perception of clinical pain.

Finally, but by no means least important, diagnostic issues mentioned in the review of the literature must also be addressed in future headache research. Specifically, the etiology of chronic headache and the validity of the "mixed headache" diagnostic category are both topics worthy of extensive study. The same is true of the issue of how best to match particular headache problems with particular modes of treatment. Chronic, intractable headache is a complex clinical phenomenon which is poorly understood, and for that reason is typically managed with only limited success.

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Appendix A: Measures used in the study.

Pretreatment and treatment outcome data were collected using the following the protocols:

1. Subjects' Pain Questionnaire
2. McGill Pain Questionnaire
3. Brief Symptom Inventory
4. Posttreatment Questionnaire
5. Follow-Up Questionnaire

The manner in which each of these protocols was used in this study is explained in the text, along with a description of the data collected from each and summaries of the analyses performed.

STRUCTURED PAIN ASSESSMENT

Full name: _____ Age: _____

Marital status: _____ Religion: _____

Years education: _____ Active in your religion? _____

Current Address: _____ Home phone: _____

_____ Work phone: _____

_____ Family's ethnic
origin: _____Current attending
physician(s):

Name: _____ Name: _____

Address: _____ Address: _____

Please list all the members of your household other than yourself:

Initials Sex Age Relationship to You

What kind of work do you do? _____

Approximately how many hours per week? _____

Please list group activities that you participate in (e.g. church, clubs, PTA, etc.) and how often.

Group	Daily	Weekly	Monthly
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

Do you smoke? _____ How much? (pack(s) per day) _____

Do you drink alcoholic beverages? _____ How often? _____

Do you use "recreational" drugs? _____ If so, please specify which drugs and how often.

Are you currently taking any medications? (including aspirin, sedatives, pain killers, sleeping pills, etc.) _____ If so, please supply the following information:

Name	Type	Amount	Frequency
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

How long have you been taking medications? _____

How long have you had the pain you are currently experiencing? _____

In what part(s) of your body is the pain present? (Please describe.)

Does the pain come and go or is it constant? (Please describe.)

Usually pain varies in intensity. When is your pain worst?

Please describe when your pain is least severe.

Besides taking medication what do you do that helps you deal with your pain? Please be as specific as you can be.

What sorts of thoughts go through your mind whenever the pain is especially bad? Again, please be specific.

**** PLEASE GO ON TO THE NEXT PAGE

*** Please circle the mark on each line that best describes your present feeling or situation.

EXAMPLE:

A. How nervous are you about being here for this interview?

The placement of the circle indicates a mild degree of nervousness.

*** Please try to answer each of the following. Try to be as honest and accurate as you can in marking your answers. Be sure to read each item carefully, including the descriptions on the lines..

1. Rate the level of your pain at the present moment (right now).

2. How severe has your pain been during the last week (on the average)?

3. In general, how much does your pain problem interfere with your day to day activities?

4. How much suffering do you experience because of your pain?

5. How much has your pain affected your ability to work?

6. How much has your pain affected your ability to participate in recreational and other social activities?

7. How much has your pain affected your marriage and other family relationships?

8. How much has your pain affected your ability to do household chores?

9. How much has your pain affected your friendships with people other than your family?

No change Extreme change

10. How much has your pain affected the amount of satisfaction or enjoyment you get from work?

No enjoyment change Extreme change

11. How much has your pain affected the amount of satisfaction or enjoyment you get from participation in social and recreational activities?

No change Extreme change

12. How much has your pain affected the amount of satisfaction you get from family-related activities?

No change Extreme change

13. How satisfying is your job at the present time?

Not at all Satisfying Extremely Satisfying

14. How satisfying is your relationship with your spouse (significant other)?

Not at all Satisfying Extremely Satisfying

20. How frustrated does your spouse (significant other) get with you in relation to your pain problem?

Not at all Frustrated Extremely Frustrated

21. How attentive is your spouse (significant other) to your pain problem?

Not at all Attentive Extremely Attentive

22. How dependent on others do you think your pain has made you?

Not at all Dependent Extremely Dependent

23. Rate your overall mood during the last week?

Extremely Low Mood Extremely High Mood

24. During the past week, how satisfied have you felt with your life in general?

Not at all Satisfied Extremely Satisfied

25. During the past week how much control do you feel you've had over your life?

Not at all in Control Extremely in Control

26. During the past week how much do you feel that you've been able to deal with your problems?

Not at all Extremely well

27. During the past week how irritable have you been?

Not at all Irritable Extremely Irritable

28. During the past week how tense or anxious have you been?

Not at all Tense or Anxious Extremely Tense or Anxious

GO BACK OVER YOUR ANSWERS AND MAKE SURE YOU HAVE
COMPLETED EACH ONE. DO NOT LEAVE ANY BLANK.

.....
.....

*** How often do you do each of the following (when they are available to do)?

- 0 = Never
- 1 = Almost never, rarely
- 2 = Occasionally
- 3 = Fairly often
- 4 = Almost always
- 5 = Always

-----Take out the trash

-----Wash dishes

-----Mow the lawn

-----Work in the garden

-----Take a short walk

-----Go grocery shopping

-----Visit friends

-----Visit relatives

-----Go out to eat

-----Go to a movie

-----Play cards or other games

-----Do some physical exercises

-----Take a ride in a car

-----Take a trip

-----Go swimming or play
some active sport

-----Work on the car

-----Wash the car

-----Go bowling

-----Go to a sporting
event

-----Go to church

-----Help with the
house cleaning

-----Prepare a meal

-----Work on a hobby

-----Read a book

-----Work on a needed
house repair

-----Go to a park or
beach

-----Do a load of
laundry

-----Talk to a friend
on the phone

-----Write a letter

-----Other (specify)

Pain Medication(s) _____ Date _____ Time _____
 Average _____ Time Given _____
 Dosage _____ Time Given _____

PM 8 _____ A _____ M _____
 (Groups 1-10) (Groups 11-15) (Group 16) (Groups 17-20)
 WWC: _____
 (Groups 1-20)

PM _____

McGill-Melzack Pain Questionnaire

1	FLICKERING QUICKENING PULSING THROBBING BEATING POUNDING	11	TIRING EXHAUSTING SICKENING SUFFOCATING FEARFUL FRIGHTFUL TERRIFYING		Mark 8 if pain is extreme; 1 if mild; if pain is both extreme and mild, mark 5.
2	JUMPING FLASHING SHOOTING	12	PUNISHING GRUELLING CRUEL VICIOUS KILLING		
3	PRICKING BURNING DRILLING STABBING	13	WRETCHED BLINDING ANNOYING TROUBLESOME MISERABLE INTENSE UNBEARABLE		
4	SHARP CUTTING LACERATING	14	SPREADING RADIATING PENETRATING PIERCING		
5	PINCHING PRESSING GRABING CRAMPING CRUSHING	15	TIGHT NUMB DRAWING SQUEEZING TEARING		
6	TUGGING PULLING WRENCHING	16	COOL COLD FREEZING		
7	HOT BURNING SCALDING SEARING	17	NAGGING NAUSEATING AGONYING DREADFUL TORTURING		
8	TINGLING ITCHY SMARTING STINGING	18	SLEEP GOOD FITFUL CAN'T SLEEP		
9	DULL SORE HURTING ACHING HEAVY	19	FOOD INTAKE GOOD SOME LITTLE NONE		
10	TENDER TAUT RASPING SPPLITTING	20	ACTIVITY GOOD SOME LITTLE NONE		
		PPI	1. MILD 2. DISCOMFORTING 3. DISTRESSING 4. HORRIBLE 5. EXCRUCIATING		

ACCOMPANYING SYMPTOMS COMMENTS:

SLEEP COMMENTS:

FOOD INTAKE COMMENTS:

ACTIVITY COMMENTS:

BSI

INSTRUCTIONS

Below is a list of problems and complaints that people sometimes have. Read each one carefully, and select one of the numbered descriptors that best describes HOW MUCH DISCOMFORT THAT PROBLEM HAS CAUSED YOU DURING THE PAST WEEK INCLUDING TODAY. Place that number in the space to the right of the problem. Do not skip any items and print your numbers clearly. If you change your mind, erase your first number completely. Read the example below before beginning, and if you have any questions, please ask the technician.

EXAMPLE:

HOW MUCH WERE YOU DISTRESSED BY:

Descriptors

1. Body aches.....

- 0 Not at all
- 1 A little bit
- 2 Moderately
- 3 Quite a bit
- 4 Extremely

HOW MUCH WERE YOU DISTRESSED BY:

- 1. Nervousness or shakiness inside..... ----
- 2. Faintness or dizziness..... ----
- 3. The idea that someone else can control your thoughts..... ----
- 4. Feeling others are to blame for most of your troubles..... ----
- 5. Trouble remembering things..... ----
- 6. Feeling easily annoyed or irritated..... ----
- 7. Pains in heart or chest..... ----
- 8. Feeling afraid in open spaces..... ----
- 9. Thoughts of ending your life..... ----
- 10. Feeling that most people cannot be trusted..... ----

11. Poor appetite..... ----
12. Suddenly scared for no reason..... ----
13. Temper outbursts that you could not control..... ----
14. Feeling lonely even when you are with people..... ----
15. Feeling blocked in getting things done..... ----
16. Feeling lonely..... ----
17. Feeling blue..... ----
18. Feeling no interest in things..... ----
19. Feeling fearful..... ----
20. Your feelings being easily hurt..... ----
21. Feeling that people are unfriendly or dislike you..... ----
22. Feeling inferior to others..... ----
23. Nausea or upset stomach..... ----
24. Feeling that you are watched or talked about by others.... ----
25. Trouble falling asleep..... ----
26. Having to check and doublecheck what you do..... ----
27. Difficulty making decisions..... ----
28. Feeling afraid to travel on buses subways or trains..... ----
29. Trouble getting your breath..... ----
30. Hot or cold spells..... ----
31. Having to avoid certain things, places or activities because they frighten you..... ----
32. Your mind going blank..... ----
33. Numbness or tingling in parts of your body..... ----
34. The idea that you should be punished for your sins.... ----
35. Feeling hopeless about the future..... ----
36. Trouble concentrating..... ----
37. Feeling weak in parts of your body..... ----

- 38. Feeling tense or keyed up..... ----
- 39. Thoughts of death or dying..... ----
- 40. Having urges to beat, injure or harm someone..... ----
- 41. Having urges to break or smash things..... ----
- 42. Feeling very self-conscious with others..... ----
- 43. Feeling uneasy in crowds..... ----
- 44. Never feeling close to another person..... ----
- 45. Spells of terror or panic..... ----
- 46. Getting into frequent arguments..... ----
- 47. Feeling nervous when you are left alone..... ----
- 48. Others not giving you proper credit for your
achievements..... ----
- 49. Feeling so restless you couldn't sit still..... ---
- 50. Feelings of worthlessness..... ----
- 51. Feeling that other people will take advantage of you if you
let them..... ----
- 52. Feelings of guilt..... ----
- 53. The idea that something is wrong with your mind..... ----

Posttreatment Evaluation

This questionnaire concerns changes which may have taken place over the course of treatment. If any change has occurred, first circle the word which indicates the direction of change (e.g. improved/worsened). Then circle the number which corresponds to the magnitude of change you have experienced. A rating of "1" means little change (barely noticeable); a rating of "10" indicates as much change as you feel is possible to have taken place.

If no change has taken place, circle only the "0" below that statement.

A. Over the course of treatment . . .

1) My pain has improved/worsened:

0 1 2 3 4 5 6 7 8 9 10

2) My sleep has become more/less fitful:

0 1 2 3 4 5 6 7 8 9 10

3) I have increased/decreased my use of medications:

0 1 2 3 4 5 6 7 8 9 10

4) My use of other drugs (caffeine, alcohol, marijuana, etc.) has increased/decreased:

0 1 2 3 4 5 6 7 8 9 10

5) My relationships have improved/worsened:

0 1 2 3 4 5 6 7 8 9 10

6) My general mood throughout the day is better/worse:

0 1 2 3 4 5 6 7 8 9 10

7) My overall sense of being able to control my pain has increased/decreased:

0 1 2 3 4 5 6 7 8 9 10

8) My general feeling of comfort/relaxation has increased/decreased:

0 1 2 3 4 5 6 7 8 9 10

B. My experience in treatment was positive/negative:

0 1 2 3 4 5 6 7 8 9 10
not at all completely

C. My treatment goals were met:

0 1 2 3 4 5 6 7 8 9 10
not at all completely

D. The best way to improve this type of treatment for pain would be to . . . (please be as specific as you can)

Follow-Up Questionnaire

This questionnaire is to be used for telephone follow-up. Circle the direction and intensity of change. If no change has taken place circle only the "0" below that statement.

A. Compared to how things were prior to treatment . . .

1) Has your pain improved/worsened?

0 1 2 3 4 5 6 7 8 9 10

2) Has your sleep become more/less fitful?

0 1 2 3 4 5 6 7 8 9 10

3) Have you increased/decreased your use of medications?

0 1 2 3 4 5 6 7 8 9 10

4) Has your use of other drugs (caffeine, alcohol, marijuana, etc.) increased/decreased?

0 1 2 3 4 5 6 7 8 9 10

5) Have your relationships improved/worsened?

0 1 2 3 4 5 6 7 8 9 10

6) Is your general mood throughout the day better/worse?

0 1 2 3 4 5 6 7 8 9 10

7) Has your overall sense of being able to control your pain increased/decreased?

0 1 2 3 4 5 6 7 8 9 10

B) Has your general feeling of comfort/relaxation increased/decreased?

0 1 2 3 4 5 6 7 8 9 10

B. Are you taking medications at this point? yes no
If so, what medications, how often and in what amounts?

C. Are you still doing relaxation exercises? yes no
If so, how often? -----

D. Since the last time you were contacted have there been
any other significant changes in related to your pain?
Please be as specific as possible.

Appendix B: Outline of treatment Sessions

Each 90 minute session was divided into three parts. During the first 15 to 20 minutes, questions regarding various aspects of treatment were answered, and problems were discussed which may have arisen since the last session. The next 45 to 50 minutes was devoted to the presentation of didactic information pertaining to the experience of chronic headache, and/or to some aspect of cognitive therapy. The last 30 to 35 minutes of each session was used for relaxation training.

Session One

Introduction. This session began with a discussion of self-monitoring (SM) during baseline, focusing especially on what subjects may have learned regarding the pattern of their pain. Problems or questions pertaining to self-monitoring were addressed.

Didactic. Observations about the nature of pain were presented as the first step in the process of reconceptualizing the experience of pain. The point was made that pain is a perceived event that we learn to

interpret differentially according to personal history and situational factors. Thus, we can learn to re-interpret pain by modifying what we say to ourselves about it (cognitive restructuring) and by learning new bodily responses (e.g. through relaxation).

Within this context, a simplified version of the Gate Control Theory was also presented, emphasizing that "pain gates" may be effectively closed by using a variety of cognitive behavioral (CB) techniques. A strong statement was made to begin to anticipate developing control over pain.

Relaxation. Passive relaxation training was used, with an emphasis on slow, deep breathing. Subjects were asked to imagine a wave of relaxation moving slowly through their body, beginning at their feet and proceeding muscle group by muscle group. Special attention was given to the trapezius muscles, and to muscles of the neck, scalp and face.

Summary. Questions regarding the session were answered, and subjects were told to practice relaxation twice a day until completion of the treatment program, indicating on their SM cards when they practiced. Subjects were also reminded that significant treatment effects

typically are not realized until about the third week.

Session Two

Introduction. SM data were discussed with a focus on how subjects experienced doing relaxation training at home. A special point was made to assess the subject's compliance regarding practicing relaxation, and to troubleshoot any problems which may have arisen.

Didactic. As an introduction to the process of learning how to modify cognitions, it was pointed out that any given episode of pain always elicits a pattern of self-statements that help us to anticipate, deal with, and ultimately learn from the experience. Subjects were asked to list three of their own self-statements which typically accompany headaches. Within this context, the difference between "coping" and "catastrophizing" statements was discussed, and subjects were asked to pinpoint the maladaptive aspects of their cognitions.

Relaxation. Relaxation training followed the same pattern as for Session One.

Summary. Subjects were given a handout summarizing the role of self-statements in the experience of pain, and were asked to review it at least twice before the next

session. Subjects were also reminded that they are gradually acquiring more control over their pain.

Session Three

Introduction. SM data were reviewed and problems/questions stemming from Session Two were addressed.

Didactic. In this session, specific CB treatment methods were discussed. These included reappraisal of pain events, focusing attention on non-painful events or stimuli, transformation of context and the use of non-pain imagery. Subjects were also asked to develop a vivid image of their typical troublesome headache, with a view toward learning to modify that image as a means of reducing pain. The point was made that acquiring these skills would greatly enhance one's ability to effectively manage pain.

Relaxation. In this session, the use of imagery was introduced as a means of enhancing the passive relaxation used up to this point. Prior to starting relaxation, subjects were asked to describe a scene which they found to be pleasant and relaxing. An abbreviated version of the passive "relaxation wave" was then presented, after which the subject's scene was described in detail, along with

intermittent suggestions to the subject to relax even more.

Following this sequence, subjects were asked to comment on the effectiveness of the image used, so that it could be appropriately modified, if necessary, for use during home practice.

Summary. Subjects were instructed to experiment with at least two of the cognitive techniques discussed, and with the pain image developed during this session. In addition, they were told to begin using relaxation imagery during home training, and to begin to develop other relaxation images if they desired to.

Session Four

Introduction. SM data were reviewed, and subjects were asked to report on their use of specific CB techniques, pain imagery, and imagery during relaxation training. Problems/questions related to these issues were discussed.

Didactic. This session was focused on the issue of generalization of treatment gains to daily life. The program up to this point was reviewed in detail, and subjects' responses to each aspect of the program were discussed. The point of this discussion was to work

through problems related to the application of the techniques thus far presented, and not to evaluate the effectiveness of treatment. Subjects were encouraged to continue using techniques that they found to be of benefit, and to continue to experiment with ones not yet tried.

Relaxation. Training followed the same format as Session Three, except that subjects went through the passive relaxation procedure on their own and then indicated to the therapist when they were relaxed and ready to proceed with imagery.

Summary. Subjects had been instructed that two weeks would elapse between this session and Session Five, so that they could practice the techniques they had learned without benefit of a weekly therapy contact. It was suggested that they closely monitor their pain behaviors and cognitions, with a view toward effectively resolving any difficulties encountered before termination of treatment.

Session Five

Introduction. SM data were reviewed and subjects were asked to discuss any differences they noted in the pattern of their headaches owing to the extra week between treatment sessions.

Didactic. The aim of this session was to evaluate subjects' ability to generalize treatment gains over a two week period. Specifically, they were asked to comment on relative successes and failures they experienced in attempting to manage their headaches. Subjects were given strong verbal reinforcement for effectively applying the techniques they had learned, and attempts were made to address problems encountered.

Relaxation. Relaxation training followed the same pattern as Session Four.

Summary. Subjects were instructed to continue self-monitoring for one more week, until they returned for a posttreatment evaluation session.

Appendix C: OSU Consent Form

CONSENT TO SPECIAL TREATMENT OR PROCEDURE

I, _____, hereby authorize or direct Beverly E. Thorn, Ph.D. or associates or assistants of his or her choosing, to perform the following treatment of procedure and such additional services as they may deem reasonably necessary in its performance (describe in general terms:

cognitive-behavioral treatment and relaxation
training for chronic headache
upon myself _____.

The experimental portion of the treatment or procedure is:
the nature of the treatment itself, which is being
tested in a variety of settings _____.

This is done as part of an investigation entitled:
The cognitive-behavioral treatment of chronic
headache _____.

1. Purpose of the procedure or treatment:
To further establish the effectiveness of this
type of treatment _____.
2. Possible appropriate alternative methods of treatment:
medication; stress reduction
techniques; biofeedback _____.
3. Discomforts and risks reasonably to be expected:
immersion of hand in ice water for several
minutes; disappointment if treatment is not as
effective as may be expected _____.
4. Possible benefits for subject/society:
reduction
in headache; increased ability to relax; decreased
anxiety/depression; beneficial lifestyle changes _____.

I hereby acknowledge that I have had a full opportunity to ask any questions regarding the procedure described above and that all questions have been answered to my full satisfaction. The risks described above have been explained and I understand them.

(Please proceed to second page.)

I understand that any further inquiries I may make concerning the procedure described above will be answered, and I understand that I am free to withdraw my consent and participation in this project at any time after notifying the project director without prejudicing my future care. No guarantee has been given to me concerning this treatment or procedure.

In the unlikely event of physical injury resulting from my participation in this study, I understand that immediate medical treatment is available at University Hospital of The Ohio State University. I also understand that the costs of such treatment will be at my expense and that financial compensation is not available.

I have read and fully understand the consent form. I have signed it freely and voluntarily and understand a copy is available upon request.

Date: _____ Signed: _____
Time: _____ am/pm

Witness: _____

Witness: _____

I certify that I have personally completed all blanks in this form and explained them to the subject or his/her representative before requesting the subject or his/her representative to sign it.

Signed: _____
(Project Director)