The Use of a Self-help Treatment Intervention
for Panic Disorder with Agoraphobia

by

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ABSTRACT

A recent study suggested that bibliotherapy may be an effective intervention for panic disordered individuals with agoraphobia. The present study attempted to enhance this bibliotherapy intervention by adding audio- and videotape self-help supplements. Thirty subjects suffering panic disorder with mild to moderate agoraphobia were matched on level of avoidance and then randomly assigned to 1) a Wait-list control condition (WL), or 2) a Self-help condition (SH). The intervention lasted four weeks followed by an eight week post-treatment phase, and follow-up measures at the end of this phase. Results indicated that, from pre-treatment to follow-up, SH subjects improved significantly on 11 of the 12 dependent measures used in this study, while WL subjects did not. Furthermore, SH subjects were significantly more improved than WL subjects at follow-up with regard to agoraphobic avoidance, coping with panic attacks, self-efficacy for mild, moderate and severe attacks, and for two critical measures of distress: frequency of panic attacks, and total severity of each attack. Clinical outcome measures also supported the effectiveness of the self-help approach. More than two-thirds of SH subjects met the criteria for clinical improvement, while only one-quarter of WL subjects met these criteria. Implications for the treatment of panic disordered individuals are discussed, as is the role of self-efficacy in mediating clinical change.
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<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Method</td>
<td>13</td>
</tr>
<tr>
<td>Results</td>
<td>25</td>
</tr>
<tr>
<td>Discussion</td>
<td>36</td>
</tr>
<tr>
<td>Tables</td>
<td>45</td>
</tr>
<tr>
<td>Figures</td>
<td>50</td>
</tr>
<tr>
<td>References</td>
<td>62</td>
</tr>
<tr>
<td>Appendices</td>
<td>72</td>
</tr>
<tr>
<td>Vita</td>
<td>86</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. Summary of Select Subject Characteristics
Table 2. Mean, Standard Deviation and Range Values for Select Subject Characteristics
Table 3. Mean and Standard Deviation Values of Weekly Dependent Measures for WL and SH Groups at Different Experimental Time Phases
Table 4. Mean and Standard Deviation Values of Pre/Post Dependent Measures for WL and SH Groups at Different Experimental Time Phases
Table 5. Mean and Standard Deviation Self-efficacy Measures for WL and SH Groups at Different Experimental Time Phases
LIST OF FIGURES

Figure 1. Mean Number of Panic Attacks across time by condition
Figure 2. Mean Total Severity of each Attack across time by condition
Figure 3. Mean Panic Symptoms across time by condition
Figure 4. Mean Panic Cognitions across time by condition
Figure 5. Mean Level of Avoidance across time by condition
Figure 6. Mean scores on Coping with a Panic Attack across time by condition
Figure 7. Mean scores on Likelihood of Having a Panic Attack across time by condition
Figure 8. Mean scores on Thoughts during a Panic Attack across time by condition
Figure 9. Mean scores on Depression across time by condition
Figure 10. Mean scores on Self-efficacy for a Mild Attack across time by condition
Figure 11. Mean scores on Self-efficacy for a Moderate Attack across time by condition
Figure 12. Mean scores on Self-efficacy for a Severe Attack across time by condition
INTRODUCTION

The use of self-help treatment approaches appears to be a widespread phenomenon in American psychology. Self-help books, or "bibliotherapy", have grown significantly in the past decade, and are used increasingly by consumers and mental health professionals (Riordan & Wilson, 1989; Rosen, 1987; Smith & Burkhalter, 1987; Warner, 1991). Starker (1986) reported that 58% of psychologists, 59% of psychiatrists, and 86% of internists frequently prescribe self-help books as a supplement to treatment. More recently, with the advent of video cassette recorders (VCRs), quality self-help has expanded beyond bibliotherapy to include videotapes. Together with their bibliotherapy predecessors, these self-help materials now target a wide range of problems and concerns from discrete targets like toilet training and progressive muscle relaxation to matters of general inspiration like self-esteem and self-actualization.

The popularity of these materials may be due to the advantages that self-help offers over more traditional therapeutic interventions. First, even with the advent of effective behavioral technology for some disorders, the limited dissemination of such technology leaves potential gains unrealized. Self-help approaches can make such behavioral technology more accessible to the lay consumer. Second, self-help approaches convey a therapeutic protocol in a very cost-effective manner (Altman, Flora, Fortman, & Farquhar, 1987; Daughton, Kass, Fix, Ahrens, & Rennard, 1986; Teders, Blanchard, Andrasik, Jurish, Neff, & Arena, 1984; Williamson, Monguillo, Jarell, Cohen, Pratt, & Blouin, 1984). Recognizing the general trend of rising costs in professional health care, the World Health Organization has endorsed the development of self-help interventions in the
coming decade (Kickbusch, 1989). Third, self-help may be the treatment of choice for a number of individuals who wish to feel less stigmatized by treatment, and desire greater autonomy and control over the procedures used. Cummings, Emonet, Jaén, and Sciandra (1988) reported that self-help seems to be the treatment of choice for the vast majority of smokers who quit without any formal cessation program.

Despite the extensive proliferation and prescription of self-help materials, Rosen (1987) warned of the lack of controlled research in this area. He noted that few controlled studies have assessed the impact of self-help books on their target audiences. In addition, although Rosen acknowledged that the benefits of self-help treatments may be great, he summarized a number of risks as well: 1) techniques applied successfully by therapists are not always self-administered successfully; 2) some self-help efforts can lead to a worsening of the problem; 3) well-intentioned changes instituted by a reader can sometimes have a significant and negative impact on treatment outcome. Rosen feels that commercial, rather than public health, considerations dominate the marketing of self-help products. He warns that the growing popularity of self-help makes it important to find an empirical basis for determining who will profit from such interventions, and what kinds of target problems are appropriate.

The present research study examined the effectiveness of a recently published self-help book, *Coping with Panic* (Clum, 1990), with a group of panic disordered individuals having mild to moderate levels of agoraphobia. Panic disorder with agoraphobia is the most common phobic disorder in adults (Marks, 1987; Weissman & Merikangas, 1986). The purpose of the study was to determine if panic disordered subjects who were in a self-help (SH) treatment condition were
able to improve on a variety of measures associated with their panic condition, and if they differed significantly from a group of wait-list controls (WL). SH subjects read this book, watched a brief videotape about panic, and used a relaxation audiotape. Although subjects in the SH condition were not in a "pure" self-help condition, in the sense that they did not self-diagnose nor purchase the self-help materials on their own, they designed and administered their own treatment program independently. Furthermore, they saw a researcher for assessment purposes only, and for a total of 3.0 hours.

Literature Review

Self-help studies

How effective are self-help materials in treating panic sufferers? Only one study to date has assessed their efficacy with a panic disordered population, and this research was the pilot study for the present experiment. Gould, Clum, and Shapiro (in press) randomly assigned 31 mildly agoraphobic panic sufferers to one of three experimental conditions: 1) Wait-list control (WL); 2) Bibliotherapy using the self-help book Coping with Panic (BT), and 3) Individual therapy using Guided Imaginal Coping (ITGIC). Results indicated that, in general, subjects in the BT group were significantly more improved than subjects in WL, and not significantly different from those in ITGIC. This finding was obtained on measures of changes in panic cognitions, self-efficacy, and coping with panic attacks. In addition, BT was significantly different from WL on measures of panic symptoms, thoughts during a panic attack, and likelihood of having a panic attack, while ITGIC did not differ from WL on these measures. Measures of clinical improvement in this study were defined as being panic free at the end of treatment (Clum, 1989). Four of 11 subjects
(36%) in WL, 8 of 11 (73%) in BT, and 6 of 9 (67%) in ITGiC met this standard. Taken together these results have promising implications for bibliotherapy with panic. However, there were no differences between the three groups on two "bottom-line" variables: changes in number of panic attacks, and total severity of each attack. This finding suggests the need for a more powerful self-help intervention for the present study.

While no other studies have examined self-help with panic disordered individuals per se, some research has examined its use in other disorders where anxiety is the principal feature. Several studies have targeted agoraphobia using this approach. Given the shared symptomatology and treatment considerations between agoraphobia and panic disorder, these studies deserve special consideration. In one such study, Ghosh and Marks (1987) provided agoraphobic outpatients with self-exposure instructions via one of three conditions: a self-help book (Living with Fear; Marks, 1978), a psychiatrist, or a computer program. All three groups improved substantially up to 6 months follow-up, with no significant differences among them. However, the fact that there was no control group in this study makes it difficult to interpret these results: non-specific treatment effects such as the passage of time or being in a treatment study may have been responsible for these effects. Three other self-help/minimal therapist contact studies with agoraphobics, (Mathews, Gelder, & Johnston, 1981; Mathews, Teasdale, Munby, Johnston, & Shaw, 1977; and Jannoun, Munby, Catalan, & Gelder, 1980) have reported that a mere 3.5 hours of targeted therapy per patient was enough to effect marked improvement in agoraphobics who utilized home-based practice with the aid of written material. Two of these studies (Mathews et al., 1977; Mathews et al., 1981) also employed homework diaries, and a spouse as co-therapist to supplement
this treatment. Again, cautious interpretation of these minimal intervention studies is suggested because of failure to include adequate control groups for comparisons.

Despite the success of self-help approaches in these studies, effective bibliotherapy may be limited to treating agoraphobics who are not severely avoidant. Holden, O'Brien, Barlow, Stetson, and Infantino (1983) examined the efficacy of a self-help manual for six female agoraphobics using a multiple baseline across subjects design. Subjects were so severely agoraphobic that they could not come into a clinic regularly for therapy. Results indicated that subjects failed to perform the in-vivo exposure practice required by the manual and did not improve.

Other studies have employed self-help strategies to treat simple phobics. A number of early studies that targeted phobics with behavioral techniques have demonstrated that individuals can successfully self-direct systematic desensitization (Baker, Cohen, & Saunders, 1973; Cotler, 1970; Donner & Guerny, 1969; Morris & Thomas, 1973). Two other early studies (Kahn & Baker, 1968; Krapfl, 1968) compared self-directed desensitization with therapist-directed desensitization for snake phobics; the two formats were found to be equally effective. In another study with snake phobics, Rosen, Glasgow and Barrera (1976) found that a desensitization manual did as well as a therapist-assisted condition in reducing self-report and physiological measures of anxiety. Both conditions were superior to a no-treatment control group. More recently, Glasgow and Rosen (1982) found that approximately 50% of subjects with simple phobias were able to significantly reduce anxiety reactions under self-administered or minimal contact conditions. A study of 84 chronic phobics by Ghosh, Marks, and Carr (1988) examined the use of self-
exposure conditions using a book, psychiatrist, and a computer terminal. They found substantial and similar improvement of the three groups up to 6 months follow-up. However, since all groups improved equally, and there was no control condition, it can not be determined if the improvement was attributable to specific or non-specific effects.

Phillips, Johnson, and Geyer (1972) reported that a completely self-administered desensitization procedure is an effective method for treating irrational fears, at least as measured by self-reports. Forty-eight percent of their subjects who received a manual reported themselves as "cured" or "greatly improved". However, nearly half of the subjects dropped out and did not complete even the initial terms of their hierarchy. Using a self-administered program for public speaking anxiety, Marshall, Presse, and Andrews (1976) found that none of the treatments had any effect on behavioral manifestations of public speaking anxiety, but all treatment subjects showed greater reductions in subjective anxiety than either of the control groups. Schelver and Gutsch (1983) reported that self-administered cognitive therapy significantly decreased social anxiety and fear of negative evaluation in socially anxious students. Finally, in a case study report, Johansson and Öst (1981) successfully taught relaxation coping skills using audiotape instructions to a woman suffering from "cardiac neurosis" as manifested by episodic heart palpitations.

Evidence for the efficacy of self-help is further buttressed by a recent meta-analysis that examined treatment effectiveness across a number of studies using standardized units of comparison. Gould and Clum (1993) examined the strength of self-help interventions across nine different clinical targets (e.g. fear reduction, smoking cessation, depression) encompassed in 40 studies. These authors found a
large mean effect size of $ES=1.11$ for the clinical target area of fear reduction, which was the second largest effect size among all clinical target areas. In addition, they reported a strong mean effect of $ES=0.64$ for bibliotherapy interventions across all clinical targets. Both of these findings suggest the potential success of self-help treatments in general, and for panic sufferers in particular.

Panic studies

An alternative approach to answering the question: “Is self-help likely to be an effective means of treating panic?” may lie in answering the question: “Can effective panic treatment strategies be packaged in a self-help format?” Given the dearth of studies that have assessed self-help treatments with panic sufferers, this approach is particularly relevant. What strategies and procedures are effective in treating panic disorder? In his recent review of the panic treatment literature, Clum (1989) concluded that behavioral therapies specifically developed to ameliorate panic had the highest success rates and the lowest relapse rates. In addition, treatments which specifically employ instruction and self-directed practice of coping strategies seemed most efficacious. More recently, Michelson and Marchione (1991) affirmed that interventions that included exposure to panic symptoms, along with cognitive restructuring, breathing retraining, and relaxation training are more effective than any of these techniques administered alone. Relaxation training may be particularly helpful to panic sufferers with moderate agoraphobia, given their high level of physiological arousal (Michelson, 1986). NIH (National Institutes of Health, 1991) has recently endorsed this multidimensional approach to treating panic disorder and suggested that researchers find ways of making it more accessible to panic sufferers (Klerman, Weissman,
Several studies targeting panic have demonstrated that cognitive-behavioral techniques are the treatment of choice (Barlow, Craske, Cerny, & Klosko, 1989; Craske, Brown, & Barlow, 1991; Fava, Grandi, Canestrari, & Grasso, 1991; Klosko, Barlow, Tassinari, & Cerny, 1990; Mattick, Andrews, Hadzi-Pavlovic, & Christensen, 1990; Ost, 1988; Salkovskis, Jones, & Clark, 1986).

It seems plausible that the didactic and self-directed treatment strategies used in these studies could be imparted by a book. For example, information about panic and avoidance is easily imparted through reading material. Techniques like muscle and imagery relaxation, diaphragmatic breathing, confronting avoided situations, and challenging catastrophic cognitions can be effectively communicated in a written format. In addition, a number of these techniques already have been shown to be successful in treating agoraphobia using a bibliotherapy format (Ghosh & Marks, 1987; Mathews et al., 1981; Mathews et al., 1977; Jannoun et al., 1980).

**Additional research**

The design of the present study also drew on findings from other empirical research. Two areas of particular relevance include breathing retraining and using audiotape and videotape supplements to enhance bibliotherapy. Ley (1991) reported that hyperventilation is one of the most common symptoms experienced by panic sufferers, and that breathing retraining for hyperventilation was an essential feature in the successful treatment of panic disorder. Kenardy, Gei, & Evans (1990) concluded that hyperventilation is the primary physiological mechanism by which panic symptoms are exacerbated. A number of studies have
emphasized that breathing retraining is a primary ingredient for panic treatment (Michelson, Marchione, Greenwald, & Glanz, 1990; Borden, Clum, & Salmon, 1991; Craske et al., 1991).

In the previously mentioned meta-analysis, Gould and Clum (1993) found that self-help interventions that included audiotape or videotape supplements yielded very large treatment effects (ES=1.53; ES=1.64, respectively). In addition, they found that self-help videotapes that employed modeling were very effective (ES=1.08), and that self-help materials that used the strategy of successive approximation of goals were also quite effective (ES=0.95). A number of self-help studies further indicate the usefulness of audiotape and videotape materials (Allen, Danforth, & Drabman, 1989; Baker, Cohen, & Saunders, 1979; Danscher, Jefferay, Zimmerman, & Nelson, 1980; Hum, Clader, & Zingle, 1983; Morawetz, 1989; Speas, 1979).

Summary.

In summary, findings from past research are particularly relevant to the present study's justification and design. First, many studies have failed to use adequate control groups to rule out non-specific factors such as the passage of time, or being in a treatment group. Second, behavioral techniques that employ instruction, breathing and relaxation training, and self-directed practice of coping strategies seem to have the highest success rates for treating panic. Third, such techniques have been shown to be successfully imparted in bibliotherapy treatment studies with agoraphobics, and in the one study for the treatment of panic disorder. Fourth, the one study that did employ a bibliotherapy treatment for panic failed to obtain changes in certain critical measures; this finding suggested
the need for a more powerful self-help intervention. Fifth, additional techniques like breathing retraining and relaxation training have been shown to be powerful interventions for panic. These techniques could be modeled with the use of supplemental self-help materials like videotapes that may make a self-help intervention more powerful.

These five findings have been taken into account in the design of the present study. The primary objective of the study was to improve upon and extend previous research (Gould et al., in press) in order to further assess the effectiveness of self-help with a panic-disordered population. A two-group design was employed that included a wait-list control condition and a self-help condition that used instruction and self-directed practice of coping strategies. In addition, the SH condition was enhanced with the addition of a videotape that modeled diaphragmatic breathing and an audiotape that directed the progressive muscle relaxation (PMR) procedure described in the book. It was posited that the addition of these self-help materials would help panic sufferers to prevent their panic symptoms from escalating into a full-blown panic attack.

The role of self-efficacy.

A secondary objective of the present study was to explore whether self-efficacy mediates treatment changes occurring in self-help interventions for panic. Bandura (1977) posited that behavior changes can be explained by the concept of self-efficacy: a person’s belief in his/her ability to perform a behavior, and the belief that this behavior will lead to a certain outcome. The number of papers which have used self-efficacy measures or invoked its concept to explain behavior has grown exponentially in the past decade. Self-efficacy has been
measured in a wide range of areas including traditional clinical areas (e.g. Katz, Stout, Taylor, Horne, & Agra, 1983), intellectual development (e.g. Schunk, 1983), health-related activities (e.g. O'Leary, 1985), and sports performance (e.g. Lee, 1989).

Evidence that self-efficacy may mediate clinical improvement in self-help interventions comes from three studies. First, Gould et al., (in press) found that changes in self-efficacy were significantly greater for subjects receiving a bibliotherapy intervention than for those in a wait-list condition. In addition, the most pronounced difference between these two groups was on this variable. Second, Strecher, Becker, Kirscht, and Eraker (1985) found that smokers who did best in a minimal contact intervention were those reporting high perceived expectations of efficacy. Finally, Mahalik and Kivlighan (1988) reported that high generalized self-efficacy and internal locus of control were correlated highly with other measures of treatment success for depressed outpatients using a self-help approach.

How might increased self-efficacy influence panic sufferers? Individuals with panic disorder may feel unable to control their attacks or to cope effectively with their somatic experiences. They often focus on their inability to control what is happening to them, and develop catastrophic and escalating thoughts regarding their physical symptoms (e.g. acceleration in heart rate denotes and impending heart attack). The belief that one can manage these physical sensations may serve to prevent or ameliorate these catastrophic thoughts.

In the present study, two advances over previous studies were made in assessing self-efficacy. First, in an effort to better identify a process of change, self-efficacy was assessed at pre-, mid-, post-treatment, and at the end of follow-up. Multiple linear regressions were employed to assess if early changes in self-
efficacy predicted later decreases in frequency of panic attacks. Second, in an
effort to obtain a more "in vivo" behavioral measure of self-efficacy, subjects
listened to audiotaped scripts of their idiosyncratic mild, moderate, and severe
attacks, and then completed self-efficacy measures. The validity of using this
approach to evoke anxiety has been previously established (Watkins, Clum, Borden,
Broyles, & Hayes, 1990). Three levels of attacks (mild, moderate, and severe) were
included in this procedure to better reflect the range of attacks that panickers may
experience.

The following hypotheses were advanced in the present study. First,
subjects in the SH condition would exhibit significantly more improvement than
WL subjects from pre-treatment to follow-up on measures of frequency of panic
attacks, total severity of each attack, severity of panic symptoms, catastrophic
cognitions, agoraphobic avoidance, self-efficacy, belief in the likelihood of having
a panic attack, thoughts during a panic attack, coping with panic attacks, and
depression. Second, SH subjects would not differ significantly from WL subjects on
measures of frequency of panic attacks, total severity of each attack, and
agoraphobic avoidance until the follow-up period; results from a previous study
suggested that changes in these measures may take longer than 5 weeks (Gould et
al., in press). Third, it was hypothesized that early changes in self-efficacy would
predict later change in treatment effectiveness as measured by frequency of panic
attacks.
METHOD

Subjects

Twenty-five individuals, 21 (84%) women and 4 (16%) men meeting the DSM-III-R (American Psychiatric Association, 1987) criteria for panic disorder completed this study. The mean age of the entire sample was 36.2 (SD = 7.7) years, and subjects ranged in age from 19 to 61 years. The mean education level of the sample was 13.8 (SD = 2.0) years. Six of 25 (24%) subjects were affiliated with the University community as either staff, or students. Three of these 6 were staff, 2 were graduate students, and one was an undergraduate student. The remaining 19 subjects were not affiliated with the University. Eleven subjects (44%) had been stabilized on medication and continued to use medication for their panic attacks during the course of the study.

Twenty-one subjects (84%) met the criteria for panic disorder with agoraphobia while 4 subjects (16%) met the criteria for panic disorder without agoraphobia. With regard to DSM-III-R severity level of panic disorder, 12%, 64%, and 24% of the subjects fell into the mild, moderate, and severe categories, respectively. With regard to DSM-III-R severity level of agoraphobia, 60%, 32%, and 8% of the subjects fell into the mild, moderate, and severe categories, respectively. The mean number of panic attacks in the 2 week period prior to baseline was 2.3 (SD = 1.9). Duration of panic symptoms ranged from 9 months to 32 years (M = 10.3 years, SD = 8.3 years). These subject characteristics are very comparable to the Klosko et al., (1990) sample of 74% women and 26% men, whose mean age was 37 years (SD = 11.04); and whose mean number of panic attacks in the week prior to treatment was 2.0.
Recruitment. Subjects were recruited using four methods. First, flyers that described the symptoms of panic attacks and agoraphobia were mailed to eight-thousand Virginia Tech faculty, staff, and graduate students (see Appendix A). Individuals experiencing these symptoms were urged to contact the Psychological Services Center (PSC), or to complete a brief form and mail it to Dr. Clum. Second, an announcement was made about the study by teaching assistants in Discussion sections of undergraduate Introductory Psychology classes. Third, a local radio station ran a series of announcements describing the study for a three week period. Fourth, public service announcements were run in local newspapers (Roanoke Times, New River Free Press) that urged individuals suffering panic symptoms to contact the PSC. The validity of these recruitment approaches is supported by Krupnick, Shea, and Elkin (1986) who reported that solicited patients may be equal in severity to unsolicited patients, provided that adequate screening has occurred.

Screening. One hundred twenty-eight individuals contacted the researchers about participating in the study. Researchers were able to contact 121 of these individuals by telephone to assess whether they appeared to meet the criteria for panic disorder; individuals were asked to describe a recent panic attack, and asked about their specific panic symptoms. Of these, 52 appeared to meet the criteria for panic disorder and were invited for further assessment by one of two advanced graduate students in psychology who used a standardized clinical interview for anxiety disorders (Anxiety Disorders Interview Schedule-Revised; ADIS-R; DiNardo et al., 1988). Of these individuals, 33 met the criteria for panic disorder and initially agreed to be in the study. During the first 3 days of the baseline period 3 subjects decided not be in the study; their decisions were made prior to their learning their
treatment assignment. Of the remaining 30 subjects 15 were randomly assigned to the WL group, and 15 to the SH condition.

Attrition. Five subjects were designated as drop-outs in this study: 2 from the WL group, and 3 from the SH group. Among the WL dropouts: one subject reported not having the time to keep records, and the other gave no reason for termination. Among SH subjects: one decided he needed to see a psychiatrist and wanted medication for his problems; one terminated for no discernible reason and did not return our telephone calls; and one never read the book and was removed from all statistical analyses. All other subjects in the SH condition reported reading the book, and mid-treatment assessments confirmed this self-report. Twenty-five subjects were used for the statistical comparisons.

Subject criteria. Subjects were required to meet the diagnostic criteria for panic disorder with or without agoraphobia (DSM-III-R), and to have had a panic attack within the two week period prior to their diagnostic interview. The latter criterion was adopted to insure that subjects were all active panickers. Subjects were required to be a minimum of 18 years of age, and could not be involved in any other form of psychotherapy or self-help during the course of the study. Individuals were excluded from the study if they reported that they had been diagnosed by a physician as having any of the following conditions: seizure disorder, kidney disease, stroke, schizophrenia, organic brain syndrome, emphysema, myocardial infarction, or chronic hypertension. Other exclusionary criteria included: chronic use of alcohol, drug dependence or abuse, or any type of psychotic disorder. Subjects were required to endorse whether they had any of these medical and psychiatric conditions on a medical screening questionnaire (see Appendix B) administered along with the subject consent form (see Appendix C).
Subjects taking medication for anxiety or depression were allowed to participate if they had been stabilized on the medication for at least four weeks and continued to have panic symptoms, and if they recorded their medication usage throughout the study (n =11). Six of these subjects were in the SH group, and 5 were in the WL condition.

**Diagnostic reliability.** Experimenters were trained in diagnosing panic disorder using DSM-III-R criteria by a senior psychology faculty member in the following manner: 1) All anxiety diagnostic categories were reviewed, 2) All team members had to demonstrate familiarity with the format, instructions, and administration of the ADIS-R, 3) Experimenters observed sessions with anxiety disordered individuals and then discussed diagnostic issues related to those sessions. Experimenters videotaped intake sessions and rated a randomly selected pool of these sessions for diagnostic reliability. Inter-rater reliability was determined by employing the kappa statistic (k) (Cohen, 1968) which describes the proportion of agreement after correcting for chance agreement. On a subsample of 12 subjects the proportion of agreement for diagnosing panic disorder with or without agoraphobia was k = 0.84.

**Assessment Procedures.**

A time-line describing the assessment procedures for subjects in both experimental conditions is illustrated in Appendix D. The two experimental conditions were: 1) Wait-list control (WL); and 2) Self-help (SH), using the self-help materials described below. The total time required for subjects to complete this study was 14 weeks and consisted of a 2 week baseline phase, a 4 week treatment phase, and an 8 week follow-up period.
**Pre-treatment measures.** At pre-treatment subjects completed a set of four questionnaires (pre/post measures) that included the following: Likelihood of Having a Panic Attack (Telch, 1985); Your Thoughts During a Panic Attack (Telch, 1985); Coping with Panic Attacks (Telch, 1985); and Beck Depression Inventory (BDI) (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961). In addition, they completed the Panic Self-Efficacy Questionnaire (PSEQ) (Clum, 1990). Subjects also filled out an Expectancy Questionnaire (EQ) (Gould et al., in press) after reading a written description of their experimental condition. The EQ asked them to rate their expectation for the improvement of their panic condition on a Likert-type scale (see Appendix E).

**Weekly measures.** Throughout the course of the study subjects completed four weekly measures that assessed the frequency and total severity of their panic attacks, severity of physical panic symptoms, severity of cognitive panic symptoms, and the severity of behavioral avoidance. These measures included the: Daily Panic Attack Record (DPAR) (Clum, 1990); Panic Attack Symptoms Questionnaire (PASQ) (Clum, 1990); Panic Attack Cognitions Questionnaire (PACQ) (Clum, 1990); and The Mobility Inventory for Agoraphobia (MIA) (Chambless, Caputo, Jasin, Gracely, & Williams, 1985), respectively. Subjects were trained on how to accurately complete each of these measures by means of a simple modeling procedure.

**Post-treatment measures.** At the end of the four week treatment period subjects completed the same set of four dependent measures they had filled out at pre-treatment (pre/post measures) as well as the PSEQ.

**Follow-up measures.** At the end of the eight week post-treatment phase subjects again completed the same set of four dependent measures they had filled out at the pre-treatment and at post-treatment (pre/post measures) and the PSEQ. In
addition, SH subjects completed the Client Satisfaction Questionnaire (CSQ; Larsen, Atkisson, Hargreaves, & Nguyen, 1979) designed to assess subject’s satisfaction rating for the services provided.

**Assessment of self-efficacy.** During the initial pre-treatment interview each subject was asked to recount a mild, a moderate and a severe panic attack. Systematic probes were used to derive the details of each attack (e.g., "How did your panic attack begin?"; "What symptoms did you have next?"). The idiosyncratic details of the situation, symptoms and cognitions associated with each attack were written down. A script of each individual’s three panic attacks was then recorded on audiotape by the first author. Each audiotape script was six minutes long (two minutes for each panic attack), and was presented in order from least to most severe (1. Mild attack, 2. Moderate attack, 3. Severe attack).

Subjects' self-efficacy regarding the three panic attacks was assessed in the following way. First, subjects were asked to close their eyes and to listen to the tape of their mild attack; they were encouraged to try to imagine themselves re-experiencing the actual attack. The tape was then stopped and subjects were asked to implement strategies to cope with this attack for one minute. They were then asked to rate their ability to successfully implement coping strategies on a Likert-type self-efficacy scale (the PSEQ). This same procedure was then repeated for the moderate and severe attacks. The validity of this imaginal approach in evoking anxiety has been previously established (Watkins et al., 1990). The self-efficacy assessment procedure was presented to all subjects at pre-treatment, mid-treatment, post-treatment and post-follow-up.
**Treatment Procedures.**

Individuals satisfying the criteria for panic disorder read and signed a consent form that described the experiment. At the end of the baseline period, all subjects were matched on their pre-treatment level of avoidance score and then randomly assigned to one of the two experimental conditions. Level of avoidance in panic disorder has been shown to be correlated with overall severity and treatment outcome (Barlow, 1988). At the end of the follow-up period subjects in both conditions were told that they could choose to receive further treatment for their panic attacks, in the form of group therapy, at the end of the study. Nine subjects chose to do so, 6 from the WL group and 3 from the SH group.

**Wait-list Control (WL).** Subjects in this condition did not receive treatment during the course of the experiment, and were told that their treatment would begin in 14 weeks (2 weeks baseline, 4 weeks treatment, 8 week post-treatment). WL subjects were instructed to complete the four weekly dependent measures that have been described above and to mail this information in each week. Subjects who failed to mail in their weekly data were reminded to do so by telephone contact from one of the study’s personnel.

**Self-help (SH).** SH subjects took part in a combined self-help treatment that included: reading a self-help book *Coping with Panic* (Clum, 1990); watching a brief videotape; and listening to a progressive muscle relaxation audiotape. The self-help book was written to be used either with or without the guidance of a therapist. It focuses on 1) educating individuals about the etiology and nature of panic disorder 2) teaching them a variety of cognitive and behavioral strategies that include relaxation, cognitive restructuring, breathing retraining, and exposure, and 3) advising them on how to implement these strategies. Specific
cognitive strategies include exploring faulty logic, reconsidering attributions, exploring alternatives, decatastrophizing, hypothesis testing, and enlisting social support for adaptive coping. The book includes advise on how to implement coping strategies along with homework assignments to encourage active practice of these techniques. Subjects purchased the book, and were told to read it at their own pace.

The videotape is a 15 minute teaching tool that used the format of a mock therapy session between a therapist and a panic disordered client (see Appendix F). It explains what is known about the etiology of panic disorder, describes the spiralling and circular relationship between panic symptoms and cognitions, models diaphragmatic breathing, and exhorts individuals to practice coping techniques. Diaphragmatic breathing is a simple relaxation technique in which individuals are taught to avoid hyperventilation by breathing using their upper abdomen. Hyperventilation can be both a symptom and a cause of an escalating panic attack. All materials used in the videotape script were derived from the self-help book. SH subjects also were given an audiotape that taught the progressive muscle relaxation technique that was illustrated in the self-help book. They were encouraged to use the tape on their own at home.

SH subjects were told that their progress in reading the book would be assessed at mid- and post-treatment by telephone. The researchers used a specific written protocol derived from material covered in the book (Appendix G). A score of 70% on this assessment was considered evidence that the individual had read the book.

SH subjects were instructed to complete and mail in the same four weekly measures as WL subjects. In addition, they were instructed to fill out a weekly Practice Record on which they recorded the total amount of time spent practicing
specific techniques outlined in the book. Subjects who did not mail in their weekly
data were reminded to do so by telephone.

The total time spent with researcher/therapists for each group of subjects
was, including the initial diagnostic evaluation, 2.5 hours for the WL group and 3.0
hours for the SH group. All subjects were told that they could contact their
graduate researcher at any time during treatment.

**Dependent Measures.**

**Weekly measures.** Each week all subjects completed the four measures
specified above. For the PASQ and PACQ subjects rated their most recent attack. The
DPAR is a daily measure of panic attacks in which individuals record the duration of
13 possible panic symptoms for each panic attack. These 13 panic symptoms were
derived directly from diagnostic criteria of the DSM-III-R (1987, p. 238). The DPAR
consists of a 5-point scale measuring the duration of symptoms with scores ranging
from 1 (1 second to 1 minute) to 5 (4 hours to one day) for each panic attack.
Subjects were instructed to check off the duration of panic symptoms for each
discrete attack they experienced throughout the course of each day. Consistent
with DSM-III-R criteria, researchers classified four or more of these symptoms as a
panic attack, and less than four symptoms as a limited symptom attack. The DPAR
yielded two different measures: 1) Number of Panic Attacks per week, and 2) Total
Severity of each Attack, which is the total length of time that a subject experienced
panic symptoms in a given week. Previous research has demonstrated the validity
of using duration of panic symptoms as a measure of severity (Clum, Broyles,
The PASQ is a 36-item scale reflecting symptoms frequently experienced during a panic attack. Each item is rated on a 6-point scale indicating duration of symptoms, ranging from 1 (do not experience) to 6 (protracted period of 24 hours to 2 days or more). The total score is derived by summing the ratings across all items yielding a total rating of severity for panic attack symptoms. Previous validation of the questionnaire has shown that the PASQ reliably differentiates panic sufferers from anxious but non-panic clients. Internal consistency is also high with a Cronbach alpha of .88 (Clum et al., 1990).

The PACQ contains negative cognitions associated with panic attacks. Each item is rated on a 4-point scale indicating degree of preoccupation with each cognition during each attack. Scores range from 1 (not at all) to 4 (totally dominates). A total score is obtained by summing the scores for the 25 items. Previous validation of the questionnaire has demonstrated that the total score on the PACQ can reliably differentiate panic sufferers from anxious subjects who do not experience panic. Moreover, internal consistency reliabilities are adequate with a Cronbach alpha of .88 for the entire PACQ (Clum et al., 1990).

The MIA is a 27-item inventory, and situations are rated for avoidance both when the person is accompanied and when alone. In order to limit the number of dependent variables, the present study included analyses based only on ratings of avoidance of situations while alone. The MIA has a 5 point scale that ranges from 1 (never avoid) to 5 (always avoid). Adequate reliability as well as concurrent and construct validity have been established. It is a stable, internally consistent scale, and sensitive to change with treatment (Chambless et al., 1985).
Subjects in the SH group also recorded weekly the total amount of time they devoted to practicing specific coping techniques and exposing themselves to anxiety provoking situations.

**Pre/post measures.** The three questionnaires: Likelihood of Having a Panic Attack, Your Thoughts During a Panic Attack, and Coping with Panic Attacks are all derived from Telch’s Panic Appraisal Inventory (Telch, 1985). These scales assess the cognitive appraisals of panickers and were included in the study because of their frequent use in other panic studies, and because of their psychometric properties. The Likelihood of Having a Panic Attack questionnaire is a 10-item scale in which panickers rate their chance of having a panic attack on a scale from 0 ("No Chance of Panic Attack") to 100 ("Definite Panic Attack"). The "Your Thoughts During a Panic Attack" questionnaire is a 15-item scale in which panickers rate their thoughts ranging from 0 ("Not at all troubling") to 10 ("Extremely troubling"). The Coping with Panic Attacks questionnaire is a 10-item scale in which individuals rate their confidence in coping with panic attacks in different situations on a scale from 0 ("Not at all confident") to 100 ("Completely confident"). Each of these three scales has been shown to have high test-retest reliability (r = 0.89, r = 0.86, r = 0.81, respectively) and adequate internal consistency (coefficient alphas = 0.94, 0.91, 0.88, respectively).

The Beck Depression Inventory is a 21-item measure of depression in which individuals rate statements concerning their depression on a 3-point scale. A number of studies have demonstrated the BDI’s reliability and validity (e.g. Beck, 1967; Beck, Steer, & Garbin, 1988; Oliver & Simmons, 1984).

**Self-efficacy measures and other measures.** The PSEQ is an 11-item questionnaire that measures subjects’ perceptions of their abilities to cope with
various aspects of a panic attack. Each item has two parts. The first part assesses whether the individual believes that he or she can cope with various aspects of the attack. The second part assesses on a 9-point Likert scale their degree of confidence that they can do so. These two aspects of self-efficacy are what Bandura (1977) referred to as magnitude and strength. These scales have been shown to be sensitive to the changes in panic disordered individuals which take place during treatment (Borden et al., 1991).

The EQ is a 5-item measure developed for the pilot of this research study that asks individuals to rate their expectation for improvement using a 4-point scale. This questionnaire was administered to subjects immediately after they read a description of their forthcoming treatment.

The CSQ contains eight four-point Likert-scale items that assess the quality, amount, and effectiveness of services rendered to clients. Items address whether the client's needs were met, whether they would recommend the same program to a friend, and whether they would seek out the same program if the need arose in the future.
RESULTS

One-way ANOVAs and Chi Square analyses revealed that subjects in the treatment and control groups did not differ on any of the demographic variables measured in this study. These variables included age, sex, level of education, and affiliation status (i.e., academic affiliation vs. non-academic affiliation). The mean number of panic attacks experienced in the two week baseline period was not different across groups, nor was the severity of panic symptoms. One-way ANOVAs revealed that conditions also did not differ with regard to DSM-III-R severity ratings of panic and agoraphobia. The demographic and panic characteristics that were measured for all subjects at pre-treatment are summarized in Tables 1 & 2.

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Insert Tables 1 & 2 Here

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Conditions did not differ relative to medication status: 42% of WL subjects and 46% of SH subjects were on medication throughout the study. The 11 subjects who had been stabilized and continued to use medication during the study did not differ significantly from all others in the sample on initial measures or outcome measures of panic frequency, avoidance, panic symptoms, or panic cognitions. Hence, random assignment resulted in two conditions of equivalent status with regard to demographic characteristics and severity of the disorder.

Dependent Measures.

Given the probability that dependent measures were highly correlated, two MANOVAs were performed using Wilk's Lambda criterion. The first was a 2x3
MANOVA involving the four weekly dependent measures examining the main effects of condition, and time, and the interaction of these variables from pre-treatment to the end of follow-up. The MANOVA for the weekly dependent measures revealed no Group effect, but a Time effect \([F(5, 17)=7.68, p<0.001]\), and a Group by Time interaction \([F(5, 17)=3.08, p<0.05]\). A second 2x3 MANOVA included the four pre/post measures plus the three self-efficacy measures and examined the main effects of condition, and time, and the interaction of these variables from pre-treatment to the end of follow-up. This MANOVA revealed no Group effect, but a Time effect \([F(7, 16)=12.63, p<0.001]\), and a Group by Time effect \([F(7, 16)=6.88, p<0.001]\). For both the weekly and pre/post dependent measures, Repeated Measures Analyses of Variance were run to determine which dependent measures were accounting for these differences.

**Weekly dependent measures.**

The four weekly dependent measures were examined first. A series of 2x3 ANOVAs were conducted to compare the groups at three different phases of the experiment: 1) the two week baseline or pre-treatment phase (Baseline 1 and 2), 2) the post-treatment phase (Post 1 and 2), and 3) the final two weeks during the follow-up period (Post 7 and 8). These three phases were chosen because they marked natural points of comparison in the experimental design. Mean values for each two week period were derived for these comparisons and are summarized in Table 3. All multiple comparisons were conducted using the Sheffé F-test.

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Insert Table 3 Here

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Figures 1 & 2 illustrate the mean Number of Panic Attacks and the Total Severity of each Attack as reported by subjects during each week of the study.

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Insert Figures 1 & 2 Here

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The Repeated Measures ANOVA examining the mean Number of Panic Attacks per week was not significant for the main effects of Group or Time, but was significant for the interaction of Group by Time ($F(2, 23)=8.42, p<.001$), suggesting that groups differed at different time phases in the study. Multiple comparisons revealed significant pre- to post-treatment differences ($F(1, 12)=8.47, p<.05$), and pre- to follow-up differences ($F(1, 12)=14.81, p<.01$) for the SH group only. Further multiple comparisons revealed that SH and WL were not significantly different from each other at either baseline or at post-treatment, but were different during the final two follow-up weeks, ($F(1, 23)=4.12, p<.05$). The SH group had significantly decreased their frequency of panic attacks by the end of the study, while WL subjects, based on graphical interpretation, actually showed a slight increase.

A Repeated Measures ANOVA comparison for the mean Total Severity of each Attack revealed no significant main effects for Group or Time, but an interaction effect for Group by Time, ($F(2, 23)=10.62, p<.001$). Multiple comparisons revealed significant pre- to post-treatment differences ($F(1, 12)=9.66, p<.01$), and pre- to follow-up differences ($F(1, 12)=15.25, p<.01$) for the SH group only. Further multiple comparisons showed that groups again differed significantly at follow-up, ($F(1, 23)=4.50, p<.05$).
Figures 3, 4 and 5 illustrate subjects' Panic Symptoms (PASQ), Panic Cognitions (PACQ) and Levels of Avoidance (MIA), respectively, over the course of the study.

Insert Figures 3, 4, & 5 Here

Group comparisons for Panic Symptoms showed a significant main effect for Time \[ F(2, 23) = 18.88, \ p < .0001 \], and an interaction of Group by Time, \[ F(2, 23) = 6.39, \ p < .01 \]. Multiple comparisons revealed significant pre- to post-treatment differences \[ F(1, 12) = 13.84, \ p < .01 \], and pre- to follow-up differences \[ F(1, 12) = 22.84, \ p < .001 \] for the SH group only. Further multiple comparisons revealed no significant differences at post-treatment or follow-up between the two conditions.

A Repeated Measures ANOVA for Panic Cognitions revealed a significant main effect for Time, \[ F(2, 23) = 22.18, \ p < .0001 \], and an interaction of Group by Time, \[ F(2, 23) = 3.71, \ p < .05 \]. Multiple comparisons revealed significant pre- to post-treatment differences \[ F(1, 12) = 8.94, \ p < .05 \], and pre- to follow-up differences \[ F(1, 12) = 30.34, \ p < .0001 \] for the SH group only. Further multiple comparisons revealed no significant differences at post-treatment or follow-up between the two conditions.

A Repeated Measures ANOVA for Levels of Avoidance indicated a significant main effect for Time, \[ F(2, 23) = 11.70, \ p < .0001 \], and a significant interaction of Group by Time, \[ F(2, 23) = 5.30, \ p < .01 \]. Multiple comparisons revealed significant pre- to post-differences \[ F(1, 12) = 7.81, \ p < .05 \], and pre- to follow-up differences \[ F(1, 12) = 7.57, \ p < .05 \] for the SH group. Further multiple comparisons significant differences at post-treatment \[ F(1, 12) = 6.95, \ p < .05 \], and at follow-up \[ F(1, 12) = 6.13, \ p < .05 \] between the two conditions.
In summary, subjects in the SH group differed significantly from pre- to post-treatment and pre-to follow-up on every weekly measure (Number of Panic Attacks, Total Severity of each Attack, Panic Symptoms, Panic Cognitions, and Levels of Avoidance) while WL subjects did not differ on any of these measures for either time period. SH and WL subjects differed significantly from each other at post-treatment with regard to Levels of Avoidance, and at follow-up with regard to Number of Panic Attacks, Total Severity of each Attack, and Levels of Avoidance.

**Pre/post measures.**

The four pre/post dependent variables were assessed also at pre-treatment, post-treatment, and at follow-up. Mean values for pre/post measures during these three periods are presented in Table 4.

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Insert Table 4 Here

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Pre/post measures included Coping with a Panic Attack, Likelihood of Having a Panic Attack, Thoughts during a Panic Attack, and Depression, and are illustrated graphically in Figures 6, 7, 8, and 9, respectively.

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Insert Figures 6, 7, 8 & 9 Here

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A Repeated Measures ANOVA for Coping with a Panic Attack yielded a significant main effect for Group \( [F(2, 23)=8.10, p<.01] \), and Time, \( [F(2, 23)=5.86, p=.01] \), and an interaction effect for Group by Time, \( [F(2, 24)=10.12, p<.001] \). Multiple comparisons revealed significant pre- to post-treatment differences \( [F(1, 12)=4.87, \)
and pre- to follow-up differences \( F(1, 12) = 9.04, p < .05 \) for the SH group only. Further multiple comparisons revealed that groups differed significantly at post-treatment \( F(1, 23) = 9.54, p < .01 \), and at the end of follow-up \( F(1, 23) = 18.05, p < .001 \).

A Repeated Measures ANOVA for Likelihood of Having a Panic Attack yielded no significant main effect for Group, but a significant main effect for Time \( F(2, 23) = 5.87, p < .01 \), and an interaction effect for Group by Time \( F(2, 23) = 3.30, p < .05 \). Multiple comparisons revealed significant pre- to post-treatment differences \( F(1, 12) = 10.22, p < .05 \), and pre- to follow-up differences \( F(1, 12) = 10.82, p < .05 \) for the SH group only. Further multiple comparisons indicated that groups did not differ significantly at pre-treatment, post-treatment, or at the end of follow-up.

A Repeated Measures ANOVA for Thoughts During a Panic Attack revealed no significant main effect for Group, but a significant main effect for Time \( F(2, 23) = 28.2, p < .0001 \), and an interaction effect for Group by Time \( F(2, 23) = 3.67, p < .05 \). Multiple comparisons revealed significant pre- to post-treatment differences \( F(1, 12) = 10.34, p < .01 \), and pre- to follow-up differences \( F(1, 12) = 14.08, p < .01 \) for the SH group only. Further multiple comparisons indicated again that groups did not differ significantly at pre-treatment, post-treatment, or at the end of follow-up.

Group comparisons for Depression yielded no significant main effect for Group, but a significant main effect for Time \( F(2, 23) = 5.88, p < .01 \). There was no interaction effect for Group by Time, suggesting that both groups decreased their depression over time.

Hence, subjects in the SH group differed significantly from pre- to post-treatment and pre- to follow-up on three of four pre/post measures (Coping with a Panic Attack, Likelihood of Having a Panic Attack, and Thoughts During a Panic Attack), while WL subjects did not differ on any of these measures for either time.
period. SH and WL subjects differed significantly from each other at post-treatment and at follow-up with regard to Coping with a Panic Attack only.

Self-efficacy and other measures.

Mean values for Self-efficacy measures at pre-treatment, post-treatment, and follow-up are presented in Table 5.

Insert Table 5 Here

Figures 10, 11 & 12 illustrate changes in Self-efficacy scores that were measured for Mild, Moderate and Severe panic attacks, respectively. These measures were completed at four different time periods: pre-treatment, mid-treatment, post-treatment, and at the end of follow-up.

Insert Figures 10, 11 & 12 Here

A Repeated Measures ANOVA for Self-efficacy for a Mild attack revealed significant main effects for Group \(F(1, 23)=9.96, p<.01\), and Time, \(F(3, 23)=13.92, p<.001\), and an interaction effect for Group by Time \(F(3, 23)=6.77, p<.001\). Multiple comparisons revealed significant pre- to post-treatment differences \(F(1, 12)=19.67, p<.001\), and pre- to follow-up differences \(F(1, 12)=14.08, p<.01\) for the SH group only. Further multiple comparisons indicated that groups did not differ significantly at pre-treatment, but did differ at mid-treatment \(F(1, 23)=6.44, p<.05\), post-treatment \(F(1, 23)=6.90, p<.05\), and at follow-up \(F(1, 23)=16.41, p<.001\).
A Repeated Measures ANOVA for Self-efficacy for a Moderate attack yielded significant main effects for Group \(F(1, 23)=10.91, p<.01\), and Time \(F(3, 23)=29.25, p<.0001\), and an interaction effect for Group by Time, \(F(3, 23)=8.00, p<.0001\). Multiple comparisons revealed significant pre- to post-treatment differences \(F(1, 12)=23.36, p<.001\), and pre- to follow-up differences \(F(1, 12)=43.31, p<.0001\) for the SH group only. Further multiple comparisons again indicated that groups did not differ significantly at pre-treatment, but did differ at mid-treatment \(F(1, 23)=4.32, p<.05\), post-treatment \(F(1, 23)=5.61, p<.05\), and at the end of follow-up \(F(1, 23)=17.40, p<.001\).

A Repeated Measures ANOVA for Self-efficacy for a Severe attack indicated significant main effects for Group \(F(1, 23)=5.23, p<.0332\), and Time \(F(3, 23)=21.17 p<.0001\), and an interaction effect for Group by Time \(F(3, 23)=6.11, p<.01\). Multiple comparisons revealed significant pre- to post-treatment differences \(F(1, 12)=24.35, p<.001\), and pre- to follow-up differences \(F(1, 12)=32.20, p<.0001\) for the SH group only. Further multiple comparisons revealed that groups did not differ significantly at pre-treatment or mid-treatment, but did differ at post-treatment \(F(1, 23)=4.44, p<.05\), and at the end of follow-up \(F(1, 23)=9.66, p<.01\).

In summary, subjects in the SH group differed significantly from pre- to post-treatment and pre-to follow-up on all three self-efficacy measures, while WL subjects did not differ on any of these measures for either time period. SH and WL subjects differed significantly from each other at mid-treatment with regard to Self-efficacy for Mild and Moderate Attacks, and at post-treatment and at follow-up with regard to all three self-efficacy measures.
Were changes in self-efficacy predictive of decreases in panic frequency, above and beyond the prediction accounted for by initial level of panic frequency? Two multiple linear regression equations were derived to answer this question. In the first equation, Number of Panic Attacks at pre-treatment were initially entered into the equation. Subsequently, changes in Self-efficacy for Mild, Moderate and Severe Attacks from pre-treatment to mid-treatment were added to predict Number of Panic Attacks at post-treatment. The rationale for entering these three variables in this order was that it seemed likely that individuals would show the largest improvements in Self-efficacy for a Mild attack first, and subsequently for Moderate and Severe attacks. Panic frequency at pre-treatment accounted for 35% of the variance in the initial equation (t=3.53, p<.01; R=.73), and an additional 20% was accounted for by changes in Self-efficacy for a Mild attack (t=3.04, p<.001). Increases in Self-efficacy for a Mild attack were associated with decreases in panic frequency (R=-.063). An additional 3% of the variance was accounted for by changes in Self-efficacy for a Moderate attack (t=-.96, p=ns; R=-.007), and an additional 2% was accounted for by changes in Self-efficacy for a Severe attack (t=-.51, p=ns; R=-.002).

In the second equation, Number of Panic Attacks at pre-treatment were again initially entered into the equation. Subsequently, changes in Self-efficacy for Mild, Moderate, and Severe Attack from pre-treatment to post-treatment were added to predict Number of Panic Attacks at follow-up. Panic frequency at pre-treatment accounted for 22% of the variance in the initial equation (t=2.58, p=.05; R=.68), and an additional 44% was accounted for by changes in Self-efficacy for a Mild attack (t=5.27, p<.0001). Increases in Self-efficacy for a Mild attack were associated with decreases in panic frequency (R=-.89). An additional 5% of the
variance was accounted for by changes in Self-efficacy for a Moderate attack (t=1.55, p=ns; B=.05), and an additional 2% was accounted for by changes in Self-efficacy for a Severe attack (t=.93, p=ns; B=.04).

Two additional regression equations were derived to assess whether the inverse relationship was true: whether panic frequency predicted self-efficacy. In the first equation, Self-efficacy for a Mild Attack at pre-treatment accounted for 25% of the variance (t=2.72, p<.05; B=.54) used to predict Self-efficacy for a Mild Attack at post-treatment. An additional 1% of the variance was accounted for by changes in panic frequency from pre- to mid-treatment (t=2.07, p=ns; B=.85). In the second equation, Self-efficacy for a Mild attack at pre-treatment accounted for 20% of the variance (t=2.34, p<.05; B=.59) used to predict Self-efficacy for a Mild Attack at follow-up. However, an additional 36% of the variance was accounted for by changes in panic frequency from pre- to post-treatment (t=4.23, p<.001; B=.80).

Groups did differ significantly on measures of expectancy for improvement at pre-treatment \( F(1, 23) = 23.27, p < .001 \), with the SH group showing significantly greater expectancy for improvement. SH subjects were well satisfied with the treatment services that they received as indicated by their CSQ scores \( M = 28.2, SD = 3.7 \) at follow-up. There did not appear to be a correlation between amount of practice (average number of minutes practiced per week) and treatment outcome as defined by frequency of panic at follow-up. The correlation between these two variables was \( r = .12 \) (p=ns). All subjects were told that they could contact their graduate researcher at any time during treatment. None did so.
Clinical improvement for individuals suffering panic attacks has been defined as being panic free following treatment (Clum, 1989). In order to meet this criteria, subjects were required to be experiencing panic attacks at pre-treatment. Six of 13 subjects (46%) in the SH condition, and 3 of 12 subjects (25%) in the WL condition met this clinical criteria at post-treatment. Pairwise tests of proportional differences revealed that the SH and WL conditions differed significantly \( z=1.67, p<.05 \). At follow-up 9 of 13 (69%) SH subjects, and again 3 of 12 (25%) WL subjects met these criteria. As expected, pairwise tests of proportional differences again revealed that the SH and WL conditions differed significantly \( z=3.04, p<.01 \).
DISCUSSION

In general, results from the present study support the hypothesis that self-help is an effective treatment for individuals suffering from panic disorder with agoraphobia. From pre-treatment to follow-up, SH subjects improved significantly on 11 of the 12 dependent measures used in this study, while WL subjects did not. Specifically, SH subjects achieved significant improvement on measures of frequency of panic attacks, total severity of each attack, severity of physical symptoms, severity of catastrophic thoughts, agoraphobic avoidance, belief in the likelihood of having a panic attack, thoughts during a panic attack, coping with panic attacks, and self-efficacy for mild, moderate and severe attacks.

An even more central question is whether the self-help treatment was better than the nonspecific effects of being in a treatment study. Results indicated that SH subjects were significantly more improved than WL subjects at follow-up on two critical measures of distress: frequency of panic attacks, and total severity of each attack. In addition, SH subjects were significantly more improved than WL subjects at follow-up with regard to agoraphobic avoidance, coping with panic attacks, and self-efficacy for mild, moderate and severe attacks. Clinical outcome measures also supported the effectiveness of the self-help approach. More than two-thirds of SH subjects met the criteria for clinical improvement, compared to one-quarter of WL subjects who met these criteria.

Outcomes produced by SH subjects in the present study compare favorably to those produced by subjects in a bibliotherapy (BT) condition in the Gould et al., (in press) study. Both groups of subjects used the book *Coping with Panic* (Clum, 1990) as their primary self-help resource. However, SH subjects in the present study
improved significantly from wait-list on measures of frequency of panic attacks, total severity of each attack, and agoraphobic avoidance while BT subjects in the previous study did not. Measures of clinical improvement between the two groups were comparable: 69% for SH and 73% for BT.

It is not entirely clear why the SH group achieved positive changes in these critical measures while the BT group from the previous study did not. Two possible explanations exist. First, it is likely that the addition of videotape and audiotape self-help components was a contributing factor. The diaphragmatic breathing technique modeled in the videotape is designed to help individuals prevent panic symptoms from escalating, and becoming full-blown panic attacks. Successful implementation of this technique would, logically, decrease the number of panic attacks experienced by a SH subject, and decrease the total severity of each attack.

By the same token, the PMR procedure taught on the audiotape could aid in decreasing general arousal, and also aid in preventing the escalation of panic symptoms. Realistically, however, it is beyond the scope and design of the present study to tease out the additive and/or synergistic effects of these various self-help treatment components. By the same token, it is difficult to assess which techniques that SH subjects practiced were the most helpful in their self-treatment. It appears that subjects who practiced cognitive restructuring and exposure techniques had the best outcomes in terms of reduction of a number of panic measures.

A second explanation is that SH subjects had a longer period of time (12 weeks instead of 5 weeks) to interact with the self-help materials than did BT subjects from the Gould et al., (in press) study. Perhaps a period of 5 weeks is insufficient for individuals to implement, practice, and hone coping techniques. Barlow et al., (1989), for example, employed a 15 week treatment intervention for
his panic subjects. In the present study, many SH subjects continued to improve
after post-treatment. SH subjects were not significantly different from WL subjects
on measures of panic frequency, and total severity until the follow-up period.
Moreover, the number of SH subjects meeting the criteria for clinical improvement
also continued to improve from post-treatment (6 of 13) to follow-up (9 of 13), while
WL subjects stayed the same (3 of 12).

The one dependent measure for which subjects did not change as predicted
was depression. Why did the SH and WL conditions show similar decreases in
depression over the course of the study? One explanation is that the BDI measures
symptoms that are more related to global distress, than to specific symptoms of
panic. It is likely that the non-specific effects of participation in a structured
treatment program, monitoring panic symptoms, and knowing that one will
eventually receive treatment contributed to these improvements in WL subjects.
These non-specific treatment effects, along with regression to the mean, may also
help to explain why 1) one quarter of WL subjects did meet the criteria for clinical
improvement at follow-up, and 2) despite significant changes over time for SH
subjects on measures of panic symptoms, panic cognitions, and likelihood of having
a panic attack, SH and WL groups were not significantly different at follow-up on
these variables.

With regard to the WL group's clinical improvement, other panic studies
have reported similar improvements among their control subjects. Gould et al., (in
press) found that 36% of wait-list subjects met the same criteria for clinical
improvement that were used in the present study. Barlow et al., (1989) found that
36% of wait-list subjects were panic free at post-treatment. Two studies that
included drug treatment interventions for panic (Klosko et al., 1990; Ballenger et
reported that 33% and 32% of their control subjects were panic free at follow-up, respectively.

Present findings concur with those of several others noted earlier that self-help is a promising treatment approach for individuals suffering anxiety disorders (e.g., Ghosh & Marks, 1987; Mathews et al., 1981; Mathews et al., 1977; Jannoun et al., 1980; Glasgow & Rosen, 1982; Rosen et al., 1976). More importantly, present findings are smaller, but approximate results from studies that have employed the treatment of choice for panic disorder: cognitive-behavioral interventions with a clinician. Results of clinical improvement for the SH subjects in this study (69%) are very similar to those reported in a recent review of behavioral interventions for panic with a therapist. Clum (1989) found that 71% of subjects receiving behavioral therapies had "successful" treatment outcomes. In general, the criteria for success was the absence of panic attacks at follow-up, and not all studies in the sample were adequately controlled. Results of clinical improvement are somewhat smaller relative to three well-controlled studies. Barlow et al., (1989) reported that 87% of panic subjects receiving applied relaxation, plus exposure, plus cognitive restructuring with a therapist were panic free at post-treatment. Kloko et al., (1990) also found that 87% of her subjects who had received a cognitive-behavioral treatment were panic free at post-treatment. Finally, Clark and Salkovskis (1990) reported that 90% of cognitive therapy subjects were panic free at post-treatment.

Perhaps as important as its effectiveness in ameliorating symptoms is the palatability of an intervention to consumers. Results from the CSQ suggest that SH subjects, believed that the intervention was both credible and helpful (Larsen et al., 1979). In addition, the drop-out rate was 16%, lower than that reported in most
pharmacological studies of panic, and consistent with behavior therapy studies (Clum, 1989).

The second hypothesis of the present study was also confirmed. SH subjects did not differ significantly from WL subjects on measures of frequency of panic attacks, total severity of each attack, and agoraphobic avoidance until the follow-up period. This finding was consistent with the findings from Gould et al., (in press) and suggests that while it is reasonable to expect individuals to read a self-help book in four weeks, it may take longer for positive clinical changes to be realized.

The third hypothesis of the present study concerned the predictive role of self-efficacy. Results indicated that changes in Self-efficacy for a Mild Attack contributed significantly to the equation predicting panic frequency at post-treatment and follow-up beyond initial level of panic frequency. These changes were particularly useful at predicting panic frequency at follow-up, accounting for twice the variance of initial level of panic (44% compared to 22%). Changes in Self-efficacy for Moderate and Severe Attacks were subsequently entered into the equation and were less predictive; this was probably due to the fact that these two measures were highly correlated with Changes in Self-efficacy for a Mild Attack, and with each other.

Did improvements in self-efficacy lead to individuals having fewer panic attacks, or did having fewer panic attacks yield changes in self-efficacy? Results from the present study suggest a reciprocal and interactive relationship between these two variables that appears to be initiated by changes in self-efficacy. Changes in self-efficacy predicted frequency of panic beyond initial level of panic both at post-treatment and at follow-up. In contrast, changes in panic frequency predicted level of self-efficacy beyond initial level of self-efficacy at follow-up.
only. Perhaps early increases in self-efficacy help the panic sufferer to cope better and to decrease frequency of panic attacks. Thereafter, a more dynamic and bi-directional process may take over in which 1) an individual's decrease in panic frequency makes him feel more efficacious and 2) an individual's increase in self-efficacy continues to help decrease his episodes of panic.

Although results from the present study suggest that self-help using bibliotherapy is a useful approach for individuals suffering panic attacks with mild to moderate agoraphobia, there are some methodological issues to be considered. First, this study was not a test of the effectiveness of a "pure" self-help condition, rather, it examined self-help with minimal researcher contact. Second, there were certain unavoidable demand characteristics in this study; SH subjects were told that they would be tested on the reading material, and were given sheets to record the amount that they practiced coping techniques. Individuals may have read and used the book differently without these demand characteristics, without minimal researcher contact, and without being diagnosed as having panic disorder. Third, subjects in the present study were volunteers; they may have differed from panic sufferers in the general population in terms of their motivation levels and concurrent psychopathology. A recent study by Cox, Norton, Swinson, and Endler (1990) revealed that many persons with panic disorder also suffer from conditions such as substance abuse, which served as exclusionary criteria here. Fourth, subjects were more educated than the general population (mean years of education was 13.8 years) suggesting some limitations in terms of these findings' external validity. By the same token it is unlikely that poorly educated consumers would select bibliotherapy as an approach to treat their panic. Fifth, the fact that researchers were not blind to subjects' treatment conditions raises the possibility
that they may have treated subjects differently (either consciously or subconsciously) as a function of this knowledge. However, given the fact that this study involved little researcher contact, that the only contact was for assessment purposes only, and that dependent measures were largely self-report, it is unlikely that such experimenter knowledge was a significant influence. Finally, although subjects' participation in this study was over 3 months in duration, this study did not address the longer-term maintenance effects of self-help.

Despite these limitations the present study suggests promising possibilities for self-help. A recent epidemiological review revealed that, despite being the most prevalent psychological dysfunction in the United States, fewer than 25% of panic disorder sufferers seek out treatment (Weissman & Merikangas, 1986). A study from NIH (1991) concluded that certain barriers such as accessibility, availability, and affordability have prevented a large number of panic sufferers from taking advantage of effective cognitive-behavioral intervention techniques. The present study has taken a step in overcoming these barriers. Self-help interventions may be particularly useful in settings where therapist or physician time and resources are in high demand, or where more traditional approaches, like individual therapy, are not immediately available. Self-help materials could also be used as a way for panic sufferers to start working on developing coping skills until further resources become available. Distribution of self-help materials to emergency rooms and family practices may be particularly important given the number of panic sufferers who present to these settings (Ballenger, 1987; Marshall, 1991). Other possible approaches include using self-help materials in combination with pharmacological agents to treat panic.
It is not the intention of the present study to suggest that self-help for panic is an equivalent substitute for individual therapy. Cognitive-behavioral interventions with a therapist remain the treatment of choice. In fact, a recent meta-analysis by Mattick et al. (1991) indicated that clinician-administered exposure plus anxiety management training yielded the strongest treatment effect sizes relative to all other interventions both at post-treatment (ES=1.29), and at follow-up (ES=1.32). Results from the present study do, however, suggest it may be unnecessary for some panic sufferers to develop a therapeutic relationship in order to get better. While it is probable that many panic sufferers will still require therapist-supervised treatment, it may not be indicated for more motivated and educated ones with mild to moderate agoraphobia.

Future research regarding self-help for panic disorder is indicated in four basic areas. First, the question of what type of patient is suitable for self-help should be further addressed. Matching patient variables to treatment outcome success would greatly advance this area of research. Second, future studies need to focus on demonstrating the effectiveness of self-help in less controlled modalities that may initially include semi-controlled studies or large-scale naturalistic field studies that approximate the use of such materials in the real world (Gould & Clum, 1993). For an intermediate semi-controlled study, self-help materials could be administered in clinical situations such as physicians' offices or emergency rooms on a random basis, alternating with "treatment as usual". Such an approach would take the study design one step closer to real-life situations. Third, future studies should address understanding the specific benefits of self-help techniques, and the additive or synergistic effects of different treatment components. Dismantling designs could be employed to better determine such effects. Finally, studies should
utilize follow-up assessments of longer duration at regular monthly intervals to better assess treatment effectiveness.
Table 1

**Summary of Select Subject Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>WL Condition</th>
<th>SH Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Subjects</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Number of Dropouts</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sex</td>
<td>11 female, 1 male</td>
<td>10 female, 3 male</td>
</tr>
<tr>
<td>Percentage Ss Using Panic Medication</td>
<td>5/12 or 42%</td>
<td>6/13 or 46%</td>
</tr>
</tbody>
</table>
Table 2

**Mean, Standard Deviation and Range Values for Select Subject Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>WL Condition</th>
<th></th>
<th>SH Condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Range</td>
<td>M</td>
</tr>
<tr>
<td>Age (years)</td>
<td>38.9</td>
<td>9.7</td>
<td>(20-51)</td>
<td>33.9</td>
</tr>
<tr>
<td>Level of Education (years)</td>
<td>13.6</td>
<td>2.1</td>
<td>(12-16)</td>
<td>14.0</td>
</tr>
<tr>
<td>Length of Panic (years)</td>
<td>10.9</td>
<td>11.7</td>
<td>(0.8-32)</td>
<td>9.8</td>
</tr>
<tr>
<td>Number of PAs in prior 2 weeks</td>
<td>2.0</td>
<td>2.1</td>
<td>(0-7)</td>
<td>2.6</td>
</tr>
</tbody>
</table>
**Table 3**

*Mean and Standard Deviation Values of Weekly Dependent Measures for WL and SH Groups at Different Experimental Time Phases*

<table>
<thead>
<tr>
<th></th>
<th>Pre-treatment</th>
<th></th>
<th>Post-treatment</th>
<th></th>
<th>Follow-up</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  SD</td>
<td>M  SD</td>
<td>M  SD</td>
<td></td>
<td>M  SD</td>
<td></td>
</tr>
<tr>
<td>Number of PA's</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>1.79  2.06</td>
<td>2.13  3.34</td>
<td>2.54  3.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>2.57  1.85</td>
<td>0.92  0.81</td>
<td>0.50  0.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>23.42 31.52</td>
<td>35.42 55.40</td>
<td>50.92 76.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>35.08 26.23</td>
<td>10.96 9.71</td>
<td>5.50 7.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panic Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>29.33 23.08</td>
<td>16.96 21.85</td>
<td>21.91 26.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>38.23 16.73</td>
<td>15.54 14.27</td>
<td>8.15 15.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panic Cognitions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>36.54 16.71</td>
<td>20.05 22.08</td>
<td>21.14 23.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>46.84 16.90</td>
<td>24.81 20.50</td>
<td>12.15 15.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Avoidance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>2.39 1.11</td>
<td>2.23 1.01</td>
<td>2.28 1.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>2.40 1.26</td>
<td>1.86 1.18</td>
<td>1.82 1.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4

**Mean and Standard Deviation Values of Pre/Post Dependent Measures for WL and SH Groups at Different Experimental Time Phases**

<table>
<thead>
<tr>
<th></th>
<th>Pre-treatment</th>
<th></th>
<th>Post-treatment</th>
<th></th>
<th>Follow-up</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Coping with a PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>287.58</td>
<td>244.92</td>
<td>238.33</td>
<td>222.42</td>
<td>251.25</td>
<td>151.48</td>
</tr>
<tr>
<td>SH</td>
<td>328.08</td>
<td>208.88</td>
<td>518.46</td>
<td>230.17</td>
<td>589.85</td>
<td>234.36</td>
</tr>
<tr>
<td>Likelihood of Having a PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>297.50</td>
<td>222.26</td>
<td>304.33</td>
<td>265.35</td>
<td>268.75</td>
<td>240.68</td>
</tr>
<tr>
<td>SH</td>
<td>386.39</td>
<td>308.83</td>
<td>221.54</td>
<td>256.02</td>
<td>220.38</td>
<td>216.01</td>
</tr>
<tr>
<td>Thoughts during a PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>62.25</td>
<td>38.69</td>
<td>42.50</td>
<td>21.05</td>
<td>44.17</td>
<td>25.05</td>
</tr>
<tr>
<td>SH</td>
<td>70.15</td>
<td>29.88</td>
<td>31.77</td>
<td>30.97</td>
<td>28.38</td>
<td>26.81</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>16.75</td>
<td>13.65</td>
<td>12.60</td>
<td>8.31</td>
<td>11.17</td>
<td>8.51</td>
</tr>
<tr>
<td>SH</td>
<td>15.46</td>
<td>9.21</td>
<td>9.62</td>
<td>7.32</td>
<td>9.08</td>
<td>8.29</td>
</tr>
</tbody>
</table>
Table 5

Mean and Standard Deviation Values of Self-efficacy Measures for WL and SH Groups at Different Experimental Time Phases

<table>
<thead>
<tr>
<th></th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td><strong>Self-efficacy for</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>a Mild Attack</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>41.50</td>
<td>24.32</td>
<td>47.64</td>
</tr>
<tr>
<td>SH</td>
<td>41.23</td>
<td>17.12</td>
<td>68.77</td>
</tr>
<tr>
<td><strong>Self-efficacy for</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>a Moderate Attack</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>33.33</td>
<td>18.24</td>
<td>43.12</td>
</tr>
<tr>
<td>SH</td>
<td>34.53</td>
<td>13.73</td>
<td>63.07</td>
</tr>
<tr>
<td><strong>Self-efficacy for</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>a Severe Attack</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WL</td>
<td>27.83</td>
<td>24.14</td>
<td>37.00</td>
</tr>
<tr>
<td>SH</td>
<td>23.92</td>
<td>13.59</td>
<td>55.00</td>
</tr>
</tbody>
</table>
Figure 1. Mean Number of Panic Attacks across time by condition
Figure 2. Mean Total Severity of each Attack across time by condition
Figure 3. Mean Panic Symptoms across time by condition
Figure 4. Mean Panic Cognitions across time by condition
Figure 5. Mean Level of Avoidance across time by condition
Figure 6. Mean scores on coping with a Panic Attack across time by condition
Figure 7. Mean scores on Likelihood of Having a Panic Attack across time by condition
Figure 8. Mean scores on Thoughts during a Panic Attack across time by condition
Figure 9. Means scores on Depression across time by condition
Figure 1B. Mean scores on Self-efficacy for a Mild Attack across time by condition
Figure 11. Mean scores on Self-efficacy for a Moderate Attack across time by condition
Figure 12. Mean scores on Self-efficacy for a Severe Attack across time by condition.
REFERENCES


Appendix A: Recruitment Flyers

PANIC TREATMENT STUDY

As part of a research project, the Psychological Services Center at Virginia Tech is offering free assessment and treatment to people suffering from panic disorder.

People with panic disorder experience a variety of unpleasant symptoms which come on suddenly and unpredictably. These symptoms include shortness of breath or smothering sensations, rapid breathing, fast heart rate, chest pain, sweating, faintness, trembling or tingling sensations, and fear of dying or losing control. They may also experience agoraphobic symptoms like fear crowded public places such as stores, public transportation, theaters, and situations such as tunnels, bridges, and elevators.

If you are experiencing problems such as these and are willing to participate in a research project which involves the assessment and treatment of your panic and avoidance symptoms, please complete the bottom part of this form, or call the Psychological Services Center at 231-6914. We will get back to you to answer any questions you may have. All information will be treated confidentially, and the identity of participants will remain anonymous.

I would like more information about the research on panic disorder being conducted at the Psychological Services Center. Please contact me at one of the telephone numbers listed below.

________________________  ___________  ___________
Appendix B. Medical Screening Checklist.

Please complete the medical screening below.

Have you ever been diagnosed by a physician as having?: (Yes/No)

a) a seizure disorder ______  e) organic brain syndrome ______
b) a kidney disease ______  f) emphysema ______
c) a stroke ______  g) heart attack ______
d) schizophrenia ______  h) chronic hypertension ______
i) bipolar disorder ______

Are you presently taking medication? ______ If so, what kind?

______________

Do you have any other physical or psychological disorders that may preclude your participation in this study? ______

Have you ever been treated for a psychological problem? ______ Yes _____ No

If so, please explain.

I have completed the above medical screening as honestly as possible and have not been diagnosed by a physician as having any of the above disorders.

_______________  ____________

Name
Appendix C: Statement of Informed Consent

Statement of Informed Consent

Panic Attack Treatment Study

Description.

The purpose of this study is to assess the effectiveness of different kinds of treatment interventions for panic attack sufferers. As a participant, you will be randomly assigned to one of two experimental conditions:
1) Treatment with a self-help book, an audiotape and a brief videotape, with ongoing assessment.
2) Ongoing assessment alone.

The length of these two experimental conditions will be approximately 14 weeks; 2 weeks baseline, 4 weeks treatment, and 8 weeks follow-up. Researchers in this study consist of graduate clinicians from the Department of Psychology and the Panic Disorders Project at V.P.I., and Dr. George Clum, a Professor of Psychology. Assessment sessions will be conducted at the Psychological Services Center at V.P.I. by graduate clinicians and Dr. Clum. At the end of this study, you will be offered further treatment with a therapist if you so desire for no charge.

Regardless of treatment condition, my participation in this study will include the following:
1) taking part in an initial 30 minute structured interview with a trained graduate clinician that focuses on the degree to which I suffer from panic attacks. I understand that this interview may be videotaped for research purposes for observation by other researchers in this study, and that I may be observed during this experiment. Videotapes will be kept in a locked filing room at the Psychological Services Center for one-month and then erased.
2) completing a set of questionnaires that further assess the nature of my panic attacks, avoidance behavior, and anxiety levels. These should take a total of approximately 1 hour to complete. This will be done before treatment, after treatment, and at follow-up.
3) keeping a weekly record of my panic attacks, panic symptoms and thoughts, and levels of anxiety for 14 weeks. These should take approximately 20 minutes per week.

4) taking part in three assessments of self-efficacy at pre-, mid-, post-treatment, and follow-up.

Alternative and additional treatment.

If I suffer from panic attacks but do not wish to be in this study, I may be referred for treatment at the Psychological Services Center if I so desire. I may also choose to contact my primary physician, Cooper House, or Saint Albans Psychiatric Hospital. At the conclusion of the study, I will be offered the opportunity to seek further treatment for my panic attacks, if I so desire.

Risks and Benefits.

My participation in this experiment may involve some psychological discomfort in the form of anxiety when applying certain treatment strategies for panic attacks. Some treatment strategies may require that I induce panic symptoms to practice coping techniques. These treatment strategies are taught in the self-help materials, and I will implement them when I have learned coping techniques. However, I will not be required to induce panic symptoms if I do not wish to do so. I may also be asked to answer what I consider to be personal questions. I will not be required to answer such questions if I do not wish to.

The benefits of my participation may include a reduction in the frequency and intensity of my panic attacks, and a free assessment of my panic disorder.

I understand that in order to be in this study, I need to be at least 18 years old. It is my responsibility to inform the researchers of any medical problems that might arise in the course of the study. I have completed the medical screening questionnaire as accurately and honestly as possible.

I understand that any data of a personal nature will be held confidential and will be used for research purposes only. I also understand that these data may only be used when I cannot not be personally identifiable by them.

I understand that I may abstain from participation in any part of this experiment or withdraw from the experiment at any time without penalty.
If at any time during the course of the study I feel that I need to contact a graduate clinician or Dr. Clum, they can be reached at the following numbers: Robert Gould (home) 953-3076; Terry Weaver (home) 552-4804; Michael Preister (home) 951-5085; George Clum (work) 231-5701, (home) 951-1697. If I am unable to reach a clinician and need assistance I can call the RAFT hotline at: 382-1738.

I have read the above statements and have had the opportunity to ask questions. I understand that the researchers will, at any time, answer my inquiries concerning the procedures used in this experiment in a truthful way. In so far as possible the researchers have informed me what to expect from being in the group to which I have been assigned. I have been offered a copy of this consent form.

I understand that this research project has been approved by the Psychology Department's Human Subjects Research Committee, and that any questions I may have about the project should be directed to Dr. George Clum, Dr. Helen Crawford, or Dr. Ernest Stout (telephone numbers provided on the last page of this consent form).

Scientific inquiry is indispensable to the advancement of knowledge. Your participation in this experiment provides the investigators the opportunity to conduct meaningful scientific observations designed to make a contribution to psychological research.

If you would like to receive the results of this investigation, please indicate this choice by marking the appropriate space provided below. A copy will then be distributed to you as soon as the results are made available by the investigator.

_______ I request a copy of the results of this study.
I, ____________________, do hereby voluntarily agree and consent to participate in the research study described above and under the conditions described above; this research study is conducted by the personnel of the Department of Psychology of Virginia Polytechnic Institute and State University.

Date _______ Time ________ a.m./p.m.

Participant Signature ____________________

Witness _________________________________

Project Director __________________________ Telephone 231-5701
(Dr. George Clum)
Human Subjects Chairman ________________ Telephone 231-6581
(Dr. Helen Crawford)
Institutional Review Board Chairman ________ Telephone 231-5281
(Dr. Ernest Stout)

Graduate Researchers.
Robert Gould Telephone 953-3076
Terri Weaver Telephone 552-4804
Michael Preister Telephone 953-3191
**Appendix D. Time-line of Assessment Procedures.**

**Wait-list.**

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Ongoing self-monitoring</th>
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<tbody>
<tr>
<td>Self-monitor</td>
<td>Self-monitor</td>
</tr>
<tr>
<td>(&lt; 1 week)</td>
<td>(2 weeks)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial</th>
<th>Pre-Tx</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>ADIS-R</td>
<td></td>
</tr>
<tr>
<td>contact</td>
<td>Pre-Post measures + EQ</td>
<td>Pre-Post measures</td>
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<tr>
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**Self-help.**

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<th>Follow-up/Maintenance</th>
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<td>Self-monitor</td>
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<td>(&lt; 1 week)</td>
<td>(2 weeks)</td>
<td>(4 weeks)</td>
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<td>Assess Util.</td>
<td>Assess Utilization</td>
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<td>contact</td>
<td>Pre-Post measures + Videotape</td>
<td>Pre-Post measures</td>
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</tbody>
</table>
Appendix E. **Expectancy Measure.**

**Expectancy Measure.**

Please indicate your responses by the circling the appropriate number on the following scale.

1. **To what extent do you expect the frequency of your panic attacks to change over the next 12 weeks?**

   -4  -3  -2  -1  0  1  2  3  4  
   decrease  remain  increase
dramatically  unchanged  dramatically

2. **To what extent do you expect the severity of your panic attacks to change over the next 12 weeks?**

   -4  -3  -2  -1  0  1  2  3  4  
   decrease  remain  increase
dramatically  unchanged  dramatically

3. **To what extent do you expect your thoughts that contribute to your panic attacks to change over the next 12 weeks?**

   -4  -3  -2  -1  0  1  2  3  4  
   decrease  remain  increase
dramatically  unchanged  dramatically

4. **To what extent do you expect the amount that you avoid anxiety provoking situations to change next 12 weeks?**

   -4  -3  -2  -1  0  1  2  3  4  
   decrease  remain  increase
dramatically  unchanged  dramatically
Appendix F. Videotape Script.

Disclaimer: This video-tape was designed to teach individuals about panic disorder, and shows a simulated therapy session. The client in this tape is not an actual panic attack sufferer, nor is she in treatment with the therapist presented here.

Th: I wanted to talk to you today about two things. First, I want to explain to you what a panic attack is, and what causes them. Second, I want to show you a technique that you can use as a relaxation technique to help prevent panic attacks, and that you can also use to help prevent small attacks from developing into larger attacks.

Cl: O.K., sounds good.

Th: First, I want to talk about what panic attacks are and what causes them. Panic attacks are sudden and dramatic increases in arousal. These increases in arousal are frequently accompanied by a number of different physical symptoms and thoughts. Physical symptoms may include shortness of breath, accelerated heart rate, numbness or tingling sensations, chest pain or discomfort, dizziness, nausea, and trembling. Thoughts may include a fear of dying, or a fear of going crazy or doing something uncontrolled. Are any of these symptoms familiar to you?

Cl: Yes, my most powerful symptom is feeling like I cannot get a breath; I also get tingling sensations that go down my arm. Then my heart starts racing, and I sometimes begin to feel a little dizzy. I feel like I need to escape whatever situation I am in. It seems like the more I try to fight these symptoms, the worse it gets.

Th: The most common symptoms in panic attacks are problems with breathing, which are caused at least in part by a tightening of the muscles of the chest, making it harder to get a deep breath. Individuals then tend to try to compensate
by hyperventilating. This means they begin to breathe very rapidly, and essentially overbreathe, like this:

THERAPIST DEMONSTRATES OVERBREATHING

People who hyperventilate often breath through their mouths, take short shallow breaths, or sigh frequently. They are often not even aware that they are doing this. When we hyperventilate, we may often feel dizzy, or lightheaded, as you described.

Sometimes these symptoms can lead to a viscous cycle that may be bring on a full-blown panic attack. An individual feels anxious, which makes him overbreathe, which in turn brings about symptoms that make him feel anxious, that makes him overbreathe, etc., etc. Has that ever happened to you?

Cl: Yes it has, and it is very frightening.

Th: I am going to show a technique that can help you to relax and to better control your breathing, but first, lets talk further about how panic attacks occur, and what causes them.

Panic attacks are frequently unexpected and often come on when individuals are in a state of relaxation. The reaction is so powerful that individuals become sensitive to whatever situation of stimulus they encountered during the attack. Thus, when they reencounter this situation they react with fear again, and anticipate that they will have another attack. Once you begin anticipating panic attacks, the frequency and severity of your attacks is likely to increase. This is a natural result of the increase in your overall level of tension caused by your anticipation and by hypervigilance in looking for signs that you are about to have an attack.
For example if an individual experiences their first panic attack while driving a car, from that point their anxiety level may increase when they drive. This anxiety alone may lead to another panic attack. We call this process of associating a specific situation with fear a learned action. Once you begin anticipating panic attacks, the frequency and severity of your attacks are likely to increase.

Sometimes people who have panic attacks in specific situations will begin to avoid those situations. So they may avoid driving their car, or going to parties, or getting on planes. This avoidance is called agoraphobia, and in severe cases people can become housebound.

Panic attacks are caused by a complex interaction of genetics, neurophysiology, learned reactions, and acute stressors. We know that panic attacks run more in families than in the general population. We also know that they tend to occur more often when people are under some kind of stress. More recently, one theory is that panic attacks are a physical reaction caused by a misfiring of the trigger that turns on the fight or flight mechanism. This is the mechanism of arousal that all animals have. It misfires and signals that there is a dangerous situation when there isn’t one. That is this flaw in the way that we are “wired” that may cause anxious symptoms.

Do you have any questions about what a panic attack is, and what causes them?

Cl:  No, I understand better now.

Th:  O.K., then I want to demonstrate a simple technique to you today that has been shown to be quite effective in helping people who have panic attacks. It is called diaphragmatic breathing.
By learning diaphragmatic breathing, we can help you to get out of the panic cycle that we talked about earlier. Diaphragmatic breathing slows down your breathing so you don’t hyperventilate and also helps to relax your body. It is also a good relaxation technique to use even when you are not feeling panicked.

Take a couple of minutes to observe your breathing. Does your stomach rise as you inhale with your chest rising afterward?

CLIENT PAUSES AND FOCUSES ON BREATHING

It is really a simple technique to use. All you do place your left-hand over the upper part of your stomach above your navel and concentrate on making your stomach rise before your chest like this.

THERAPIST DEMONSTRATES TECHNIQUE

Many people also find it helpful to breathe through their nose. You are less likely to hyperventilate if you breathe through their nose. Now you try it.

CLIENT TRIES TECHNIQUE.

Good job. Your goal should be to breathe, while at rest, between 9 and 16 times per minute.

Now I want to try to bring on a few of you anxious symptoms, and try the technique.

THERAPIST HELPS TO INDUCE PANIC SYMPTOMS AND CLIENT USES TECHNIQUE SUCCESSFULLY

Now you should practice this technique frequently to get good at it. This means at least three times a day for 10 minutes. No quiet place of comfortable chair is needed. You can practice it while driving your car or working at your desk, in a crowd of people, or by yourself. These exercises should prove especially helpful when your chest is feeling tight and when you feel you cannot get a full breath. I
also want you to practice this technique by bringing on some anxious symptoms and then bringing them under control using this technique like we did today. This will help you to feel that you can control your panic symptoms when they begin to occur.

Many panic attack sufferers report that this is their favorite technique to use because it is so easy to apply and its effects are immediate.
Appendix G. Reading assessment questionnaires at Weeks 2 and 4.

Are they reading?

Subject # ________

Week 2.

1. How much of the book have you read?

2. Describe (name) as many coping strategies as you can recall that are mentioned in the book.

3. Describe (name) some of the causes of panic mentioned in the book.

4. Describe the anticipatory response.

5. Describe the avoidance response.

Are they reading?

Subject # ________

Week 4.

1. What is cognitive distraction?

2. What is a catastrophic cognition?

3. Describe what "sequencing your strategies" means.

4. Describe the circular thinking underlying avoidance strategies.

5. What strategies should one use to get over avoidance?
Curriculum Vitae

Robert Andrew Gould

Current Address:
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(617) 734-1636

Date and Place of Birth:
May 9, 1960  Worcester, Massachusetts

Marital Status:
Married (Bonnie Louise MacDonald)

Education:
1993  Brown University Internship Consortium  Psychology
1993  Ph.D.  Virginia Tech (upon completion of Internship) Psychology
1989  M.S.  Virginia Tech  Psychology
1984-1985  University of Pennsylvania  Psychology
1978-1982  B.A.  Davidson College  Psychology

Areas of Specialization:
Treatment of Anxiety and Affective Disorders
Prevention and Health Promotion

Professional Associations:
American Psychological Association
Association for the Advancement of Behavior Therapy

Employment:
1992  National Center for Post Traumatic Stress Disorder, Boston VAMC, Boston, MA. Research consultant on a study investigating physiological responsivity to traumatic stressors in Vietnam combat veterans with PTSD. Primary responsibilities included running statistical analyses using SPSS-X.

1989-1991  Virginia Tech Anxiety Disorders Project, Blacksburg, VA. Therapist researcher for two studies. One study investigating the effectiveness of cognitive and behavioral treatment strategies for panic disordered individuals. A second study assessing the effectiveness of teaching problem solving strategies to suicidal college students.

1989-1990  Saint Albans Hospital, Radford, VA. Psychology extern. Performed individual and group psychotherapy for adult inpatient and outpatient psychiatric patients. Performed a research study on the
effectiveness of treatment components in the Cognitive Therapy program.

1989  
**Teradyne, Inc.** Boston, MA. Consultant. Organized and taught a weight-loss group for employees using cognitive and behavioral techniques.

1987-1990  
**Federal Mogal, Inc.** Blacksburg, VA. Consultant. Organized and lead weight-loss groups and competitions for employees that utilized cognitive and behavioral techniques.

1987  
**Veterans Administration Medical Center.** Boston, MA. Researcher. Investigated the use of a PTSD subscale for the MMPI-AX among psychiatric inpatients.

1986-1989  
**Department of Psychology, Virginia Polytechnic Institute and State University.** Blacksburg, VA. Teaching assistant. Responsibilities included lecturing, grading papers and exams, and administering exams.

- **Supervisors:**
  - Neil Bohannon, Ph.D.
  - Albert Prestrud, Ph.D.

- **Psychology:**
  - Jack Finney, Ph.D.
  - Caryn Carlson, Ph.D.
  - Caryn Carlson, Ph.D.
  - Joseph Germana, Ph.D.

1985-1986  
**University of Pennsylvania School of Medicine, Department of Psychiatry.** Philadelphia, PA. Research Assistant for the Obesity Research Group. Involved in all facets of research including collecting data, running studies, writing and editing scientific papers, and performing statistical analyses.

1982-1984  
**Horizon House, Inc.** Philadelphia, PA. Psychological counselor. Provided individual psychotherapy, ran communication skills and stress-management groups, and coordinated adjunct psychosocial services.

**Clinical Experience:**

1992-1993  
**Brown University Internship Consortium.** Rotations in PTSD Outpatient/Substance Abuse Inpatient, Providence VAMC Supervisors: James Curran, Ph.D., William Unger, Ph.D. Suzy Bird Gulliver, Ph.D.

Affective Disorders Inpatient Unit, Butler Hospital Supervisors: Gabor Keitner, M.D., Ivan Miller, Ph.D.
Behavioral Medicine; Providence VAMC
Supervisors: John Wincze, Ph.D., Alan Sirotz, Ph.D.
Scott Haltzman, M.D.

1989-1990
Saint Albans Hospital, Radford, VA. Clinical extern in the Cognitive Therapy Program. Responsible for running the cognitive therapy, socialization, and problem solving groups, performing psychological testing and evaluations, and providing individual therapy to inpatients.

1986-1990
Virginia Tech Psychological Services Center, Blacksburg, VA. Graduate Therapist. Provided outpatient treatment services to individuals and families presenting with a variety of psychological disorders, under direct supervision of clinical staff. Use of behavior therapy, psychotherapy, and family intervention techniques.

1988
Division of Forensic Psychology, Department of Mental Health, State of Massachusetts. Graduate therapist/extern. Conducted clinical forensic mental health evaluations concerning psychological functioning and assessment of need for treatment services. Assisted in conducting clinical forensic mental health evaluations concerning civil commitment, competency to stand trial, criminal responsibility, aid in sentencing, and drug and alcohol petitions. Evaluated children and their families for Juvenile Probation Departments. Provided written evaluations for the Court.

1987
Veterans Administration Medical Center, Boston, MA. Evaluated and tested veteran inpatients presenting with a variety of psychological complaints. Testing instruments included the SCID, MMPI-AX, Mississippi Scale for Combat-Related PTSD, Jackson Interview, and the Dallas Problem Solving Inventory.

Research Experience:

Dissertation:
1991
Self-help Approaches to the Treatment of Panic: A Treatment Outcome Study. Principal Investigator. Investigating the use of self-help treatment components that include videotape, audiotape and bibliotherapy materials to treat panic disordered individuals.

Research Study:
1991

Research Study:
1990
The Use of Bibliotherapy in the Treatment of Panic: A Treatment Outcome Study. Principal Investigator. A comparison of bibliotherapy and individual therapy treatment approaches to panic disordered adults.
Research Study:
1990  An Experimental Investigation of the Relationship between Panic Expectancy and Agoraphobia. Investigated the reciprocal roles of panic expectancy and avoidance behaviors.

Masters Thesis:
1988-1989 The Use of Multiple Measures, Repeated Feedback, Goal Setting, Shaping, and Nutrition Education to Lower Serum Cholesterol Levels in Males. Principal Investigator. Investigated the use of multiple change strategies to alter dietary behaviors and lower cholesterol levels in males at risk for cardiovascular disease.

Research Study:

Research Study:
1988-89 Nutritional Purchases. Assisted in an investigation of the use of an interactive video system in supermarkets to increase shopper's low-fat and decrease their high-fat food purchases.

Research Study:
1987-1988 Chronic Tension Headache. Assisted in an investigation of the use of biofeedback in the treatment of chronic headache sufferers. Developed relaxation tapes and was a therapist to subjects who were headache sufferers.

Research Study:
1987 PTSD. Assisted in an investigation of the use of a PTSD subscale for the MMPI. Developed a system for recruitment of subjects in a Veterans Administration Hospital. Tested subjects and analyzed results.

Research Study:
1986 Family Communication/AIDS Project. Assisted in an investigation of how parents communicate with their children about sexual issues Conducted assessment interviews with parents and teens.

Research Study:

Research Study:

Publications:


**Presentations:**


