GROUP TREATMENT OF NONCLINICAL PANIC ATTACKS
IN LATE ADOLESCENCE: A COMPARISON OF
EDUCATION/SUPPORT AND COGNITIVE-BEHAVIORAL APPROACHES

by

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Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

in
Psychology

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February, 1997
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KEY WORDS: panic attacks, group treatment, late adolescence
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(Abstract)

Nonclinical panic attacks have been defined as "panic reported by individuals not seeking treatment" (Norton, Cox, & Malan, 1992). The purpose of this study was to assess the prevalence of nonclinical panic attacks and associated symptomatology in a university sample of 576 late adolescents (ages 18-19), and to compare the effectiveness of two group treatments [Education/Support (ES) and Cognitive-Behavioral (CBT)] and a self-monitoring Waitlist (WL) condition in reducing the frequency and severity of nonclinical panic attacks, daily anxiety, and associated symptomatology. Nonpanickers (71.4% of the sample) reported no history of panic on the Panic Attack Questionnaire (PAQ; Cox, Norton, & Swinson, 1992). Past Panickers (16.5%) reported at least one panic attack prior to the past month. Recent Panickers (12.2%) reported at least one panic attack in the past month. Recent Panickers evidenced higher levels of trait anxiety, state anxiety, and depression, with a trend toward higher levels of anxiety sensitivity and internal negative attributions, relative to both Past Panickers and Nonpanickers, who did not differ. Thirty-four Recent Panickers were randomly assigned to the WL, ES, or CBT conditions. The entire sample, regardless of condition, showed a reduction in frequency of panic attacks, as well as their associated symptoms and cognitions, severity of daily anxiety, and three measures of general psychopathology (i.e., depression, trait anxiety, and state anxiety). However, both active treatment groups were superior to the waitlist in producing improvement in panic-related self-efficacy, avoidance, and anxiety sensitivity.
There was evidence that ES was slightly more effective than CBT in improving panic-related self-efficacy, while CBT was somewhat more effective in reducing avoidance. Finally, while both treatment conditions combined fared significantly better than the waitlist in producing high endstate functioning, assessed via a constellation of variables conceptually related to panic (i.e., panic-free status, high panic-related self-efficacy, low avoidance, low anxiety sensitivity), ES appeared most effective in promoting high endstate functioning at Post-Treatment and Follow-Up (two months following treatment). Implications of these findings for the treatment of nonclinical panic attacks in late adolescence are discussed.
Acknowledgements

I wish to thank several people who contributed their time, wisdom, and encouragement to make this project possible. First, I would like to thank Dr. Tom Ollendick who has continuously set an invaluable example for me of what it means to be a true teacher, researcher, and psychologist. His guidance throughout the course of this project as well as my other endeavors has both supported and challenged me, and his dedication to his work and students has been an inspiration. I could not have wished for a better mentor. Thank you also to Dr. George Clum, Dr. Jack Finney, Dr. Russell Jones, Dr. Ellie Sturgis, and Dr. Sandy Zeskind for the wisdom and expertise they brought to this project, the time spent reviewing this work, and their valuable suggestions and questions which helped shape the design and encouraged me to think more critically as a scientist and researcher. I also wish to thank Cindy Koziol for her kindness, expertise, and constant willingness to help with all of the critical details.

To my wonderful fellow graduate students who gave of their time and talents to help make this project a reality - words cannot begin to express how grateful I am. I would like to thank Chris Rock whose organizational efforts played a key role in the success of this project and were appreciated by many. You are a true friend. Thank you to Tim Butcher, Lisa Curtin, Greg Febbraro, Chuck Gulotta, Katie Ingman, and Laura Seligman, who served as therapists, as well as Devin Byrd, Amanda Goza, Chris Rock, and Cheri Weeks, who conducted assessments. Your talent and dedication were appreciated, not only by me, but by the individuals who participated in the project. In the words of one participant, "The administrators of this project were very good and should be highly praised." Thank you also to my research assistants, whose work coding treatment tapes, entering data, and administering questionnaires was much appreciated. I would also like to acknowledge the participants themselves, whose time and effort extended my own understanding of anxiety, late adolescence, and ways to help.
Finally, I'd like to thank my parents, sisters, and grandparents, for their enthusiasm and encouragement, not to mention the unconditional love which has never failed to support me. Thank you also to my wonderful graduate school friends, particularly my cruise buddies, Lisa, Katie, and Diana, who became like a second family to me and whose support and friendship have made these years unforgettable.

This work is dedicated to my little dog, Brandy, who has been my constant companion from the beginning, and to my husband, Erick, for his eternal patience, love, and support...thank you.
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Introduction

A panic attack is defined in the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV; American Psychiatric Association, 1994) as a discrete period characterized by the sudden onset of intense fear, apprehension, or discomfort which is accompanied by at least four of 13 somatic or cognitive symptoms (i.e., palpitations, sweating, trembling or shaking, sensations of shortness of breath or smothering, feeling of choking, chest pain or discomfort, nausea or abdominal distress, dizziness or lightheadedness, derealization or depersonalization, fear of losing control or going crazy, fear of dying, paresthesias, and chills or hot flushes). Onset is described as sudden, with an attack building rapidly to a peak (i.e., within 10 minutes) and often accompanied by feelings of impending doom and an intense desire to escape. Attacks meeting the above criteria but having fewer than four symptoms are designated as limited-symptom attacks.

The DSM-IV identifies three types of panic attacks which may occur across a variety of anxiety disorders. Unexpected or uncued panic attacks are not associated with a situational trigger and thus occur spontaneously or "out of the blue"; situationally bound or cued panic attacks almost always occur immediately upon exposure to, or in anticipation of, a situational trigger (e.g., seeing a spider immediately triggers an attack); and situationally predisposed panic attacks are more likely to occur upon exposure to a situational cue although they lack an invariable association with the cue and do not always occur immediately upon exposure (e.g., attacks are more likely to occur while flying, but the individual does not always have a panic attack in this situation or he/she may experience a panic attack an hour after take-off). The experience of recurrent unexpected panic attacks is a criterion for the diagnosis of panic disorder (with or without agoraphobia), although situationally predisposed panic attacks are also common in this
disorder. Situationally bound panic attacks are most typical of social and specific phobias (American Psychiatric Association, 1994).

In a discussion of past and current definitions of panic, Barlow, Brown, and Craske (1994) compared DSM-III-R (American Psychiatric Association, 1987) and DSM-IV definitions of both panic attacks and panic disorder. They noted many similar features (e.g., the requirement of a 10 minute rise time for a panic attack and the presence of four of 13 symptoms), as well as a critical difference in DSM-IV's recognition that panic attacks are not limited to panic disorder. Specifically, DSM-IV has removed the criteria for panic attacks from the panic disorder category and placed it at the beginning of the anxiety disorders section. The different types of panic attacks defined in the DSM-IV promote further understanding of the differential relationships between panic attacks and situational cues across various disorders, including panic disorder.

Considering the diagnosis of panic disorder, Barlow and colleagues (1994) noted that, rather than including a panic frequency criterion for panic disorder (the DSM-III-R requires four attacks within a four-week period, or at least one attack followed by at least a month of persistent fear of having another), the DSM-IV requires recurrent unexpected panic attacks, with at least one of the attacks followed by at least one month of persistent concern regarding future attacks, worry about implications or consequences of the attack (e.g., losing control), and/or significant behavior change associated with the attacks. For a diagnosis of panic disorder, the attacks must not be better accounted for by another disorder (e.g., social phobia, posttraumatic stress disorder) and must not be due to the physiological impact of a substance or a general medical condition.

Finally, an interesting difference exists between DSM-III-R and DSM-IV descriptions of age at onset for panic disorder. The DSM-III-R describes age at onset as variable, with the disorder most commonly beginning in the 20s or 30s. The DSM-IV indicates that, while age at onset varies, it typically occurs between late adolescence and the mid-30s,
with the possibility of a bimodal distribution (i.e., the first, larger peak occurring in late adolescence and a smaller peak evident in the mid-30s). Neither edition of the diagnostic manual provides age at onset information for panic attacks per se.

Nonclinical Panic: Prevalence and Characteristics

Norton, Cox, and Malan (1992) have defined nonclinical panic attacks as "DSM-III and DSM-III-R-defined panic reported by individuals not seeking treatment" (Norton et al., 1992, p. 122). In their review of the literature on nonclinical panickers (NCPs), these authors reported on findings regarding prevalence, symptomatology, psychopathology, family history of panic attacks, and psychophysiological responses to challenges. They concluded that reported prevalence of nonclinical panic varies depending on definitions and methods of assessment. For instance, in six studies which used structured interviews (and required at least one spontaneous attack), an average of 12.8% of individuals assessed reported experiencing panic attacks within a period of one-year. However, an average of 30.4% was reported for studies utilizing questionnaires. Norton et al. (1992) suggested that such differences may be due, at least in part, to varying definitional requirements across studies (i.e., the requirement of at least four symptoms; the requirement of at least one spontaneous attack; and the nature of the screening questions used to determine the presence of attacks).

Norton and colleagues (1992) examined panic attack symptomatology across studies of NCPs. They reported highly consistent rank orders of severity across studies for specific symptoms, noting particular consistency for those symptoms rated highest (palpitations, trembling, and sweating) and lowest (paresthesia and choking) in severity. Based on these data, Norton and colleagues concluded that "NCP is a stable, reliable phenomenon which is similar to the anxiety reported by clinical panickers" (Norton et al., 1992, p. 130). Comparison of symptom profiles revealed NCP to be most similar to the panic symptom patterns of social phobics and agoraphobics with panic attacks and least
similar to simple phobics and generalized anxiety disorder patients. Norton and colleagues (1992) reported that NCPs differ from panic disorder patients in that they are less likely than the patients to report spontaneous attacks and fear of dying or going crazy during attacks. They conjectured that such factors may lead individuals with agoraphobic and panic disorder to perceive their attacks as more unpredictable and catastrophic relative to NCPs.

Norton et al. (1992) reported that NCP's scores on most measures of psychopathology (e.g., depression, trait anxiety, anxiety sensitivity) fall in an intermediate range between clinical panickers and nonpanickers. They suggested that familial mechanisms may be similar across both NCP and clinical panic, as the proportion of family members evidencing panic has not been found to differ for clinical and nonclinical panickers. Finally, these authors stated that it is difficult to draw conclusions regarding psychophysiological changes in NCPs in response to various challenges (e.g., hyperventilation, imagery), although findings suggest that NCPs evidence greater physiological responsivity in response to some challenges relative to nonpanickers.

Several studies examining the prevalence and characteristics of nonclinical panic will be reviewed below. Emphasis will be placed on the period of adolescence/young adulthood, as the DSM-IV describes late adolescence as the initial peak for onset of panic disorder. It is thus likely that the investigation of nonclinical panic in this age group offers an important key to understanding the initial development and progression of panic attacks/disorder.

Nonclinical Panic in Adolescents and College Students

An initial normative study of the prevalence and nature of panic attacks in adolescents was conducted by Warren and Zgourides (1988). These authors administered a panic attack survey to 338 students ranging in age from 12 to 19. The panic attack survey was designed after the authors reviewed previous panic questionnaires (e.g., Norton, Dorward,
& Cox, 1986), and its purpose was to assess variables related to the onset and course of panic disorder and agoraphobia. Sixty percent of the students surveyed reported having had a panic attack, with 16% of the students reporting both cued and uncued panic, 9.7% reporting cued panic only, and 1.5% reporting only uncued panic. The DSM-III (American Psychiatric Association, 1980) criteria for panic disorder was met by 4.7% of the students. This group reported both cued and uncued panic attacks characterized by at least four symptoms, indicated current problems with panic attacks, and reported having had at least three attacks in the previous three weeks.

The symptom most commonly reported by the panickers in the Warren and Zgourides (1988) study was palpitations (reported by 58% of the panickers) followed by trembling or shaking (reported by 50%). Twenty-five percent reported the cognitive symptom of "fear of going crazy, or doing something uncontrolled during the attack," and 23% reported "fear of dying". Mean age at first panic attack was reported as 11.56 (S.D. = 3.8), with a modal age of 13. The panickers reported several situations in which initial panic attacks occurred, including circumstances involving "risk of physical danger," speaking/performing, and taking tests. Interpersonal conflict, loss, and grade concerns were reported as antecedents to initial attacks.

Asked to respond to a list of items regarding reactions to their initial attack, 98% of panickers endorsed avoidance tactics (e.g., forgetting about it, avoiding situations associated with panic, using substances to deal with anxiety), while 30% indicated talking with a friend, 26% talked with a professional (e.g., doctor, counselor, teacher), and 3% sought information or education regarding panic attacks. Only 24% reported fear that, subsequent to their first panic attack, they would experience future attacks. Asked to rate the intensity and frequency of fear or worry regarding future panic attacks, 32% of all panickers reported no intensity, 23% reported mild fear, 31% moderate, 10% severe, and 4% very severe. Frequency ratings of fear/worry regarding attacks were as follows: 40%
not at all, 44% once per week, 10% more than once per week, 4% almost daily and 2% almost all the time. Current problems with panic attacks were reported by 29% of the panickers. Based on their data, Warren and Zgourides made several suggestions regarding intervention strategies, including "education about the phenomenon of panic, stress management, (and) social and interpersonal problem solving" (Warren & Zgourides, 1988, p. 112). They also recommended incorporation of the cognitive model and similar approaches.

Macaulay and Kleinknecht (1989) studied the prevalence and nature of panic attacks in a sample of 660 adolescents, age 13 to 18. These authors also assessed concurrent depression, psychosocial stressors, and social support in this group. Participants completed a revised version of the Panic Attack Questionnaire (PAQ; Norton et al., 1986; Norton, Harrison, Hauch, & Rhodes, 1985) as well as the Center for Epidemiologic Studies-Depression scale (CES-D; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Of the respondents, 400 (63.3%) indicated experiencing one or more panic attacks in the previous year. The sample was divided into the following four groups based on self-reported frequency, severity, and distress: no panic (35.7%), mild panic (47.5%), moderate panic (10.4%), and severe panic (5.4%). The mild panic group evidenced significantly fewer attacks (M = 2.0 in the previous four weeks) relative to the moderate and severe groups, which did not differ from each other (Ms = 3.2 and 3.7 respectively). Median and modal age at first panic attack was 13 years, with a mean of 12 years. Age at initial panic attack did not differ as a function of gender or panic group. However, females were more likely than males to be in the severe group.

Symptomatology, situations associated with panic attacks, and differences between individuals experiencing cued versus uncued attacks were also assessed in this study. Participants were asked to endorse symptoms they had experienced and to rate the intensity of each (0 = none; 1 = mild; 2 = moderate; 3 = severe; 4 = very severe).
Racing heart, trembling, and sweating each received a mean intensity rating of 2 or greater. The mild group reported significantly less intensity for all symptoms relative to the moderate and severe groups.

Panickers were asked to endorse all situations in which they had evidenced an attack as well as the situation in which they experienced their first attack. The most commonly endorsed situations were: walking alone (52.1%), periods of high stress (51.0%), speaking or acting (48.7%), tests (38.8%), and loss of important other (36.3%). Uncued attacks were reported by 27.8% of the panickers. Walking alone (11.6%), speaking or acting (5.9%), and loss of important other (5.9%) were most frequently associated with initial panic attacks. Participants who experienced uncued panic attacks reported more severe panic relative to those who reported only cued attacks. Those who evidenced uncued panic also indicated greater change in lifestyle, higher frequency of attacks, more severe symptoms, and higher levels of depression. However, individuals experiencing only cued attacks were no different in their ability to terminate an attack relative to uncued panickers.

Finally, Macaulay and Kleinknecht (1989) reported comorbidity between panic and depression in their sample. Individuals in the severe panic group received a mean score of 25.3 on the CES-D, indicating clinically significant levels of depression. This group did not differ from the moderate group ($M = 22.7$) although both were significantly different from the mild ($M = 18.1$) and nonpanic ($M = 14.6$) groups which also differed from each other. Participants were also asked to rate their level of stress associated with school and family, as well as degree of support received from family and friends. Multiple regression analysis revealed that severity of panic, defined by panic group membership, was significantly and positively predicted by self-reported depression scores, perceived stress from family, gender (with females evidencing greater severity than males), and school stress, and inversely related to support from family members.
Macaulay and Kleinknecht (1989) concluded that, given the prevalence of panic attacks among adolescents, there is a need for identification of panickers in this age group and for the provision of appropriate intervention.

Hayward, Killen, and Taylor (1989) interviewed a sample of 95 ninth graders, aged 14 to 16, with the purpose of determining the lifetime prevalence of panic attacks and assessing the relationship between panic and both depression and substance use in adolescents. Participants completed a questionnaire containing items regarding ethnicity, parents' marital status, and substance use as well as the depression scale from the SCL-90-R (Derogatis, 1983). The panic disorder section of the Structured Clinical Interview for DSM-III-R Disorders (SCID; Spitzer, Williams, & Gibbon, 1987) was administered.

Of this sample, 11.6% reported experiencing at least one four-symptom panic attack, encompassing 17.4% of the girls and 6.1% of the boys. In addition, 3.2% of the sample, all boys, were identified as having experienced one or more limited symptom attacks. The incidence of divorced or separated parents was significantly higher among panickers than non-panickers (61% vs. 29%) as was the tendency to have engaged in cigarette use (77% vs. 48%). The panickers also reported significantly higher levels of depression on the SCL-90-R than the non-panickers, leading the authors to note the likelihood of comorbidity between panic attacks and depression in adolescents.

While the above investigations studied panic attacks in American adolescent samples, King and his colleagues have investigated the prevalence, symptomatology, and characteristics of panic attacks in Australian adolescents (King, Gullone, Tonge, & Ollendick, 1993; King, Ollendick, Mattis, Yang, & Tonge, 1996). King and colleagues (1993) administered a Panic Attack Questionnaire similar to that used by other investigators (e.g., Macaulay & Kleinknecht, 1989; Norton et al., 1985; Warren & Zgourides, 1988) and the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) to 534 Australian adolescents, aged 13 to 18. Of this sample, 42.9%
reported having had a panic attack at some point in their lives. A significant relationship between sex and reports of panic was not found, although a greater proportion of females than males reported having had a panic attack (47.1 and 39.3%, respectively). Similarly, no significant age differences were found, with 46.3% of 13-15 year-olds and 39.9% of 16-18 year-olds reporting having experienced at least one panic attack.

The majority (68.6%) of those reporting panic indicated that their attacks took less than 10 minutes to reach maximum intensity, and 60.3% reported that attacks lasted 0 to 10 minutes. The four most frequently endorsed symptoms were pounding heart (70.8%), trembling or shaking (53.1%), sweating (38.1%), and nausea (33.6%). Ratings of life interference caused by panic attacks revealed that most adolescent panickers perceived their attacks as causing little interference, with only 6.8% indicating "quite a bit" or "very much" life interference. However, 16-18 year-olds evidenced significantly higher mean interference ratings than younger adolescents. Of the panickers, 25% reported avoidance of particular situations (e.g., giving a speech, being alone at night, going to the hospital) because they feared having a panic attack. Finally, panickers reported a significantly higher level of anxiety on the RCMAS than nonpanickers, and females reported more anxiety than males. King and colleagues (1993) suggested that high levels of anxiety in adolescence may be a risk factor for the development of panic.

In a study aimed at investigating the prevalence, symptomatology, and associated features of panic attacks in adolescents not seeking treatment (i.e., nonclinical panic), King and colleagues (King et al., 1996) administered the Panic Attack Questionnaire for Adolescents (Macaulay & Kleinknecht, 1989), the RCMAS, the Fear Survey Schedule for Children - Revised (FSSC-R; Ollendick, 1983), and the Children's Depression Inventory (CDI; Kovacs & Beck, 1977) to a sample of 649 unselected Australian youth, aged 12 to 17. Of this sample, 35.9% reported having experienced a panic attack at some point in their lives, and 16.33% met DSM-III-R criteria for full-blown panic attacks.
Females were more likely than males to report full-blown panic attacks (66.35% of those meeting criteria for nonclinical panic attacks were female), while age was unrelated to reports of panic. The average number of attacks reported in the past year by nonclinical panickers was 5.12 (S.D. = 3.39), while the average number of attacks in the previous four weeks was 2.59 (S.D. = 2.37). The majority of nonclinical panickers (58.87%) reported that their attacks lasted 0 to 10 minutes, and the most frequently endorsed symptoms were trembling (86.5%), pounding heart (78.8%), dizziness/faintness (79.8%) and sweating (75.0%). The most frequently endorsed situations associated with panic attacks were separation from someone important (42.3%), walking alone at night (39.4%), during tests (38.3%), and being watched/stared at (37.5%). Unexpected panic attacks were reported by 21% of the panickers.

Panickers reported significantly less family support and significantly more family associated stress and pressure than nonpanickers. In addition, significantly higher levels of anxiety, depression, and fear were reported by panickers than nonpanickers, and girls evidenced higher scores than boys on each of these constructs. Anxiety, depression, fear, and perceived stress from family contributed significantly to the prediction of number of symptoms and panic group status, with sex contributing marginally. Support from family was inversely related to panic group status and contributed marginally to the prediction of this variable. Finally, path analysis revealed that sex and family support, as well as anxiety, depression, and fear, had meaningful influences on panic symptomatology. The authors concluded that, given the fairly high prevalence of panic attacks in their nonclinical adolescent sample, we should be alert to the presence and potential clinical implications of panic attacks in this population.

In addition to studies investigating nonclinical panic in adolescents, research exists which investigates this phenomenon in college students. Norton, Cairns, Wozney, and Malan (1988) administered a revised version of the Panic Attack Questionnaire (PAQ;
Norton et al., 1986), the Hopkins Symptom Checklist (HSCL; Lipman, Covi, & Shapiro, 1979), the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) to 358 undergraduate students ranging in age from 17-50, with a mean age of 20.8 years (median = 19.0). Participants were divided into the following five groups based on panic attack frequency, number and severity of symptoms, and number of attacks occurring in the three weeks prior to completing the PAQ: 1. Non-panickers (NP) - no panic attacks reported in the past year (50% of participants); 2. Limited Symptom Panickers (LP) - reported experiencing panic, but did not meet four-symptom criteria (10% of participants); 3. Infrequent Panickers (IP) - reported experiencing at least one panic attack in the past year, but none in the three weeks prior to completing the PAQ (15% of participants); 4. Recent Panickers (RP) - reported one or two panic attacks in the previous three-week period (19% of participants); 5. Frequent Panickers (FP) - reported experiencing at least three panic attacks in the previous three-week period (6% of participants). Participants in the IP, RP, and FP groups reported at least four symptoms with a severity rating of two or higher on a four-point scale.

Analysis of the self-report measures revealed that the RP and FP groups scored significantly higher than the NP and LP groups on the majority of the HSCL-90 scales, the STAI, and the BDI. The IP group scored significantly higher than the LP group on the majority of the HSCL-90 scales and the Trait scale of the STAI, while scoring significantly lower than the RP and FP groups on two scales of the HSCL-90 (i.e., Obsessive-Compulsive and Agitated Depression) and Trait Anxiety. IP participants scored significantly higher than NP participants on the Agitated Depression scale of the HSCL-90. Analysis of participants' ratings of severity for 18 panic symptoms revealed that all but Choking and Fear of Dying differed significantly across the four panic groups. The LP group scored significantly lower than the other groups on the remaining
symptoms with the exception of Chest Pain and Faintness which did not differ between the LP and IP groups. Difficulty concentrating was the only symptom which showed differences between the IP, RP, and FP groups, with FP participants scoring significantly higher than IP participants. LP and IP participants reported significantly fewer attacks than RP and FP participants, and FP participants reported more attacks than RP participants. The IP, RP, and FP groups reported significantly longer duration for attacks, while the LP group reported less distress and lifestyle change associated with attacks. Finally, FP participants perceived their attacks as more serious and reported greater lifestyle change compared to other groups. They were also more likely than LP and IP participants to have sought treatment. The authors concluded that their data support a "spectrum of severity" of psychopathology among individuals who report panic attacks (Norton et al., 1988, p. 328).

Telch and colleagues (Telch, Lucas, & Nelson, 1989) also explored the prevalence and symptomatology of nonclinical panic in college students, aged 16 to 50 years (mean = 18.8 years, S.D. = .05). Participants completed an anxiety questionnaire (AQ) designed by the authors to gain information relevant to diagnostic criteria for panic disorder (e.g., the experience of an unexpected panic attack, frequency of panic attacks, symptoms associated with attacks). The Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1987) was also administered. Of this sample, 12.29% reported experiencing at least one unexpected panic attack in their lifetime, with 7.45% reporting the presence of at least four symptoms during one or more attacks. The percentage reporting at least three attacks in a 3-week period was 3.12%, and 1.81% reported at least four attacks in a 4-week period. No significant sex differences were evident among these rates of panic, nor on any of the panic symptoms. The four most commonly endorsed symptoms were palpitations, trembling, sweating, and shortness of breath, and individuals meeting DSM-III criteria for panic disorder (PD participants) were more likely to endorse each of the
symptoms, with the exception of palpitations, choking, and flushes. Differences between PD participants and those who reported panic but did not meet criteria for panic disorder (infrequent panickers) were most prominent for the symptoms of "fear of dying" (51.8% vs. 17.8%), "fear of going crazy" (64.3% vs. 25.9%), and "derealization" (66.1% vs. 30.5%). Furthermore, PD individuals and women reported significantly more panic symptoms and panic attacks than did infrequent panickers and men. Panic-related apprehension was reported by 22% of all panickers, and was more common among the PD group and among men. Scores on the ASI were significantly higher in the PD group than in the infrequent panic and non-panic groups, which did not differ on the measure. Finally, PD individuals were more likely than infrequent panickers to have consulted a professional regarding anxiety. Telch and colleagues (1989) concluded that "unexpected bouts of panic are surprisingly common among nonclinical populations of young adults" (p. 303). They suggested that the prospective study of these nonclinical panickers, including ongoing monitoring, is a critical step in discovering the causal mechanisms involved in the transition from nonclinical panic to clinical panic disorder.

Cox, Endler, and Swinson (1991) administered the PAQ, the ASI, the BDI, the Endler Multidimensional Anxiety Scales (EMAS; Endler, Edwards, & Vitelli, 1991), and the Fear Questionnaire (FQ; Marks & Mathews, 1979) to 50 outpatients diagnosed with panic disorder with agoraphobia (PDs) and 38 undergraduate nonclinical panickers (NCPs) who reported at least one panic attack with four or more symptoms in the preceding three weeks. NCPs were selected from 275 students who completed the PAQ. Of this group, 76 (27.6%) reported at least one four-symptom panic attack, while 38 of these had one or more attacks in the past three weeks and were included in the study. The mean age of the PDs was 34.4 years (S.D. = 11.0 years) while the mean age of the NCPs was 21.1 years (S.D. = 2.3 years). Age was treated as a covariate in the majority of analyses.
PDs reported significantly more panic attacks than NCPs both in the past year (M = 5.6, S.D. = 1.1 vs. M = 2.7, S.D. = 1.8) and in the past three weeks (M = 6.3, S.D. = 3.2 vs. M = 2.4, S.D. = 2.1). Mean severity rating of panic symptoms was larger for PDs than for NCPs, although both groups reported feelings of helplessness as the most severe symptom associated with panic. The five most common symptoms (i.e., palpitations, tachycardia, difficulty concentrating, feelings of helplessness, and dizziness) were also identical across the two groups. Stress was the most common situation associated with panic by NCPs, while PDs reported panic which occurs "out of the blue" as most common. Indeed, a significantly higher proportion of PDs reported unexpected attacks. PDs received significantly higher scores on the BDI, ASI, agoraphobia subscale of the FQ, and daily routines subscale of the EMAS-T. Furthermore, PDs evidenced higher ratings of avoidance behavior, lifestyle restrictions, and subjective distress associated with panic. Cox and colleagues (1991) concluded that, in general, their data supported the existence of a panic-anxiety continuum on which clinical and nonclinical panickers differ quantitatively rather than qualitatively, although some qualitative differences exist (e.g., unexpected panic, agoraphobic avoidance).

Wilson and colleagues (Wilson, Sandler, Asmundson, Ediger, Larsen, & Walker, 1992) also reached the conclusion that the principal difference between clinical and nonclinical panickers is a quantitative one, with clinical panickers evidencing a broader range of symptomatology at higher severity levels. These researchers administered the PAQ, BDI, and the Symptom Checklist-90 (SCL-90; Derogatis, Lipman, & Covi, 1973) to 1,610 undergraduates, aged 17-22 with a mean age of 18.7. Half of the participants completed the original version of the PAQ which provided a DSM-III (American Psychiatric Association, 1980) description of panic, while the other half also read a brief clinical vignette describing the experience of a full-blown panic attack. Of the 805 individuals who read this clinical vignette, 33.4% reported experiencing one or more
panic attacks in the last year. These nonclinical participants were compared with 33 panic disorder patients. The patients reported higher severity ratings for the majority of panic associated symptoms. Cluster analytic procedures were then used to identify nonclinical panickers whose symptom profiles resembled those of panic disorder patients. Of the 269 nonclinical panickers, 56 (an overall prevalence rate of 7.0%) were so classified and assigned to Cluster 1. Cluster 1 participants had significantly higher severity ratings than Cluster 2 participants (panickers whose symptoms profiles did not resemble those of patients) on every symptom, while Cluster 1 did not differ from the patients on any symptom. Cluster 1 participants also reported more panic attacks in the past year which were characterized by more symptoms and occurred in a greater number of situations than Cluster 2 participants. However, the two groups did not differ in their experience of spontaneous attacks, with 21.4% of Cluster 1 and 17.8% of Cluster 2 reporting that their attacks sometimes occurred out of the blue. Cluster 1 participants reported more extensive avoidant behavior and were more likely to have sought professional help and to have engaged in self-medication than Cluster 2 participants. Interestingly, however, treatment seeking was relatively low in both groups, with only 12.5% of Cluster 1 and 2.8% of Cluster 2 participants seeking professional help for panic. Finally, Cluster 1 participants evidenced higher scores on the SCL-90 than Cluster 2 participants and nonpanickers, who were not different from each other. All three groups differed on the BDI, with Cluster 1 receiving a mean score of 17.2, Cluster 2 a mean score of 9.7, and nonpanickers a mean score of 8.4. Based on this first sample, the authors concluded that cluster analysis could be effectively used to identify a subset of nonclinical panickers who show greater levels of psychopathology similar to panic disorder patients.

Wilson and colleagues (1992) cross-validated the above findings with the second sample of undergraduates who took the original PAQ (i.e., without the clinical vignette).
Of this sample, 51.3% reported one or more panic attacks in the past year. Cluster analysis assigned 65 of these participants (8.1% of the total sample) to Cluster 1 and the remaining 43.2% of the entire sample to Cluster 2. As in the first sample, Cluster 1 participants reported more symptoms during attacks, identified more situations in which they had experienced an attack, and reported more extensive avoidance than Cluster 2 participants. However, the groups did not differ in the number of panic attacks reported in the past year. A higher proportion of Cluster 1 participants had sought treatment for panic (10.8% vs. 2.0%), and had engaged in self-medication. Spontaneous panic was also reported by a higher percentage of Cluster 1 than Cluster 2 participants (24.6% vs. 11.8%). Finally, on both the SCL-90 and the BDI, Cluster 1 participants evidenced higher scores than Cluster 2 participants and nonpanicers, who did not differ. Wilson and colleagues concluded that the most striking difference between "clinical" and "nonclinical" panic attacks is a qualitative one (i.e., the general elevation of the symptom profile), and that their results "are of considerable interest in providing a perspective on panic that ties the reporting of attacks by college students to the experience of patients with panic disorder" (Wilson et al., 1992, p. 467).

Whittal, Suchday, & Goetsch (1994) administered the PAQ and the Trait form of the STAI to 311 female undergraduates. Of this sample, 3.22% reported panic attacks consistent with DSM-III-R criteria for panic disorder (i.e., four or more attacks in the past month, most recent attack characterized by at least four symptoms, and a history of spontaneous panic), 40.19% were identified as infrequent panicers, 50.8% were nonpanicers, and 4 participants reported limited symptom attacks. Of the infrequent panicers, 46.4% reported having experienced an unexpected panic attack, while 53.6% had not. Nonpanicers evidenced significantly lower STAI scores than panicers, and significantly fewer nonpanicers reported having a family member with panic than did infrequent panicers (22.9% vs. 51.2%). Similarly, more "clinical" panicers reported
having a family member with panic (70%) compared to both nonpanicers and infrequent panicers. There were no significant differences between expected and unexpected panicers in trait anxiety or family history of panic.

The Treatment of Panic

While there are no known studies which directly examine the treatment of nonclinical panic attacks, particularly in late adolescents, several studies have investigated the treatment of panic attacks in the clinical population. It is hypothesized that these studies provide guidelines for strategies which may also be applicable to the treatment of nonclinical panicers. Several such studies are reviewed below.

Margraf, Barlow, Clark, & Tuch (1993) reviewed current psychological treatments of panic, focusing on the work of four research groups located in different centers in the United States and Europe. The Albany study (Barlow, Brown, Craske, Rapee, & Antony, 1991; cited in Margraf et al., 1993; Barlow, Craske, Cerny, & Klosko, 1989; and Craske, Brown, & Barlow, 1991) compared the following three active treatment conditions to a waitlist control: progressive muscle relaxation, panic control treatment (interoceptive exposure combined with cognitive restructuring; Barlow & Cerny, 1988), and a combination of progressive muscle relaxation and panic control treatment. Interoceptive exposure, as described by Barlow and Cerny (1988), consists of exposure to both feared situations (e.g., crowded places) and bodily sensations (e.g., hyperventilation) both in imagery and in vivo. Participants were 56 patients diagnosed with panic disorder (age range= 32-38 years). Treatment was conducted via individual therapy sessions held once per week for 15 weeks. A variety of outcome measures, including the State-Trait Anxiety Inventory (Spielberger et al., 1970), the Beck Depression Inventory (Beck et al., 1961), the Fear Questionnaire (Marks & Matthews, 1979), the Hamilton Anxiety and Depression Scales (Hamilton, 1959, 1960), frequency of panic attacks, and a composite measure of endstate functioning, revealed that all three treatments resulted in significantly more
improvement than the waitlist. Furthermore, the two conditions which included panic control treatment evidenced significantly more panic-free participants following treatment that did the progressive muscle relaxation condition and the waitlist. At 6- and 24-month follow-up, a significantly higher percentage of participants in the panic control and combined treatment conditions were panic-free compared to the progressive muscle relaxation condition (at 6-months the percentage of panic-free participants was 14.3, 62.5, and 50%, while at 24-months the percentage was 35.7, 81.3, and 42.9% for progressive muscle relaxation, panic control, and combined treatment conditions, respectively).

The Marburg study (Margraf & Schneider, 1991; cited in Margraf et al., 1993) compared the following three treatment conditions to a waitlist control: cognitive therapy (i.e., reattribution of the symptoms of anxiety), exposure treatment (i.e., exposure to external and internal anxiety-provoking stimuli), and combined cognitive/exposure treatment. Participants consisted of 82 patients meeting DSM-III-R criteria for panic disorder with spontaneous panic attacks as the principal complaint. All three treatment conditions showed strong positive outcomes on various measures, including panic and self-exposure diaries, patient and therapist clinical ratings, clinical questionnaires, ambulatory physiological monitoring, and response to CO\textsubscript{2} panic induction. At 1-month follow-up, 77-93% of participants from the active treatment conditions were panic-free, compared to 5% of the waitlist. Examination of process measures revealed a strong relationship between treatment success and panic-specific cognitive changes, while amount of self-exposure had no effect on outcome. Significant, albeit moderate, positive relationships were also found between success and the non-specific process measures of a good therapeutic relationship, high treatment credibility, and high therapist competence/directivity. Margraf et al. (1993) suggested that, while not conclusive, these data provide greater support for the role of reattribution than that of habituation in the successful treatment of panic.
The Oxford study (Clark, Salkovskis, Hackman, & Gelder, 1991; cited in Margraf et al., 1993) randomly assigned 64 patients meeting DSM-III-R diagnosis for panic disorder without agoraphobia to either cognitive therapy, applied relaxation (relaxation combined with graded exposure to feared stimuli; Öst, 1987), imipramine treatment, or a waitlist control. Participants in the active treatment conditions had weekly therapeutic contact for a period of three months, and all three treatments included weekly self-exposure to feared situations. At the end of treatment, the cognitive therapy condition evidenced significantly more gains in reducing panic, generalized anxiety, panic-related cognitions, and avoidance compared to applied relaxation and imipramine, although these latter treatments were more effective than the waitlist control. At 3-month follow-up, the percentage of panic-free participants was 90, 50, 55, and 7% in the cognitive treatment, applied relaxation, imipramine, and waitlist conditions, respectively. A similar pattern of results was evidenced at 12-month follow-up. Furthermore, it was reported that post-treatment measures of the cognitive misinterpretation of bodily sensations were positively correlated with the presence of panic symptoms at follow-up.

An investigation of the effectiveness of administering panic control treatment in a group format was conducted in the Austin study (Telch, 1991; cited in Margraf et al., 1993). This study randomly assigned 67 panic patients without agoraphobia to either a group panic inoculation treatment or a delayed treatment control condition. The panic inoculation condition consisted of small groups, ranging from 4 to 6 participants, which met for twelve 90-minute sessions over an 8-week period and incorporated the following components: information pertaining to the nature/physiology of anxiety, cognitive restructuring of inaccurate beliefs related to panic, interoceptive exposure, and respiratory training. Participants receiving the group panic inoculation training evidenced marked improvement on all outcome measures, including panic frequency and expectancy, anxiety, anxiety sensitivity, depression, avoidance, reaction to hyperventilation
challenge, and overall functioning. No significant improvement on any of these measures was evidenced in the delayed treatment control condition. The percentage of panic-free participants in the group treatment condition was 85% post-treatment and 83% at 6-month follow-up. Of the control group, 30% were panic-free at post-treatment (no follow-up data were available for this group). Furthermore, an average post-treatment rate of recovery of 81% (i.e., scores in the normal range on measures of panic attacks, anxiety, anxiety sensitivity, avoidance, and depression) was reported for the group treatment condition compared with only 31% for the control group. Margraf et al. (1993) concluded that these data support the efficacy of psychological treatment for panic disorder administered in a group format. Finally, referring to the collective findings of the four investigations reviewed above, these authors concluded that "cognitive-behavioral treatments rest on firm experimental evidence that justifies their application in everyday practice" (Margraf et al., 1993, p. 6).

Öst, Westling, and Hellström (1993) investigated the relative effectiveness of applied relaxation, exposure in vivo, and cognitive methods in the treatment of panic disorder with agoraphobia. Forty-five psychiatric outpatients meeting DSM-III-R criteria for this disorder were randomly assigned, within sex, to one of the three treatment conditions, with 10 females and 5 males in each group. Treatment consisted of 12 sessions over 3 months, and each condition included self-exposure (i.e., emphasis on the importance of regular exposure to feared situations). Applied relaxation treatment consisted of relaxation training (e.g., progressive relaxation, release-only relaxation, conditioned or cue-controlled relaxation) and the gradual application of these skills to naturally occurring agoraphobic situations. Exposure treatment entailed entering phobic situations, associated with increasing degrees of anxiety, initially accompanied by the therapist and gradually fading out the therapist's presence. The rationale was that anxiety would dissipate if the individual remained in the phobic situation long enough without avoiding
or escaping, and that he or she would be able to handle increasingly anxiety-provoking situations in this manner. Finally, cognitive treatment consisted of monitoring negative thoughts in phobic situations, developing positive self-instructions and cognitive coping procedures, and cognitive restructuring (i.e., recognizing alternative explanations).

The three groups showed significant and approximately equivalent post-treatment improvements on various self-report measures of agoraphobic cognitions, fear, and avoidance, as well as other measures of psychopathology (e.g., state-trait anxiety, depression). These improvements were maintained at 12-month follow-up. Behavioral test measures, consisting of the percentage of situations the individual could enter from an individualized fear hierarchy, self-rating of anxiety in the most feared situation, rating of negative thoughts, and ratings of autonomic perceptions, revealed that participants in the applied relaxation group completed a higher percentage of situations than the cognitive treatment group, while neither differed from the exposure group at post-treatment. At 12-month follow-up, the exposure and cognitive treatment groups showed further gains on this measure, yielding no significant group differences. Ratings of anxiety, negative thoughts, and autonomic perceptions revealed post-treatment and follow-up improvements, with no significant group differences. Analysis of participants' self-statements indicated a reduction in the frequency of negative, self-defeating cognitions across groups, with only minor changes in positive and neutral self-statements. Finally, clinically significant improvement was calculated for the percentage of situations completed in the behavioral test and reduction in avoidance behavior. It was reported that the percentage of participants evidencing clinically significant improvement on the behavioral test was 86.7, 80, and 60% for the applied relaxation, exposure, and cognitive therapy groups, respectively. Clinically significant improvement in avoidance behavior was evidenced by 53.3, 46.7, and 60% of the applied relaxation, exposure, and cognitive treatment groups, respectively. Given the significant and non-differential post-treatment
improvements on various outcome measures, Öst and colleagues (1993) concluded that the three treatments, focusing respectively on the physiological, behavioral, and cognitive components of anxiety, are of approximately equal effectiveness in the treatment of panic disorder with agoraphobia.

In a multiple baseline design analysis of the cognitive-behavioral treatment of panic disorder in adolescents, Ollendick (1995) combined elements of the cognitive-behavioral treatments developed by Barlow and colleagues (e.g., Barlow et al., 1989) and Öst and colleagues (e.g., Öst et al., 1993). Participants were three females and one male, ranging in age from 13 to 17 years, and meeting DSM-III-R criteria for panic disorder with agoraphobia. Treatment duration ranged from 6 to 9 sessions, with termination contingent on panic-free status for two consecutive weeks. The initial treatment session focused on information regarding the nature of panic and the treatment strategy. The focus of the second session was progressive muscle relaxation and breathing retraining, while cue-controlled and applied relaxation were taught during the third session. The fourth treatment session focused on the development of positive self-statements, cognitive coping procedures, and self-instruction strategies. Exposure trials were then instituted, based on an individualized hierarchy of agoraphobic situations, and the remaining sessions were devoted to review of exposure trials, progress, and continued rehearsal of relaxation and self-instruction.

Cognitive-behavioral treatment resulted in a decrease in the frequency of panic attacks for all participants, with the average number of attacks per week during baseline ranging from 1.5 to 2, and all participants achieving two consecutive panic-free weeks before termination of treatment. Improvement was also evidenced in reduction of agoraphobic avoidance and self-efficacy ratings in agoraphobic situations. Specifically, at post-treatment participants rarely avoided agoraphobic situations, were able to remain in such situations alone for extended periods of time, and evidenced self-efficacy ratings which
reflected feeling "very sure" to "absolutely sure" that they could cope with both agoraphobic situations and panic attacks. Reductions in frequency of panic attacks and agoraphobic avoidance as well as increases in self-efficacy were maintained at 6-month follow-up, with none of the participants meeting diagnostic criteria for panic disorder either at termination or follow-up. Furthermore, self-report measures of anxiety sensitivity, trait anxiety, fear, and depression reflected improvements at post-treatment which were, for the most part, maintained at follow-up. Based on these findings, Ollendick (1995) concluded that combined cognitive-behavioral treatment procedures found to be effective in the treatment of panic disorder in adults may be successfully applied to the treatment of adolescents.

In one of the few studies to use an education control group, Borden, Clum, and Salmon (1991) compared the relative effectiveness of a panic education (PE) program and guided imaginal coping (GIC), a cognitive-behavioral approach, in the treatment of adults with a DSM-III diagnosis of panic disorder or agoraphobia with panic attacks. Nineteen participants were assigned in cohorts to the two conditions. The GIC group consisted of nine women and one man, with an average age of 34.9 years, while the PE group had eight women and one man, with an average age of 35.8 years. Both treatment conditions combined four group and six individual sessions. The goal of the PE condition was to provide information, support, and encouragement in the absence of actual training in specific coping strategies for panic attacks. The relationship of panic to stressors and conflicts was discussed, and participants were encouraged to develop insight into the origins of their panic attacks as well as the relationship between current attacks and life stressors. Instillation of hope, expectation of improvement, and participants' recognition that they were not alone in the experience of panic were important components of this condition. The GIC condition also included information and support as well as specific cognitive-behavioral training in the management of panic symptoms.
Treatment procedures used included relaxation, cognitive restructuring, breathing retraining, anxiety induction via imagery, and rehearsal of coping strategies.

Both treatment groups evidenced decreases over time (i.e., pretreatment, posttreatment, 1-month follow-up and 2-month follow-up) in the number of panic attacks, panic symptoms, and catastrophic thoughts. Both groups also reported decreases in their level of avoidance over time, although GIC participants reported less avoidance overall relative to the PE group. Evaluator-rated coping of a behavioral assessment (i.e., imagining a situation associated with panic) revealed that both groups demonstrated significantly less adaptive coping at pretreatment compared to posttreatment and follow-up. However, while the PE group used significantly more strategies, the GIC group was rated as coping more adaptively overall. Finally, pretreatment self-efficacy for both groups was significantly lower than self-efficacy at posttreatment and both follow-up periods. Examination of the relationship over time between total catastrophic thoughts and self-efficacy suggested that the directional relationship of efficacy to thoughts was consistently stronger than that of thoughts to efficacy. The potential causal relationship between self-efficacy and panic symptoms was unclear. The authors concluded that both PE and GIC treatment worked fairly well, as most of the dependent measures changed over time but not across group. They suggested that changes in self-efficacy or perception of control over panic might explain changes associated with both treatment conditions.

The literature on nonclinical panic clearly identifies the occurrence of panic attacks as a fairly prevalent phenomenon in the adolescent and college student populations. However, while the DSM-IV identifies late adolescence as the initial peak for onset of panic disorder, no studies, to the author's knowledge, have focused exclusively on the assessment of panic in this age group. Furthermore, no treatment studies exist which seek to ameliorate nonclinical panic attacks in late adolescence. It would seem that a
focused assessment of nonclinical panic in late adolescents is warranted, as is 
investigation of the effectiveness with which strategies useful in the treatment of panic 
disorder (e.g., cognitive-behavioral techniques, education/support) may be applied 
towards the alleviation of this problem. Indeed, these approaches may serve a 
preventative function by targeting panic attacks in late adolescence before they reach 
levels of severity associated with a clinical disorder.
**Purpose**

Given that there is no known prior study focusing on either the assessment or treatment of late adolescent nonclinical panickers, the purposes of the present study were as follows:

1. to assess the prevalence, nature, and severity of nonclinical panic attacks as well as associated symptomatology in a late adolescent (i.e., age 18-19) university sample;

2. to compare the relative effectiveness of two active treatments (i.e., cognitive-behavioral vs. education/support) and a waitlist control condition in reducing the frequency and severity of nonclinical panic attacks and associated symptomatology in late adolescents;

3. to assess the degree of daily anxiety within a sample of late adolescent nonclinical panickers and its response to treatment.

**Method**

**Participants**

This study was conducted during the spring and fall semesters of 1995. Participants were students from undergraduate psychology courses who received extra credit for participating in this study. A total of 582 late adolescents (291 each semester), aged 18-19, were recruited from undergraduate psychology courses and screened in a group format. Of the spring sample, 204 were female and 87 were male. Of the fall sample, 201 were female and 90 were male.

Of the persons screened during the spring semester, 38 (30 females and 8 males) qualified for the individual assessment and treatment components of the study (see Procedure below). Eight individuals (7 females and 1 male) declined participation in the remainder of the study. Two additional females did not participate in the study for different reasons (i.e., one had recently moved and could not be contacted, and the other
indicated on the phone that she had previously received treatment for her panic attacks. The individual assessment was thus completed by a total of 28 participants (21 females and 7 males) during the spring semester, with 2 (1 female and 1 male) dropping out of the study prior to treatment. Primary reasons for declining participation or dropping out of the study prior to treatment were inability to make the time commitment required for participation, or feelings of discomfort related to either the interview or the prospect of group treatment. A total of 26 late adolescents (20 females and 6 males) participated in the treatment component of the study during the spring semester.

Of the individuals screened during the fall semester, 33 (24 females and 9 males) qualified for the remainder of the study (see Procedure below). Ten (7 females and 3 males) declined participation. Due to an oversight, one female who qualified for the study was not invited to participate (it was noted upon reviewing the data after completion of the study that this individual had experienced one panic attack in the four weeks preceding the screening session). Four additional individuals (3 females and 1 male) did not participate in the study due to time constraints at the end of the semester (i.e., it was evident that there was not enough time remaining in the semester to recruit a complete second cohort of participants). The individual assessment was thus completed by 18 individuals (13 females and 5 males) during the fall semester, with 6 (5 females and 1 male) dropping out of the study prior to treatment, and 2 (1 male and 1 female) unable to complete treatment due to time constraints at the end of the semester, as described above. Primary reasons for declining participation or dropping out of the study prior to treatment were inability to make the time commitment required for participation, or feelings of discomfort related to either the interview or the prospect of group treatment. Thus, a total of 10 late adolescents (7 females and 3 males) participated in the treatment component of the study during the fall semester.
Procedure

1. Screening

Participants were asked to sign a consent form (see Appendix A) describing the purposes and procedures of the initial screening and requesting permission to contact them should they meet criteria for the individual assessment and treatment components of the study. Students were then asked to complete the following self-report measures (see Appendix B): a) the revised version of the Panic Attack Questionnaire (PAQ; Cox, Norton, & Swinson, 1992), b) the Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992); c) the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970); d) the Beck Depression Inventory (BDI; Beck et al., 1961); e) the Attributional Style Questionnaire (ASQ; Seligman, 1984); f) the Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978); and g) the Medical History Form.

2. Individual Assessment

From the larger group of participants, those reporting at least one DSM-IV defined panic attack within the previous four weeks on the PAQ were identified. Of this group, participants who did not indicate seeking treatment for their panic attacks and who did not report a history of heart disease or hyperthyroidism were contacted and asked to participate in the remainder of the study. Those agreeing to participate then underwent an individual assessment conducted by one of five graduate clinicians. ¹

At the beginning of the individual assessment, a consent form describing the purposes and procedures of the remainder of the study was read by the participant, questions were answered, and consent to participate was obtained (see Appendix A). The following measures were then administered (see Appendix B): a) the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994a); b) the Panic

¹ Individual assessments were conducted by Chris Rock, Sara Mattis, Devin Byrd, Amanda Goza, and Cheri Weeks.
Attack Symptoms Questionnaire (PASQ; Clum, 1990); c) the Panic Attack Cognitions Questionnaire (PACQ; Clum, 1990); d) the Self-Efficacy Questionnaire (SEQ; Clum, 1990); and e) the Chambless Mobility Inventory (CMI; Chambless, Caputo, Jasin, Gracely, & Williams, 1985). Prior to leaving the individual assessment session, participants were given a booklet of Panic Attack Records and Daily Anxiety Records (see Appendix C) and asked to monitor their panic attacks and daily anxiety in the interim period (approximately 2 weeks) before beginning treatment or the waitlist condition. Participants were also asked to sign a Student Health Service release of information form (see Appendix A) giving the investigator permission to obtain information related to the presenting problem and outcome, including diagnosis and treatment, of any visits made by the participant to the Student Health Service over the course of the study (with the exception of regular annual appointments). This information was used to assess the extent to which nonclinical panickers seek medical attention for physical symptoms. Finally, participants were randomly assigned to treatment condition and informed of their condition after the individual assessment was completed.

3. Treatment

Participants were randomly assigned to one of three experimental conditions: a) cognitive-behavioral treatment (CBT); b) education/support (ES); and c) waitlist control (WL). Randomization occurred within gender, so that the ratio of males to females was equal across conditions. Two cohorts of individuals participated in the study during the spring semester, with 18 participants in Cohort 1 and 8 participants in Cohort 2. One cohort of 10 participants (Cohort 3) completed the study during the fall semester. Table 1 illustrates the number of participants within each of the semesters, cohorts, and conditions.

The active treatment groups (i.e., CBT and ES) received 8 sessions of group treatment over a six week period (see treatment protocols, Appendix D). CBT treatment included
applied relaxation, cognitive restructuring, and exposure to panic-related situations, both through imagery and through behavioral experiments conducted as homework. ES treatment consisted of education regarding the definition, components, and characteristics of panic, exploration of participants’ experiences with panic from both an historical and immediate perspective, and group support. Therapists were 4 female/male pairs of graduate clinicians trained in the treatment protocols of this study. Treatment groups consisted of 2 to 6 participants each, with three groups in each of the active treatment conditions. As illustrated in Table 1, four groups (2 ES and 2 CBT) were run during the spring semester, and 2 groups (1 ES and 1 CBT) were conducted during the fall semester. A treatment credibility questionnaire (see Appendix D) was administered after the first, fifth, and final treatment sessions. Sessions were audiotaped and coded by undergraduate research assistants in order to assess treatment integrity.

Throughout the 6-week course of treatment, participants in all groups were asked to monitor panic attacks and daily anxiety using the Panic Attack and Daily Anxiety Records (see Appendix C). These self-monitoring forms were assessed and collected each week from participants in all three conditions, and a fresh booklet was given. Participants were asked to continue self-monitoring of panic attacks and daily anxiety through the post-treatment assessment (1 week following treatment). The following measures were also completed by all participants in all groups on a weekly basis through the 6-week period of treatment: the A-State scale of the STA1, the PASQ, the PACQ, the SEQ, and the CMI. Participants in the WL group met weekly with the investigator or a trained research assistant to complete these measures, return completed Panic Attack and Daily Anxiety Records, and receive new booklets of these self-monitoring forms.

2 Therapist pairs were: Lisa Curtin/Tim Butcher; Sara Mattis/Greg Febbraro; Laura Seligman/Chuck Gulotta; and Katie Ingman/Tim Butcher.
4. Post-Treatment Assessment

One week following completion of treatment or the waitlist period, participants were assessed individually with the same measures used in the initial screening and individual assessment, with the exception of the PAQ and the Medical History Form. Components of the ADIS-IV were re-administered to participants meeting diagnostic criteria for one or more disorders at pretreatment. Only sections of the interview for which an individual met diagnostic criteria during the previous individual assessment were administered. All individuals who participated in the treatment component of the study completed the post-treatment assessment.

5. Follow-Up Assessment

Two months following completion of treatment or the waitlist period, participants were mailed and asked to complete the same measures used in the initial screening and individual assessment, with the exception of the PAQ, the Medical History Form, and the ADIS-IV. At follow-up, all participants were offered a referral for free treatment at the Psychological Services Center in Blacksburg, Virginia should they wish to seek further treatment for their panic attacks or if they were assigned to the waitlist group and wished to receive treatment. Two female participants from Cohort 1 failed to complete the follow-up assessment (one was out of the country, and the other failed to return the questionnaires and could not be reached by phone despite repeated attempts). All other individuals who participated in the treatment component of the study completed the follow-up assessment.

Measures (see Appendix B and Appendix C)

The Panic Attack Questionnaire (PAQ)

The revised version of the Panic Attack Questionnaire (PAQ; Cox et al., 1992) assesses self-reports of DSM-III-R defined panic attacks. It is divided into three sections. The first pertains to basic demographic information (e.g., age, sex, marital status,
educational level, occupation) and information regarding previous treatment for a variety of disorders (e.g., depression, anxiety, heart problems). The questionnaire then defines a panic attack as "the sudden onset of intense apprehension, fear, or terror, often associated with feelings of impending doom." It further indicates that, "some of the most common symptoms experienced during an attack are: dizziness, shortness of breath, chest pain or discomfort, and trembling or shaking." Respondents are asked to indicate whether or not they themselves or members of their immediate family have ever experienced a panic attack. Individuals who report having themselves experienced a panic attack are then asked to complete the final section of the questionnaire. This section includes questions pertaining to frequency (i.e., number of panic attacks experienced in the past year, past four weeks, and past week), age at onset, symptomatology, situations associated with panic, duration of onset to peak severity and overall duration of attacks, perceptions of control over panic attacks, associated distress, lifestyle interference, and predictability of attacks. The PAQ also contains items regarding generalized anxiety and worry/apprehension, techniques for coping with panic attacks, depression/suicidal ideation, participation in treatment aimed at anxiety problems, and feelings of unreality/derealization.

The PAQ has been used in several studies investigating the prevalence and nature of nonclinical panic attacks (e.g., Cox et al., 1991; Norton et al., 1986; Norton et al., 1988; Whittall et al., 1994; and Wilson et al., 1992). Margraf and Ehlers (1988) reported the results of two studies (i.e., the Marburg and Tübingen Studies) conducted in Germany which administered a German translation of the former version of the PAQ (Norton et al., 1985; Norton et al., 1986) to a total of 306 undergraduates and assessed its reliability and validity compared to a structured interview (i.e., the SCID; Spitzer & Williams, 1986). Test-retest reliability was reported as generally good for a subsample of 39 individuals retested at an interval of 14-28 days (mean = 20 days). The following information was
given reliably (kappa, Spearman, or Pearson coefficients = .65-1.00): information about panic attack occurrence, frequency, and intensity, stress experienced at onset of panic, avoidance behavior, and family history. However, items assessing the experience of unexpected attacks (kappa = .53), panic attacks experienced only in social situations (kappa = .43), and the experience of most symptoms within the first 10 minutes of an attack (kappa = .33) proved unreliable. Compared with the SCID criteria, Margraf and Ehlers (1988) reported that the PAQ yielded a high rate of false positives (i.e., 27 out of 52 PAQ-panickers met SCID criteria for panic attacks) but a low rate of false negatives (only 4 of 42 PAQ-nonpanickers met SCID criteria for panic). While overall rates of agreement were relatively low (74% and 65%; kappa = .50 and .32 for studies 1 and 2, respectively), post hoc analysis of PAQ-panickers who did not meet SCID criteria indicated that disagreement was not due to pure chance. Instead, these "false positives" seemed to reflect a milder variant of the same problem as well as the more conservative distinction between panic and non-panic used in the SCID. Margraf and Ehlers concluded that, despite its high potential for "false positives," the PAQ's low likelihood of "false negatives" and its good test-retest reliability make it a "valid screening device" (Margraf & Ehlers, 1988, p. 112). They did, however, suggest that its use in conjunction with a structured interview would ensure compatibility with diagnostic criteria, and that future forms of the PAQ might evidence higher rates of validity when compared to structured interviews. Finally, these authors posed the possibility that validity was limited by the lack of reliability of specific criteria, such as information regarding unexpected attacks and rapidity of onset. They suggested that the failure of individuals to give such information reliably raises some question as to the usefulness of these criteria in the diagnosis of panic.
The Anxiety Sensitivity Index (ASI)

The Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992) is a 16-item self-report questionnaire which assesses anxiety sensitivity (i.e., the belief that anxiety or fear causes negative events such as illness, embarrassment, or additional anxiety; Reiss & McNally, 1985). This measure was included in this study as it has been associated with apprehension surrounding panic attacks, and may specifically be evidenced in cognitive symptoms experienced during a panic attack (i.e., fears of dying, going crazy, or losing control). Each item is scored on a five-point scale, and the total score ranges from 0 to 64. Factor analytic research supports the use of this total score as a single factor (Peterson & Reiss, 1992).

Peterson and Reiss (1992) reported a satisfactory degree of internal consistency (alpha coefficients in the .80 to .90 range) and test-retest reliability (correlations of .75 and .71 over a two-week and three-year period, respectively) for the ASI. The authors also reported excellent criterion validity for the ASI, with individuals with panic disorder and agoraphobia scoring approximately two standard deviations above the norm, and individuals with other anxiety disorders scoring about one standard deviation above. Strong associations have been reported between ASI scores and panic attack occurrence, frequency, and intensity, as well as between ASI scores and total scores on Fear Survey Schedules (Peterson & Reiss, 1992). Finally, data from 11 samples comparing the ASI with measures of trait anxiety found common variance ranging from 0 to 36%, indicating that the ASI has properties unique from other anxiety measures (Reiss, 1991; cited in Peterson & Reiss, 1992).

The State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970) is comprised of two scales, each consisting of 20 items (scored on a four-point scale). The A-State scale assesses a transitory state of apprehension and elevated autonomic nervous system
activity which is expected to vary over time and context. In contrast, the A-Trait scale assesses the relatively stable construct of anxiety proneness, or the tendency to react to threatening situations with elevated state anxiety. Scores range from 20 to 80 for each scale. This measure was included in the present study as NCPs have been found to score higher on measures of state-trait anxiety relative to nonpanickers (Norton et al., 1992).

Spielberger and colleagues (1970) reported relatively high test-retest reliability for the A-Trait scale (correlations ranged from .73 to .86), while test-retest reliability of the A-State scale was low (correlations ranged from .16 to .54), as would be expected given its variable nature. A high degree of internal consistency was reported for both scales (alpha coefficients ranged from .83 to .92). The concurrent validity of the A-Trait scale was determined through comparisons with other anxiety measures (e.g., the Taylor Manifest Anxiety Scale; Taylor, 1953; cited in Spielberger et al., 1970) which yielded moderately high correlations, ranging from .77 to .83 for patients and from .52 to .80 for college students. Evidence of the construct validity of the A-State scale was determined by asking college students to complete the scale under normal conditions, after a period of relaxation, and after viewing a stressful movie. As expected, scores were lowest under relaxed conditions and highest under conditions of stress.

**The Beck Depression Inventory (BDI)**

The Beck Depression Inventory (BDI; Beck et al., 1961) is a 21-item self-report measure designed to assess depression and its behavioral manifestations. Each item is rated on a 4-point scale, and total scores range from 0 to 63. It was included in the present study as NCPs have been found to score higher on measures of depression relative to nonpanickers (Norton et al., 1992).

Analysis of internal consistency of the BDI revealed a highly significant relationship between the total score and each item. Split-half reliability yielded a Pearson r of .86 which rose to .93 with a Spearman-Brown correction. Based on these measures of
internal consistency, Beck et al. (1961) concluded that the BDI was highly reliable. The authors cited the validity of this instrument as reflected in the highly significant relationship between its scores and clinical ratings of Depth of Depression ($p < .001$). Furthermore, the BDI successfully predicted minor clinical changes in Depth of Depression in 28 of 33 hospitalized patients (85%), providing additional evidence of its validity (Beck et al., 1961).

**The Attributional Style Questionnaire (ASQ)**

The Attributional Style Questionnaire (ASQ; Seligman, 1984) is a 48-item self-report instrument which assesses attributional tendencies (i.e., individual differences in interpreting the causes of bad and good events as stemming from internal vs. external, stable vs. unstable, and global vs. specific factors). The ASQ presents 6 good and 6 bad events each of which is followed by four questions assessing perceived cause of the event and whether the cause is internal or external, stable or unstable, and global or specific. The dimensions of internal/external, stable/unstable, and global/specific are each rated on a seven-point scale. Individual dimension scores (i.e., internal negative, stable negative, global negative, internal positive, stable positive, global positive) as well as composite scores (i.e., composite positive attributional style, composite negative attributional style) are obtained. The ASQ was included in the present study due to a previous finding that internal attributional style in response to negative outcomes was a significant predictor of children's tendency to make internal, catastrophic attributions in response to the physical symptoms of panic (Mattis & Ollendick, 1997). This variable may thus serve as a risk factor in the development and maintenance of panic attacks.

Peterson and colleagues (Peterson, Semmel, Baeyer, Abramson, Metalsky, & Seligman, 1982) reported on the reliability of the ASQ based on administration of the questionnaire to 130 undergraduates, 100 of whom completed the measure twice with a five week interval between administrations. Adequate internal consistency was reported
for the composite scores, with alpha coefficients of .75 and .72 for positive and negative scores, respectively. Individual dimension scores evidenced a mean reliability of .54 (range = .44 to .69). Test-retest correlations were adequate, ranging from .57 to .69 for the individual dimension scores, while correlations for the composite scores were .70 and .64 for positive and negative scores, respectively. The authors concluded that this evidence of stability supported the scores' representations of a "style" (Peterson et al., 1982). Finally, Peterson and colleagues reported that the validity of the ASQ was supported by findings that ASQ scores predicted the development of depressive symptoms in college students (Golin, Sweeney, & Shaeffer, 1981; cited in Peterson et al., 1982), that ASQ scores were associated with the appearance of depressive symptoms after poor exam performance, and that ASQ scores correlated positively with actual attributions made by subjects in response to particular events (e.g., rejection by a potential date, poor task performance, and stressful life events).

**The Life Experiences Survey (LES)**

The Life Experiences Survey (LES; Sarason et al., 1978) is a 50-item self-report measure that asks respondents to indicate events experienced during the past year. The measure contains a list of 47 specific events (e.g., outstanding personal achievement, change of residence) as well as three blank spaces in which respondents can indicate other events they have experienced. Respondents are also asked to rate the impact of events they have experienced on a scale ranging from -3 to +3, where a rating of -3 indicates an extremely negative impact, 0 indicates a neutral impact, and +3 indicates an extremely positive impact. A positive change score is derived by summing the impact of events designated as positive, and a negative change score is obtained by summing the impact of events rated as negative. The sum of these two scores yields a total change score, reflecting the total amount of rated change (both positive and negative) experienced in the past year.
Sarason and colleagues (1978) reported test-retest correlations for two samples drawn from undergraduate psychology courses with a 5- to 6-week time interval between test and retest. Pearson product-moment correlations for the positive change score were .19 and .53, the reliability coefficients for the negative change score were .56 and .88, and the coefficients for the total change score were .63 and .64. Sarason and colleagues (1978) interpreted these coefficients as suggesting that the LES is a moderately reliable instrument, especially when the negative and total change scores are considered, and that the variability in responding across the two periods of time may reflect changing life events as opposed to error. They also reported that the total and negative change scores correlate significantly and in a positive direction with state and trait anxiety, assessed with the State-Trait Anxiety Inventory (Spielberger et al., 1970), and that there is a significant relationship between negative change and scores on the Beck Depression Inventory (Beck et al., 1961).

The Medical History Form

The Medical History Form was designed for this study in order to assess the presence of medical conditions within the group of participants taking part in the study. This self-report measure asked participants to indicate whether they had ever experienced any of eleven medical conditions listed on the questionnaire (e.g., irregular heart beat, mitral valve prolapse, asthma). Participants were asked to respond to each item by circling 'Y' if they currently or in the past had experienced the condition indicated, 'N' if they never had the condition, or '?' if they were unsure. Since this form was designed as a self-report assessment of medical conditions for the current study, no reliability or validity data are available.

The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV)

The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown et al., 1994a) is a structured interview which assesses for the presence of current anxiety
disorders, as well as disorders with a high comorbidity rate with anxiety (i.e., mood, somatoform, and substance use disorders), utilizing DSM-IV criteria. This instrument was used in the current study to determine the extent to which subjects reporting nonclinical panic attacks on the PAQ also meet diagnostic criteria for an anxiety disorder or other disorder based on DSM-IV criteria. Clinicians who administered the ADIS-IV in the current study were trained through review and discussion of the clinician's manual (Brown, Di Nardo, & Barlow, 1994b), as well as through viewing an ADIS-IV training videotape, purchased along with the ADIS-IV and clinician's manual, which presented vignettes from different ADIS-IV interviews and illustrated a variety of differential diagnostic decisions using the ADIS-IV.

While no studies have yet been published examining the psychometric properties of the DSM-IV, good reliability has been demonstrated for the majority of disorders covered by previous editions of the ADIS (Di Nardo, O'Brien, Barlow, Waddell, & Blanchard, 1983; cited in Brown et al., 1994b). Di Nardo and colleagues (Di Nardo, Moras, Barlow, Rapee, & Brown, 1993) assessed the reliability of current anxiety disorder diagnoses made by two diagnosticians utilizing the ADIS-R to conduct independent interviews. They reported excellent reliability for current principal diagnoses of simple phobia, social phobia, and obsessive-compulsive disorder ($k = .79$ to $.82$), good reliability for panic disorder with agoraphobia (mild), panic disorder with agoraphobia (moderate), and major depression ($k = .60$ to $.71$), and fair reliability for generalized anxiety disorder, panic disorder, panic disorder with agoraphobia (severe), and posttraumatic stress disorder ($k = .43$ to $.57$). The authors noted that neither the interval between interviews nor the presence of a mood disorder affected the reliability estimates (Di Nardo et al., 1993).

**The Panic Attack Symptoms Questionnaire (PASQ)**

The Panic Attack Symptoms Questionnaire (PASQ; Clum 1990) is a 36-item self-report measure assessing the presence and duration of symptoms experienced during an
individual's most recent panic attack. Items are rated on a 6-point scale (0 = do not experience this, 3 = moderately - 10 min to 1 hour, 6 = protractedly - 1 day to 2 days). Ratings are summed across all items to obtain the total score. This instrument was included in the present study to assess panic symptomatology prior to, during, and following treatment.

Clum and colleagues (Clum, Broyles, Borden, & Watkins, 1990) assessed the reliability and validity of the PASQ by administering this instrument to individuals with at least one anxiety disorder who either did or did not report having experienced at least one panic attack. Panickers scored significantly higher than nonpanickers, and 18 of the 36 items differentiated the two groups, with panickers scoring higher in all cases. Item-total correlations revealed that all but three items (i.e., vomiting, numb body, and ears ringing) were significantly correlated with the total score. Internal consistency reliability was calculated, yielding a Cronbach alpha of .88.

The instructions of the PASQ were slightly modified for the purposes of the present study. Specifically, participants were asked to complete the PASQ with its original instruction set during the pre-treatment assessment. Thereafter, participants were asked to complete the PASQ for the most recent panic attack experienced since they last completed this questionnaire. For instance, during the first week of treatment participants were asked to complete the PASQ for the most recent panic attack experienced since the individual assessment; during the second week of treatment, they were asked to complete the PASQ for their most recent panic attack experienced in the previous week, etc. If no panic attacks were experienced in the designated time period, the PASQ was not completed and the items were coded as "0". The purpose for this modification of instructions was to prevent participants from completing the PASQ more than one time in reference to the same (i.e., the most recent) panic attack.
The Panic Attack Cognitions Questionnaire (PASQ)

The Panic Attack Cognitions Questionnaire (PACQ; Clum 1990) is a 25-item self-report measure assessing the presence and degree of negative cognitions experienced during an individual's most recent panic attack. Items are rated on a 4-point scale (1 = not at all, 4 = totally dominated your thoughts). Ratings are summed across all items to obtain the total score. This instrument was included in the present study to assess cognitions associated with panic prior to, during, and following treatment.

Clum and colleagues (Clum et al., 1990) assessed the reliability and validity of the PACQ using the same procedures described above for the PASQ. Panickers scored significantly higher than nonpanickers on 8 of the items, and lower on 1 item (i.e., "I am going to scream"). However, when Bonferroni's correction was used, only 6 of the 8 items continued to discriminate panickers from nonpanickers (i.e., "This will never end," "I am having a heart attack," "I am going to pass out," "I won't be able to get out of here," "I don't understand what is happening to me," "Something is really wrong with me"). Item-total correlations revealed that all but two items (i.e., "I will choke to death" and "I am going to babble or talk funny") were significantly correlated with the total score. Internal consistency reliability was calculated, yielding a Cronbach alpha of .88.

As with the PASQ, the instructions of the PACQ were slightly modified for the purposes of the present study. Specifically, participants were asked to complete the PACQ with its original instruction set during the pre-treatment assessment. Thereafter, participants were asked to complete the PACQ for the most recent panic attack experienced since they last completed this questionnaire. For instance, during the first week of treatment participants were asked to complete the PACQ for the most recent panic attack experienced since the individual assessment; during the second week of treatment, they were asked to complete the PACQ for their most recent panic attack experienced in the previous week, etc. If no panic attacks were experienced in the
designated time period, the PACQ was not completed and the items were coded as "1". The purpose for this modification of instructions was to prevent participants from completing the PACQ more than one time in reference to the same (i.e., the most recent) panic attack.

**The Self-Efficacy Questionnaire (SEQ)**

The Self-Efficacy Questionnaire (SEQ; Clum, 1990) is an 11-item self-report measure which assesses perceptions of ability to cope with different aspects of a panic attack. Items are rated on a 9-point scale (1 = not at all confident, 5 = moderately confident, 9 = totally confident), and a total score is obtained by summing ratings across the 11 items. This measure has been shown to be sensitive to changes in individuals with panic disorder over the course of treatment and follow-up (Borden et al., 1991). Furthermore, Gould and colleagues (Gould, Clum, & Shapiro, 1993) reported that the SEQ distinguished a waitlist control group from participants with panic disorder who had received either bibliotherapy (BT) or individual therapy with guided imaginal coping (ITGIC). Specifically, participants receiving BT and ITGIC evidenced higher self-efficacy ratings on the SEQ compared to waitlist participants. The SEQ was incorporated in the present study to assess for changes in perceived ability to cope with panic prior to, during, and following treatment.

**The Chambless Mobility Inventory (CMI)**

The Chambless Mobility Inventory (CMI; Chambless et al., 1985) is a 27-item self-report measure assessing degree of avoidance of specific places and situations due to discomfort or anxiety. The first 26 items list specific places and situations (e.g., restaurants, airplanes, parties or social gatherings), while the final item is a blank space allowing the respondent to indicate any additional situations or places that are avoided. Respondents are asked to rate their amount of avoidance on a 1 to 5 scale, where a rating of 1 indicates "never avoid," 3 indicates "avoid about half the time," and 5 indicates
"always avoid." Each item is rated once for degree of avoidance when accompanied by a trusted companion and once for degree of avoidance if encountering the place or situation alone. Averaging ratings across situations yields a total score for Avoidance Alone (AAL) and Avoidance Accompanied (AAC).

Chambless and colleagues (1985) reported high test-retest reliability for AAL and AAC scores over a 31-day test-retest interval, with Pearson product-moment correlations ranging from .75 to .90. The AAL and AAC scores were reported to be only moderately correlated \(r = .67\) and \(.44\) in two samples, supporting the distinction between the two scales. A high degree of internal consistency was reported for both scales (alpha coefficients ranged from .91 to .97). Both scales were found to be significantly and positively correlated with depression, as assessed with the Beck Depression Inventory (Beck et al., 1961), and trait anxiety, as assessed with the State-Trait Anxiety Inventory (Spielberger et al., 1970).

**The Panic Attack Record**

The Panic Attack Record was adapted for this study from a self-monitoring form for panic attacks described by Rapee and colleagues (Rapee, Craske, & Barlow, 1990). Its purpose was to promote the assessment of panic attacks by participants as soon as possible after their occurrence. Participants were given a booklet of Panic Attack Records which they were asked to carry with them at all times. As soon as possible after the occurrence of a panic attack, participants were asked to indicate on the Panic Attack Record the date, time, and duration of the attack, whom they were with at the time of the attack or if they were alone, whether or not they were in a stressful situation and, if so, what the situation was, and whether or not the panic attack was expected. Participants were also asked to rate the severity of the attack on a 9-point scale, endorse all symptoms experienced during the attack, and indicate any thoughts associated with the panic attack. Rapee and colleagues reported that individuals who used their self-monitoring form for
panic attacks rated the forms as understandable, descriptive, and convenient. Individuals also reported regular use of the forms. Indeed, the majority (77%) indicated generally using the forms within an hour of experiencing a panic attack and 31% reported using the forms immediately after an attack (Rapee et al., 1990).

**The Daily Anxiety Record**

The Daily Anxiety Record was designed for this study as a self-monitoring form for the assessment of participants' daily experience with anxiety that did not result in a panic attack. Participants were given a booklet of Daily Anxiety Records and were asked to complete three records per day (i.e., morning, afternoon, and evening). On each form, participants were asked to indicate the date, time, whether or not a stressful situation had been experienced that morning, afternoon, or evening, and, if so, to specify what the stressful situation was. Using a 9-point scale, participants were asked to indicate their lowest level of anxiety experienced that morning, afternoon, or evening, as well as their highest level of anxiety experienced that did not result in a panic attack. Finally, participants were asked to endorse any symptoms experienced which did not result in a panic attack and to indicate any thoughts associated with their anxiety.
Hypotheses

H1 Individuals reporting at least one panic attack (panickers) will evidence higher levels of anxiety sensitivity, trait anxiety, state anxiety, depression, and internal negative attributions than nonpanickers. Recent panickers (individuals reporting at least one panic attack occurring in the past month) will evidence higher levels of these variables relative to past panickers (individuals reporting having experienced at least one panic attack, but none in the past month) and nonpanickers. Females are expected to evidence higher levels of these variables than males, regardless of panic status. Recent panickers will also evidence lower life experiences ratings relative to past panickers and nonpanickers.

H2 Panickers receiving CBT will evidence greater improvement than those in the ES group who, in turn, will show greater improvement than WL participants on the following variables: average rating of daily anxiety for the past week, average number of daily anxiety symptoms for the past week, number of panic attacks monitored in the past week, and average number of panic attack symptoms reported per attack in the past week.

H3 Panickers receiving CBT will evidence greater improvement than those in the ES group who, in turn, will show greater improvement than WL participants on the following variables: presence and duration of panic attack symptoms during the most recent attack, presence and degree of panic attack cognitions during the most recent attack, and number of attacks in the past month.

H4 Panickers receiving CBT will report higher levels of self-efficacy in terms of perceived ability to cope with various aspects of a panic attack than will those in the ES group who, in turn, will report higher levels of panic related self-efficacy than participants in the WL group. Panickers receiving CBT will also report less state anxiety
and avoidance than those in the ES group who, in turn, will report less state anxiety and avoidance than participants in the WL group.

H5 The CBT group will evidence greater improvement than the ES group which, in turn, will show greater improvement than WL participants on the following overall measures of psychopathology: anxiety sensitivity, trait anxiety, depression, and internal negative attributions.

H6 Pretreatment measures of anxiety sensitivity, trait anxiety, depression, and internal negative attributions will significantly and negatively predict change on the following variables: state anxiety, panic related self-efficacy, presence and duration of panic attack symptoms during the most recent attack, presence and degree of panic attack cognitions during the most recent attack, number of attacks in the past week, average number of symptoms per attack in the past week, average rating of daily anxiety for the past week, average number of daily anxiety symptoms for the past week, and avoidance. Life experience ratings will positively predict change on these variables.
Results

The analyses for Hypothesis 1 utilized the sample of participants who completed the screening component of the study. Of the 582 late adolescents screened, 6 (4 females and 2 males) were eliminated from the analyses as they reported seeking treatment for their panic attacks and could not be considered nonclinical panickers. Thus, 576 participants were included in the analyses for Hypothesis 1.

As the remaining Hypotheses focus on treatment outcome, these analyses utilized the sample of participants completing the treatment component of the study (see Table 1). Participants missing 4 or more treatment sessions (i.e., at least half of the sessions) were eliminated from the sample for purposes of these analyses. This pertained to two participants from Cohort 1 (1 female from the ES group who missed 4 sessions and 1 male from the CBT group who missed 5 sessions). Data from a total of 34 participants (14 WL, 10 ES, and 10 CBT) were thus included in the analyses for Hypotheses 2 through 6.

Prior to conducting the analyses for Hypotheses 2 through 6, the effectiveness of randomization was tested by conducting a series of 3 Group (WL, ES, CBT) MANOVAs on pretreatment scores for the clusters of variables involved in each hypothesis. The MANOVAs yielded nonsignificant results, indicating that randomization was effective. The presence of therapist effects was also tested by conducting a series of 2 (Group: ES, CBT) x 4 (Therapist: SM/GF, LC/TB, LS/CG, KI/TB) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) 3 Repeated Measures Analyses again on the clusters of variables involved in each hypothesis. None of the interactions involving Therapist nor the main effect for this variable were significant. Subsequent analyses were thus collapsed across therapist.

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3 A 2 (Group) x 4 (Therapist) x 2 (Time) design was used for variables assessed at only two points in time (e.g., self-monitoring variables).
Hypothesis 1: (Screening Data)

The sample of 576 participants who completed the screening component of the study was divided into 3 groups based on self-reports of panic attacks on the Panic Attack Questionnaire (PAQ). Nonpanickers reported no history of panic and consisted of 411 participants (276 females, 135 males). Past Panickers reported having experienced at least one past panic attack, but none in the past month. This group consisted of 95 participants (72 females, 23 males). Recent Panickers reported at least one panic attack occurring in the past month and consisted of 70 participants (53 females, 17 males). Nonpanickers thus comprised 71.4% of the sample, Past Panickers comprised 16.5%, and Recent Panickers comprised 12.2%. The distribution of each of these groups is presented in Table 2.

A 3 (Panic Status: Nonpanickers, Past Panickers, Recent Panickers) x 2 (Gender: Male, Female) Multivariate Analysis of Variance (MANOVA) was conducted on Anxiety Sensitivity Index (ASI) score, Trait Anxiety score from the State-Trait Anxiety Inventory (STAI), State Anxiety score from the STAI, and Beck Depression Inventory (BDI) score to test the hypothesis that nonclinical panickers and females would evidence higher levels of anxiety sensitivity, trait anxiety, state anxiety, and depression. A significant main effect was found for Panic Status, Pillais statistic = .06, Approximate $F(8, 1048) = 4.38$, $p < .001$, as well as for Gender, Pillais statistic = .03, $F(4, 523) = 4.61$, $p < .001$. The Panic Status x Gender interaction was not significant.

Univariate analyses indicated a marginally significant main effect for Panic Status for ASI score, $F(2, 569) = 2.93$, $p < .06$, as well as a significant main effect for Panic Status for Trait Anxiety score, $F(2, 530) = 15.25$, $p < .001$, State Anxiety score, $F(2, 569) = 12.16$, $p < .001$, and BDI score, $F(2, 567) = 17.85$, $p < .001$. Mean ASI score was 19.69 (S.D. = 8.79) for Nonpanickers, 19.21 (S.D. = 7.92) for Past Panickers, and 23.04 (S.D. = 10.67) for Recent Panickers. Mean Trait Anxiety score was 40.36 (S.D. = 10.35) for
Nonpanickers, 40.71 (S.D. = 10.59) for Past Panickers, and 50.05 (S.D. = 11.16) for Recent Panickers. Mean State Anxiety score was 36.82 (S.D. = 10.35) for Nonpanickers, 37.24 (S.D. = 12.09) for Past Panickers, and 44.53 (S.D. = 11.31) for Recent Panickers. Mean BDI score was 7.92 (S.D. = 6.49) for Nonpanickers, 8.29 (S.D. = 6.66) for Past Panickers, and 14.60 (S.D. = 9.09) for Recent Panickers. Post hoc analyses utilizing the Student Newman-Keuls test indicated that Recent Panickers scored significantly higher than Past Panickers and Nonpanickers, who did not differ from each other on each of these measures (i.e., ASI, Trait Anxiety, State Anxiety, and BDI).

A significant main effect for Gender was found for ASI score, $F (1, 569) = 13.64$, $p < .001$, Trait Anxiety score, $F (1, 530) = 6.03$, $p < .05$, and BDI score, $F (1, 567) = 8.21$, $p < .01$, but not for State Anxiety score, $F (1, 569) = 2.32$, $p > .1$. Mean ASI score was 17.87 (S.D. = 8.22) for males, and 20.95 (S.D. = 9.11) for females. Mean Trait Anxiety score was 39.82 (S.D. = 9.38) for males, and 42.36 (S.D. = 11.48) for females. Mean BDI score was 7.37 (S.D. = 6.36) for males, and 9.42 (S.D. = 7.47) for females. Mean State Anxiety score was 35.96 (S.D. = 10.50) for males, and 38.64 (S.D. = 11.90) for females. None of the Panic Status x Gender interactions were significant for these variables.

Two 3 (Panic Status: Nonpanickers, Past Panickers, Recent Panickers) x 2 (Gender: Male, Female) MANOVA s were conducted to test the hypothesis that panickers and females would evidence more internal negative attributions, assessed with the Attributional Style Questionnaire (ASQ), than would nonpanickers and males. One MANOVA was computed on the individual dimension scores (Internal Negative, Stable Negative, Global Negative, Internal Positive, Stable Positive, Global Positive), and the other MANOVA was computed on the composite scores (Composite Positive and Composite Negative) of the ASQ. No significant results were found. However, an exploratory 3 (Panic Status: Nonpanickers, Past Panickers, Recent Panickers) x 2
ANOVA conducted on Internal Negative score alone approached significance for the Panic Status main effect, \( F(2, 566) = 2.63, \ p<.08 \), with the Student Newman-Keuls test indicating that Recent Panickers scored significantly higher than Past Panickers and Nonpanickers, who did not differ from each other on this variable. Mean Internal Negative score was 4.50 (S.D. = 0.85) for Nonpanickers, 4.46 (S.D. = 0.89) for Past Panickers, and 4.88 (S.D. = 0.95) for Recent Panickers.

Finally, a 3 (Panic Status: Nonpanickers, Past Panickers, Recent Panickers) x 2 (Gender: Male, Female) MANOVA was conducted on Positive and Negative scores from the Life Experiences Survey (LES) to test the hypothesis that recent panickers would evidence lower life experiences ratings relative to past panickers and nonpanickers. A significant main effect was found for Panic Status, Pillais statistic = .04, Approximate \( F(4, 1140) = 5.10, \ p<.001 \), as well as for Gender, Pillais statistic = .01, \( F(2, 569) = 3.05, \ p<.05 \). Univariate tests conducted on Positive score (the sum of Positive life experiences ratings) and Negative score (the sum of Negative life experiences ratings) as well as Total score (the sum of Positive and Negative life experiences ratings) from the LES yielded a significant main effect for Panic Status for Positive score, \( F(2, 570) = 3.25, \ p<.05 \), Negative score, \( F(2, 570) = 5.60, \ p<.01 \), and Total score, \( F(2, 570) = 9.70, \ p<.001 \), as well as a significant main effect for Gender for Negative score, \( F(1, 570) = 5.54, \ p<.05 \). None of the Panic Status x Gender interactions were significant.

Mean Positive score was 6.11 (S.D. = 5.14) for Nonpanickers, 5.79 (S.D. = 5.81) for Past Panickers, and 4.54 (S.D. = 4.42) for Recent Panickers. Mean Negative score was -6.40 (S.D. = 6.19) for Nonpanickers, -5.34 (S.D. = 5.11) for Past Panickers, and -9.61 (S.D. = 10.02) for Recent Panickers. Mean Total score was -0.29 (S.D. = 7.45) for Nonpanickers, 0.45 (S.D. = 7.79) for Past Panickers, and -5.07 (S.D. = 8.58) for Recent Panickers. Post hoc analyses utilizing the Student Newman-Keuls test indicated that Recent Panickers scored significantly lower than Past Panickers and Nonpanickers, who
did not differ from each other on both Negative score and Total score, while no significant differences were evident between any of the Panic Status groups on Positive score.

Mean Negative score was -5.61 (S.D. = 5.35) for males, and -7.05 (S.D. = 7.19) for females. Mean Positive score was 5.53 (S.D. = 4.87) for males, and 6.01 (S.D. = 5.32) for females. Mean Total score was -0.08 (S.D. = 7.40) for males, and -1.04 (S.D. = 7.98) for females.

**Hypothesis 2: (Self-Monitoring)**

Given that self-monitoring was completed only through the post-treatment assessment, analyses for self-monitoring of daily anxiety and panic attacks were conducted across two points in time (Pre-Treatment and Post-Treatment). Average daily anxiety ratings for the week preceding and the week following the treatment / waitlist period were used for the purposes of these analyses, although self-monitoring of anxiety was also completed on a daily basis throughout the course of the treatment / waitlist period.

**Daily Anxiety Ratings and Symptoms**

A 3 (Group: WL, ES, CBT) x 2 (Time: Pre-Treatment, Post-Treatment) Repeated Measures Analysis, utilizing a doubly multivariate design (Stevens, 1996), was conducted on Low DAR (average lowest daily anxiety rating in the past week), High DAR (average highest daily anxiety rating in the past week), and Anxiety Symptoms (average number of anxiety symptoms per daily monitoring period in the past week). A marginally significant main effect was found for Time, Pillais statistic = .37, $F (3, 16) = 3.07$, $p<.06$. Univariate tests indicated a significant main effect for Time for all three variables: Low DAR, $F (1, 18) = 6.63$, $p<.05$, High DAR, $F (1, 18) = 10.15$, $p<.01$, and Anxiety Symptoms, $F (1, 18) = 7.55$, $p<.05$. For all dependent variables, the score at Post-Treatment was significantly less than that at Pre-Treatment. None of the Group main effects nor Group x Time interaction effects were significant.
Means and standard deviations for Low DAR, High DAR, and Anxiety Symptoms at Pre-Treatment and Post-Treatment are presented in Table 3. Figures 1-3 depict mean scores for Low DAR, High DAR, and Anxiety Symptoms for each group at Pre-Treatment, Post-Treatment, and across the 5-week treatment period (i.e., Tx Week 1 represents the week between Sessions 1 and 2, Tx Week 2 represents the week between Sessions 2 and 3, etc.).

**Panic Attacks and Panic Symptoms**

A 3 (Group: WL, ES, CBT) x 2 (Time: Pre-Treatment, Post-Treatment) Repeated Measures Analysis, utilizing a doubly multivariate design, was conducted on number of panic attacks monitored and average number of panic symptoms monitored per attack in the past week. The effect for Time was nonsignificant, Pillais statistic = .15, $F(2, 26) = 2.24, p<.2$. However, exploratory univariate tests indicated a significant main effect for Time for number of panic attacks in the past week, $F(1, 27) = 4.54, p<.05$, and a marginally significant main effect for Time for average number of panic symptoms per attack in the past week, $F(1, 27) = 3.38, p<.08$. For both variables, the values at Post-Treatment were less than at Pre-Treatment. None of the Group main effects nor Group x Time interaction effects were significant.

Means and standard deviations for number of panic attacks monitored and average number of panic symptoms monitored per attack in the week preceding treatment (Pre-Treatment) and the week following treatment (Post-Treatment) are presented in Table 4. A total of nine participants (4 WL, 4 ES, and 1 CBT), or 26.5% of the sample, reported at least one panic attack in the week preceding treatment. Only two participants (1 WL and 1 ES), or 5.9% of the sample, reported at least one panic attack in the week following treatment. Figures 4-5 depict mean scores for number of panic attacks monitored and average number of panic symptoms monitored per attack for each group at Pre-Treatment, Post-Treatment, and across the 5-week treatment period.
Hypothesis 3: (PASQ, PACQ, Panic Attacks in Past Month)

Analyses for the Panic Attack Symptoms Questionnaire (PASQ) and the Panic Attack Cognitions Questionnaire (PACQ) were conducted across two points in time (Pre-Treatment and Follow-Up). The decision to eliminate the Post-Treatment assessment from these analyses was made for two reasons. First, only two subjects (1 WL and 1 ES) completed the PASQ and PACQ at Post-Treatment, indicating that they had a panic attack between the final week of the waitlist or treatment period and the Post-Treatment assessment. None of the other subjects completed these measures at Post-Treatment, as they had not experienced a panic attack in the preceding week. Secondly, a true Post-Treatment assessment of the number of panic attacks occurring in the past month could only be obtained at Follow-Up, as the Post-Treatment assessment was conducted only one week after completion of treatment.

A 3 (Group: WL, ES, CBT) x 2 (Time: Pre-Treatment, Follow-Up) Repeated Measures Analysis, utilizing a doubly multivariate design, was conducted on PASQ score, PACQ-during score, PACQ-after score, and number of Panic Attacks in the past month as reported on the PASQ. A significant main effect was found for Time, Pillais statistic = .72, $F(4, 25) = 16.47$, $p < .001$. Univariate tests indicated a significant main effect for Time for PASQ score, $F(1, 28) = 22.44$, $p < .001$, PACQ-during score, $F(1, 28) = 33.52$, $p < .001$, PACQ-after score, $F(1, 28) = 19.75$, $p < .001$, and number of Panic Attacks in the past month, $F(1, 29) = 28.48$, $p < .001$. For all dependent variables, the score at Follow-Up was significantly less than that at Pre-Treatment. None of the Group main effects nor Group x Time interaction effects were significant.

Means and standard deviations for PASQ, PACQ-during, PACQ-after, and number of Panic Attacks in the past month at Pre-Treatment and Follow-Up are presented in Table 5.
Hypothesis 4: (SEQ, Srate, CMI)

Self-Efficacy Questionnaire (SEQ)

A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis was conducted on SEQ score. A significant effect was found for the Group x Time interaction, $F(4, 56) = 2.80$, $p < .05$, and for the Time main effect, $F(2, 56) = 16.76$, $p < .001$. One-way (Group: WL, ES, CBT) ANOVAs conducted separately at each point in time showed no differences between the groups at Pre-Treatment, Post-Treatment, or Follow-Up. A Repeated Measures Analysis was conducted separately for each group with Time as the within subjects factor. The Time effect for the WL group was not significant, $F(2, 22) = .73$, $p > .4$. The main effect for Time was significant for the ES group, $F(2, 18) = 11.71$, $p < .001$, and the CBT group, $F(2, 16) = 6.11$, $p < .01$.

A series of six 1-tailed paired $t$-tests was conducted to assess differences between the means at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the ES and CBT groups. Bonferroni correction for $p < .05$ was equal to $p < .008$. For the ES group, the Pre/Post test yielded $t(9) = 3.20$, $p < .006$, the Pre/Fu test yielded $t(9) = 3.79$, $p < .002$, and the Post/Fu test yielded $t(9) = 1.84$, $p < .05$. For the CBT group, the Pre/Post test yielded $t(9) = 2.23$, $p < .03$, the Pre/Fu test yielded $t(8) = 2.95$, $p < .009$, and the Post/Fu test yielded $t(8) = 2.04$, $p < .04$.

Means and standard deviations for SEQ score at Pre-Treatment, Post-Treatment, and Follow-Up are presented in Table 6. Figure 6 depicts mean SEQ scores for each group at Pre-Treatment, Post-Treatment, and Follow-Up, as well as at each of the 6 weekly sessions during the course of the treatment / waitlist period.
State Anxiety

A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis was conducted on State Anxiety score as derived from the State-Trait Anxiety Inventory (STAI). A significant main effect was found for Time, $F(2, 58) = 7.48$, $p<.001$. Neither the Group main effect nor the Group x Time interaction was significant.

A series of three 1-tailed paired $t$-tests was conducted to assess differences between the means at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the entire sample. Bonferroni correction for $p<.05$ was equal to $p<.017$. The Pre/Post test yielded $t(33) = -2.79$, $p<.0045$, the Pre/Fu test yielded $t(31) = -3.72$, $p<.0005$, and the Post/Fu test yielded $t(31) = -1.06$, $p<.148$.

Means and standard deviations for State Anxiety score at Pre-Treatment, Post-Treatment, and Follow-Up are presented in Table 7. Figure 7 depicts mean State Anxiety scores for each group at Pre-Treatment, Post-Treatment, and Follow-Up, as well as at each of the 6 weekly sessions during the course of the treatment / waitlist period.

Chambless Mobility Inventory (CMI)

A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis, utilizing a doubly multivariate design, was conducted on Chambless Mobility Inventory - accompanied (CMI-accompanied) and Chambless Mobility Inventory - alone (CMI-alone) scores. A significant main effect was found for Time using an averaged multivariate test of significance, Pillais statistic = .17, Approximate $F(4, 112) = 2.68$, $p<.05$.

A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis conducted on CMI-accompanied score yielded no significant effects. However, a 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment,
Post-Treatment, Follow-Up) Repeated Measures Analysis conducted on CMI-alone score yielded a significant main effect for Time, $F(2, 56) = 4.05, p<.05$, as well as a marginally significant Group x Time interaction, $F(4, 56) = 2.11, p<.1$. A series of three 1-tailed paired $t$-tests was conducted to assess differences between mean CMI-alone scores at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the entire sample. Bonferroni correction for $p<.05$ was equal to $p<.017$. The Pre/Post test yielded $t(32) = -2.86, p<.004$, the Pre/Fu test yielded $t(31) = -1.69, p<.051$, and the Post/Fu test yielded $t(30) = 1.19, p<.122$.

Exploratory analyses were conducted in order to investigate the marginally significant Group x Time interaction for CMI-alone score. One-way (Group: WL, ES, CBT) ANOVAs conducted separately at each point in time showed no differences between the groups at Pre-Treatment, Post-Treatment, or Follow-Up. A Repeated Measures Analysis was conducted separately for each group with Time as the within subjects factor. The WL group did not evidence a significant main effect for Time, $F(2, 22) = .57, p>.5$, while a significant main effect for Time was found for the ES group, $F(2, 18) = 3.78, p<.05$, and CBT group, $F(2, 16) = 7.09, p<.01$.

A series of six 1-tailed paired $t$-tests was conducted to assess differences between the means at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the ES and CBT groups. Bonferroni correction for $p<.05$ was equal to $p<.008$. For the ES group, the Pre/Post test yielded $t(9) = -2.18, p<.029$, the Pre/Fu test yielded $t(9) = -1.79, p<.053$, and the Post/Fu test yielded $t(9) = .77, p<.23$. For the CBT group, the Pre/Post test yielded $t(9) = -3.59, p<.003$, the Pre/Fu test yielded $t(8) = -2.63, p<.015$, and the Post/Fu test yielded $t(8) = -0.30, p<.384$. 56
Means and standard deviations for CMI-accompanied and CMI-alone scores are presented in Table 8. Figure 8 depicts mean CMI-alone scores for each group at Pre-Treatment, Post-Treatment, and Follow-Up, as well as at each of the 6 weekly sessions during the course of the treatment / waitlist period.

**Hypothesis 5: (ASI, BDI, Trait Anxiety, ASQ)**

**ASI, BDI, and Trait Anxiety**

A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis, utilizing a doubly multivariate design, was conducted on Anxiety Sensitivity Index (ASI) score, Beck Depression Inventory (BDI) score, and Trait Anxiety score as derived from the State-Trait Anxiety Inventory (STAI). A significant effect was found for the Group x Time interaction using an averaged multivariate test of significance, Pillais statistic = .40, Approximate F(12, 150) = 1.91, p<.05. The main effect for Time was also significant, Pillais statistic = .59, Approximate F(6, 98) = 6.76, p<.001.

Two 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analyses, conducted separately on BDI and Trait Anxiety score, indicated a significant main effect for Time for both BDI, F(2, 58) = 6.11, p<.01, and Trait Anxiety, F(2, 50) = 14.09, p<.001.

A series of six 1-tailed paired t-tests was conducted to assess differences between mean BDI scores and mean Trait Anxiety scores at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the entire sample. Bonferroni correction for p<.05 was equal to p<.008. For BDI score, the Pre/Post test yielded t(33) = -2.97, p<.003, the Pre/Fu test yielded t(31) = -2.58, p<.008, and the Post/Fu test yielded t(31) = -2.9, p<.35. For Trait Anxiety score, the Pre/Post test yielded t(30) = -4.56, p<.0005, the Pre/Fu test yielded t(28) = -4.42, p<.0005, and the Post/Fu test yielded t(29) = -4.6, p<.2.
A 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis conducted on ASI score yielded a significant Group x Time interaction, $F(4, 58) = 4.01, p < .01$, as well as a significant main effect for Time, $F(2, 58) = 31.70, p < .001$. One-way (Group: WL, ES, CBT) ANOVAs conducted separately at each point in time showed no differences between the groups at Pre-Treatment, Post-Treatment, or Follow-Up. A Repeated Measures Analysis was conducted separately for each group with Time as the within subjects factor. A marginally significant main effect for Time was found for the WL group, $F(2, 24) = 3.27, p < .06$, and a significant main effect for Time was found for the ES group, $F(2, 18) = 19.88, p < .001$, and the CBT group, $F(2, 16) = 15.17, p < .001$.

A series of nine 1-tailed paired $t$-tests was conducted to assess differences between mean ASI scores at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the WL, ES, and CBT groups. Bonferroni correction for $p < .05$ was equal to $p < .006$. For the WL group, the Pre/Post test yielded $t(13) = -1.41, p < .09$, the Pre/Fu test yielded $t(12) = -2.54, p < .013$, and the Post/Fu test yielded $t(12) = -2.12, p < .028$. For the ES group, the Pre/Post test yielded $t(9) = -5.64, p < .0005$, the Pre/Fu test yielded $t(9) = -4.27, p < .001$, and the Post/Fu test yielded $t(9) = -1.3, p < .45$. For the CBT group, the Pre/Post test yielded $t(9) = -4.31, p < .001$, the Pre/Fu test yielded $t(8) = -5.18, p < .0005$, and the Post/Fu test yielded $t(8) = -1.03, p < .17$.

Means and standard deviations for ASI, BDI, and Trait Anxiety scores are presented in Table 9. Figure 9 depicts mean ASI scores for each group at Pre-Treatment, Post-Treatment, and Follow-Up.

**ASQ**

Two 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analyses, utilizing a doubly multivariate design, were
conducted. One MANOVA was computed on the individual dimension scores (Internal Negative, Stable Negative, Global Negative, Internal Positive, Stable Positive, Global Positive), and the other MANOVA was computed on the composite scores (Composite Positive and Composite Negative) of the Attributional Style Questionnaire (ASQ). No significant results were found.

An exploratory 3 (Group: WL, ES, CBT) x 3 (Time: Pre-Treatment, Post-Treatment, Follow-Up) Repeated Measures Analysis was conducted on the Internal Negative dimension score, as this was the variable of interest from the ASQ in Hypothesis 5. This analysis indicated a marginally significant main effect for Time, F(2, 58) = 2.57, p<.1.

A series of three 1-tailed paired t-tests was conducted to assess differences between mean Internal Negative dimension scores at Pre-Treatment vs. Post-Treatment (Pre/Post), Pre-Treatment vs. Follow-Up (Pre/Fu), and Post-Treatment vs. Follow-Up (Post/Fu) for the entire sample. Bonferroni correction for p<.05 was equal to p<.02. The Pre/Post test yielded t(33) = -.03, p<.49, the Pre/Fu test yielded t(31) = -1.92, p<.03, and the Post/Fu test yielded t(31) = -2.20, p<.02.

Means and standard deviations for the individual dimension and composite scores of the ASQ are presented in Table 10.

**Hypothesis 6: (Regression Analyses)**

A series of twelve stepwise multiple regression analyses was conducted to assess the extent to which measures of anxiety sensitivity, trait anxiety, depression, internal negative attributions, and life experiences ratings would predict change, as measured by Pre-Treatment / Post-Treatment difference scores (i.e., score at Post-Treatment subtracted from score at Pre-Treatment), on several variables. The predictor variables included in the analyses were Pre-Treatment scores on the ASI, Trait Anxiety (as derived from the STAI), BDI, and Internal Negative dimension of the ASQ, as well as Post-Treatment score on the LES (ratings of life events occurring over the past year). The regression
analyses tested the hypothesis that the variables listed above would significantly predict Pre-Treatment / Post-Treatment difference scores on the following outcome measures: State Anxiety (as derived from the STAI), SEQ, PASQ, PACQ-during, PACQ-after, number of panic attacks monitored in the past week, average number of panic symptoms monitored per attack in the past week, Low DAR, High DAR, Anxiety Symptoms, CMI-accompanied and CMI-alone.

At least one variable entered into the regression model as a predictor of Pre-Treatment / Post-Treatment change for six of the twelve outcome measures. Specifically, ASI (Beta = .33, p<.05) and LES (Beta = .56, p<.001) entered the model as predictors of the State Anxiety difference score \[ F(2, 29) = 9.39, p<.001, \text{Adjusted } R^2 = .35 \], and ASI entered the model as a predictor of the difference score for PASQ \[ F(1, 29) = 7.45, p<.01, \text{Adjusted } R^2 = .18, \text{Beta for ASI = .45, p<.01} \], PACQ-during \[ F(1, 29) = 14.24, p<.001, \text{Adjusted } R^2 = .31, \text{Beta for ASI = .57, p<.001} \], PACQ-after \[ F(1, 29) = 18.34, p<.001, \text{Adjusted } R^2 = .37, \text{Beta for ASI = .62, p<.001} \], average number of panic symptoms monitored per attack in the past week \[ F(1, 26) = 6.28, p<.05, \text{Adjusted } R^2 = .16, \text{Beta for ASI = .44, p<.05} \], and Low DAR \[ F(1, 18) = 6.63, p<.05, \text{Adjusted } R^2 = .23, \text{Beta for ASI = .52, p<.05} \].

A series of seven stepwise multiple regression analyses was conducted to assess the extent to which measures of anxiety sensitivity, trait anxiety, depression, internal negative attributions, and life experience ratings would predict change, as measured by Pre-Treatment / Follow-Up difference scores (i.e., score at Follow-Up subtracted from score at Pre-Treatment), on several variables. The predictor variables included in the analyses were Pre-Treatment scores on the ASI, Trait Anxiety (as derived from the STAI), BDI, and Internal Negative dimension of the ASQ, as well as Follow-Up score on the LES (ratings of life events occurring over the past year). The regression analyses tested the hypothesis that the variables listed above would significantly predict Pre-
Treatment / Follow-Up difference scores on the following outcome measures: State Anxiety (as derived from the STA1), SEQ, PASQ, PACQ-during, PACQ-after, CMI-accompanied and CMI-alone.

At least one variable entered into the regression model as a predictor of Pre-Treatment / Follow-Up change for three of the seven outcome measures. Specifically, LES (Beta = .38, p<.05) entered the model as a predictor of the difference score for State Anxiety \[ F(1, 28) = 4.77, p<.05, \text{Adjusted } R^2 = .12 \], Trait Anxiety (Beta = .40, p<.05) entered the model as a predictor of the difference score for PACQ-during \[ F(1, 27) = 5.02, p<.05, \text{Adjusted } R^2 = .13 \], and ASI (Beta = .42, p<.01) and Trait Anxiety (Beta = .45, p<.01) entered the model as predictors of the difference score for PACQ-after \[ F(2, 26) = 10.65, p<.001, \text{Adjusted } R^2 = .41 \].

**Additional Analyses:**

**Treatment Integrity**

All treatment sessions were audiotaped and coded by trained undergraduate research assistants in order to assess for treatment integrity. Coding forms (see Appendix D) were designed by the experimenter and included key elements of both the ES and CBT protocols for each session. Each session was coded independently by two research assistants, and their ratings were averaged. As session 8 for ES, Cohort 2 was coded by only one individual, averaged ratings were not obtained for that particular session. Some sessions were not coded due to equipment malfunction, and treatment integrity was not assessed for a particular session if the tape was scored "incomprehensible" by at least one coder. Thus, treatment integrity ratings were not available for the following: Sessions 3 and 5 for CBT, Cohort 1; Sessions 1, 2, and 3 for ES, Cohort 2; Session 7 for CBT, Cohort 2; and Session 2 for ES, Cohort 3.

Treatment integrity was determined for each group within each cohort by adding the total number of errors of commission (including an element present in the alternate, but
not the current, treatment protocol) and errors of omission (failing to include an element in the current treatment protocol) across the eight treatment sessions. Total number of errors was than subtracted from the total number of items coded, and this number was divided by the total number of items coded. The resulting ratio was considered an indication of the accuracy with which the treatment protocol was followed within each group. The following ratios were obtained: ES, Cohort 1: .94; CBT, Cohort 1: .90; ES, Cohort 2: .93; CBT, Cohort 2: .92; ES, Cohort 3: .95; CBT, Cohort 3: .96. The treatment protocol was thus followed with at least a 90% accuracy rate by each treatment group.

**Treatment Credibility**

A treatment credibility questionnaire (see Appendix D) was administered after the first, fifth, and final treatment sessions. This questionnaire was designed for the present study, and asked participants to respond to five questions regarding their perceptions of treatment on a 1 to 9 scale. For instance, the first question asked participants how logical this type of treatment seemed to them in terms of decreasing panic attacks, with a rating of 1 indicating "not at all logical" and a rating of 9 indicating "very logical". Summing across the five questions produced a Treatment Credibility score ranging from 5 to 45. Total scores ranging from 15 to 135 were also obtained by summing the Treatment Credibility scores across the three points in time that the questionnaire was administered.

A 2 (Group: ES, CBT) x 3 (Time: Session 1, Session 5, Session 8) Repeated Measures Analysis, conducted on Treatment Credibility score, yielded a significant main effect for Time, $\text{F}(2, 30) = 21.28$, $p < .001$, as well as a marginally significant main effect for Group, $\text{F}(1, 15) = 3.38$, $p < .09$. The Group x Time interaction was not significant.

A series of three 1-tailed paired $t$-tests was conducted to assess differences between mean Treatment Credibility scores at Session 1 vs. Session 5 (Pre/Mid), Session 1 vs. Session 8 (Pre/Post), and Session 5 vs. Session 8 (Mid/Post) for the entire sample of individuals receiving treatment. Bonferroni correction for $p < .05$ was equal to $p < .017$. 

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The Pre/Mid test yielded \( t(16) = 3.76, p<.001 \), the Pre/Post test yielded \( t(17) = 5.88, p<.001 \), and the Mid/Post test yielded \( t(18) = 3.02, p<.004 \).

Mean Treatment Credibility scores at Session 1 were 36.89 (S.D. = 3.89) for the ES group, 31.67 (S.D. = 7.43) for the CBT group, and 34.28 (S.D. = 6.35) for both groups combined. At Session 5, mean Treatment Credibility scores were 37.95 (S.D. = 5.27) for the ES group, 35.00 (S.D. = 6.78) for the CBT group, and 36.55 (S.D. = 6.05) for both groups combined. Mean Treatment Credibility scores at Session 8 were 40.10 (S.D. = 7.32) for the ES group, 37.40 (S.D. = 5.21) for the CBT group, and 38.75 (S.D. = 6.34) for both groups combined. Finally, mean total Treatment Credibility scores were 118.61 (S.D. = 7.36) for the ES group, 107.12 (S.D. = 17.10) for the CBT group, and 113.21 (S.D. = 13.78) for both groups combined.

**Percent Panic-Free**

The percentage of participants who indicated on the PASQ experiencing no panic attacks in the interim of approximately one week between termination of the treatment or waitlist period and the post-treatment assessment was determined. Only two participants (1 WL and 1 ES) reported having at least one panic attack in this interim. Thus, 92.9% of the WL group, 90% of the ES group, and 100% of the CBT group could be considered panic-free at post-treatment. Tests of differences between proportions indicated no significant differences between the groups.

The percentage of participants who indicated experiencing no panic attacks in the past month at the follow-up assessment was also determined. This applied to 9 of the 13 WL participants, 9 of the 10 ES participants, and 7 of the 9 CBT participants who completed the follow-up assessment. Thus, 69.2% of the WL group, 90% of the ES group, and 77.8% of the CBT group could be considered panic-free at follow-up. Again, however, tests of differences between proportions indicated no significant differences between the groups.
Endstate Functioning

Five variables were chosen, based on their conceptual relationship with panic attacks and associated avoidance, to determine high endstate functioning. These variables were: 1. Panic-free status (as defined above); 2. SEQ score greater than or equal to 53, as Clum (1990) found that successfully treated patients evidenced scores ranging from 53-97 on this measure; 3. CMI-accompanied score less than one standard deviation above the mean of 28.89 for a normal control group, as reported by Chambless et al. (1985); 4. CMI-alone score less than one standard deviation above the mean of 33.75 for a normal control group, as reported by Chambless et al. (1985); and 5. ASI score less than one standard deviation above the total mean score of 19.01 for this measure, as reported by Peterson & Reiss (1992).

At the post-treatment assessment, 28.6% of the WL group, 70% of the ES group, 50% of the CBT group, and 60% of the two treatment groups combined met the criteria for high endstate functioning, as defined above. Tests of differences between proportions indicated that both the ES group and the treatment groups combined were significantly better than the WL group at post-treatment ($Z = 2.01, p<.03; Z = 1.81, p<.04$).

At the follow-up assessment, 15.4% of the WL group, 60% of the ES group, 44.4% of the CBT group, and 52.6% of the two treatment groups combined met the criteria for high endstate functioning, as defined above. Tests of differences between proportions indicated that both the ES group and the treatment groups combined were significantly better than the WL group at follow-up ($Z = 2.23, p<.02; Z = 2.14, p<.02$), while the difference between the CBT and the WL group approached significance ($Z = 1.50, p<.07$).

ADIS-IV

A 3 (Group: WL, ES, CBT) x 2 (Time: Pre-Treatment, Post-Treatment) Repeated Measures Analysis, utilizing a doubly multivariate design, was conducted on Number of
Clinical Diagnoses and Number of Subclinical Diagnoses assigned to each participant on the ADIS-IV. Diagnoses are regarded as clinical on the ADIS-IV if the interviewer assigns a clinical severity rating of 4 or above on a scale ranging from 0 to 8 (0 = "absent", 2 = "mild", 4 = "moderate"; 6 = "severe"; 8 = "very severe"), while diagnoses assigned a clinical severity rating of 3 or below are considered subclinical. A significant main effect was found for Time, Pillais statistic = .32, $F(2, 30) = 7.05$, $p<.01$. Neither the Group main effect nor the Group x Time interaction was significant.

Two 3 (Group: WL, ES, CBT) x 2 (Time: Pre-Treatment, Post-Treatment) Repeated Measures Analyses, conducted separately on Number of Clinical Diagnoses and Number of Subclinical Diagnoses assigned on the ADIS-IV, indicated a marginally significant main effect for Time for Number of Clinical Diagnoses, $F(1, 31) = 3.96$, $p<.06$. None of the other main or interaction effects were significant.

At Pre-Treatment, the mean number of Clinical Diagnoses was 1.82 (S.D. = 1.88) for the total sample, 1.36 (S.D. = 1.91) for the WL, 2.10 (S.D. = 2.38) for the ES group, and 2.20 (S.D. = 1.23) for the CBT group. At Post-Treatment, the mean number of Clinical Diagnoses was 1.44 (S.D. = 1.54) for the total sample, 1.07 (S.D. = 1.73) for the WL, 1.40 (S.D. = 1.58) for the ES group, and 2.00 (S.D. = 1.15) for the CBT group. At Pre-Treatment, the mean number of Subclinical Diagnoses was 1.29 (S.D. = 1.45) for the total sample, 1.79 (S.D. = 1.93) for the WL, 0.80 (S.D. = 1.03) for the ES group, and 1.10 (S.D. = 0.74) for the CBT group. At Post-Treatment, the mean number of Subclinical Diagnoses was 0.94 (S.D. = 1.23) for the total sample, 1.29 (S.D. = 1.49) for the WL, 0.70 (S.D. = 1.06) for the ES group, and 0.70 (S.D. = 0.95) for the CBT group.

The number of participants meeting clinical criteria for various diagnoses on the ADIS-IV within each group at each period of time is presented in Table 11, while Tables 12 and 13 indicate the clinical diagnoses assigned to each participant at Pre-Treatment and Post-Treatment. Table 14 presents the number of participants meeting subclinical
criteria for various diagnoses on the ADIS-IV within each group at each period of time, while Tables 15 and 16 indicate the subclinical diagnoses assigned to each participant at Pre-Treatment and Post-Treatment. The following diagnoses are represented in each table: Panic Disorder; Agoraphobia; Social Phobia; Generalized Anxiety Disorder (GAD); Obsessive-Compulsive Disorder (OCD); Specific Phobia: Animal, Natural Environment, Blood/Injection/Injury (BII), Situational, Other; Posttraumatic Stress Disorder (PTSD); Major Depressive Episode; Dysthymic Disorder; Mania/Cyclothymia; Hypochondriasis; Mixed Anxiety-Depressive Disorder (MAD); and Bereavement.

Visits to Student Health

A one-way (Group: WL, ES, CBT) ANOVA was conducted on the number of Student Health visits made by each participant during the semester in which he or she was involved in the study. The main effect for Group was not significant, F(2, 31) = .70, p>.5. The mean number of visits was 0.94 (S.D. = 1.39) for the total sample, 1.14 (S.D. = 1.51) for the WL, 0.50 (S.D. = 0.97) for the ES group, and 1.10 (S.D. = 1.60) for the CBT group. Reasons for presenting at Student Health included sore throat, cough, fatigue, shortness of breath / difficulty breathing, sinus congestion, abdominal pain, nausea, and earache. The percentage of participants in each group who made no visits to Student Health during the semester in which they were involved in the study was: WL: 50%, ES: 70%, and CBT: 50%. Tests of differences between proportions indicated no significant differences between the groups. Of the WL group, 3 participants (21.43%) made one visit, 1 participant (7.14%) made two visits, 1 participant (7.14%) made three visits, and 2 participants (14.28%) made four visits. Of the ES group, 2 participants (20%) made one visit, and 1 participant (10%) made three visits. Finally, of the CBT group, 2 participants (20%) made one visit, 2 participants (20%) made two visits, and 1 participant (10%) made five visits.
Discussion

Nonclinical Panic Attacks and Associated Symptomatology in Late Adolescence

This study has demonstrated that the occurrence of nonclinical panic attacks is a fairly common phenomenon in late adolescence, with 12.2% of the present sample reporting at least one nonclinical panic attack in the past month (Recent Panickers), and an additional 16.5% reporting at least one past nonclinical panic attack, but none in the past month (Past Panickers). These prevalence rates are quite consistent with Norton and colleagues' (1992) review of the literature on nonclinical panickers, in which they reported an average prevalence rate of 30.4% for studies utilizing questionnaires to assess the occurrence of panic attacks. However, higher prevalence rates have been reported in previous studies of nonclinical panic in a young population which utilized questionnaires but examined a broader age group (e.g., adolescents, college students) than that examined in the present study. For instance, Warren and Zgourides (1988) reported that 60% of adolescents surveyed indicated having experienced a panic attack, and Macaulay and Kleinknecht (1989) reported that 63.3% of adolescents in their study reported at least one or more panic attacks in the past year (although only 10.4% and 5.4% were deemed moderate or severe panickers, respectively). King and colleagues (1993; 1996) reported lifetime prevalence rates that more closely approach those found in the present study, with 42.9% of one sample of Australian adolescents, and 35.9% of a second sample reporting at least one past panic attack. Finally, Norton and colleagues (1988) reported that 15% of college students surveyed indicated experiencing at least one panic attack in the past year, but none in the past month, similar to the 16.5% prevalence of Past Panickers in the present study. However, Norton and colleagues (1988) found that 25% reported at least one panic attack in the previous three-week period, which is greater than the 12.2% prevalence of Recent Panickers in the present study.
The present study demonstrated that very few late adolescent panickers report seeking treatment for their panic attacks. Indeed, only six participants were eliminated from the study on the basis of having sought treatment. It thus appears that the vast majority of late adolescents who experience panic attacks are indeed nonclinical panickers.

Hypothesis 1 was generally supported by the findings of the present study. Specifically, this study found that late adolescents who had experienced at least one recent panic attack (i.e., in the past month) evidenced significantly higher levels of trait anxiety, state anxiety, and depression, with a trend toward higher levels of anxiety sensitivity and internal negative attributions, relative to both Past Panickers and Nonpanickers, who did not differ from each other. These findings suggest that late adolescents who are currently experiencing nonclinical panic attacks are also typically facing other forms of symptomatology and distress, including more general anxiety and depression. It is notable that such symptomatology is no more evident in late adolescents with a history of less recent panic attacks than in those with no history of panic attacks, suggesting that it is indeed associated with the current experience of panic. It is possible that heightened levels of general anxiety, depression, anxiety sensitivity, and internal negative attributions may serve to trigger panic attacks in some late adolescents, or the experience of panic itself may lead to an increase in these other forms of distress / symptomatology. Perhaps most likely, however, is the possibility that panic attacks and other experiences of distress interact in a cyclical fashion, whereby one influences and serves to trigger the other. Such a pattern would result in a general state of anxiety and depression, within which concurrent panic attacks are also evidenced.

Females in the present study evidenced significantly higher levels of anxiety sensitivity, trait anxiety, and depression relative to males. This is consistent with the findings of other investigators. For instance, King and colleagues (1993; 1996) reported higher levels of anxiety, depression, and fear in female relative to male adolescents. It is
notable that 18.0% of females relative to only 13.1% of males in the present study reported a past history of panic attacks, while 13.2% of females and only 9.7% of males reported recent panic attacks. Higher levels of anxiety sensitivity, trait anxiety, and depression experienced by females may place them at higher risk for the experience of panic attacks, which may result in increased levels of negative affectivity, as described above.

Recent Panickers evidenced lower life experiences ratings relative to Past Panickers and Nonpanickers, who did not differ from each other. Specifically, when presented with a list of life events / stressors (e.g., death of a close family member, leaving home for the first time), and asked to rate the impact of events experienced in the past year on a scale ranging from -3 to +3, the sum of negative ratings as well as the total sum of positive and negative ratings was higher for Recent Panickers relative to the other two groups. Interestingly, the mean total sum of positive and negative ratings was very close to zero for both Nonpanickers (M = -0.29) and Past Panickers (M = 0.45), while it was well below zero for Recent Panickers (M = -5.07). This suggests that Nonpanickers and Past Panickers report a balance between positive and negative life events, in which some events are experienced as negative and others as positive, but the overall impact is relatively neutral. For Recent Panickers, however, negative events outweigh positive ones, and the overall impact is experienced as negative. It thus appears that Recent Panickers are experiencing higher levels of negative life stress, which may contribute to the experience of panic attacks and other forms of symptomatology (e.g., general anxiety, depression). The sum of negative life experiences ratings was also lower for females relative to males, suggesting that females may be at greater risk for the development of symptomatology related to the experience of negative life stressors.
Self-Monitoring of Daily Anxiety and Panic Attacks

Participants in the waitlist and treatment components of the present study were asked to monitor their anxiety levels three times per day from the Pre-Treatment through the Post-Treatment assessment. At each monitoring period, they were asked to record the lowest level of anxiety experienced that morning, afternoon, or evening on a 0 to 8 scale, the highest level of anxiety experienced on a 0 to 8 scale, and to endorse any symptoms experienced (e.g., pounding heart, shortness of breath, dizziness or faintness). Participants were also asked to monitor any panic attacks experienced, as well as symptoms experienced during each panic attack.

Average lowest daily anxiety rating, average highest daily anxiety rating, and average number of anxiety symptoms monitored were significantly lower at Post-Treatment than at Pre-Treatment for the entire sample. Thus, all participants, regardless of whether they were in the waitlist (WL), education/support (ES), or cognitive-behavioral (CBT) group, showed improvement in daily anxiety, as evidenced by lower anxiety ratings and fewer anxiety symptoms. Similarly, exploratory analyses indicated that the number of panic attacks monitored in the past week was significantly lower at Post-Treatment, with a trend towards significantly fewer panic symptoms per attack for the entire sample. Again, all participants, regardless of group assignment, showed improvement. It should be noted, however, that only the CBT group monitored no panic attacks in the week preceding the Post-Treatment assessment.

These findings, while demonstrating improvement over the course of the study, do not support Hypothesis 2, which proposed that panickers receiving CBT would evidence greater improvement than those in the ES group who, in turn, would show greater improvement than WL participants on ratings of daily anxiety, number of anxiety symptoms, and number of panic attacks and panic symptoms monitored. Instead, these
findings suggest that the study was experienced as equally helpful for all participants, including those in the WL group, in reducing daily anxiety and panic attacks.

One possible reason for such improvement lies in the incorporation of self-monitoring as a common component across the different groups, and the possibility that the process of self-monitoring itself may have served as a form of treatment. Nietzel and colleagues (Nietzel, Bernstein, & Russell, 1988) defined "reactivity" as it relates to self-monitoring as the extent to which the act of self-observation affects the behavior being monitored (p. 300). These authors proposed that reactivity can serve a therapeutic purpose by accelerating positive behaviors and suppressing negative ones. Indeed, in a meta-analytic investigation of self-regulation in the treatment of adult problem behaviors (i.e., habit disturbances, depression, anxiety, and health-related problems), Febbraro and Clum (in press) found that interventions using self-monitoring alone were more effective than no treatment. Similarly, in a discussion of the reactivity of a system for self-monitoring suicide ideation in college students, Clum and Curtin (1993) proposed that self-monitoring may function as treatment by serving as a feedback device which allows the individual to learn about his/her levels of suicide ideation relative to specific situations, and to understand the circumstances in which such ideation fluctuates.

It is quite possible that self-monitoring in the present study served as a form of treatment, allowing participants to learn about their levels of daily anxiety and panic attacks as they relate to specific situations, as well as the circumstances in which they fluctuate. Self-monitoring may have been particularly helpful for participants as they rated both lowest and highest anxiety levels, as well as any stressful events experienced, at three separate points in time per day. Such ratings may have allowed participants to view fluctuations in their anxiety levels on a fairly immediate and daily basis, leading to increased realization that heightened anxiety levels are temporary occurrences which do not last indefinitely or lead to catastrophic outcomes. This realization would likely lead
to fewer negative thoughts or predictions regarding one's anxiety. Participants may also
have experienced a heightened sense of control through the observation that high anxiety
levels are transient, and often soon replaced by lower ratings. Finally, monitoring panic
attacks separately from daily anxiety ratings may have allowed participants to recognize
that most experiences of anxiety do not result in a panic attack, and that panic attacks are
relatively infrequent occurrences.

_Panic Attack Symptoms, Cognitions, and Panic Attacks in the Past Month_

Similar to the findings reported above, the presence and duration of panic attack
symptoms (e.g., heart beating rapidly, nausea) during the most recent panic attack, the
presence and degree of panic attack cognitions (e.g., "I am going to die," "I am really
scared") during and after the most recent panic attack, and the number of panic attacks
reported in the past month were all significantly lower at Follow-Up than at Pre-
Treatment for the entire sample. These findings do not support Hypothesis 3, which
proposed that panickers receiving CBT would evidence greater improvement than those
in the ES group who, in turn, would show greater improvement than WL participants on
these variables. Rather, these findings suggest that the study was experienced as equally
helpful for all participants, including those in the WL group, in reducing the frequency
and severity of panic attacks, as well as panic attack symptoms and cognitions.

One potential explanation for or component of this improvement, evidenced across all
three groups, is the possibility that self-monitoring served as a form of treatment, as
described above. Another possible explanation for improvement in the frequency and
severity of panic attacks, as well as panic symptoms and cognitions, lies in an
understanding of the cognitive model of panic, as described by Clark (1986).
Specifically, Clark proposed that panic attacks result from the "catastrophic
misinterpretation" of particular bodily sensations. Such catastrophic misinterpretation
involves the perception of these sensations as far more dangerous than they actually are.
For instance, palpitations may be interpreted as a sign of an impending heart attack, slight breathlessness may be perceived as evidence of cessation of breathing and resulting death, or shakiness may be interpreted as signaling loss of control and insanity (Clark, 1986, p. 462). The cognitive model of panic proposes that such catastrophic misinterpretation plays a critical role in the vicious cycle which culminates in a panic attack. Specifically, this cycle begins with a perceived threat (e.g., external fear-evoking stimuli/situations or internal bodily sensations, thoughts, or images). The perception of threat results in a state of mild apprehension accompanied by a broad range of bodily sensations. Subsequently, the catastrophic misinterpretation of these anxiety-produced sensations results in increased apprehension which then produces a further increase in bodily sensations. It is this vicious cycle, characterized by the interplay of bodily sensations and catastrophic cognitions, which, according to the cognitive model, ultimately culminates in a panic attack.

All participants in the current study were provided with a definition of panic attacks, and the experience of panic was placed in the context of anxiety, thus offering participants a non-catastrophic means of labeling or interpreting panic symptomatology and possibly helping to break the cycle of panic described above. Specifically, at the initial screening, the Panic Attack Questionnaire (Cox et al., 1992) informed participants that they would be asked questions "regarding panic attacks and your history of anxiety problems." A panic attack was then defined in the questionnaire as: "the sudden onset of intense apprehension, fear, or terror, often associated with feelings of impending doom. Some of the most common symptoms experienced during an attack are: dizziness, shortness of breath, chest pain or discomfort, and trembling or shaking." This definition was also attached to Panic Attack Records given to participants at the Pre-Treatment assessment, to assist in self-monitoring. It is possible that the provision of even such minimal information regarding panic, and its reinforcement via self-monitoring and the
completion of other questionnaires over the course of the study, may have served as a form of psychoeducation effective in breaking the cycle of panic, particularly in nonclinical panicners whose symptomatology is likely to be less severe than their clinical counterparts. Specifically, rather than interpreting physical symptoms as a sign of catastrophic consequences (e.g., impending heart attack, loss of control) participants may have learned to label such experiences as a "panic attack" and to associate them with the non-catastrophic experience of anxiety, thus reducing the symptoms and cognitions associated with panic, as well as the likelihood of experiencing a panic attack.

Another helpful component of the study, present across all groups, may have been the provision of social support and recognition that one was not alone in the experience of panic. Specifically, all participants were aware that other late adolescents who also experienced panic attacks were participating in the study. This awareness alone may have helped normalize the experience of panic, and reduced the likelihood of certain catastrophic thoughts (e.g., "I'm the only one who feels this way. I must be going crazy."). Furthermore, during the course of treatment, participants in the WL group had individual weekly meetings with the investigator or a trained research assistant to complete questionnaires. While these meetings were brief (i.e., approximately 10 minutes) and did not include the provision of treatment, as specified in the treatment protocols of the other groups, participants may have gained a sense of support from this contact as well as the sense of sharing their experiences with another individual. The weekly measures themselves may have helped participants track their progress, while increasing their awareness of any reduction in symptomatology and reinforcing improvement. Finally, it is likely that nonclinical panicners who agreed to participate in the entire study were at a point where they were able to recognize their anxiety and panic, and were eager to find ways of changing these experiences. This may have provided a motivating factor toward behavior change, even with minimal intervention.
Self-Efficacy, Avoidance, and Anxiety Sensitivity

In the present study, the active treatment groups (i.e., ES and CBT) evidenced improvement in panic-related self-efficacy (i.e., perceptions of ability to cope with different aspects of a panic attack) over time, while the waitlist group did not. This finding is consistent with Gould and colleagues' (1993) report that panic-related self-efficacy distinguished a waitlist group from individuals with panic disorder who had received either bibliotherapy or individual therapy with guided imaginal coping. The present study indicated that, for late adolescent nonclinical panickers, group treatment which employed cognitive-behavioral techniques (CBT) or education/support (ES) was effective in enhancing individuals' perceptions of their ability to cope with different aspects of a panic attack. This finding was partially consistent with Hypothesis 4, which proposed that panickers receiving treatment would evidence higher levels of panic-related self-efficacy than those in the waitlist. However, the hypothesis that panickers receiving CBT would report higher levels of self-efficacy relative to those in the ES group was not supported. Indeed, there was some evidence that ES treatment, which incorporated education regarding the definition, components, and characteristics of panic, exploration of participants' experiences with panic, and group support, was slightly more effective in improving panic-related self-efficacy than CBT treatment, which included applied relaxation, cognitive restructuring, and exposure to panic-related situations. Specifically, while comparisons of differences in self-efficacy across Pre-Treatment, Post-Treatment, and Follow-Up yielded $p$ values less than .05 for all comparisons within each active treatment group, when Bonferroni corrections were used only the differences between self-efficacy at Pre-Treatment versus Post-Treatment and Pre-Treatment versus Follow-Up for the ES group remained significant. However, it should be noted that the difference between Pre-Treatment and Follow-Up for the CBT group was also extremely close to the level of significance (i.e., Bonferroni correction yielded $p<.008$ as the
comparison \( p \) value, and the Pre-Treatment versus Follow-Up test for the CBT group yielded \( p < 0.009 \).

Borden and colleagues (1991) reported improvements in self-efficacy, similar to those found in the present study, in adults with panic disorder or agoraphobia with panic attacks who received either a panic education program or guided imaginal coping, a cognitive-behavioral approach. By examining the relationship over time between total catastrophic thoughts and self-efficacy, these researchers found that the directional relationship of efficacy to thoughts was consistently stronger than that of thoughts to efficacy. They concluded that both panic education and guided imaginal coping were fairly effective, as most dependent measures (e.g., number of panic attacks, panic symptoms, and catastrophic thoughts) changed over time but not across group. Borden and colleagues further suggested that changes in self-efficacy or perception of control over panic might explain changes associated with both treatment conditions. Similarly, changes in self-efficacy in both treatment groups in the present study may have contributed to improvement in frequency and severity of catastrophic thoughts, despite the fact that this was not specifically targeted in the ES group. Improvement in self-efficacy may also be related to other changes in both treatment conditions, as detailed below.

No significant changes were evidenced over the course of the present study in degree of avoidance of specific places and situations (e.g., elevators, airplanes, parties or social gatherings) due to discomfort or anxiety when accompanied by a trusted companion. Indeed, participants' mean ratings of avoidance when accompanied were quite low, regardless of group (i.e., WL, ES, CBT) and time period (i.e., Pre-Treatment, Post-Treatment, Follow-Up), indicating that late adolescent nonclinical panickers in the current study evidenced little avoidance of specific places or situations due to discomfort or anxiety when they were accompanied by a trusted friend or family member.
However, significant changes were evidenced over the course of the study in degree of avoidance of specific places and situations due to discomfort or anxiety when alone. Specifically, average degree of avoidance when alone was significantly lower for the entire sample at Post-Treatment relative to Pre-Treatment. Furthermore, exploration of a marginally significant Group x Time interaction effect indicated that the ES and CBT groups evidenced improvement in degree of avoidance when alone over time, while the WL group did not. There was also some evidence that CBT treatment was slightly more effective in improving degree of avoidance when alone than ES treatment. Specifically, comparisons of differences in degree of avoidance when alone across Pre-Treatment, Post-Treatment, and Follow-Up yielded $p$ values less than .05 for the comparisons between Pre-Treatment and both Post-Treatment and Follow-Up for the CBT group, as well as the comparison between Pre-Treatment and Post-Treatment for the ES group, while the comparison between Pre-Treatment and Follow-Up for the ES group was slightly above a $p$ value of .05 ($p<.053$). However, when Bonferroni corrections were used, only the difference in degree of avoidance when alone at Pre-Treatment versus Post-Treatment for the CBT group remained significant. These findings suggest that, while both treatment groups were more effective than the waitlist, cognitive-behavioral treatment, incorporating applied relaxation, cognitive restructuring, and exposure to panic-related situations, was more effective than education/support in reducing avoidance of specific places and situations due to discomfort or anxiety when alone. The proposal of Hypothesis 4 that panickers receiving CBT would report less avoidance than the ES group who, in turn, would report less avoidance than the WL group was thus supported. These findings are consistent with Borden and colleagues' (1991) report that both panic education and guided imaginal coping produced decreases in level of avoidance over time, although participants receiving guided imaginal coping reported less avoidance overall relative to the panic education group.
The present study found highly significant improvement over time in levels of anxiety sensitivity for both the ES and the CBT groups ($p<.001$), while marginally significant improvement was evidenced for the WL group ($p<.06$). Comparisons of differences in anxiety sensitivity across Pre-Treatment, Post-Treatment, and Follow-Up yielded $p$-values less than .05 for the comparisons between Pre-Treatment and Follow-Up as well as Post-Treatment and Follow-Up for the WL group, and between Pre-Treatment and both Post-Treatment and Follow-Up for the ES and CBT groups. However, when the Bonferroni correction was used, only the comparisons between Pre-Treatment and both Post-Treatment and Follow-Up for the ES and CBT groups remained significant. These findings suggest that the two treatment groups were more effective than the waitlist group in reducing levels of anxiety sensitivity in the late adolescent nonclinical panickers participating in this study. This is consistent with the component of Hypothesis 5 which proposed that the treatment groups would show greater improvement in anxiety sensitivity than the waitlist, although the suggestion that CBT would be more effective than ES in reducing levels of anxiety sensitivity was not supported.

The above findings are significant given the theoretical relationship between anxiety sensitivity and panic attacks, as well as reports of strong associations between anxiety sensitivity, assessed via the ASI, and panic attack occurrence, frequency, and intensity (Peterson & Reiss, 1992). Anxiety sensitivity has been defined as the belief that anxiety or fear causes negative events such as illness, embarrassment, or additional anxiety (Reiss & McNally, 1985). According to Peterson and Reiss (1992), high levels of anxiety sensitivity should increase the frequency of panic attacks by contributing to the tendency to interpret bodily sensations in a catastrophic manner, thus increasing the chances that a panic attack will occur. They further argued that anxiety sensitivity should increase the intensity of panic attacks, since individuals with high anxiety sensitivity should be especially frightened by panic sensations. Finally, Peterson and Reiss stated that anxiety
sensitivity should reduce a person's capacity to cope with panic attacks, as people with low anxiety sensitivity should be able to dismiss panic attacks as temporary events while those with high anxiety sensitivity should interpret panic attacks as a sign of possible mental or physical illness. Peterson and Reiss concluded that anxiety sensitivity should be a risk factor for panic attacks and panic disorder.

Through their effectiveness in reducing levels of anxiety sensitivity in late adolescent nonclinical panickers, the two types of group treatment employed in the present study (i.e., ES, CBT) offer a promising means of decreasing the frequency and intensity of panic attacks, while enhancing capacity to cope with panic, in this population. Furthermore, by impacting a significant risk factor, such group treatments may help prevent the development of panic disorder in late adolescents with nonclinical panic.

**Depression, Trait and State Anxiety, Attributional Style**

The present study found that the entire sample evidenced improvement over time on three measures of general psychopathology, namely depression, trait anxiety, and state anxiety. Comparisons across Pre-Treatment, Post-Treatment, and Follow-Up yielded $p$ values less than .05 for differences between Pre-Treatment and both Post-Treatment and Follow-Up in mean levels of depression, trait anxiety, and state anxiety. Each of these comparisons remained significant when the Bonferroni correction was used.

Exploratory analyses also indicated marginally significant ($p<.1$) improvement in the tendency to make internal negative attributions for the entire sample. Comparisons of mean differences yielded $p$ values less than .05 for Pre-Treatment versus Follow-Up as well as Post-Treatment versus Follow-Up. However, when the Bonferroni correction was used, only the comparison between Post-Treatment and Follow-Up remained significant, while the Pre-Treatment versus Follow-Up comparison approached significance (i.e., the Bonferroni correction yielded $p<.02$ as the comparison $p$ value, and the Pre-Treatment versus Follow-Up test yielded $p<.03$).
Thus, the entire sample, regardless of group (i.e., WL, ES, CBT), evidenced significantly lower levels of depression, trait anxiety, and state anxiety at both the Post-Treatment and Follow-Up assessments relative to Pre-Treatment. There is also some indication that the entire sample evidenced fewer internal negative attributions at Follow-Up relative to Pre-Treatment and Post-Treatment. These findings do not support the hypothesis that the CBT group would evidence greater improvement than the ES group which, in turn, would show greater improvement than the WL group on a measure of state anxiety (as suggested in Hypothesis 4) as well as on measures of trait anxiety, depression, and internal negative attributions (as suggested in Hypothesis 5).

The finding that improvement in these measures of general psychopathology was evidenced across all three groups, including the waitlist, may be due to reactivity, as described previously, both related to self-monitoring of anxiety and panic as well as the completion of questionnaires regarding general psychopathology at the different assessment points (or on a weekly basis in the case of state anxiety). The provision of social support (e.g., meeting with the investigator or a trained research assistant to complete weekly measures) and the recognition that one was not alone in the experience of panic and other forms of psychopathology may also have contributed to a reduction in general psychopathology. Furthermore, improvement on other variables discussed previously (e.g., frequency and severity of panic attacks and daily anxiety) may have instilled a sense of hope and accomplishment, thus impacting change on more general measures of psychopathology (e.g., depression, internal negative attributions). Finally, as noted previously, it is likely that late adolescents who participated in and completed the entire study were at a stage of change in which they were able to recognize and wished to alter their anxiety, panic, and other general forms of psychopathology, and were thus motivated toward behavior change, even with minimal intervention.
Prediction of Change

Regression analyses indicated that level of anxiety sensitivity at Pre-Treatment, as well as total life experiences ratings of events occurring over the past year, were significant predictors of change in state anxiety from the Pre-Treatment to the Post-Treatment assessment. Level of anxiety sensitivity at Pre-Treatment was also a significant predictor of change from Pre-Treatment to Post-Treatment in presence and duration of panic attack symptoms, presence and degree of panic attack cognitions both during and after the most recent attack, average number of panic symptoms monitored per attack in the past week, and average lowest daily anxiety rating. However, contrary to Hypothesis 6 which proposed that Pre-Treatment measures of psychopathology would negatively predict change, examination of the Beta weights indicated a positive relationship between anxiety sensitivity at Pre-Treatment and change on these variables. It may be that individuals higher in anxiety sensitivity were better able to recognize and monitor daily anxiety and panic symptomatology, and were more aware of changes and improvement in these variables over the course of the study. Such enhanced sensitivity and awareness may have served to promote changes over time. As would be expected, life experiences ratings were also positively related to change in state anxiety, with individuals who rated life events occurring over the past year as more positive showing greater improvement in levels of state anxiety over the course of the study.

Total life experiences ratings of events occurring over the past year was also a significant and positive predictor of change in state anxiety from the Pre-Treatment to the Follow-Up assessment. Additionally, level of trait anxiety at Pre-Treatment significantly predicted change in presence and degree of panic attack cognitions during the most recent attack, and Pre-Treatment levels of anxiety sensitivity and trait anxiety were significant predictors of change in presence and degree of panic attack cognitions after the most recent attack, from Pre-Treatment to Follow-Up. Again, contrary to Hypothesis 6 which
proposed that Pre-Treatment measures of psychopathology would negatively predict change, examination of the Beta weights indicated a positive relationship between the predictor variables and change in panic attack cognitions from Pre-Treatment to Follow-Up.

Treatment Integrity and Treatment Credibility

High levels of treatment integrity were reported in the present study, as treatment protocols were followed with at least a 90% accuracy rate by each treatment group. Participants' perceptions of treatment credibility were also high, overall, with ratings increasing as treatment progressed. A marginally significant main effect for group indicated that ES treatment was perceived as somewhat more credible than CBT treatment by this sample of late adolescent nonclinical panickers. It may be that group treatment which places an emphasis on psychoeducation, group processing, discussion, and support, as opposed to learning cognitive-behavioral strategies for coping with panic, is slightly more appealing and perceived as more helpful by individuals who are both nonclinical (i.e., not actively seeking treatment) and at a particular developmental level (i.e., late adolescence) in which peer support plays a critical role and is of high importance. It should be noted that the CBT protocol did not focus on group support or general group discussions of material presented in session, while each ES session designated 20 to 25 minutes specifically for group discussion. This aspect of peer support as a component of treatment may be particularly useful for late adolescent panickers, and may have enhanced the ES treatment's credibility and effectiveness. It is also possible that the CBT strategies, drawn from research with clinical panickers and individuals with panic disorder, were somewhat overly intensive for nonclinical panickers participating in this study, resulting in marginally lower treatment credibility ratings relative to the ES group.
Percent Panic-Free and Endstate Functioning

The percentage of participants determined to be panic-free at Post-Treatment was high across all of the groups (i.e., 92.9%, 90%, and 100% of the WL, ES, and CBT group, respectively). Although no significant differences were evident, it is notable that, at Follow-Up, the WL group contained the lowest percentage of panic-free participants (69.2%), followed by the CBT group (77.8%), while the vast majority (90%) of the ES group was panic-free.

At both Post-Treatment and Follow-Up, the ES group and the two treatment groups combined fared significantly better than the WL group in terms of high endstate functioning, determined via a combination of five variables conceptually related to panic attacks and associated avoidance (i.e., panic-free status, high panic-related self-efficacy, low avoidance ratings, both while accompanied and alone, and low anxiety sensitivity). Specifically, only 28.6% of the WL group met the criteria for high endstate functioning at Post-Treatment, relative to 70% of the ES group, 50% of the CBT group, and 60% of the two treatment groups combined. At Follow-Up, only 15.4% of the WL group met the criteria for high endstate functioning, compared to 60% of the ES group, 44.4% of the CBT group, and 52.6% of the treatment groups combined. The difference between the CBT and the WL group approached significance at Follow-Up (p<.07).

These findings suggest that, while both treatments were more effective than the waitlist in promoting high functioning by the end of treatment and at Follow-Up, the ES group was most effective in producing change on a constellation of panic-related variables in the late adolescent nonclinical panickers who participated in the study. The emphasis on learning about panic and exploring one's experiences with panic attacks in the context of group support may be particularly helpful for late adolescent panickers, and may have enhanced the effectiveness of ES treatment as well as its credibility, as described above.
Diagnoses

The vast majority of late adolescent nonclinical panickers in the current study met diagnostic criteria for one or more anxiety and/or mood disorders. Indeed, only three participants failed to meet either clinical or subclinical diagnostic criteria for a disorder on the ADIS-IV. It is notable that, in the present sample, nonclinical panic most frequently coincided at Pre-Treatment with clinical levels of social phobia and generalized anxiety disorder, followed by specific phobia, with only three individuals meeting clinical diagnostic criteria for panic disorder. This finding suggests that nonclinical panic attacks may occur in late adolescence in association with a variety of anxiety disorders, and need not be accompanied by panic disorder per se. Marginally significant improvement was evidenced in number of clinical diagnoses over the course of the study, with the entire sample, regardless of group, receiving a lower mean number of clinical diagnoses at Post-Treatment relative to Pre-Treatment.

Visits to Student Health

While normative comparison data are not available, the percentage of late adolescent nonclinical panickers in the present study who made at least one visit to Student Health during the semester in which they were involved in the study appears fairly high. Interestingly, although the differences between proportions are nonsignificant, half of all participants in both the WL and the CBT groups made at least one visit, compared to only 30% of ES participants. It is also notable that some of the complaints for which participants presented at Student Health were consistent with panic symptomatology (e.g., shortness of breath / difficulty breathing, abdominal distress, nausea). This raises the possibility that late adolescent nonclinical panickers are more likely to present in medical rather than mental health settings due to the misinterpretation of panic symptoms as physical health concerns.
Conclusions

This study has found that the experience of panic attacks is a fairly common phenomenon in late adolescence, and that the experience of a recent panic attack is associated with other forms of symptomatology and distress, including general anxiety, depression, and negative life stress. Interestingly, very few late adolescent panickers in this study reported seeking treatment for panic attacks, although there was some evidence that they, at times, sought medical treatment through Student Health for complaints consistent with panic symptomatology.

Importantly, this study found that, when treatment was offered to late adolescent nonclinical panickers, it was effective in reducing the frequency and severity of panic attacks, as well as daily anxiety and other forms of associated symptomatology. It was also determined that even minimal levels of intervention, as offered to the waitlist group in this study, were effective in reducing some of these variables over the course of the study. Specifically, all participants, regardless of whether they were in the waitlist (WL), education/support (ES), or cognitive-behavioral (CBT) group, showed a reduction in frequency of panic attacks, as well as their associated symptoms and cognitions, severity of daily anxiety, and three measures of general psychopathology (i.e., depression, trait anxiety, and state anxiety).

In determining possible mechanisms of change which contributed to this improvement across all groups in the study, it is important to examine common components that may have served as interventions for all participants, regardless of group assignment. First, all participants were asked to self-monitor daily anxiety and panic attacks from the Pre-Treatment through the Post-Treatment assessment. Self-monitoring may have served as a form of treatment, facilitating insight into one's panic and anxiety, while offering a heightened sense of control and promoting change. Second, all participants were given a definition of panic attacks which offered them a non-catastrophic means of interpreting
panic symptomatology, thus possibly preventing catastrophic misinterpretations of panic sensations (e.g., "My heart is pounding, I must be having a heart attack.") which contribute to the cycle of panic. Third, all participants likely experienced a sense of social support through the study, as well as the recognition that they were not alone in the experience of panic. Finally, it is likely that nonclinical panickers who accepted the invitation to participate in the study were at a point where they were able to recognize their anxiety and panic, and ready to seek means of changing these experiences, thus provided a motivating factor toward behavior change. It is possible that these potential forms of intervention were effective in facilitating improvement in panic, daily anxiety, and associated symptomatology due, in part, to the fact that participants were nonclinical panickers whose symptomatology is likely to be less severe than their clinical counterparts. Thus, they may have required less intensive forms of intervention to promote change and improvement. It is also notable that high levels of anxiety sensitivity and trait anxiety at Pre-Treatment predicted changes in panic attack symptoms, cognitions, and daily anxiety. This finding suggests that higher levels of these variables may have contributed to the ability of all participants, regardless of group, to recognize and monitor daily anxiety and panic symptomatology, while enhancing awareness of improvement, and promoting change over time.

Despite the fact that all groups, including the waitlist, evidenced improvement as detailed above, there was clear evidence that the active treatment groups (ES and CBT) were superior to the waitlist in reducing some aspects of nonclinical panic and associated symptomatology, while producing higher levels of overall improvement or endstate functioning. Specifically, the data indicated that both active treatment groups were more effective than the waitlist in producing improvement in panic-related self-efficacy, avoidance of specific places or situations due to discomfort or anxiety when alone, and anxiety sensitivity. There was some evidence that ES treatment, which incorporated
education regarding the definition, components, and characteristics of panic, exploration of participants' experiences with panic, and group support, was slightly more effective in improving panic-related self-efficacy than CBT treatment, which included applied relaxation, cognitive restructuring, and exposure to panic-related situations. The emphasis on learning about panic and exploring one's own experiences with panic attacks in the context of group support may thus enhance nonclinical late adolescent panickers' perceptions of ability to cope with different aspects of a panic attack to a slightly greater degree than cognitive-behavioral strategies. In contrast, CBT treatment appeared slightly more effective than ES treatment in improving degree of avoidance when alone. This is likely due to the fact that CBT incorporated exposure to panic-related situations, both through imagery and behavioral experiments conducted as homework, thus reducing avoidance of specific situations due to fear or anxiety.

The fact that the active treatment groups combined fared significantly better than the waitlist in terms of high endstate functioning at both Post-Treatment and Follow-Up supports the effectiveness of interventions incorporating education/support and cognitive-behavioral strategies in the treatment of late adolescent nonclinical panickers. However, the CBT group alone did not differ significantly from the waitlist in terms of percentage of participants deemed high endstate functioners, while the ES group did differ significantly from the waitlist, and was the only group in which more than half of the participants were high endstate functioners at both Post-Treatment and Follow-Up. This suggests that the ES group was most effective in producing change in late adolescent nonclinical panickers on a constellation of variables conceptually related to panic attacks and associated avoidance. Interestingly, ES treatment was also rated as marginally more credible as a form of treatment by the late adolescent nonclinical panickers participating in this study. Indeed, it may be that a form of treatment which focuses on providing education, offers the opportunity to explore one's experiences with panic, and affords
time to discuss and process these experiences with peers in a supportive group setting is more appealing and effective for individuals of this particular age group (i.e., late adolescents) who are experiencing panic attacks that are nonclinical, and thus likely to be less severe, than a form of treatment that incorporates numerous cognitive and behavioral strategies but does not focus directly on group processes and support. Of course, the ideal treatment may be a combination of the two, incorporating self-monitoring, psychoeducation, and exploration of experiences with panic, as well as some relaxation strategies, cognitive restructuring, and exposure to panic-related situations, all in the context of group discussion and support.

Finally, it is valuable, in attempting to understand the aspects of treatment that are likely to be most effective for nonclinical late adolescent panickers, to consider the Post-Treatment comments made by participants in the present study. At the end of the Post-Treatment assessment, participants were asked to write comments about the study (e.g., Did you find participating in the project to be beneficial in any way? Why or why not? Which aspects were most helpful? Least helpful? Would you suggest any changes?).

Comments made by participants in the WL group included: "It was interesting to note all my problems day to day. Noticing how my mood changes from morning to evening as well. It was a learning experience."; "I found out a lot as to why I have anxiety attacks."; "I found this study to be very interesting. I enjoyed filling out the questionnaires because they were useful to me in that I could keep a record of my daily anxiety and panic attacks. Also, during the interview process, I got a chance to think about factors leading to my anxiety and panic attacks and try to find ways to cope."; "It was very beneficial in the fact that I was able to discuss my fears and anxieties to someone, whereas it is impossible for me to do so during the common day routine."; and "Even though I wasn't in a group, well, now I think about stress more - don't let it build up - so less attacks I have. It helped a lot."
Some of the comments made by ES participants were: "This project was really nice because I learned a lot about myself and the physiological reactions I experience."; This project taught me a lot about the many factors that make up a panic attack situation. I feel more aware of my body's reaction to stressors and I believe that awareness has helped me monitor and prevent anxiety problems. The daily anxiety sheets were very helpful in pinpointing my physiological changes and the sessions were a good forum to vent my psychological frustrations."; "I want to thank you very much for offering all of the support and information to us. I think the group meetings have really helped me control my level of anxiety - and at least now I can recognize it. I feel much more comfortable now in situations where I would normally have an anxiety attack."; "When I was going to the sessions I did not have any panic attacks. Maybe by going and talking to other people and listening to what they were saying helped me...The only thing I wish I could have learned in the sessions was how to stop panic attacks or what to do when I was having one to relax myself."; "The project helped me a lot in terms of being able to better understand and cope with panic attacks."; and "I did find the sessions to be beneficial simply because they helped me understand more of what was going on with myself. I would suggest having a little more on how to deal with the attacks in the sessions."

Finally, CBT participants commented: "This project made me a lot more aware of the thoughts that are leading to my fears. While I haven't mastered it yet, I think these techniques will be helpful in the future."; "This project really helped me with taking tests, and my grades prove it."; "I personally didn't feel too anxious during the experiment but did find the muscle relaxing to help."; and "I found it very helpful. I am able to handle most of my anxiety attacks and rarely avoid some situations. Things which would have been an attack before are no longer one now. I use the cognitive thinking the most and I think that is the most helpful, mostly because I find that my anxiety comes from worrying
too much, so when I worry less and 'straighten my mind out' the attack is either less severe or non-existent."

**Implications**

The findings of this study have important implications for the treatment of panic attacks in late adolescents. First, while the experience of panic is quite prevalent in this population, very few late adolescents report seeking treatment for their panic attacks. This phenomenon appears to demand a more active approach on the part of mental health professionals in terms of educating late adolescents about panic attacks and the availability of accessible treatment. Treatment strategies which may particularly appeal to this age group (e.g., group treatment which provides support in addition to teaching effective strategies for managing panic) should be offered in treatment settings which cater to late adolescents (e.g., college counseling centers). Secondly, those who treat panic attacks in late adolescents must acknowledge and address associated symptomatology and experiences of distress (e.g., heightened levels of general anxiety and depression). Mental health professionals working with late adolescents should be aware of the association between the experience of panic attacks and other diagnostic presentations, particularly social phobia, generalized anxiety disorder, and specific phobia.

It will be important for future research to continue exploring the nature of the association between panic attacks and other forms of psychopathology in late adolescents, while also investigating the effectiveness of treatments aimed at alleviating the fairly common experience of nonclinical panic and associated symptomatology in this age group. Future research should aim to extend the findings of the present investigation by combining components of education/support and cognitive-behavioral treatment in an effort to develop a treatment that is even more effective than either of these treatments is alone. In the present study, while both treatments were effective, education/support
appeared somewhat superior, and was rated as marginally more credible by participants, relative to cognitive-behavioral treatment, although cognitive-behavioral treatment was somewhat more effective in reducing avoidance. Group treatment which places an emphasis on psychoeducation, individual and group processing of panic experiences, and support may be particularly appealing and efficacious for a late adolescent nonclinical population. However, the inclusion of cognitive-behavioral strategies (e.g., applied relaxation, cognitive restructuring, exposure) may enhance the effectiveness of an education/support approach by offering specific coping strategies and reducing avoidance. It is interesting that, while the Post-Treatment comments of ES participants emphasized the utility of support, information, and awareness in helping them cope with their panic attacks, some indicated the desire to learn more specific strategies (e.g., "I wish I could have learned in the sessions...how to stop panic attacks or what to do when I was having one to relax myself."). Future research should incorporate the suggestions of these late adolescents by combining psychoeducation, group support, and cognitive-behavioral strategies to develop a treatment that may be optimally effective for this particular group of nonclinical panic sufferers.

It would also be interesting in future research to attempt to further analyze components of the waitlist group that contributed to improvement in the present study. For instance, future research might incorporate a control group of late adolescent nonclinical panic sufferers who did not self-monitor in order to further evaluate the effectiveness of this strategy as an intervention as well as an assessment tool. Similarly, a control group that did not meet with research staff to complete weekly assessment measures would help evaluate the impact that this component of the current study had on improvement in the waitlist group. Of course, certain elements, such as the provision of a definition of panic attacks to assess whether an individual has ever experienced one, or the sense of social support that one
obtains from participating in a study, would be difficult to eliminate from research of this nature.

Finally, as alluded to previously, it seems that any program which strives to offer treatment to late adolescent nonclinical panickers must actively educate both late adolescents and staff at medical facilities where they may present (e.g., student health services) about the nature and characteristics of panic attacks, as well as the availability of effective treatment. The present study has shown that nonclinical panic attacks in late adolescents may be effectively treated through short-term group interventions. Furthermore, the treatment strategies incorporated in the present study would be easily implemented within any university counseling center or other mental health facility that caters to late adolescents. However, as late adolescent panickers rarely present for treatment, efforts must be made to actively notify them and their medical care providers about the availability of effective group treatment programs. Such efforts have the potential long-term benefit of breaking the cycle of panic at an early stage, thus preventing the need for more costly, longer term treatments.

Since late adolescence has been identified in the DSM-IV (American Psychiatric Association, 1994) as the initial peak for onset of panic disorder, it seems particularly crucial that treatment facilities target nonclinical panic attacks in late adolescence before they reach heightened levels of severity. The approaches investigated in the present study offer realistic and effective strategies for treating late adolescent nonclinical panickers, thus helping to break the cycle of panic and its associated symptomatology.
References


Figure 2: Mean Daily Anxiety Rating
Figure 5: Mean Number of Panic Symptoms Per Attack
Figure 8: Mean CMI-Alone Score
Table 1

Number of Participants by Semester, Cohort, and Treatment Condition

<table>
<thead>
<tr>
<th>Semester</th>
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<th>Fall</th>
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<td>Cohort 3</td>
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<td>WL ES CBT</td>
<td>WL ES CBT</td>
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<td>------ LCTB SM/GF</td>
<td>------ LS/CG KI/TB</td>
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<td>3 1 1</td>
<td>3 2 2</td>
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<tr>
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<td>1 1 1</td>
<td>1 1 1</td>
</tr>
<tr>
<td>Totals</td>
<td>6 6 6</td>
<td>4 2 2</td>
<td>4 3 3</td>
</tr>
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</table>

| Totals | 36 |

27
9
Table 2

Distribution of Panic Status Groups by Gender

<table>
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<tr>
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<th>Male</th>
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<tr>
<td>Nonpanickers</td>
<td>276</td>
<td>135</td>
<td>411 (71.4%)</td>
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<tr>
<td>Past Panickers</td>
<td>72</td>
<td>23</td>
<td>95 (16.5%)</td>
</tr>
<tr>
<td>Recent Panickers</td>
<td>53</td>
<td>17</td>
<td>70 (12.2%)</td>
</tr>
<tr>
<td>Totals</td>
<td>401 (69.6%)</td>
<td>175 (30.4%)</td>
<td>576 (100%)</td>
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Table 3
Means and Standard Deviations for Daily Anxiety Ratings and Symptoms

<table>
<thead>
<tr>
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<th>Pre-Treatment</th>
<th></th>
<th>Post-Treatment</th>
<th></th>
</tr>
</thead>
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<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
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<tr>
<td>Total Sample</td>
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<td>1.18</td>
<td>0.59</td>
<td>0.88</td>
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<td>WL</td>
<td>1.50</td>
<td>1.40</td>
<td>0.86</td>
<td>1.08</td>
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<td>0.68</td>
<td>0.39</td>
<td>0.85</td>
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<td>CBT</td>
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<td>0.71</td>
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<td><strong>High DAR (0-8)</strong></td>
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<td>2.48</td>
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<td>0.53</td>
<td>0.75</td>
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Note: variable range indicated in parentheses
Table 4
Means and Standard Deviations for Panic Attacks and
Panic Symptoms in the Past Week

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<th>Pre-Treatment</th>
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<th>Post-Treatment</th>
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<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
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<tr>
<td><strong>Panic Attacks (0-indefinite)</strong></td>
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<tr>
<td>Total Sample</td>
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<td>1.01</td>
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<tr>
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<td>0.80</td>
<td>0.08</td>
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<tr>
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<td><strong>Panic Symptoms (0-15)</strong></td>
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<td>2.55</td>
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Note: variable range indicated in parentheses
Table 5

Means and Standard Deviations for PASQ, PACQ, and Number of Panic Attacks in the Past Month

<table>
<thead>
<tr>
<th></th>
<th>Pre-Treatment</th>
<th></th>
<th>Follow-Up</th>
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<td>Mean</td>
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<td><strong>PASQ (0-195)</strong></td>
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<tr>
<td>Total Sample</td>
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<td>WL</td>
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<td><strong>PACQ-during (25-100)</strong></td>
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<tr>
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<td>28.31</td>
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<tr>
<td>WL</td>
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<td>15.22</td>
<td>29.00</td>
<td>8.49</td>
</tr>
<tr>
<td>ES</td>
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<td>10.19</td>
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<tr>
<td><strong>PACQ-after (25-100)</strong></td>
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<td><strong>Panic Attacks (0-indefinite)</strong></td>
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Note: variable range indicated in parentheses
Table 7

Means and Standard Deviations for State Anxiety Score

| State Anxiety (20-80) | Pre-Treatment | | Post-Treatment | | Follow-Up | |
|----------------------|---------------|----------------|----------------|----------------|----------------|
|                      | Mean          | S.D.           | Mean           | S.D.           | Mean           | S.D.           |
| Total Sample         | 45.56         | 11.91          | 38.15          | 14.85          | 35.56          | 14.39          |
| WL                   | 47.43         | 13.04          | 38.00          | 17.42          | 40.31          | 17.55          |
| ES                   | 43.90         | 12.53          | 38.00          | 14.65          | 31.50          | 11.84          |
| CBT                  | 44.60         | 10.39          | 38.50          | 12.47          | 33.22          | 10.93          |

Note: variable range indicated in parentheses
Table 8

Means and Standard Deviations for CMI-Accompanied and CMI-Alone Scores

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Note: variable range indicated in parentheses
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Means and Standard Deviations for ASI, BDI, and Trait Anxiety Scores

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Note: variable range indicated in parentheses
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Note: totals greater than the number of participants are due to multiple diagnoses
### Table 12
Clinical Diagnoses Assigned to Each Participant on the ADIS-IV at Pre-Treatment

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</tr>
<tr>
<td>Social Phobia</td>
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<td>X</td>
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</tr>
<tr>
<td>GAD</td>
<td>X</td>
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<td>OCD</td>
<td>X</td>
<td>X</td>
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<td>Specific Phobia</td>
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Table 13
Clinical Diagnoses Assigned to Each Participant on the ADIS-IV at Post-Treatment

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Table 14

Number of Participants Meeting Subclinical Criteria for ADIS-IV Diagnoses

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Note: totals greater than the number of participants are due to multiple diagnoses
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Table 16
Subclinical Diagnoses Assigned to Each Participant on the ADIS-IV at Post-Treatment

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<thead>
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<tr>
<td>Agoraphobia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Phobia</td>
<td>X  X  X  X  X</td>
<td>X  X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>GAD</td>
<td>X  X  X  X  X</td>
<td>X  X</td>
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<tr>
<td>OCD</td>
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<tr>
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<tr>
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<td></td>
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<td>Dysthymic Disorder</td>
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<tr>
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Appendix A

1. Screening Consent Form ................................................................. 125
2. Assessment/Treatment Consent Form ............................................ 127
3. Student Health Service Release of Information Form ...................... 130
Informed Consent Form
Screening

TITLE: Group Treatment of Nonclinical Panic Attacks in Late Adolescence:
A Comparison of Education/Support and Cognitive-Behavioral Approaches

PRINCIPAL INVESTIGATOR: Sara G. Mattis, M.S.

I. PURPOSE
You are invited to participate in a study about the different feelings that college students sometimes have. The purpose of this study is to assess 18- and 19-year olds’ experiences with such feelings as anxiety and depression.

II. PROCEDURES TO BE FOLLOWED IN THE STUDY
Today, you will be asked to complete five questionnaires regarding experiences with such feelings as anxiety and depression, as well as a questionnaire dealing with life changes and a medical history form. You may skip any questions you feel uncomfortable answering. It should take approximately 45-75 minutes to complete these questionnaires. You will be participating today in the first part of a two part project. Depending on your responses to the questionnaires you will be filling out today, you may qualify for the second part of this project. If you do qualify, I am requesting permission to contact you in order to further explain the second part of the project and invite you to participate.

III. ANONYMITY OF SUBJECTS AND CONFIDENTIALITY OF RESULTS
All of your responses will remain confidential, with all of the completed questionnaires and records kept in a locked cabinet. With the exception of this consent form, you are asked to indicate only your social security number as identification on all questionnaires. Only a subject number will identify you during analyses and any writeup of this research. Your responses will not be disclosed to anyone outside of the project staff without your written consent. If, however, your responses indicate that you are at risk of hurting yourself or have serious concerns, I will consult with my faculty advisor and contact you to provide information on treatment services available to you. Such services include the Counseling Center (231-6557), the RAFT (552-5706), and the Psychological Services Center (231-6914). I will also take whatever precautions are necessary to ensure your safety, even if this requires that confidentiality be broken.

IV. DISCOMFORTS AND RISKS FROM PARTICIPATING IN THE STUDY
While there is no obvious risk involved in completing these questionnaires, there is the possibility that some of the questions may trigger distressing thoughts and feelings for some people.

V. EXPECTED BENEFITS
Your participation in the project may give you insight into some of your thoughts and feelings, and you will be helping us gain a better understanding of different feelings that college students sometimes have.

VI. FREEDOM TO WITHDRAW
Your participation in this project is voluntary and you are free to withdraw from this study at any time without penalty. If you choose to withdraw, you will receive extra credit for the portion of time that you have participated. If you choose to withdraw, you will not be penalized by reduction in points or grade for the course in which you are enrolled and are pursuing extra credit.

VII. EXTRA CREDIT
Your participation in the project today provides you with the opportunity of gaining 2 extra credit points.

VIII. USE OF RESEARCH DATA
The information from this research may be used for scientific or educational purposes. It may be presented at scientific meetings and/or published and reproduced in professional journals or books, or used for any other purpose that Virginia Tech's Department of Psychology considers proper in the interest of education, knowledge, or research.

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IX. APPROVAL OF RESEARCH
This project has been approved by the Human Subjects Research Committee of the Department of Psychology and by the Institutional Review Board at Virginia Tech. If you have any questions or concerns regarding this project, please feel free to contact Sara Mattis (552-9238), principal investigator; Dr. Thomas Ollendick (231-6451), faculty advisor; Dr. Richard Eisler (231-6914), Human Subjects Committee Chair; or Ernest Stout (231-9359), Institutional Review Board Chairperson.

X. SUBJECT'S PERMISSION
Please sign below indicating your willingness to participate in the project today and to be contacted if you qualify for the second part of this project. Your participation is appreciated.

"I have read and understand the informed consent form and conditions of this project. I have had an opportunity to ask questions and have had them all answered. I hereby acknowledge the above and give my voluntary consent for participation in this study. I further understand that if I participate, I may withdraw at any time without penalty. I give the project staff permission to contact me if I qualify for the second part of this project. I understand that should I have any questions or concerns regarding this research and its conduct, I should contact any of the persons named below."

Principal Investigator: Sara Mattis, M.S. Phone: 552-9238
Faculty Advisor: Dr. Thomas Ollendick Phone: 231-6451
Chair, HSC: Dr. Richard Eisler Phone: 231-6914
Chair, IRB: Ernest Stout Phone: 231-9359

_____________________________ ________________________________
Signature Date

_____________________________ ________________________________
Name (Please Print) Social Security Number

_____________________________ ________________________________
Phone Number Address

Below is a list of assistance providers in the Blacksburg area who offer treatment for problems addressed in this study, including feelings of anxiety and depression.
The Counseling Center (231-6537)
The RAFT (552-5706)
The Psychological Services Center (231-6914)
Informed Consent Form
Assessment/Treatment

TITLE: Group Treatment of Nonclinical Panic Attacks in Late Adolescence: A Comparison of Education/Support and Cognitive-Behavioral Approaches

PRINCIPAL INVESTIGATOR: Sara G. Mattis, M.S.

I. PURPOSE
You are invited to participate in a study about the different feelings that college students sometimes have. In particular, this study focuses on 18- and 19-year olds and their experiences with anxiety and panic attacks. On the questionnaires you completed in the first part of this project, you indicated that you have had a panic attack in the past month. Based on this experience you have been invited to participate in the second part of this project. The purpose of the second part of this project is to conduct a more indepth assessment of 18- and 19-year olds’ experiences with anxiety, panic attacks, and other problems, and to investigate the effectiveness of group treatment for such problems.

II. PROCEDURE TO BE FOLLOWED IN THE STUDY
If you agree to participate, you will be interviewed today by a graduate student in clinical psychology regarding your experiences with anxiety, panic attacks, and other problems, and you will be asked to complete four questionnaires regarding your experiences with panic attacks and anxiety. You may skip any questions you feel uncomfortable answering. Today’s assessment will take 1-2 hours. You will also be asked to complete a release of information form for the Student Health Service which will give the primary investigator permission to obtain information related to the presenting problem and outcome, including diagnosis and treatment, of any visits you make to the Student Health Service over the course of the study (with the exception of regular annual appointments). In addition, you will be asked to monitor your panic attacks and daily anxiety for the next 8-10 weeks on forms that will be provided to you. Each week, during a 6-week period, you will be asked to return these forms and to complete five brief questionnaires (three regarding panic attacks and two regarding anxiety in general). It should take approximately 15 minutes each week to complete these questionnaires. Again, you may skip any questions you feel uncomfortable answering. In approximately 8-9 weeks, you will be interviewed again by a graduate student in clinical psychology and asked to complete several questionnaires. This final interview should take approximately 45-90 minutes. Finally, you may be assigned to participate in one of two group treatments for panic attacks or assigned to a no-treatment waitlist condition. You will be randomly assigned to one of these three groups. If assigned to treatment, your group will consist of approximately 4-6 18 and 19-year olds. Two graduate students in clinical psychology will serve as group leaders. Group meetings will begin within two weeks and will continue for a total of six weeks. The group will meet twice per week during the first two weeks, and once per week during the remaining four weeks (for a total of eight sessions). Each group meeting will last for approximately one hour. If assigned to participate in a group, your presence at all group meetings will be valued and important. If you are assigned to the waitlist condition, you will be given a referral for treatment after completion of the study. Lastly, two months following your participation in the study, you will be mailed a final packet of questionnaires and asked to return them in a stamped envelope that will be provided.

III. ANONYMITY OF SUBJECTS AND CONFIDENTIALITY OF RESULTS
Interviews and group sessions will be audiotaped and coded by members of the project staff for the purpose of assessing reliability and treatment integrity. Audiotaped information will not contain your last name, and all audiotapes will be erased after they have been coded and not more than one year after completion of the study. Your responses will remain confidential, with all of the completed questionnaires, records, and tapes stored in a locked cabinet. Only a subject number will identify you during analyses and any writeup of this research. Your responses will not be disclosed to anyone outside of the project staff without your written consent. If, however, your responses indicate that you are at risk of hurting yourself or have serious concerns, I will consult with my faculty advisor and contact you to provide information on treatment services available to you. Such services include the Counseling Center (231-6557), the RAFT (552-5706),
and the Psychological Services Center (231-6914). I will also take whatever precautions are necessary to ensure your safety, even if this requires that confidentiality be broken.

IV. DISCOMFORTS AND RISKS FROM PARTICIPATING IN THE STUDY
Your participation in this project may involve the potential risk of discomfort associated with focusing on your anxiety and panic attacks while trying to monitor, understand, and/or learn ways to cope with them. While many of the techniques used in this project have been shown to be effective treatments for anxiety and panic attacks in many people, they may result in initial increases in anxiety levels and/or panic attacks for some people. If participation in this project is not effective in reducing your anxiety and/or panic attacks, or if you experience increased levels of anxiety which have not been alleviated by the end of the study, you will be given an appropriate treatment referral. If you experience serious distress as a result of this project, and desire to terminate participation, you will immediately be terminated from the study and given an appropriate referral. With your consent, we would follow your progress until a reduction in your level of distress has been evidenced.

V. EXPECTED BENEFITS
By participating in this study, you will be helping us gain a better understanding of anxiety and panic attacks in college students and potential treatments for these problems. Participation in this study may provide you with insight into your experiences with anxiety and panic attacks, and may help you cope with these problems. However, we cannot promise treatment that may prove beneficial beyond the time of this study.

VI. FREEDOM TO WITHDRAW
Your participation in this project is voluntary and you are free to withdraw from this study at any time without penalty. If you choose to withdraw, you will receive extra credit points for each assessment/interview that you have completed. If you choose to withdraw, you will not be penalized by reduction in points or grade for the course in which you are enrolled and are pursuing extra credit.

VII. EXTRA CREDIT
Your participation in this project provides you with the opportunity of gaining 8 extra credit points. Specifically, you will receive 2 points for today’s assessment, 3 points for the final interview described above, and 3 points for agreeing to return the final questionnaires by mail.

VIII. USE OF RESEARCH DATA
The information from this research may be used for scientific or educational purposes. It may be presented at scientific meetings and/or published and reproduced in professional journals or books, or used for any other purpose that Virginia Tech’s Department of Psychology considers proper in the interest of education, knowledge, or research.

IX. APPROVAL OF RESEARCH
This project has been approved by the Human Subjects Research Committee of the Department of Psychology and by the Institutional Review Board at Virginia Tech. If you have any questions or concerns regarding this project, please feel free to contact Sara Mattis (552-9238), principal investigator; Dr. Thomas Ollendick (231-6451), faculty advisor; Dr. Richard Eisler (231-6914), Human Subjects Committee Chair; or Ernest Stout (231-9359), Institutional Review Board Chairperson.
X. SUBJECT'S PERMISSION
Please sign below indicating your willingness to participate in the project. Your participation is appreciated. I have read and understand the informed consent form and conditions of this project. I have had an opportunity to ask questions and have had them all answered. I hereby acknowledge the above and give my voluntary consent for participation in this study. I further understand that if I participate, I may withdraw at any time without penalty. I understand that should I have any questions or concerns regarding this research and its conduct, I should contact any of the persons named below.

Principal Investigator: Sara Mattis, M.S. Phone: 552-9238
Faculty Advisor: Dr. Thomas Ollendick Phone: 231-6451
Chair, HSC: Dr. Richard Eisler Phone: 231-6914
Chair, IRB: Ernest Stout Phone: 231-9359

__________________________________________
Signature

__________________________________________
Date

__________________________________________
Name (Please Print) Social Security Number

__________________________________________
Phone Number Address

Below is a list of assistance providers in the Blacksburg area who offer treatment for problems addressed in this study, including feelings of anxiety and depression.
   The Counseling Center (231-6557)
   The RAFT (552-5706)
   The Psychological Services Center (231-6914)
VIRGINIA TECH
STUDENT HEALTH SERVICE

AUTHORIZATION FOR RELEASE OF INFORMATION

DATE: __________

TO WHOM IT MAY CONCERN:

This is to certify that I, ____________________________,
NAME OF PATIENT
ID# ____________________ , grant permission to ____________________________,
NAME OF PHYSICIAN
Sara Mattis, M.S. or
Thomas Ollandick, Ph.D.

NAME OF PHYSICIAN

to inform ____________________________,
RECIPIENT
Thomas Ollandick, Ph.D.

NAME OF PHYSICIAN

regarding my illness, disability, outcome, diagnosis, treatment.

SIGNED: ____________________________________________

PICK UP OR MAIL TO:

WITNESSED: _______________________________________

____________________________________________________

OFFICE USE ONLY:

Material Released: ___________________________ Date Released ___________________________

Released To Whom: ___________________________ By Whom: ___________________________
Appendix B

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12. The Chambless Mobility Inventory (CMI) ....................................................... 143
The Panic Attack Questionnaire (PAQ) can be obtained from:

G. Ron Norton  
The University of Winnipeg  
515 Portage Avenue  
Winnipeg, Manitoba  
Canada  
R3B 2E9
The Anxiety Sensitivity Index (ASI) can be obtained from:

IDS Publishing
P.O. Box 389
Worthington, OH 43085
614-885-2323
The State-Trait Anxiety Inventory (STAI) can be obtained from:

Mind Garden, Inc.
P.O. Box 60669
Palo Alto, CA 94306
415-424-8493
The Beck Depression Inventory (BDI) can be obtained from:

The Psychological Corporation
P.O. Box 839954
San Antonio, TX 78283-3954
1-800-211-8378
The **Attributional Style Questionnaire (ASQ)** can be obtained from:

Martin E. P. Seligman  
University of Pennsylvania  
Department of Psychology  
3815 Walnut Street  
Philadelphia, PA 19104-6196
The *Life Experiences Survey (LES)* can be obtained from:

Irwin G. Sarason  
Department of Psychology NI-25  
University of Washington  
Seattle, WA 98195
SSN ____________

Medical History Form

Please circle yes (Y) to the right of each column if you now have or have ever had the condition indicated. Circle no (N) if you have never had the condition or circle ? if you are unsure.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Y</th>
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<tr>
<td>Irregular heart beat</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Arrhythmias or fibrillations</td>
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<td></td>
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<td>Heart murmurs</td>
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<td>Mitral valve prolapse</td>
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<tr>
<td>Seizures</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperthyroidism</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV) can be obtained from:

The Psychological Corporation
P.O. Box 839954
San Antonio, TX 78283-3954
1-800-211-8378
The Panic Attack Symptoms Questionnaire (PASQ) can be obtained from:

George A. Clum
Virginia Polytechnic Institute and State University
Department of Psychology
Blacksburg, VA 24061-0436
The **Panic Attack Cognitions Questionnaire (PACQ)** can be obtained from:

George A. Clum  
Virginia Polytechnic Institute and State University  
Department of Psychology  
Blacksburg, VA 24061-0436
The **Self-Efficacy Questionnaire (SEQ)** can be obtained from:

George A. Clum  
Virginia Polytechnic Institute and State University  
Department of Psychology  
Blacksburg, VA 24061-0436
The Chambless Mobility Inventory (CMI) can be obtained from:

Dianne L. Chambless
Department of Psychiatry
Temple University Medical School
Philadelphia, PA 19140
Appendix C

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Panic Attack Record
(Adapted from Rapee, Craske, & Barlow, 1990)

ID#: ________________ Date: __________ Time: __________ Duration: __________ (mins)

With: Friend_______ Family member ______ Stranger_______ Alone_______

Stressful situation: Yes / No If yes, specify ____________________________ Expected: Yes / No

Severity

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
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<td>moderate</td>
<td>severe</td>
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<td></td>
</tr>
</tbody>
</table>

Symptoms (check all that apply)

___ Pounding heart ___ Chest pain or discomfort ___ Feelings of unreality
___ Sweating ___ Nausea ___ Fear of losing control
___ Trembling / shaking ___ Dizzy or faint ___ Fear of going crazy
___ Shortness of breath ___ Numbness or tingling ___ Fear of dying
___ Choking ___ Hot or cold flashes ___ Other________________

Please indicate any thoughts associated with the panic attack below.
Daily Anxiety Record

Morning
ID#: ______________ Date: ______________ Time: ______________
Stressful situation: Yes / No If yes, specify __________________________
Please indicate your lowest level of anxiety experienced this morning
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please indicate your highest level of anxiety experienced this morning that did not result in a panic attack
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please check any of these symptoms that you experienced this morning but did not result in a panic attack
  □ Pounding heart  □ Chest pain or discomfort  □ Feelings of unreality
  □ Sweating        □ Nausea                      □ Fear of losing control
  □ Trembling / shaking □ Dizzy or faint            □ Fear of going crazy
  □ Shortness of breath □ Numbness or tingling      □ Fear of dying
  □ Choking          □ Hot or cold flashes          □ Other ______
Please indicate any thoughts associated with your anxiety below.

Afternoon
ID#: ______________ Date: ______________ Time: ______________
Stressful situation: Yes / No If yes, specify __________________________
Please indicate your lowest level of anxiety experienced this afternoon
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please indicate your highest level of anxiety experienced this afternoon that did not result in a panic attack
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please check any of these symptoms that you experienced this afternoon but did not result in a panic attack
  □ Pounding heart  □ Chest pain or discomfort  □ Feelings of unreality
  □ Sweating        □ Nausea                      □ Fear of losing control
  □ Trembling / shaking □ Dizzy or faint            □ Fear of going crazy
  □ Shortness of breath □ Numbness or tingling      □ Fear of dying
  □ Choking          □ Hot or cold flashes          □ Other ______
Please indicate any thoughts associated with your anxiety below.

Evening
ID#: ______________ Date: ______________ Time: ______________
Stressful situation: Yes / No If yes, specify __________________________
Please indicate your lowest level of anxiety experienced this evening
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please indicate your highest level of anxiety experienced this evening that did not result in a panic attack
____0_______1_______2_______3_______4_______5_______6_______7_______8
  mild  moderate  severe
Please check any of these symptoms that you experienced this evening but did not result in a panic attack
  □ Pounding heart  □ Chest pain or discomfort  □ Feelings of unreality
  □ Sweating        □ Nausea                      □ Fear of losing control
  □ Trembling / shaking □ Dizzy or faint            □ Fear of going crazy
  □ Shortness of breath □ Numbness or tingling      □ Fear of dying
  □ Choking          □ Hot or cold flashes          □ Other ______
Please indicate any thoughts associated with your anxiety below.
Appendix D

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Cognitive-Behavioral Treatment (CBT) Protocol
Adapted from Barlow & Cerny, 1988; Borden, Clum, & Salmon, 1991; Clum, 1990; and Ost, 1987

SESSION 1

Session Goals:
1. Introduction of therapist and group members (10 min)
2. General inquiry into members' experiences with panic attacks (15 min)
3. Description of treatment program and rationale (15 min)
4. Review Panic Attack and Daily Anxiety Records (15 min)
5. Assess credibility of treatment (5 min)

1. Introductions
   - Introduce self as a graduate clinician with a master's degree in clinical psychology
   - Indicate that all members of the group have reported experiencing panic attacks and that the group will be working closely together over the next six weeks to learn strategies for coping with this problem
   - Mention that it will be important that all members be involved in group discussion and work. Review confidentiality issues.
   - Ask each member to introduce and briefly describe him/herself (e.g., where from, family, etc.).

2. Inquiry into members' experiences with panic
   - Ask each member of the group to share their own perceptions and history of panic attacks. Probe for information related to initial panic attack (e.g., age, situation in which it occurred), current frequency of panic attacks, situations which trigger panic attacks and associated avoidance, physical symptoms, and cognitions.
   - Identify members' goals

3. Description of treatment and rationale
   - Explain that the purpose of treatment will be to learn specific coping strategies that many people find effective for managing panic attacks
   - Introduce the concept that panic attacks consist of physical, cognitive, and behavioral components, and that different coping strategies will be aimed at reducing each of these. Relate the components of panic to subjects' experience as discussed above.
   - Emphasize the importance of active involvement on the part of members, including the practice of coping skills in real-world situations that are anxiety provoking and/or associated with panic attacks

4. Review Panic Attack and Daily Anxiety Records
   - Make sure records are complete and accurate. Collect records.
   - Emphasize the importance of these records for the following reasons:
     a. monitoring progress
     b. identifying situations associated with attacks
     c. helping subjects identify effective coping strategies as they practice skills learned in treatment
     d. addressing the circumstances if no panic attacks for that week
   - Reinforce that subjects must bring these to each session so you can collect them
   - Hand out more Panic Attack and Daily Anxiety Records
   - Answer any questions
5. Assess credibility of treatment
   • Ask subjects to complete the Treatment Credibility Questionnaire
SESSION 2

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (5 min)
2. Discuss antecedents to panic attacks or heightened anxiety (10 min)
3. Describe the cycle of panic, including physiological, cognitive, and behavioral components (15 min)
4. Introduce diaphragmatic breathing as a coping strategy aimed at breaking the cycle (15 min)
5. Introduce monitoring of cognitions and self-statements (10 min)
6. Summary and homework (5 min)

1. Review Panic Attack and Daily Anxiety Records
   - Reinforce completeness and accuracy.
   - If no panic attacks were experienced that week, discuss the need for continued monitoring.

2. Discuss antecedents
   - Referring to the panic attack records, ask each member to identify at least two circumstances, situations, or events which have directly preceded a recent panic attack or heightened anxiety.
   - Probe for physical symptoms experienced, cognitive interpretations, and behavioral responses (e.g., avoidance, inability to perform a task)
   - Examine coping strategies used and their effectiveness

3. Describe the cycle of panic
   - Clearly differentiate panic attacks from heightened anxiety. Explain that anxiety symptoms are described as a panic attack when at least four symptoms occur in combination and they come on suddenly. Panic attacks may occur spontaneously or "out of the blue," or they may be associated with particular situations. They are often accompanied by feelings of impending doom and an intense desire to escape.
   - Explain each component and its role in creating a cycle which culminates in a panic attack
     a. Physiological component: physical sensations or feelings (e.g., shortness of breath/difficulty breathing, heart pounding, trembling or shaking, dizziness)
     b. Cognitive component: thoughts/self-statements, expectations, beliefs, interpretations, imagery
     c. Behavioral component: avoidance/escape, interference with performance of a skill or task
     d. These three components often interact with one another to produce a panic attack. Specifically, the physical symptoms of anxiety reflect normal bodily changes in physiological arousal. However, many individuals who experience panic attacks interpret such symptoms as signaling that something very negative or catastrophic is happening to them (e.g., dying, losing control, going crazy). Such cognitive interpretations often act to increase the experience of anxiety and the accompanying physical symptoms. More negative thinking results, and a vicious cycle has been established which is experienced as a panic attack. Avoidance of or escape from situations in which this vicious cycle is experienced may result, or performance within that situation may be impeded.
   - Ask subjects to apply the cycle of panic and its components to their own experience.
• Answer any questions about the cycle of panic and its components

4. Introduce diaphragmatic breathing
   • Explain that people often hyperventilate before and during a panic attack. Hyperventilation can be caused by breathing through one’s mouth, taking short, shallow breaths, or frequent sighing. Hyperventilation can produce some of the physical symptoms associated with panic, and can thus set the vicious cycle in motion leading to a panic attack. Diaphragmatic breathing is a coping strategy which prevents hyperventilation by slowing breathing. It can help you gain control of your breathing during a panic attack and also help you relax your body.
   • Teach diaphragmatic breathing (tell them it is pretty easy to learn this coping strategy)
     a. Ask subjects to observe their breathing. Explain that if the stomach does not rise first followed by the chest, you are not breathing from your diaphragm. Ask subjects to breathe through the nose for the following exercises.
     b. Ask subjects to breathe normally and count the number of breaths they take for 1 minute (time this for them). Tell them that their goal is a breathing rate, while at rest, of 9 to 16 breaths per minute.
     c. Instruct subjects to place one hand over the abdomen and state that, when inhaling, the abdomen should rise first and the upper chest second. Allow them to practice breathing this way, 9 to 16 times per minute (time two minutes for them).
     d. Instruct subjects to practice diaphragmatic breathing in this fashion 2 times per day for 10 minutes each time prior to the next session. Provide a homework diary and instruct them in recording this practice. Also, emphasize that they should practice slowing their breathing down and breathing from the diaphragm throughout the day, such as while watching TV, sitting in class, riding the bus, etc. Stress that, like any skill, the more one practices, the more natural it will become. Tell the group that diaphragmatic breathing is particularly helpful when you experience feelings of tightness in your chest, difficulty getting a full breath, or tingling sensations.

5. Introduce monitoring of cognitions and self-statements
   • Introduce the idea that, in order to reevaluate and change anxiety-provoking thoughts involved in the cycle of panic, it is important to become aware of these thoughts and the situations in which they occur
   • Discuss cognitive symptoms which were revealed in the exploration of antecedents to panic attacks or heightened anxiety. Be sure each group member can identify at least one anxiety-provoking thought. Ask subjects questions aimed at eliciting specific interpretations/expectations in antecedent/anxiety-provoking situations (e.g., "What do you think will happen?", "What do you picture or imagine happening?", "What are you telling yourself about the situation?")
   • Instruct subjects to monitor specific anxiety-provoking cognitions and self-statements on the Panic Attack and Daily Anxiety Records

6. Summary and homework
   • Briefly discuss what members feel they learned during the session
   • Answer questions
   • Reinforce the importance of practice and self-monitoring. Ensure all subjects have enough Panic Attack and Daily Anxiety Records and homework diaries to last until the next session and that they understand how to complete them.
SESSION 3

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review application of diaphragmatic breathing (5 min)
3. Review monitoring of cognitions and self-statements (5 min)
4. Introduce progressive relaxation (20 min)
5. Begin to explore alternative explanations for cognitions/self-statements (20 min)
6. Summary and homework (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   - Reinforce completeness and accuracy

2. Review application of diaphragmatic breathing
   - Be sure this was practiced frequently and correctly
   - Discuss situations in which it was used and its perceived effectiveness as a strategy for coping with panic attacks and/or heightened anxiety

3. Review monitoring of cognitions and self-statements
   - Discuss specific anxiety-provoking cognitions and self-statements monitored by subjects since the last session, including situations in which they occurred.
   - Discuss group members' perceptions of how such thoughts may impact their experience of anxiety and/or panic

4. Introduce progressive relaxation (Öst, 1987)
   - Introduce relaxation as another coping strategy designed to decrease one's general level of anxiety and reduce symptoms associated with panic, thus helping to break the cycle of panic discussed last week. Explain that, since relaxation and anxiety are opponent processes, it is impossible to feel both simultaneously.
   - Discuss the idea that, since many of us are unaware of when our muscles are tense, the process of tensing and releasing different muscles helps us learn to differentiate between muscle tension and relaxation. The goal of muscle relaxation is to learn to quickly relax all of your muscles in response to a particular cue. Today we will practice relaxing specific muscle groups.
   - Begin progressive muscle relaxation by having group members focus on diaphragmatic breathing. Model tensing and relaxing the large muscle groups, while subjects practice along with you. After practicing, have subjects close their eyes while you guide them through tensing and relaxing all the muscle groups. When tensing muscles, have subjects hold the tension for a count of five. When relaxing, hold for a count of ten. Have subjects focus on diaphragmatic breathing between muscle groups.
   - Instruct subjects to practice these exercises twice per day for 15-20 minutes, recording practices on their homework diary. Indicate that practice should be done while sitting in a quiet, comfortable place. Again, stress that, like any skill, the more one practices the more natural it will become. Provide each member with a copy of the script.

5. Begin to explore alternative explanations for cognitions/self-statements (Barlow & Cerny, 1988, p. 124-125)
   - Referring to cognitions/self-statements recorded on the Panic Attack and Daily Anxiety Records, present the idea that the first step in changing such anxiety-provoking
thoughts is to ask oneself whether there are alternative ways of looking at the situation. For instance, many people limit their view of anxiety-provoking situations by focusing only on very negative outcomes (e.g., "I know I will fail," "I know I will appear very anxious and embarrass myself"). Rather than jumping quickly to such anxiety-provoking conclusions, encourage subjects to regard such predictions/interpretations as hypotheses rather than facts, and to ask themselves "How do I know/what evidence do I have that this will happen?" or "Are there other possible ways of looking at the situation?"

- Have the group discuss examples from their own lives in which they originally jumped to a negative, anxiety-provoking conclusion regarding a situation, and later realized that their interpretation/prediction was incorrect. You may also rely on information from the Panic Attack and Daily Anxiety Records in promoting this discussion.

- Explain that a common anxiety-provoking prediction made by people who experience panic attacks is the notion that physical symptoms of anxiety signal serious illness, loss of control, and even death. The prediction that entering a situation associated with panic or an otherwise anxiety-provoking situation will result in a panic attack is also commonly experienced, and seems to cause anticipatory anxiety. Encourage subjects to explore alternative explanations for such cognitions.

- Instruct subjects to begin searching for and recording alternative explanations for stressful situations on their Panic Attack and Daily Anxiety Records.

6. Summary and homework
- Answer questions.
- Continue practicing diaphragmatic breathing in different situations throughout the day.
- Practice progressive relaxation twice daily.
- Reinforce importance of completing Panic Attack and Daily Anxiety Records and homework diaries.
SESSION 4

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review diaphragmatic breathing and progressive muscle relaxation (5 min)
3. Review monitoring of cognitions/self-statements and alternative explanations (10 min)
4. Introduce release-only relaxation (15 min)
5. Introduce analysis of faulty logic (20 min)
6. Summary and homework (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   • Reinforce completeness and accuracy

2. Review diaphragmatic breathing and progressive relaxation
   • Examine frequency and correctness of practice
   • Discuss situations in which these techniques were used and their effectiveness
     as strategies for coping with the specific symptoms of panic attacks and/or heightened
     anxiety

3. Review monitoring of cognitions/self-statements and alternative explanations
   • Discuss specific anxiety-provoking cognitions and self-statements monitored by
     subjects since the last session, including situations in which they occurred.
   • Discuss alternative explanations for these cognitions.

4. Introduce release-only relaxation (Öst, 1987)
   • Explain to the group that, now that they have learned how to tense and relax the
     large muscle groups, you are going to teach them how to relax these muscle groups
     directly in order to attain a state of relaxation more quickly.
   • Bring the group through release-only relaxation described by Öst (1987). If
     they experience tension in a muscle group, instruct them to tense that group briefly
     and then relax it.
   • Instruct subjects to replace previous relaxation practice with release-only
     relaxation twice daily. They should record practice in their homework diary.

5. Introduce analysis of faulty logic (Barlow & Cerny, 1988, p. 128-130)
   • Review with the group the idea that a person's thoughts, interpretations,
     predictions, and self-statements in particular situations may serve to increase his or her
     anxiety. Explain that treating such thoughts as hypotheses rather than facts and
     examining the evidence for them is important in gaining control over them and the
     anxiety that they produce.
   • Introduce the idea that many people make logical errors in interpreting
     situations and that these errors often lead to anxiety-provoking predictions and
     conclusions. Explain that you will describe the major types of errors that people make.
     While anxiety-provoking thoughts often seem automatic, knowledge of logical errors will
     help subjects begin to catch themselves making them. Stress that this is an important step
     toward changing such cognitions and reducing anxiety.

1. Evidence: Jumping to a conclusion before considering all the facts
   (e.g., assuming you will fail a test despite being prepared; assuming someone is angry

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with you without considering other factors such as the possibility that they are in a bad mood)

2. Overgeneralizing: Making negative predictions or conclusions about a situation based on very limited past experience (e.g., assuming you will become very anxious in a situation because you have been anxious in similar past situations, but ignoring the many times you were not anxious or successfully managed your anxiety). Need to ask yourself "Have I experienced only failures in this situation in the past, or have there been times when I've done OK?"

3. Certainties vs. possibilities: In anxiety-provoking situations, we may confuse low probabilities with high probabilities or think that negative outcomes are certainties as opposed to possibilities (e.g., "I know I am going to have a panic attack next time I have to give a class presentation" rather than "I could become very anxious and panic next time I have to give a class presentation"). When you notice yourself making an unrealistic statement, ask yourself "What are the real chances that this will happen?"

4. All-or-none thinking: Thinking in black or white terms rather than recognizing that there are different degrees of anxiety, performance, etc. Believing you must be perfect or you have failed completely. Equating one mistake/setting with total failure (e.g., "My hands shook while I gave that speech - I'm a complete failure" when the speech was otherwise fine).

5. Absolutistic thinking: Giving oneself an ultimatum or thinking in absolute terms in an anxiety-provoking situation. Instruct subjects to be on the lookout for words like "always," "never," "need," "must," "can't" as well as overgeneralized statements like "I am a complete failure" or "I am a bad student, friend, etc." Try to replace absolute words with relative ones (e.g., "always" can become "often" and "never" can become "rarely"). Replace "I have to" with "I prefer" or "I want to" and "I can't" with "I would find it difficult."

- Have the group discuss examples from their own lives in which they made the logical errors described. Refer to subjects' Panic Attack and Daily Anxiety Records and have them label errors in some of the cognitions they have recorded. Instruct the group to be on the lookout for errors in their thinking during the following week and to record such errors in their Panic Attack and Daily Anxiety Records. They should also continue monitoring cognitions/self-statements and alternative explanations.

6. Summary and homework
- Answer questions.
- Continue practicing diaphragmatic breathing in different situations throughout the day.
- Practice release-only relaxation twice daily.
- Be on the lookout for logical errors in anxiety-provoking situations and search for alternative explanations for anxiety-provoking cognitions/self-statements.
- Reinforce importance of completing Panic Attack and Daily Anxiety Records and homework diaries.
SESSION 5

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review relaxation strategies (5 min)
3. Review monitoring of cognitions/self-statements, alternative explanations, and logical errors (5 min)
4. Introduce cue-controlled relaxation (10 min)
5. Introduce self-instruction/calming self-talk (10 min)
6. Imaginal practice/assign a behavioral experiment (20 min)
7. Summary, homework and treatment credibility questionnaire (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   • Reinforce completeness and accuracy

2. Review relaxation strategies
   • Examine frequency and correctness of practice
   • Discuss situations in which diaphragmatic breathing and relaxation were used and their effectiveness as strategies for coping with the specific symptoms of panic attacks and/or heightened anxiety

3. Review monitoring of cognitions/self-statements, alternative explanations, and logical errors
   • Discuss specific anxiety-provoking cognitions/self-statements monitored by subjects since the last session, including situations in which they occurred.
   • Discuss logical errors made and alternative explanations for these cognitions

4. Introduce cue-controlled relaxation (Öst, 1987)
   • Explain that you will be teaching them to relax the whole body on cue so they can become relaxed even more quickly.
   • Instruct subjects to relax by themselves using release-only relaxation, raising a finger when they are deeply relaxed. Then, instruct subjects to attend to their breathing and to say the word INHALE to themselves just before inhaling and the word RELAX just before exhaling. They should use the cue, RELAX, to let their whole body immediately relax. Then help them identify muscle groups which remain tense and relax them. Instruct subjects to begin paying attention to muscular tension in their daily life and to use this technique for reducing muscular tension throughout the day. Indicate that they will probably notice that particular situations/events trigger muscular tension, and that people are different in the groups of muscles they usually tense. Instruct subjects to use cue-controlled relaxation to relax these particular muscles or muscle groups when they find that they are tense (e.g., in anxiety-provoking situations).
   • Instruct subjects to practice cue-controlled relaxation 15-20 times per day in natural situations. Help them identify an environmental cue which will remind them to practice (e.g., looking at their watch, making a phone call). Emphasize that they should use this technique throughout the day and in anxiety-provoking situations.

5. Introduce self-instruction/calming self-talk
   • Explain that one way in which subjects can overcome fears and beliefs experienced prior to entering an anxiety-provoking situation or during a panic attack is to
use self-instruction. Assist subjects in developing calming self-statements which will be helpful in coping with their symptoms by:

1. Helping them articulate genuine responses to their catastrophic thoughts.

2. Providing examples of coping and reinforcing self-statements.
   - Have subjects write their self-statements on 3” x 5” index cards, and instruct them to refer to the cards and use these self-statements by actually talking to themselves, either covertly or aloud, whenever they fear the onset of a panic attack or heightened anxiety. Instruct them to use these self-statements prior to entering an anxiety-provoking situation and throughout the day, stressing that the more they practice the more effective they will be at gaining control over catastrophic thoughts and the easier it will be to enter/remain in anxiety-provoking situations. Ask subjects to indicate the use of self-instruction as a coping strategy on their Panic Attack and Daily Anxiety Records.

6. Imaginal practice/assign a behavioral experiment
   - Indicate that one way to practice the coping strategies we have learned is through imaginal practice (i.e., simulating a panic attack through imagery in order to identify physical symptoms and cognitions and practice using the strategies we have learned to cope with these). This is a good way to prepare yourself for confronting anxiety-provoking situations and coping with panic attacks in the real world.
   - Have subjects become comfortable, close their eyes, and concentrate on breathing through their nose. Ask them to imagine their last panic attack, starting at the point it began and remembering the situation they were in and what they were doing. Instruct subjects to slowly proceed in their imagination to the point where they started experiencing symptoms. Ask them to notice the specific symptoms and the thoughts which followed, carefully differentiating between physical symptoms and thoughts. Instruct them to use their coping strategies, targeting the cognitions first through calming self-talk and replacing logical errors with alternative explanations. Proceed to coping with the physical symptoms through diaphragmatic breathing and cue-controlled relaxation. Have them slowly replay the scene again, identifying symptoms and thoughts as well as the effect the coping strategies have on each. Instruct subjects to continue replaying the scene in their imagination until they experience a sense of mastery and control over their symptoms and thoughts.
   - Instruct subjects to engage in imaginal practice on a daily basis, recording practice on their homework diaries.
   - Have each subject identify a relatively low-level anxiety-provoking situation which they could realistically put themselves in over the course of the following week (e.g., asking a question in class, going to a party). As a behavioral experiment, assign each subject to enter this situation before the next session and to use both relaxation and cognitive coping strategies to manage their anxiety. Have them record this behavioral experiment on their homework diaries.

7. Summary and homework
   - Answer questions
   - Remind group to practice cue-controlled relaxation and self-instruction
   - Do at least one imaginal practice per day
   - Do behavioral experiment this week, using relaxation and cognitive coping strategies to manage anxiety
   - Reinforce importance of completing self-monitoring and homework diaries
   - Have subjects complete the Treatment Credibility Questionnaire
SESSION 6

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review relaxation strategies, cognitive coping strategies and imaginal practice (10 min)
3. Present thought stopping and refocusing techniques as anxiety management strategies (10 min)
4. Introduce pre-panic preparation and sequencing of coping strategies as ways of dealing with escape and avoidance (15 min)
5. Imaginal practice/assign a behavioral experiment (15 min)
6. Summary and homework (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   - Reinforce completeness and accuracy

2. Review relaxation strategies, cognitive coping strategies and imaginal practice
   - Review and reinforce the practice of relaxation strategies, cognitive coping strategies and imaginal practice
   - Discuss situations in which relaxation and cognitive coping strategies were used and their effectiveness in managing the specific symptoms of panic attacks and/or heightened anxiety. Focus particularly on the behavioral experiment that was assigned last week.
     - Examine subjects' self-efficacy for using these strategies when relaxed and in anxiety-provoking situations of varying degrees

3. Present thought stopping and refocusing techniques as anxiety management strategies
   - Explain to the group that you will be teaching them some more strategies designed to give them more control over anxiety-provoking thoughts and images which may lead to a panic attack.
   - Introduce thought stopping as a way to stop dwelling on such thoughts and images by using visual imagery (e.g., a big red stop sign) in response to anxiety-provoking thoughts/images.
   - After thought stopping, instruct subjects to refocus by turning attention outward (i.e., becoming more attentive and engaged in their environment). The purpose here is for the individual to purposefully focus on the details of what he or she is doing and the situation he or she is in while focusing away from anxiety-provoking thoughts and images. For instance, the subject might focus on how well he or she is doing at the task, how he or she might improve performance, and how others are handling the situation. The goal is not to deny feelings of anxiety or panic, but, rather, to become more fully engaged in the surrounding environment. Subjects should be encouraged to recognize physical symptoms of anxiety but not to dwell on associated catastrophic thoughts.
   - Instruct subjects to practice thought stopping and refocusing techniques as coping strategies in anxiety-provoking situations and when they experience heightened anxiety or a panic attack. Use of these techniques should be recorded as coping strategies on the Panic Attack and Daily Anxiety Records.

4. Introduce pre-panic preparation and sequencing of coping strategies as ways of dealing with escape and avoidance
• Discuss the idea that, while some panic attacks occur spontaneously, others often occur in specific situations. Learning to associate such situations with panic can lead to anticipatory anxiety and escape or avoidance.

• Introduce pre-panic preparation as a way of helping prevent a panic attack in a situation in which you expect that you might panic. This technique is similar to the imaginal practice introduced last week except that you focus on the possibility of having a future attack in a situation you plan to enter, and outline in advance the strategies you will use to cope. We will practice this momentarily, but first let's look at sequencing the coping strategies we have learned in order to obtain maximum benefit from them and increase your chances of quickly bringing an attack under control.

• Present sequencing of coping strategies (Clum, 1990, p. 121-122).

  1. Gather Information: this first step will help prevent your panic attack from getting worse by providing accurate information
     a. Take stock of what is happening to you
     b. Determine why this is happening
     c. Differentiate feelings (physical symptoms) from thoughts

  2. Take Aim at Your Thoughts

     Targeting catastrophic thoughts next is the most effective way to reduce the severity of your panic attack as it breaks the vicious cycle whereby such thoughts lead to an exacerbation of symptoms. Encourage subjects to use the cognitive strategies we have learned (i.e., exploring logical errors and alternative explanations, self-instruction/calming self-talk, thought stopping/refocusing) to challenge and refocus attention away from catastrophic cognitions. Stress that different individuals find particular strategies more useful than others. They will all need to experiment with these strategies to determine which work best for them.

  3. Take Aim at Your Symptoms

     After dealing with your thoughts, turn your attention to your physical symptoms. This is where your practice of diaphragmatic breathing, relaxation of muscle groups, and cue-controlled relaxation should be most useful. Of these you will need to find the coping strategies that work best for you in reducing the symptoms you typically experience.

  4. Letting a Panic Attack Happen

     Sometimes even after using all of the strategies we have learned you will find that your panic attack continues. In such situations you must be prepared to accept the attack and ride it out while continuing to apply different strategies. There may be times when your strategies succeed in reducing symptoms but not eliminating them. This does not mean that your strategies are not working, but it does mean that you will need to accept your symptoms, stop struggling against them, and persist in applying different strategies.

5. Imaginal practice/assign a behavioral experiment

• Ask subjects to each identify a situation which is associated with panic and tends to trigger avoidance and/or escape.

• Using the same imaginal procedure from last week, guide the group through a pre-panic preparation exercise, focused on the experience of a panic attack within the situation they have identified. Use the coping sequence described above to help subjects develop a plan for dealing with such a panic attack without the use of avoidance or escape. Practice cognitive and relaxation strategies for coping with cognitions and symptoms elicited through imagery.

• Have subjects each identify a moderately anxiety-provoking situation in which they fear they might have a panic attack and which is associated with avoidance and or
escape responses. This should be a situation they could realistically enter in the coming week. Instruct them to enter this situation before the next session, using pre-panic preparation via imagery prior to actually entering the situation. They should record this behavioral experiment, along with the coping strategies used, on their homework diaries.

• Instruct clients to continue imaginal practice on a daily basis, recording it on their homework diaries.

6. Summary and homework

• Answer questions
• Remind subjects to use thought stopping and refocusing techniques as another cognitive coping strategy
• Remind subjects to continue cue-controlled relaxation, self-instruction, and imaginal practice
• Do behavioral experiment this week, using pre-panic preparation prior to actually entering the situation. Focus on the appropriate sequencing of coping strategies, both in imagery and reality.
  • Reinforce importance of completing Panic Attack and Daily Anxiety Records and homework diaries.
SESSION 7

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review pre-panic preparation and behavioral experiment (10 min)
3. Use imaginal practice to review a past panic situation using coping techniques (20 min)
4. Use imaginal practice as pre-panic preparation for a highly anxiety-provoking situation/assign a behavioral experiment (20 min)
5. Summary and homework (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   • Reinforce completeness and accuracy

2. Review pre-panic preparation and behavioral experiment
   • Review and reinforce subjects' use of pre-panic preparation and the sequencing of coping strategies prior to conducting their behavioral experiment this past week.
   • Discuss the behavioral experiment, focusing on relaxation and cognitive coping strategies used and their effectiveness in managing the specific symptoms of panic and/or heightened anxiety. Reinforce subjects for their ability to cope with the feared situation without avoiding or escaping.
   • Examine subjects' self-efficacy for using the coping strategies we have learned both when relaxed and in anxiety-provoking situations. Encourage subjects to use self-reinforcement for their efforts.

3. Use imaginal practice to review a past panic situation using coping techniques
   • Using the imaginal procedure introduced in Session 5, have the group reexperience a past situation in which they had a panic attack.
   • Using the sequencing of coping strategies discussed last week, have subjects imaginally identify the details of the past situation, including cognitions, symptoms, and avoidance/escape. Have them utilize coping strategies until they have successfully managed their panic attack.
   • Encourage subjects to experience self-efficacy and self-reinforcement for imaginally coping with a past panic situation. Have the group discuss which coping strategies work best for them.

4. Use imaginal practice as pre-panic preparation for a highly anxiety-provoking situation/assign a behavioral experiment
   • Ask subjects to each identify a highly anxiety-provoking situation which is associated with panic.
   • Using imaginal practice, guide the group through a pre-panic preparation exercise, focused on the experience of a panic attack within the situation they have identified. Use the sequencing of coping strategies to help subjects develop a plan for dealing with such a panic attack without the use of avoidance or escape. Practice cognitive and relaxation strategies for coping with cognitions and symptoms elicited through imagery.
   • Have subjects each identify a highly anxiety-provoking situation in which they fear they might have a panic attack. This should be a situation they could realistically enter in the coming week. Instruct them to enter this situation before the next session, using pre-panic preparation via imagery prior to actually entering the situation. They
should record this behavioral experiment, along with the coping strategies used, on their homework diaries.
  • Instruct clients to continue imaginal practice on a daily basis, recording it on their homework diaries.

5. Summary and homework
  • Answer questions
  • Encourage subjects to practice cognitive coping and relaxation in increasingly challenging situations
  • Remind subjects to continue imaginal practice
  • Do behavioral experiment this week, using pre-panic preparation prior to actually entering the situation. Focus on the appropriate sequencing of coping strategies, both in imagery and reality.
  • Reinforce importance of completing Panic Attack and Daily Anxiety Records and homework diaries.
SESSION 8

Session Goals:
1. Review Panic Attack and Daily Anxiety Records and homework diaries (5 min)
2. Review behavioral experiment and use of coping strategies (15 min)
3. Plan for future behavioral experiments (10 min)
4. Discuss strategies for dealing with relapse (10 min)
5. Review coping strategies learned (15 min)
6. Summary and treatment credibility (5 min)

1. Review Panic Attack and Daily Anxiety Records and homework diaries
   • Reinforce completeness and accuracy

2. Review behavioral experiment and use of coping strategies
   • Review and reinforce subjects' use of pre-panic preparation and the sequencing of coping strategies prior to conducting their behavioral experiment this past week.
   • Discuss the behavioral experiment, focusing on relaxation and cognitive coping strategies used and their effectiveness in managing the specific symptoms of panic and/or heightened anxiety. Reinforce subjects for their ability to cope with the feared situation without avoiding or escaping.
   • Discuss other situations in which coping strategies were used and their effectiveness.
   • Examine subjects' self-efficacy for using the coping strategies we have learned both when relaxed and in anxiety-provoking situations. Encourage subjects to use self-reinforcement for their efforts.

3. Plan for future behavioral experiments
   • Have subjects develop a written list of anxiety-provoking situations which they can realistically enter in order to practice their coping strategies.
   • Encourage subjects to continue entering such situations, using pre-panic preparation and sequencing of coping strategies.

4. Discuss strategies for dealing with relapse
   • Discuss situations which might be expected to lead to panic attacks (e.g., stressors that have lead to panic in the past, fear of having an attack, additive stress, when they least expect it).
     • Reframe such situations as opportunities to practice coping strategies.
     • Encourage continued practice of relaxation, cognitive strategies, and imagery.
   The better practiced these skills are, the more effective they will be.
   • Encourage subjects to try to cope with panic attacks on their own.
   • Provide the phone number for the Psychological Services Center (231-6914), the Counseling Center on campus (231-6557) and RAFT (552-5706) and present these as places where they could seek future treatment if necessary. (These numbers are also provided to subjects on their copy of the consent form).

5. Review coping strategies learned
   • Briefly review all of the coping strategies we have learned and answer questions.
   • Cognitive coping strategies: alternative explanations, analysis of faulty logic, self-instruction/calming self-talk
• Relaxation: diaphragmatic breathing, progressive relaxation, release-only relaxation, cue-controlled relaxation
• Imaginal practice, pre-panic preparation, sequencing of coping strategies

6. Summary
• Answer questions
• Encourage subjects to continue practicing cognitive coping and relaxation in increasingly challenging situations
• Remind subjects to continue imaginal practice and behavioral experiments. Continue using pre-panic preparation and focusing on the appropriate sequencing of coping strategies, both in imagery and reality.
• Ensure everyone has enough Panic Attack and Daily Anxiety Records to last until their 1-week posttreatment assessment.
• Congratulations!
• Have subjects complete the Treatment Credibility Questionnaire
SESSION 1

Session Goals:
1. Introduction of therapist and group members (10 min)
2. General inquiry into members' experiences with panic attacks (15 min)
3. Description of treatment program and rationale (15 min)
4. Review Panic Attack and Daily Anxiety Records (15 min)
5. Assess credibility of treatment (5 min)

1. Introductions
   - Introduce self as a graduate clinician with a master's degree in clinical psychology
   - Indicate that all members of the group have reported experiencing panic attacks and that the group will be working closely together over the next six weeks to learn more about this problem
   - Mention that it will be important that all members be involved in group discussion and work. Review confidentiality issues.
   - Ask each member to introduce and briefly describe him/herself (e.g., where from, family, etc.).

2. Inquiry into members' experiences with panic
   - Ask each member of the group to share their own perceptions and history of panic attacks. Probe for information related to initial panic attack (e.g., age, situation in which it occurred), current frequency of panic attacks, situations which trigger panic attacks and associated avoidance, physical symptoms, and cognitions.
   - Identify members' goals

3. Description of treatment and rationale
   - Explain that the purpose of treatment will be to learn about panic attacks and about why each member in the group experiences them (i.e., why the attacks began and why they continue). Explain that we will be looking at stressors in each subjects' life to gain an historical and immediate perspective of their problems with panic attacks.
   - Introduce the concept that panic attacks consist of physical, cognitive, and behavioral components, and that we will be examining each of these. Relate the components of panic to subjects' experience as discussed above.
   - Emphasize the importance of active involvement on the part of members. Explain that, while you are there to facilitate the process of treatment, they are largely responsible for the process and conduct of the group. Instill a norm of acceptance by emphasizing that everyone's input is valued and important.

4. Review Panic Attack and Daily Anxiety Records
   - Make sure records are complete and accurate. Collect records.
   - Emphasize the importance of these records for the following reasons:
     a. monitoring progress
     b. uncovering stressors associated with panic attacks and anxiety
     c. helping subjects understand their panic attacks
     d. addressing the circumstances of no panic attacks for that week
   - Reinforce that subjects must bring these to each session so you can collect them
• Hand out more Panic Attack and Daily Anxiety Records and answer questions

5. Assess credibility of treatment
• Ask subjects to complete the Treatment Credibility Questionnaire
SESSION 2

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (5 min)
2. Discuss antecedents to panic attacks or heightened anxiety (10 min)
3. Describe the cycle of panic, including physiological, cognitive, and behavioral components (20 min)
4. Group discussion (20 min)
5. Summary (5 min)

1. Review Panic Attack and Daily Anxiety Records
   - Reinforce completeness and accuracy.
   - If no panic attacks were experienced that week, discuss the need for continued monitoring.

2. Discuss antecedents
   - Referring to the panic attack and daily anxiety records, ask each member to identify at least two circumstances, situations, or stressors which have directly preceded a recent panic attack or heightened anxiety.
   - Probe for physical symptoms experienced, cognitive interpretations, and behavioral responses (e.g., avoidance, inability to perform a task)

3. Describe the cycle of panic
   - Clearly differentiate panic attacks from heightened anxiety. Explain that anxiety symptoms are described as a panic attack when at least four symptoms occur in combination and they come on suddenly. Panic attacks may occur spontaneously or "out of the blue," or they may be associated with particular situations. They are often accompanied by feelings of impending doom and an intense desire to escape.
   - Explain each component and its role in creating a cycle which culminates in a panic attack
     a. Physiological component: the DSM-IV lists several physical sensations or feelings which may characterize a panic attack (e.g., palpitations, sweating, trembling or shaking, sensations of shortness of breath or smothering, feeling of choking, chest pain or discomfort, nausea or abdominal distress, dizziness or lightheadedness, derealization or depersonalization, numbness or tingling sensations, and chills or hot flushes)
     b. Cognitive component: the DSM-IV lists two cognitive symptoms of panic (i.e., fear of losing control or going crazy; fear of dying). The cognitive component includes thoughts/self-statements, expectations, beliefs, interpretations, and imagery associated with a panic attack.
     c. Behavioral component: avoidance/escape, interference with performance of a skill or task
     d. These three components often interact with one another to produce a panic attack. Specifically, the physical symptoms of anxiety reflect normal bodily changes in physiological arousal. However, many individuals who experience panic attacks interpret such symptoms as signaling that something very negative or catastrophic is happening to them (e.g., dying, losing control, going crazy). Such cognitive interpretations often act to increase the experience of anxiety and the accompanying physical symptoms. More negative thinking results, and a vicious cycle has been established which is experienced as a panic attack. Avoidance of or escape from situations in which this vicious cycle is experienced may result, or performance within that situation may be impeded.
• Answer any questions about the cycle of panic and its components

4. Group discussion
• Ask subjects to apply the cycle of panic and its components to their own experience and to share this with the group.
• Encourage the group to discuss the definition of panic attacks and any previous misconceptions they have had regarding the nature of panic
• Instruct subjects to monitor the three components of panic on their Panic Attack Records whenever they experience them

5. Summary
• Briefly discuss what members feel they learned during the session
• Answer questions
• Reinforce the importance of self-monitoring. Ensure all subjects have enough Panic Attack and Daily Anxiety Records to last until the next session and that they understand how to complete them.
SESSION 3

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
2. Discuss the prevalence of panic attacks and differences from general anxiety (20 min)
3. Group discussion (20 min)
4. Summary (5 min)

1. Review Panic Attack and Daily Anxiety Records
   • Reinforce completeness and accuracy
   • Discuss panic attacks and/or heightened anxiety experienced since the last session
   • Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
   • Review the components of panic and subjects' self-monitoring of these since the last session
   • Discuss progress/improvement

2. Discuss the prevalence of panic attacks and differences from general anxiety
   • Explain that, while many people who experience panic attacks feel they are the only ones to suffer from this problem, panic attacks are, in fact, quite common. Indeed, one review of studies examining the prevalence of panic attacks concluded that an average of 30% of people report experiencing at least one attack in the past year (Norton, Cox, & Malan, 1992).
   • Because the primary symptoms of panic are physical in nature, many people who experience panic attacks consult physicians, fearing that they have a physical problem. However, panic attacks reflect a problem with anxiety rather than a medical problem and, as such, are not life-threatening or dangerous.
   • Panic attacks are different from more general anxiety in several ways:
     1. Panic attacks involve more extreme physical changes.
     2. While general anxiety is often associated with worry or vague discomfort, panic attacks are associated with catastrophic thoughts, intense fear, apprehension or discomfort, feelings of impending doom, and an intense desire to escape.
     3. General anxiety is characterized by chronic, persistent feelings of anxiety. Panic attacks consist of relatively brief episodes of intense anxiety that come and go.

3. Group discussion
   • Encourage the group to apply the material discussed above to their own experiences, including misperceptions regarding the prevalence of panic and its differentiation from general anxiety.
   • Have they ever felt they had a medical condition that was life-threatening or dangerous? Have they ever felt they were alone in experiencing panic attacks? How do they feel regarding the information presented today? Were there areas not addressed for any one of them?

4. Summary
   • Answer questions.
   • Reinforce importance of completing Panic Attack and Daily Anxiety Records.
SESSION 4

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
2. Discuss the stages of a panic attack (20 min)
3. Group discussion (20 min)
4. Summary (5 min)

1. Review Panic Attack and Daily Anxiety Records
   • Reinforce completeness and accuracy
   • Discuss panic attacks and/or heightened anxiety experienced since the last session
   • Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
   • Review subjects' self-monitoring of physiological, cognitive, and behavioral components since the last session
   • Discuss progress/improvement

2. Discuss the stages of a panic attack
   • Explain the five stages of a panic attack described by Clum (1990, p. 10-11).
   Emphasize that they may not be fully aware of these stages as panic attacks may seem to come "out of the blue".
   1. The preparatory stage
      • This stage is characterized by a high level of chronic stress (e.g., work or school related stress, a conflictual relationship) which precedes the onset of panic attacks
      • Situation is perceived as inescapable, all alternatives for resolving the conflict seem negative, you feel trapped
   2. The acute stage
      • Characterized by the sudden occurrence of panic attacks which may seem to come out of the blue
      • Some people find that a period of relatively low stress directly precedes their panic attacks. However, a high-stress period will always precede the low-stress period. Panic attacks may occur just when you seem to be recovering from the high stress.
   3. The appraisal stage
      • Search for explanations of the panic attack.
      • Scan immediate and previous environment for information you can use in explaining the attack
   4. The intensification or resolution stage
      • The intensification stage occurs if you cannot explain the panic attack as resulting from stressful events but begin making catastrophic interpretations of your panic attack (e.g., you believe you are having a stroke or heart attack). Your symptoms, in turn, intensify.
      • The resolution stage occurs if you explain the panic attack as due to stress and begin to reassure yourself that your symptoms are understandable and you will regain control. Your symptoms, in turn, gradually subside.
5. The residual stage
   - The symptoms of the acute stage will eventually subside. However, a period of exhaustion, extreme fatigue or weakness often follows a panic attack. This is the result of the depletion of your body's energy after a period of arousal. This residual stage may cause you to feel demoralized as you have less energy with which to manage stress.

3. Group discussion
   - Encourage the group to apply the material discussed above to their own experiences.
   - Discuss how the different stages characterize each subject's panic attacks.
   - Identify chronic stressors which historically and currently set the stage for the development of panic attacks in each subject's experience.

4. Summary
   - Answer questions.
   - Reinforce importance of completing Panic Attack and Daily Anxiety Records.
SESSION 5

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
   - Reinforce completeness and accuracy
   - Discuss panic attacks and/or heightened anxiety experienced since the last session
   - Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
   - Review subjects' self-monitoring of physiological, cognitive, and behavioral components since the last session
   - Discuss progress/improvement

2. Discuss the anticipatory and the avoidance response (Clum, 1990, p. 11-13)
   - Give the group Figure 1.1 from Clum (1990, p. 12). Explain that, following the five stages of a panic attack discussed last week, some people come to anticipate and dread the occurrence of future attacks. When this happens, you are likely to become hypervigilant to physical cues, scanning your body for signs of an impending attack. Normal increases in your heart rate or breathing can be interpreted as signs of a developing panic attack. The anticipatory response has also been called anxiety sensitivity or "fear of fear." It typically causes an increase in your level of tension and is likely to set the stage for additional panic attacks.
   - Many people who have panic attacks avoid particular situations in which they have had past experiences with panic. The anticipatory and the avoidance responses are related in that you may scan your environment looking for patterns which characterize your panic attacks (e.g., particular situations in which you feel you are likely to panic). Once you anticipate such a pattern, you will likely become more vigilant for signs of panic and more tense in particular situations associated with panic, thus increasing your chances of having a panic attack in those situations. Avoidance of such situations often follows. However, the avoidance response does not solve the underlying problem, and panic attacks will typically continue, becoming associated with other situations. As you may guess, the avoidance response can have an extremely disruptive effect on a person's life when it is applied extensively and used in an attempt to avoid experiencing panic. It may actually cause an increase in the symptoms.

3. Group discussion
   - Encourage the group to apply the material discussed above to their own experiences.
   - Explore the extent to which each subject anticipates future attacks. What bodily sensations are they particularly sensitive to? What situations are anticipated and associated with panic attacks?
   - Explore the extent to which each subject uses the avoidance response. What particular situations are avoided?
4. Summary
   - Answer questions.
   - Reinforce importance of completing Panic Attack and Daily Anxiety Records.
   - Have subjects complete the Treatment Credibility Questionnaire
SESSION 6

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
2. Begin discussing the causes of panic (20 min)
3. Group discussion (20 min)
4. Summary (5 min)

1. Review Panic Attack and Daily Anxiety Records
   - Reinforce completeness and accuracy
   - Discuss panic attacks and/or heightened anxiety experienced since the last session
   - Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
   - Review subjects' self-monitoring of physiological, cognitive, and behavioral components since the last session
   - Discuss progress/improvement

2. Begin discussing the causes of panic (Clum, 1990, p. 17-40)
   - Give everyone a copy of the causal model of panic (Figure 2.1 from Clum, 1990, p. 18). Explain that we will be spending two sessions discussing the causes of panic and examining the factors which have led to the development and maintenance of panic attacks for each member of the group. Briefly review the overall model, then explain that we will be discussing biological and family factors this week and psychological factors next week.
   - Discuss biological and family factors
     1. Genetic predisposition/Learning history
        - There is evidence that panic attacks tend to run in families, indicating that some genetic predisposition may exist for some of the people who experience panic attacks. These people are likely to have a panic attack in response to lower levels of stress than people who do not have a predisposition.
        - Another factor which may predispose you to the experience of panic is having observed one or both of your parents having panic attacks while you were growing up. You may have learned to associate high levels of stress with a panic attack. If this is the case, stress will serve to trigger panic as a learned response.
     2. Physiological and chemical factors
        - People who are highly anxious may be particularly vulnerable to chemical substances in the body. Increases in the naturally occurring substance of sodium lactate through chronic stress or overexertion may trigger a panic attack in people with a high general state of anxiety. This is thought to occur as sodium lactate produces some panic symptoms which may trigger catastrophic thoughts resulting in the cycle of panic. The tendency toward hyperventilation (i.e., excessively rapid breathing) may also produce physical symptoms which trigger an attack.
        - While many people mistakenly believe that caffeine and alcohol will help calm them, these substances can produce increases in somatic arousal and trigger a panic attack in susceptible individuals.
        - People who have experienced a heart attack are at risk for experiencing panic attacks as are people with benign heart conditions (e.g., mitral valve prolapse). Several other physical conditions (e.g., asthma, allergies, hyperthyroidism, inner ear problems, insomnia, headaches, painful menstruation, colds, diarrhea, and fatigue) may also lead to panic attacks in some individuals. Physical symptoms
associated with these conditions may be interpreted as signs of a panic attack, leading to the cycle of panic, and people with these problems may become hypervigilant to physical symptoms, resulting in heightened anxiety.

3. Group discussion
   • Encourage the group to apply the material discussed above to their own experiences.
   • Explore subjects' perceptions of genetic vs. learning factors in understanding their own experience with panic attacks. Do family members have panic attacks? How did this affect them?
   • Explore the role of physiological and chemical factors in the development and maintenance of subjects' panic attacks.

4. Summary
   • Answer questions.
   • Reinforce importance of completing Panic Attack and Daily Anxiety Records.
SESSION 7

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
2. Continue discussing the causes of panic (20 min)
3. Group discussion (20 min)
4. Summary (5 min)

1. Review Panic Attack and Daily Anxiety Records
- Reinforce completeness and accuracy
- Discuss panic attacks and/or heightened anxiety experienced since the last session
  - Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
  - Review subjects' self-monitoring of physiological, cognitive, and behavioral components since the last session
  - Discuss progress/improvement

2. Continue discussing the causes of panic (Clum, 1990, p.17-40)
- Briefly review the causal model of panic (Figure 2.1 from Clum, 1990, p. 18).
  Explain that we will be discussing psychological factors this week.
- Discuss psychological factors
  1. The onset of panic attacks is always associated with stress. This connection is not always obvious, however, and requires some exploration of your life history.
     - Acute Stress: stress due to transitory events (e.g., death of loved one, relationship difficulties, leaving home, change in academic responsibilities). This is likely to lead to panic attacks if you feel you are incapable of resolving the situation or if chronic stress results from the acute stress.
     - Chronic Stress: stress due to a persistent, unresolvable conflict in which you see all possible alternatives as negative. For instance, you may feel "trapped" in a particular relationship or academic field, miserable but afraid to leave. Some people create chronic stress for themselves through perfectionistic behavior, driven to please everyone and never feeling satisfied. Daily hassles can also build up and lead to chronic stress.
     - Idiosyncratic Stress: a particular learned vulnerability to specific kinds of stress, either acute or chronic. Understanding idiosyncratic stress requires exploration of your past history to discover why some stress triggers panic for you and why the experience of panic symptoms triggers an anticipatory or "fear of fear" response for you. Panic attacks occur in response to particular stressors that are associated with stressful prior life events. Furthermore, learned vulnerabilities lead to the interpretation of panic symptoms as threatening (e.g., a person who has learned to be sensitive to the opinions of other people may fear losing control and perceive such symptoms as signals that she will make a fool of herself). Clum (1990) identifies four inaccurate belief systems which, in combination with a particular stressor, may lead to panic: "I can't live without him/her," "I can't lose control," "I must be successful, but I can't be," and "I must never disappoint."
   - Depression may both precede and follow panic attacks. Panic attacks may lead to depression by reducing a person's sense of control and emotional well-being. Depression can lead to panic by making you feel out of control, increasing

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your vulnerability to stress (e.g., through lack of sleep, reduced problem solving ability), and serving as a stressor.

3. Group discussion
   - Encourage the group to apply the material discussed above to their own experiences.
   - Explore the role of acute, chronic, and idiosyncratic stress as well as depression in the development and maintenance of each subject's panic attacks.

4. Summary
   - Answer questions.
   - Reinforce importance of completing Panic Attack and Daily Anxiety Records.
SESSION 8

Session Goals:
1. Review Panic Attack and Daily Anxiety Records (15 min)
2. General review (20 min)
3. Group discussion (20 min)
4. Summary and treatment credibility (5 min)

1. Review Panic Attack and Daily Anxiety Records
   • Reinforce completeness and accuracy
   • Discuss panic attacks and/or heightened anxiety experienced since the last session
   • Discuss situations/stressors associated with panic attacks and/or heightened anxiety since the last session
   • Review subjects’ self-monitoring of physiological, cognitive, and behavioral components since the last session
   • Discuss progress/improvement

2. General review
   • Briefly review all of the material covered in previous sessions (i.e., the cycle of panic, prevalence of panic and differences from general anxiety, the stages of a panic attack, the anticipatory and the avoidance response, the causal model of panic)
   • Answer questions/clarify issues that remain unclear

3. Group discussion
   • Lead the group in a final discussion of the material and its application to their own experiences.

4. Summary
   • Answer questions regarding treatment.
   • Ensure everyone has enough Panic Attack and Daily Anxiety Records to last until their 1-week posttreatment assessment.
   • Provide the phone number for the Psychological Services Center (231-6914), the Counseling Center on campus (231-6557) and RAFT (552-5706) and present these as places where they could seek future treatment if necessary. (These numbers are also provided to subjects on their copy of the consent form).
   • Congratulations!
   • Have subjects complete the Treatment Credibility Questionnaire
Treatment Credibility Questionnaire - Sessions 1 and 5

We are interested in obtaining your impressions regarding your group treatment at this time. Please answer each question as honestly as possible. Circle the number which best reflects your feelings.

1. How logical does this type of treatment seem to you in terms of decreasing panic attacks?

   1  2  3  4  5  6  7  8  9
   not at all logical very logical

2. How confident are you that this treatment will be successful in reducing your panic attacks?

   1  2  3  4  5  6  7  8  9
   not at all confident very confident!

3. How confident would you be in recommending this treatment to a friend with panic attacks?

   1  2  3  4  5  6  7  8  9
   not at all confident very confident

4. How important do you think it is that we make this treatment available to others who experience panic attacks?

   1  2  3  4  5  6  7  8  9
   not at all important very important

5. Please rate the level of mastery of the treatment skills you believe you will obtain by the end of the last treatment session.

   1  2  3  4  5  6  7  8  9
   no mastery at all great mastery
Subject ID ______________________ Date ________________

Treatment Credibility Questionnaire - Session 8

We are interested in obtaining your impressions regarding your group treatment at this time. Please answer each question as honestly as possible. Circle the number which best reflects your feelings.

1. How logical did this type of treatment seem to you in terms of decreasing panic attacks?
   1 2 3 4 5 6 7 8 9
   not at all logical very logical

2. How confident are you that this treatment was successful in reducing your panic attacks?
   1 2 3 4 5 6 7 8 9
   not at all confident very confident

3. How confident would you be in recommending this treatment to a friend with panic attacks?
   1 2 3 4 5 6 7 8 9
   not at all confident very confident

4. How important do you think it is that we make this treatment available to others who experience panic attacks?
   1 2 3 4 5 6 7 8 9
   not at all important very important

5. Please rate the level of mastery of the treatment skills you believe you obtained by the end of the last treatment session.
   1 2 3 4 5 6 7 8 9
   no mastery at all great mastery
Treatment Integrity Coding Forms

SESSION 1

___ 1. Introductions of group members and leaders.

___ 2. Review of confidentiality issues.

___ 3. Group members share their experiences with panic attacks.


___ 5. Explanation that the purpose of treatment will be to learn about panic attacks and why each member of the group experiences them.

___ 6. Explanation that the purpose of treatment will be to learn specific coping strategies for managing panic attacks.

___ 7. Introduction of the concept that panic attacks consist of physical, cognitive, and behavioral components.

___ 8. Mention of the importance of active involvement of group members.


SESSION 2

___ 1. Review of panic attack and daily anxiety records.

___ 2. Ask group members to identify at least two circumstances, situations, or stressors which have preceded a recent panic attack or heightened anxiety.

___ 3. Probe for physical symptoms experienced, cognitive interpretations, and behavioral responses.

___ 4. Examine coping strategies used and their effectiveness.

___ 5. Explanation of the difference between panic attacks and heightened anxiety.

___ 6. Description of the cycle of panic.

___ 7. Group discussion of the cycle of panic and the definition of panic attacks.

___ 8. Explanation that diaphragmatic breathing is a coping strategy which prevents hyperventilation by slowing breathing.

___ 9. Teaching diaphragmatic breathing.
10. Introduction of the idea that, in order to reevaluate and change anxiety-provoking thoughts, it is important to become aware of these thoughts and the situations in which they occur.

11. Encourage group members to identify at least one anxiety-provoking thought.

12. Instruct group members to monitor specific anxiety-provoking cognitions and self-statements on the panic attack and daily anxiety records.

13. Instruct group members to monitor the three components of panic on their panic attack records whenever they experience them.

14. Discuss what members feel they learned during the session.

15. Reinforce the importance of self-monitoring.

16. Reinforce the importance of practicing diaphragmatic breathing.

SESSION 3

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Be sure diaphragmatic breathing was practiced appropriately.

4. Discuss situations in which diaphragmatic breathing was used and its effectiveness as a coping strategy.

5. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

6. Discuss progress/improvement.

7. Discuss anxiety-provoking cognitions monitored by group members, including situations in which they occurred.

8. Discuss group members' perceptions of how anxiety-provoking thoughts affect their experience of anxiety and/or panic.

9. Discuss the prevalence of panic attacks (how common they are).

10. Discuss the fact that many people who experience panic attacks consult physicians, but that panic attacks reflect a problem with anxiety rather than a medical problem and are not dangerous.

11. Discuss differences between panic attacks and general anxiety.
12. Group discussion of the prevalence of panic attacks, differences from general anxiety, and whether members of the group ever felt they had a medical condition or were alone in experiencing panic.

13. Introduction of relaxation as another coping strategy.

14. Teaching of progressive muscle relaxation.

15. Instructing subjects to practice muscle relaxation exercises.

16. Encourage group members to look for alternative explanations for anxiety-provoking thoughts.

17. Group discussion of examples in which members originally jumped to a negative, anxiety-provoking conclusion regarding a situation and later realized that their interpretation or prediction was incorrect.

18. Explanation that a common anxiety-provoking prediction is that physical symptoms of anxiety signal serious illness, loss of control, and even death.

19. Instruct subjects to begin searching for and recording alternative explanations for stressful situations on their panic attacks and daily anxiety records.

20. Remind subjects to continue practicing diaphragmatic breathing in different situations throughout the day.

SESSION 4

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Discuss situations in which diaphragmatic breathing and relaxation were used and their effectiveness.

4. Discuss specific anxiety-provoking thoughts monitored by subjects, including situations in which they occurred.

5. Discuss alternative explanations for anxiety-provoking thoughts.

6. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

7. Discuss progress/improvement.

8. Explain the 5 stages of a panic attack.

9. Group discussion of the stages of a panic attack including how the different stages characterize each subject's panic attacks.
10. Identify stressors which set the stage for the development of panic attacks for each group member.

11. Explanation that, now that the group has learned to tense and relax the large muscle groups, they are ready to learn how to relax these muscle groups directly in order to achieve a state of relaxation more quickly.

12. Teach release-only relaxation.

13. Instruct group to replace previous relaxation practice with release-only relaxation.

14. Introduce the idea that many people make logical errors in interpreting situations and that these errors lead to anxiety-provoking predictions and conclusions.

15. Describe the major types of logical errors (i.e., evidence, overgeneralizing, certainties vs. possibilities, all-or-none thinking, absolutistic thinking).

16. Group discussion of logical errors, including examples from their own lives.

17. Instruct group to record logical errors on panic attack and daily anxiety records.

SESSION 5

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Discuss situations in which diaphragmatic breathing and relaxation were used and their effectiveness.

4. Discuss specific anxiety-provoking thoughts monitored by subjects, including situations in which they occurred.

5. Discuss logical errors made and alternative explanations for anxiety-provoking thoughts.

6. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

7. Discuss progress/improvement.

8. Discuss the anticipatory response, including dreading the occurrence of future attacks and becoming hypervigilant to physical cues which may signal an impending attack.

9. Discuss the avoidance response in which people will avoid situations in which they have had past experiences with panic.
10. Group discussion of the anticipatory and avoidance response, including the extent to which each group member uses each.

11. Explanation that the group will be learning to relax the whole body on cue so they can become relaxed even more quickly.

12. Teaching cue-controlled relaxation (i.e., using a cue like the word RELAX to let the whole body immediately relax).

13. Instruct subjects to practice cue-controlled relaxation.

14. Assist subjects in developing calming self-statements to use prior to entering an anxiety-provoking situation and throughout the day. Have them write these statements on index cards.

15. Indicate that one way to practice coping strategies is through imaginal practice.

16. Have subjects imagine their last panic attack and to imagine using coping strategies until they experience a sense of control over their symptoms and thoughts.

17. Instruct subjects to use imaginal practice on a daily basis.

18. Have each subject identify a relatively low-level anxiety-provoking situation and instruct each subject to enter the situation he/she identified before the next session, using both relaxation and cognitive coping strategies to manage their anxiety.

**SESSION 6**

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Review and reinforce the practice of relaxation strategies, cognitive coping strategies, and imaginal practice.

4. Discuss situations in which relaxation and cognitive coping strategies were used and their effectiveness.

5. Examine subjects' confidence in their ability to use coping strategies both when relaxed and in anxiety provoking situations.

6. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

7. Discuss progress/improvement.
8. Give everyone a copy of the causal model of panic, explaining that two sessions will be spent discussing the causes of panic and examining the factors which have led to the development and maintenance of panic attacks for each member of the group.

9. Discuss biological and family factors, including genetic predisposition/learning and physiological and chemical factors.

10. Group discussion of the causes of panic, including subjects' perceptions of the role of genetic, family, and learning factors as well as physiological and chemical factors in their own experience with panic.

11. Introduce thought stopping (e.g., picturing a big red stop sign) as a way to stop dwelling on anxiety-provoking thoughts.

12. Instruct subjects to refocus by turning attention outward (i.e., becoming more attentive and engaged in their environment) and focusing away from anxiety-provoking thoughts.

13. Instruct subjects to practice thought stopping and refocusing techniques as coping strategies in anxiety-provoking situations.

14. Introduce pre-panic preparation (focusing on the possibility of having a future attack and outlining coping strategies in advance) as a way of helping prevent a panic attack in a situation in which you expect you might panic.

15. Present sequencing of coping strategies (gather information, take aim at your thoughts, take aim at your symptoms, letting a panic attack happen).

16. Use imaginal practice, having subjects identify a situation associated with panic and imagine using coping strategies to manage a panic attack in that situation.

17. Have each subject identify a moderately anxiety-provoking situation and instruct each subject to enter the situation he/she identified before the next session, using pre-panic preparation via imagery prior to entering the situation.

SESSION 7

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Review and reinforce the use of pre-panic preparation and the sequencing of coping strategies.

4. Discuss subjects' ability to enter an anxiety-provoking situation in the past week, focusing on relaxation and cognitive coping strategies used and their effectiveness.
5. Examine subjects' confidence in their ability to use coping strategies both when relaxed and in anxiety provoking situations.

6. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

7. Discuss progress/improvement.

8. Briefly review the causal model of panic, explaining that we will be discussing psychological factors this week.

9. Discuss psychological factors, including acute stress, chronic stress, idiosyncratic stress, and depression.

10. Group discussion of the role of acute, chronic, idiosyncratic stress, and/or depression in the development and maintenance of each subject's panic attacks.

11. Using imaginal practice, have subjects imagine a past situation in which they had a panic attack, using coping strategies to manage the attack.

12. Group discussion of which coping strategies work best for them.

13. Using imaginal practice, have subjects imagine experiencing a panic attack in a highly anxiety-provoking situation and using coping strategies to deal with it.

14. Have each subject identify a highly anxiety-provoking situation and instruct each subject to enter the situation he/she identified before the next session, using pre-panic preparation via imagery prior to entering the situation.

SESSION 8

1. Review panic attack and daily anxiety records.

2. Review homework diaries.

3. Review and reinforce the use of pre-panic preparation and the sequencing of coping strategies.

4. Discuss subjects' ability to enter an anxiety-provoking situation in the past week, focusing on relaxation and cognitive coping strategies used and their effectiveness.

5. Examine subjects' confidence in their ability to use coping strategies both when relaxed and in anxiety provoking situations.

6. Discuss panic attacks and/or heightened anxiety experienced since the last session, including situations associated with panic and the components of panic.

7. Discuss progress/improvement.
8. Briefly review the cycle of panic, prevalence of panic and differences from general anxiety, the stages of a panic attack, the anticipatory and avoidance response, and the causal model of panic.

9. Group discussion of material reviewed (i.e., the cycle of panic, prevalence of panic and differences from general anxiety, the stages of a panic attack, the anticipatory and avoidance response, and the causal model of panic) and its application to their own experiences.

10. Have subjects develop a written list of anxiety-provoking situations, encouraging them to enter these situations in order to practice their coping strategies.

11. Discuss situations which might be expected to lead to panic attacks, reframing these as opportunities to practice coping strategies.

12. Encourage subjects to try to cope with panic attacks on their own.

13. Indicate that the Psychological Services Center and the Counseling Center on campus are places where they could seek future treatment if necessary.

14. Review coping strategies learned (i.e., cognitive strategies, relaxation, imaginal practice).

15. Ask if there are any questions.
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(617) 353-9610

EDUCATION
Candidate, Doctor of Philosophy
Clinical Psychology
Virginia Polytechnic Institute and State University

Predoctoral Internship, Completed August 1996
Children's Hospital and Judge Baker Children's Center,
Harvard Medical School

Master of Science, December 1993
Clinical Psychology
Virginia Polytechnic Institute and State University

Bachelor of Arts, June 1990
Major: Music with Psychology
Dartmouth College
Magna cum Laude, Phi Beta Kappa

EXPERIENCE
Clinical
Research Associate and Director of the
Child and Adolescent Fear and Anxiety
Treatment Program - September 1996 - Present
Center for Anxiety and Related
Disorders at Boston University
648 Beacon Street, 6th Floor
Boston, MA 02215-2015
(617) 353-9610

Supervisors: Dr. David H. Barlow
Dr. David Spiegel

Responsibilities include directing a research project on the
treatment of social phobia in adolescents, providing clinical
assessment and treatment services to children and adolescents with
anxiety disorders, supervising undergraduate and graduate
students, and offering seminars and lectures within the community
on the topic of anxiety disorders in children and adolescents and
their treatment.
Predoctoral Intern - September 1995 - August 1996  
Children's Hospital and Judge Baker Children's Center,  
Harvard Medical School  
300 & 295 Longwood Avenue  
Boston, MA 02115  
(617) 355-6680 / 232-8390

Supervisors:  
Dr. Laura Basili  
Dr. Ernest Bergel  
Dr. Eugene D'Angelo  
Dr. Linda Gudas  
Ms. Sarah Finn, LICSW  
Ms. Susanne Meyer, LICSW

Responsibilities included the provision of individual, family, and  
group psychotherapy, as well as parent guidance work, at the  
Manville School, a therapeutic day school for children with  
learning disabilities and emotional disturbance. Duties also  
included outpatient assessment and treatment through the Sexual  
Abuse Treatment Team at Children's Hospital, the provision of  
psychological consultation services and crisis evaluations for the  
emergency room of Children's Hospital, Consultation/Liaison work  
with two Boston area high schools, psychological testing of both  
inpatient and outpatient children, participation in individual and  
group supervision meetings, and attendance at weekly seminars.

Graduate Clinician - August 1994 - May 1995

Supervisors:  
August 1994-May 1995 Dr. Thomas H. Ollendick  
June 1993-August 1993 Dr. Richard Eisler  
August 1992-May 1993 Dr. George A. Clum  
August 1991-May 1992 Dr. Thomas H. Ollendick  
Dr. Ellie T. Surgis

Duties included outpatient therapy and assessment, psychological  
testing, participation on a practicum team, and weekly supervision  
meetings. Conducted comprehensive testing batteries as part of a  
specialized assessment clinic for children with anxiety and  
attentional problems.
Youth Services Intern - August 1993 - August 1994
New River Valley Community Services Board
Mental Health Services - Pulaski Clinic
302 North Washington Avenue
Pulaski, VA 24301
(540) 980-0660
Supervisors: Dr. Dennis Cropper
Cheri Warburton, M.S.

Worked with outpatient youth, aged 2 through 17 years, and their families. Duties included individual and family therapy, assessment, case management, and weekly supervision meetings.

School Counselor - September 1991 - May 1993
Montgomery County Public School System, Virginia
Supervisor: Dr. Thomas H. Ollendick

Provided weekly individual counseling for emotionally disturbed students as specified on their educational plans. Attended bi-weekly group supervision meetings and monthly staff meetings.

Activities Therapy Volunteer - September 1989 - June 1990
Dartmouth-Hitchcock Mental Health Center
Hanover, NH 03755

Assisted in the supervision of recreational and therapeutic activities for psychosocially dysfunctional adolescents and adults. Coordinated entertainment programs and assisted in volunteer training, supervision, and recruitment.

Assistant Special Education Teacher - Summer 1987
Bi-County Collaborative
North Attleboro, MA 02760

Assisted in the supervision of classroom and recreational activities at a summer camp for children with learning, emotional, and behavioral disorders. Worked closely with a group of six children, ages 6-12.

Assistant Special Education Teacher - November 1985-March 1986
Aiken School
Seekonk, MA 02771

Assisted in the supervision of academic and recreational activities. Worked closely with a group of children, ages 7-10, with various behavioral, learning, emotional, and genetic disorders.
Teaching

Instructor - August 1994 - May 1995
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(540) 231-6581
Supervisor: Dr. Thomas H. Ollendick

Duties involved full teaching responsibility for two sections of an undergraduate course in abnormal psychology. Responsibilities included designing a syllabus, the preparation and delivery of lectures, designing quizzes and examinations, and grading.

Graduate Teaching Assistant - August - December 1993
Dr. Richard A. Winett
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(540) 231-6581

Duties involved grading assignments for an undergraduate behavior modification course.

Graduate Teaching Assistant - January - May 1993
Dr. Joseph Germana
Phillippe Cunningham, M.S.
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(540) 231-6581

Duties involved grading course exams and guest lecturing for two sections of an undergraduate psychology of learning course.

Graduate Teaching Assistant - August - December 1992
Denise Martz-Ludwig, M.S.
Jennifer Wertz, M.S.
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(540) 231-6581

Duties involved grading course papers, guest lecturing, and providing individual assistance to students for two sections of an undergraduate social psychology course.
Research

**Dissertation Research - August 1994 - February 1997**
"Group Treatment of Nonclinical Panic Attacks in Late Adolescence: A Comparison of Education/Support and Cognitive-Behavioral Approaches"

Chairperson: Dr. Thomas H. Ollendick

Designed and conducted a study involving the assessment of nonclinical panic attacks in late adolescence and comparing the effectiveness of two types of group treatment (i.e., cognitive-behavioral vs. education/support).

"Children's Cognitive Responses to the Symptoms of Panic"

Chairperson: Dr. Thomas H. Ollendick

Designed and conducted a study investigating children's conceptions of common physical illnesses (i.e., colds, heart attacks) and a psychological phenomenon (i.e., panic attacks), and examining their cognitive interpretations of the physiological symptoms of panic.

**Intern - June - August 1992**
Women & Infants' Hospital
Providence, RI 02905
(401) 453-7040
Supervisor: Dr. Barry Lester

Conducted data analyses for a study investigating psychosocial risk and protective factors among low-SES infants.

**Intern - August 1991 - May 1992**
National Institute of Mental Health Training Grant
Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061
(540) 231-6581
Supervisor: Dr. Thomas H. Ollendick

Duties included data management and supervision of undergraduate research assistants for a cross-cultural study of children's fears. Administered the Diagnostic Interview for Children and Adolescents as part of a research project aimed at examining the comorbidity of conduct disorder and depression in adolescent subjects.
Research Assistant - June 1990 - June 1991
Women & Infants' Hospital
Providence, RI 02905
(401) 274-1100
Supervisor: Dr. Cynthia Garcia-Coll

Conducted follow-up assessments with infant subjects, ages 4-18 months, for a study of behavioral intervention with IUGR infants. Administered the Bayley Scales of Infant Development, the Sequenced Inventory of Communication Development, the Home Observation for Measurement of the Environment, and a behavioral assessment of infant temperament. Managed data collection and recruitment for a study aimed at examining the relationship between infant behavior and parenting stress.

PROFESSIONAL ORGANIZATIONS AND ACTIVITIES

Student Affiliate, American Psychological Association
Student Member, Association for Advancement of Behavior Therapy
Served as co-reviewer for an article submitted to the Journal of Abnormal Child Psychology, November, 1996.

PRESENTATIONS / POSTERS

Mattis, S. G. (January, 1997). Anxiety disorders in children and adolescents. Seminar conducted with parents as part of the Saturday Success Program at Boston Latin High School in Boston, MA.


Mattis, S. G. (November, 1996). Anxiety disorders in children and adolescents. Presentation given as part of a program on anxiety disorders sponsored by the Center for Anxiety and Related Disorders at Boston University.


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DOB: 4/10/68