Integrating mindfulness and cognitive-behavioral therapy for panic disorder: A theoretically-based treatment manual

Samantha M. Forsythe
Pacific University

Recommended Citation

This Dissertation is brought to you for free and open access by the College of Health Professions at CommonKnowledge. It has been accepted for inclusion in School of Graduate Psychology by an authorized administrator of CommonKnowledge. For more information, please contact CommonKnowledge@pacificu.edu.
Integrating mindfulness and cognitive-behavioral therapy for panic disorder: A theoretically-based treatment manual

Abstract
Panic disorder is a prevalent mental health disorder that entails significant costs, both to the individual and to society. Currently, the gold standard treatments for panic disorder have their basis in cognitive-behavioral theory. Outcome research has demonstrated panic-free rates in the range of 50-70% after treatment with CBT (e.g., Barlow, Craske, Cerny, & Klosko, 1989; Clark et al., 1994). Therefore, while these treatments are successful for many individuals diagnosed with panic disorder, a large number (30-50%) do not respond to these treatments. The purpose of this dissertation is to explore how the integration of mindfulness-based interventions into current cognitive-behavioral treatments may assist those who do not respond to cognitive-behavioral interventions alone. In this dissertation, I explore the diagnosis of panic disorder itself including definition, course and prevalence, comorbidity and risk factors, and costs to the individual and society. In addition, I examine relevant etiological models of the cause and maintenance of panic disorder. The process of reviewing the literature revealed that there is currently no established mindfulness-based etiological model of panic disorder. Therefore, after careful review of established mindfulness-based practices and the mechanisms of mindfulness, I propose such a model. I review current evidence-based cognitive-behavioral treatments for panic disorder including the therapeutic mechanisms at work. Although there is not an established mindfulness-based treatment specifically for panic disorder, I examine other mindfulness-based treatments, including therapeutic mechanisms. This research culminates in the proposal of a treatment manual. The treatment manual utilizes well-established cognitive-behavioral interventions and therapeutic mechanisms; however, the proposed protocol implements them through a mindfulness-based perspective. The treatment manual is structured into eight modules. Each module is divided into five sections: Materials Needed, Outline, Goals and Rationale, Therapist Tasks, and At Home Practice. The necessary worksheets for both the client and therapist are provided at the end of the treatment manual. Limitations of the research as well as future directions are explored.

Degree Type
Dissertation

Degree Name
Doctor of Psychology (PsyD)

Committee Chair
James B. Lane, Ph.D

Second Advisor
Michael S. Christopher, Ph.D.

Third Advisor
Christiane Brems, Ph.D., ABPP

Subject Categories
Psychiatry and Psychology

Comments
Library Use: LIH

This dissertation is available at CommonKnowledge: https://commons.pacificu.edu/spp/1094
INTEGRATING MINDFULNESS AND COGNITIVE-BEHAVIORAL THERAPY FOR PANIC DISORDER: A THEORETICALLY-BASED TREATMENT MANUAL

A DISSERTATION
SUBMITTED TO THE FACULTY
OF
SCHOOL OF PROFESSIONAL PSYCHOLOGY
PACIFIC UNIVERSITY
HILLSBORO, OREGON

BY
SAMANTHA M. FORSYTHE
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PSYCHOLOGY
APRIL 22, 2013

APPROVED BY THE COMMITTEE:

James B. Lane, Ph.D.
Michael S. Christopher, Ph.D.

PROFESSOR AND DEAN:
Christiane Brems, Ph.D., ABPP
Abstract

Panic disorder is a prevalent mental health disorder that entails significant costs, both to the individual and to society. Currently, the gold standard treatments for panic disorder have their basis in cognitive-behavioral theory. Outcome research has demonstrated panic-free rates in the range of 50-70% after treatment with CBT (e.g., Barlow, Craske, Cerny, & Klosko, 1989; Clark et al., 1994). Therefore, while these treatments are successful for many individuals diagnosed with panic disorder, a large number (30-50%) do not respond to these treatments. The purpose of this dissertation is to explore how the integration of mindfulness-based interventions into current cognitive-behavioral treatments may assist those who do not respond to cognitive-behavioral interventions alone. In this dissertation, I explore the diagnosis of panic disorder itself including definition, course and prevalence, comorbidity and risk factors, and costs to the individual and society. In addition, I examine relevant etiological models of the cause and maintenance of panic disorder. The process of reviewing the literature revealed that there is currently no established mindfulness-based etiological model of panic disorder. Therefore, after careful review of established mindfulness-based practices and the mechanisms of mindfulness, I propose such a model. I review current evidence-based cognitive-behavioral treatments for panic disorder including the therapeutic mechanisms at work. Although there is not an established mindfulness-based treatment specifically for panic disorder, I examine other mindfulness-based treatments, including therapeutic mechanisms. This research culminates in the proposal of a treatment manual. The treatment manual utilizes well-established cognitive-behavioral interventions and therapeutic mechanisms; however, the proposed protocol implements them through a mindfulness-based perspective. The treatment manual is structured into eight modules. Each module is divided into five sections: Materials Needed, Outline, Goals
and Rationale, Therapist Tasks, and At Home Practice. The necessary worksheets for both the client and therapist are provided at the end of the treatment manual. Limitations of the research as well as future directions are explored.

Keywords: Mindfulness, Mindfulness-Based Interventions, Panic Disorder, Cognitive-Behavioral Therapy, Treatment Integration, Treatment Manual
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHOD</td>
<td>1</td>
</tr>
<tr>
<td>PANIC DISORDER</td>
<td>3</td>
</tr>
<tr>
<td>1. Definition</td>
<td>3</td>
</tr>
<tr>
<td>2. Course and Prevalence</td>
<td>5</td>
</tr>
<tr>
<td>3. Comorbidity</td>
<td>6</td>
</tr>
<tr>
<td>4. Risk Factors</td>
<td>6</td>
</tr>
<tr>
<td>5. Costs to the Individual and Society</td>
<td>7</td>
</tr>
<tr>
<td>CURRENT ETIOLOGICAL MODELS OF PANIC DISORDER</td>
<td>11</td>
</tr>
<tr>
<td>1. A Biological Model</td>
<td>11</td>
</tr>
<tr>
<td>2. A Cognitive-Behavioral Model</td>
<td>12</td>
</tr>
<tr>
<td>3. A Cognitive Model</td>
<td>14</td>
</tr>
<tr>
<td>4. An Integrative Model</td>
<td>16</td>
</tr>
<tr>
<td>COGNITIVE-BEHAVIORAL TREATMENTS FOR PANIC DISORDER</td>
<td>18</td>
</tr>
<tr>
<td>1. Treatment Components</td>
<td>19</td>
</tr>
<tr>
<td>2. Therapeutic Mechanisms</td>
<td>31</td>
</tr>
<tr>
<td>3. Summary of the Cognitive-Behavioral Literature</td>
<td>33</td>
</tr>
<tr>
<td>MINDFULNESS-BASED INTERVENTIONS</td>
<td>34</td>
</tr>
<tr>
<td>1. Definition of Mindfulness</td>
<td>34</td>
</tr>
<tr>
<td>2. Therapeutic Mechanisms</td>
<td>36</td>
</tr>
</tbody>
</table>
**Introduction**

Panic disorder is a prevalent mental health disorder that entails significant costs, both to the individual and to society. Currently, the gold standard treatments for panic disorder have their basis in cognitive-behavioral theory. Outcome research has demonstrated panic-free rates in the range of 50-70% after treatment with CBT (e.g., Barlow, Craske, Cerny, & Klosko, 1989; Clark et al., 1994). Therefore, while these treatments are successful for many individuals diagnosed with panic disorder, a large number (30-50%) do not respond to these treatments. This fact points to an opportunity for current clinicians and researchers to formulate alternative treatments that may help those who do not respond to current cognitive-behavioral treatments. This quest is likely to lead to an investigation of how alternative theoretical approaches may add value to the current gold standard. The purpose of this dissertation is to explore how the integration of mindfulness-based interventions into current cognitive-behavioral treatments may assist those who do not respond to cognitive-behavioral interventions alone.

**Method**

Inspiration for this project began early, and continued throughout, my graduate training. I was largely influenced by practicum experiences, working with individuals diagnosed with a variety of anxiety disorders, panic disorder in particular. In working with these individuals, I discovered that cognitive-behavioral approaches were not effective for all clients. Having had exposure to mindfulness-based approaches through both coursework and practicum experiences, I believed it worthwhile to attempt to use these approaches with clients for whom cognitive-behavioral methods were not effective. Through this experience, I found that these clients responded to the integration of mindfulness-based approaches, evidencing more positive outcomes than with cognitive-behavioral treatments alone. These results intrigued me and I
began to consider the value of integrating the two approaches with the hope that this new method would lead to a higher proportion of individuals having a positive response to therapy.

While the anecdotal evidence described above was promising, it was necessary to articulate a theoretical rationale for the integration of cognitive-behavioral and mindfulness-based approaches for panic disorder. In this paper, I examine what is currently known about panic disorder including course and prevalence, issues of comorbidity, risk factors, costs to the individual and society, and etiological models (both cognitive-behavioral in nature and from a mindfulness perspective). The current cognitive-behavioral treatments, including treatment components and therapeutic mechanisms, are also discussed. Mindfulness is considered in detail including a discussion of definitions and therapeutic mechanisms of mindfulness as well as an examination of currently established mindfulness-based treatments. The above topics form the basis of a proposed rationale for integrating mindfulness-based interventions into cognitive-behavioral therapy in the treatment of panic disorder. Lastly, a theoretically-based treatment manual is presented.

In preparation for the literature review described above, I conducted searches through PsycINFO using the terms mindfulness, panic disorder, cognitive-behavior therapy, integration, anxiety disorders, mechanisms, and combinations thereof. I identified studies regarding the effectiveness of currently established cognitive-behavioral methods in addition to preliminary studies of the effectiveness of mindfulness-based approaches for anxiety as well as studies suggesting that an integration of the two may be promising. In addition, I conducted further searches through PsycINFO regarding the effectiveness of the various components of cognitive-behavioral treatment for panic disorder using the terms psychoeducation, self-monitoring, breathing retraining, cognitive restructuring, interoceptive exposure, in vivo exposure, and
effectiveness. Lastly, I utilized current treatment manuals including those for Panic Control Treatment (PCT), Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), and Acceptance and Commitment Therapy (ACT).

**Panic Disorder**

**Definition**

Panic disorder is characterized by the presence of recurrent, unexpected panic attacks. The DSM-IV-TR defines a panic attack as “a discrete period of intense fear or discomfort, in which four (or more)” of 13 listed criteria “developed abruptly and reached a peak within 10 minutes (American Psychiatric Association; APA, 2000, p 432). In addition, although not a diagnostic criterion, panic attacks typically do not last longer than 30 minutes (Leahy & Holland, 2000). The 13 criteria listed in the DSM-IV-TR include both somatic and cognitive symptoms, as follows: (1) palpitations, pounding heart, or accelerated heart rate; (2) sweating; (3) trembling or shaking; (4) sensations of shortness of breath or smothering; (5) feeling of choking; (6) chest pain or discomfort; (7) nausea or abdominal distress; (8) feeling dizzy, unsteady, lightheaded, or faint; (9) derealization or depersonalization; (10) fear of losing control or going crazy; (11) fear of dying; (12) paresthesias; and (13) chills or hot flushes. Although unexpected panic attacks are required for a diagnosis of panic disorder, panic attacks may be of three types: unexpected, situationally bound, or situationally predisposed.

For an individual to meet criteria for a diagnosis of panic disorder, at least one of the panic attacks must be followed by one month or more of persistent concern about the possibility of future attacks, worry about the implications or consequences of the attack, or a significant behavior change that is related to the attack (APA, 2000). It is also required that the panic
attacks are not caused by the direct physiological effects of a substance or general medical condition or better accounted for by another DSM-IV-TR diagnosis.

Another consideration in diagnosis is that many individuals with panic disorder may also meet criteria for agoraphobia; therefore, two diagnoses for panic disorder currently exist: panic disorder without agoraphobia and panic disorder with agoraphobia (APA, 2000). According to the DSM-IV-TR, agoraphobia is characterized by “anxiety about being in places or situations from which escape might be difficult (or embarrassing) or in which help may not be available in the event of having an unexpected or situationally predisposed panic attack or panic-like symptoms” (APA, 2000, p 433). Furthermore, the situations described above must be avoided or endured with significant distress or anxiety.

Although they are a definitive feature of panic disorder, panic attacks are not limited to this diagnosis. Looking at diagnostic criteria, the same cluster of physical and cognitive symptoms may be experienced by individuals with specific phobia, posttraumatic stress disorder, generalized anxiety disorder, and social phobia (APA, 2000). The main difference here is that individuals are actively aware of the source of their panic-like symptoms, whereas in panic disorder, the symptoms seem to be unexplained, appearing to occur in the absence of a precipitating event or situation (Roy-Byrne, Craske, & Stein, 2006). Roy-Byrne et al. pointed out another concern: panic attacks may also be a symptom of a physical condition such as hypothyroidism, stimulant use or abuse, and more rarely in serious disorders such as phaeochromocytoma or partial complex seizures. For this reason, it is vital to ensure that individuals who are exhibiting panic-like symptoms have had a recent medical evaluation.
Course and Prevalence

Data from the National Comorbidity Survey Replication (NCS-R) indicates that the lifetime prevalence of anxiety disorders is 28.8%, making anxiety disorders the most prevalent class of disorders, followed by impulse control disorders at 24.8%, mood disorders at 20.8%, and substance use disorders at 14.6% (Kessler, Berglund, et al., 2005). The lifetime prevalence of panic disorder was listed as 4.7%. Furthermore, in a 12-month prevalence study, the prevalence of panic disorder was found to be 2.7%, with 44.8% of these cases rated severe, 29.5% rated moderate, and 25.7% rated mild (Kessler, Chiu, Demler, & Walters, 2005). Kessler, Chiu, et al. explained that cases were rated severe if they involved a serious suicide attempt; work disability or substantial limitations; 30 or more days out of role per year; or a positive screen for psychosis, bipolar I or II, substance dependence, or an impulse control disorder. The NCS-R data also shows that anxiety disorders are more prevalent among women and among non-Hispanic whites as compared to African Americans and Hispanics (Kessler, Berglund, et al., 2005). Specifically, cross-cultural studies have evidenced a consistent excess of panic disorder in females (Roy-Byrne et al., 2006). These statistics indicate that a sizable proportion of the population will experience panic disorder and almost half of those cases will result in serious consequences, with a majority of those cases involving females.

The typical age of onset for panic disorder is late adolescence or early adulthood, with later age of onset much less frequent (Roy-Byrne et al., 2006). The typical course of panic disorder is chronic, with a waxing and waning of symptoms (APA, 2000). Only 30% of individuals diagnosed with panic disorder experience a remission of symptoms without subsequent relapse within a few years (Katschnig & Amering, 1998; Roy-Byrne & Cowley, 1995). Thus, while some individuals experience relief from symptoms, it appears that the
The majority of individuals with panic disorder continue to experience symptoms throughout their lives.

**Comorbidity**

Panic disorder frequently is comorbid with one or more other mental health disorders; 27.7% of the population has been diagnosed with two or more lifetime mental health disorders and 17.3% have had three or more (Kessler, Berglund, et al., 2005). The most frequent comorbid conditions (as indexed by correlation with panic disorder) are: agoraphobia (.64), dysthymic disorder (.54), specific phobia (.49), posttraumatic stress disorder (.49), social phobia (.48), major depressive disorder (.48), and generalized anxiety disorder (.46) (Kessler, Chiu, et al., 2005). When comorbidity exists, panic disorder may at times be considered the primary diagnosis in terms of temporal precedence, or it may be seen as secondary, considered as a marker of severity of the comorbid disorder (Kessler, Stang, et al., 1998).

**Risk Factors**

Stress-diathesis models of the etiology and maintenance of panic disorder imply a biological predisposition that interacts with the environment and certain stressors to produce the disorder (Roy-Byrne et al., 2006). Evidence for a biological predisposition comes from genetic research. Childhood panic disorder is more common in the children of parents who have the disorder (Biederman et al., 2005). Twin studies indicate a heritability rate of about 40% (Hettema, Neale, & Kendler, 2001). The genetic mechanism behind the heritability of panic disorder is unknown; however, it is thought to involve many genes, leading to vulnerability through unknown pathways (Kendler, 2005). In addition to the genetic evidence, several areas of the brain have also been implicated in panic disorder. For example, individuals with panic disorder have been shown to have decreased cerebral glucose metabolism in the amygdala,
hippocampus, thalamus, and brain-stem areas (Sakai et al., 2005). Lastly, support for a biological predisposition comes from personality research. Temperament variables such as neuroticism (Roth, 1984) and anxiety sensitivity (McNally, 2002) have been linked to the development of panic disorder.

As stated above, environmental influences likely have an impact on the development of panic disorder as well. Studies have shown that stressful life events contribute to both the onset and maintenance of the disorder (Watanabe, Nakao, Tokuyama, & Takeda, 2005; Roy-Byrne, Geraci, & Uhde, 1986). Specifically, trauma and neglect in early life have been shown to increase the risk for development of panic disorder (Stein et al., 1996). Together, these findings illustrate the importance of taking into account both biological and environmental factors in regards to the development and maintenance of panic disorder.

Costs to the Individual and Society

Panic disorder has been ranked among the most expensive mental disorders (Smit et al., 2006). Batelaan et al. (2007) found the per-patient costs of panic disorder to be higher than any other common mental health disorder. One estimate of these costs is that the loss of employment, disability benefits, loss of financial support, and health care costs of individuals with panic disorder added up to more than 100 million dollars in 1980 (Sheehan, Ballenger, & Jacobsen, 1980). This figure has no doubt increased steadily over the past 30 years due to inflation alone. The costs associated with panic disorder can be divided into direct costs and indirect costs. Direct costs include specific costs that are charged for products or services such as physician visits, emergency room visits, and medications (Edlund & Swann, 1987). Indirect costs involve activities were there are no direct charges, yet have a negative impact on the individual such as loss of employment and reduced quality of life.
As one index of direct costs, Katon (1996) reported that the rate of utilization of primary health care services for individuals with panic disorder is approximately three times that of other patients in the American health care system. Further evidence of high health care utilization among individuals with panic disorder comes from Klerman, Weissman, Ouellette, Johnson, and Greenwald (1991). These researchers examined a random sample of 18,000 individuals from five different communities in the United States. Of these individuals, 254 were found to meet criteria for panic disorder, 667 experienced panic attacks but did not meet full diagnostic criteria, 4857 met criteria for a psychiatric diagnosis other than panic disorder, and 12,233 did not meet criteria for any psychiatric diagnosis. Klerman et al. found the lifetime rate of hospitalization for emotional problems to be 35.3% among individuals with panic disorder compared to 7.6% among individuals with other psychiatric diagnoses and 1.3% among individuals with no psychiatric diagnosis. They also found emergency room use, tranquilizer use, and sleeping medication use to be significantly higher among individuals with panic disorder.

Furthermore, in a study of 65 individuals with panic disorder, Seigel, Jones, and Wilson (1990) found that 70% of these individuals reported taking some type of prescription medication to manage their panic symptoms. These authors also noted that these 65 individuals reported a total of 205 visits to medical practitioners over the previous month. This averages out to 3.1 visits per individual with an annual estimate of 37.3 visits. Lastly, the authors also reported that this sample incurred 18 hospitalizations for a total of 114 total days in the hospital in the six months prior to the study. Undoubtedly, the high rate of utilization of these products and services leads to sizable costs.

As one explanation for why individuals with panic disorder exhibit such a high rate of health care utilization, Katon (1996) hypothesized that such individuals tend to minimize their
anxiety symptoms and focus on their somatic symptoms, leading them to seek medical care. In addition, due to the fact that the most common somatic symptoms of panic disorder (cardiovascular symptoms, neurologic complaints, and gastrointestinal distress) resemble those of physical diseases, these individuals often “undergo extensive and costly diagnostic procedures to rule out conditions such as coronary artery disease, inflammatory bowel disorder, and asthma” (Katon, 1996, p. 11). Furthermore, Katon added that in addition to being costly, these procedures may delay the diagnosis of panic disorder, putting individuals at greater risk of other social and vocational costs.

Considering indirect costs, Katon (1996) stated that individuals diagnosed with Panic Disorder experience significantly higher levels of family, vocational, and social problems than individuals without panic disorder. Several studies report results that support this assertion. First, Klerman et al. (1991) reported that 26.8% of the individuals meeting criteria for panic disorder experienced financial dependency (defined by receipt of welfare or disability payments) as compared to 16.4% of individuals diagnosed with another psychiatric diagnosis and 9.5% of individuals with no psychiatric diagnosis. Klerman et al. also reported a significantly higher rate of inability to work due to emotional problems among individuals with panic disorder.

Seigal et al. (1990) found that, among the 65 individuals with panic disorder discussed above, the number of annual work days missed were more than double that of the general United States population. Seigel et al. also found that 15.2% reported using alcohol to manage their panic symptoms and 70% reported experiencing depression since the onset of their panic symptoms. Lastly, quality of life scores were found to be significantly reduced among individuals with panic disorder. Edlund and Swann (1987) examined indirect costs among 30 individuals diagnosed with panic disorder. They state that 83.3% reported decreased quality of
work, 66.7% reported losing their job or lost income from jobs, 43.3% reported experiencing a complete incapacity to work for at least one month, and 33.3% reported increased alcohol use. Overall, it appears that individuals with panic disorder encounter many negative consequences such as loss of work, increased risk for alcohol use, and loss of financial independence. Thus, it is not surprising that many of these individuals experience symptoms of depression and a reduced quality of life.

Another potential consequence of panic disorder is an increase in suicidal behavior. Using data from the National Comorbidity Survey, Goodwin and Roy-Byrne (2006) examined the relationship between panic disorder and suicidal ideation and suicide attempts. They looked at both unadjusted comparisons and comparisons after adjusting for demographic characteristics, comorbidity, and early trauma experiences. Goodwin and Roy-Byrne reported that both past-year and lifetime panic disorder diagnoses were associated with a significantly increased risk of both past-year and lifetime suicidal ideation. Although these associations were weakened considerably after adjustment for comorbidity, they remained statistically significant. Adjustment for both demographics and early trauma only minimally reduced these associations and they continued to remain significant. Furthermore, unadjusted comparisons also showed both past-year and lifetime panic disorder to be associated with both past-year and lifetime suicide attempts. While the association between past-year and lifetime panic disorder and past-year suicide attempts remained significant after adjustment, the association between past-year and lifetime panic disorder and lifetime suicide attempts did not. These results indicate that an increase in suicidal behavior among individuals with panic disorder is a real possibility. This finding, along with the other costs described above, illustrates the importance of effective treatments for panic disorder.
Current Etiological Models of Panic Disorder

Over time, numerous etiological models of the cause and maintenance of panic disorder have been proposed. The majority of these models have their basis in a biological framework, a cognitive-behavioral framework, or a combination thereof. Specifically, four models have dominated: Klein and Gorman’s (1987) biological model, Goldstein and Chambless’ (1978) cognitive-behavioral fear-of-fear model, Clark’s (1986) cognitive model, and Bouton, Mineka, and Barlow’s (2001) integrated model.

A Biological Model

Klein and Gorman (1987) asserted that panic and inter-panic anxiety are qualitatively distinct. They came to this conclusion after observing that the tricyclic antidepressant imipramine effectively stopped panic attacks but had no effect on anticipatory anxiety. Klein and Gorman also pointed out the fact that the course of panic disorder is variable with some individuals experiencing panic attacks and not developing inter-panic anxiety. They asserted that this finding would be unexpected if the chronic inter-panic anxiety was simply due to conditioning. In addition, patients with panic disorder report experiencing good days and bad days. Klein and Gorman stated that this waxing and waning of anxiety symptoms cannot be entirely explained by learning theory. Furthermore, Klein and Gorman reported that studies of lactate infusion found differences at baseline between patients with panic disorder and normal controls. Patients with panic disorder exhibited a faster heart rate and higher diastolic blood pressure. In addition, the patients showed signs of chronic hyperventilation with low PCO$_2$, low bicarbonate, and low phosphate. Klein and Gorman asserted that these differences may indicate true biological differences between those who develop panic disorder and those who do not.
Klein and Gorman’s (1987) model provides an account of the genetic predisposition to panic disorder indicated by the research described earlier. The authors hypothesized that individuals may “inherit brain stem autonomic nervous system control loci that are hypersensitive to a variety of noxious stimulants and fire at low threshold” (Klein & Gorman, 1987, p. 94). They asserted that the firing of these control loci may be responsible for the onset of a panic attack. Klein and Gorman also pointed out that life stressors and other environmental conditions likely play a role in determining whether, how, and when the genetic predisposition is expressed through panic symptoms. Klein and Gorman added that an additional component to the biological model is that panic attacks may stimulate centers of the limbic system producing the chronic anticipatory anxiety experienced by individuals with panic disorder.

Klein and Gorman (1987) concluded that the ultimate cause of the onset of panic disorder is likely biological. From this conclusion, they reasoned that if a patient wishes to be completely free from panic symptoms, medication is necessary as cognitive-behavioral treatments would not correct the underlying biological problem. Klein and Gorman stated that the usefulness of cognitive-behavioral treatments is limited to reducing the consequences of the biological autonomic stimulation.

A Cognitive-Behavioral Model

Goldstein and Chambless (1978) developed the fear-of-fear model of the etiology of panic disorder and its relation to agoraphobia, which has its roots in cognitive-behavioral theory. They hypothesized that the initial panic attack experienced by individuals with panic disorder typically occurs during or following a period of stress, typically involving interpersonal conflict. Once this initial attack occurs, the individual interprets the event as catastrophic and thus develops fear of the somatic sensations associated with panic via classical conditioning.
Therefore, panic attacks are conceptualized as conditioned responses to bodily sensations and the fear involved in agoraphobia is thought to have more to do with a fear of the somatic sensations and potential consequences of a panic attack and less to do with the actual situation being avoided.

To answer the question of why some individuals who experience a panic attack develop panic disorder and others do not, Goldstein and Chambless (1978) suggested two main differences between these groups of people. First, they proposed that individuals who develop panic disorder have relatively low levels of self-sufficiency and that this may be due to symptoms of anxiety, an actual lack of skills, or a combination thereof. Second, it is suggested that individuals who develop panic disorder have a tendency to misinterpret the causes of the uncomfortable feelings and/or sensations that they experience. Therefore, individuals who experience a panic attack but do not go on to develop panic disorder are likely able to accurately discern the cause of their discomfort and to feel they have enough personal resources to deal with the stressful situation. In this way, problems are resolved and feelings of helplessness do not arise.

Goldstein and Chambless (1978) also presented hypotheses regarding the maintenance of panic disorder and agoraphobia. They began by stating that a panic attack is a frightening experience and when this is paired with feelings of low self-sufficiency, the individual’s belief that someone must be there to take care of them is reinforced. In turn, a self-defeating feedback loop is triggered where panic attacks increase dependency and reinforce feelings of helplessness, which then makes it less likely that the individual will be able to resolve the conflicts they are experiencing, thus leading to more panic attacks. In addition, once these individuals have experienced one or more panic attacks, they become hypervigilant to any somatic sensations or
feelings of anxiety, interpreting these as signs of an impending panic attack. This leads the individual to react with such high levels of anxiety that the dreaded panic attack is almost always induced, creating a self-fulfilling prophecy. Lastly, individuals with panic disorder often receive social reinforcement from friends and family in the form of attention. Further, any avoidance behaviors are negatively reinforced by the reduction in anxiety and panic-like symptoms.

There are several research findings that are often cited in support of cognitive-behavioral models of panic disorder. For example, individuals with panic disorder exhibit elevated anxiety specifically focused on panic sensations (Antony, Brown, & Barlow, 1992). Antony, Brown, and Barlow also pointed out that individuals with panic disorder have been found to have information processing biases for attending to threat-related cues as well as an amplified awareness of somatic sensations related to panic. Lastly, they asserted that the efficacy of cognitive-behavioral therapy for the treatment of panic disorder and agoraphobia lends support to cognitive-behavioral etiological models.

**A Cognitive Model**

On the surface, the cognitive model of panic disorder proposed by Clark (1986) appears to be very similar to that proposed by Goldstein and Chambless (1978). Clark agreed with Goldstein and Chambless that panic attacks are provoked by an extreme and fearful response to somatic sensations. However, Clark disagreed that somatic sensations become associated with panic through classical conditioning alone. He reasoned that if fear were to be classically conditioned to occur in response to relevant somatic sensations, it would be expected that a panic attack would occur every time these sensations arise and, in fact, this is not the case. For example, some individuals with panic disorder are able to exercise and experience sensations, such as a raised heart rate, without experiencing a panic attack. Therefore, Clark hypothesized
that the panic attacks occur only when individuals catastrophically misinterpret the somatic sensations. He went on to say that the process of misinterpretation may happen quickly and unconsciously. Putting this all together, Clark’s model of panic disorder is as follows: An individual encounters some sort of external or internal stimuli that leads to feelings of mild apprehension. This apprehension leads to a wide variety of physical sensations which the individual then interprets as catastrophic. In turn, anxiety is heightened and panic ensues.

Whereas Klein and Gorman (1987) believe that the main difference between individuals who develop panic disorder and those who do not lies in some type of biochemical disorder and Goldstein and Chambless (1978) believe the difference lies in variation in belief of self-sufficiency and accuracy in discerning cause and effect, Clark (1986) believes that the main difference has to do with the cognitions the individuals experience in response to relevant somatic sensations. The literature contains support for this belief. First, Hibbert (1984) found panic patients to be significantly more likely than normal controls to have thoughts regarding the anticipation of death, sickness, or loss of control. This finding is consistent with a tendency to catastrophically interpret benign stimuli. Second, Ley (1985) discovered that individuals with panic disorder frequently report that the first sign of anxiety they notice is some sort of bodily sensation. This suggests that these individuals are likely to be hyperattentive to physical sensations leading to possible misinterpretation. In addition, Liebowitz et al. (1985) found that individuals who experience a panic attack in response to lactate infusion perceive the associated physical changes long before the actual onset of panic. Lastly, Clark and Hemsley (1982) examined the responses individuals may have to physical sensations. Specifically, regarding hyperventilation, they found that participants expressed a wide variety of responses, including some individuals finding the experience pleasurable.
While Clark (1986) does not believe that a biological difference is the main cause of panic disorder, he stated that biological factors likely play a role. He explained that it is possible that individuals who develop panic disorder may actually experience more, or more intense, benign bodily sensations and that this may factor into why these individuals appear to perceive these sensations at an increased rate. In addition, Clark stated that biological factors likely play a role in the intensity of the increase in physical sensation in response to threatening stimuli. That being said, Clark believes that while medications that block panic-like symptoms will produce a short-term reprieve from anxiety and panic, discontinuation of the medication will ultimately lead to relapse if the individual continues to interpret somatic sensations in a catastrophic manner. Therefore, Clark suggested that cognitive therapy would be an effective tool in treating individuals with panic disorder.

An Integrative Model

An integrative model, proposed by Bouton, Mineka, and Barlow (2001) incorporates hypotheses regarding both biological and cognitive-behavioral processes. Here, the difference between fear and anxiety is highlighted. Fear is thought to be a well-organized and robust emotion that is stored in memory and triggered by the presence of certain conditions such as imminent threat, leading to a desire to escape the feared situation. Anxiety is thought to be more loosely structured and to serve a different purpose: to prepare the individual to deal with future threats. Bouton, Mineka, and Barlow related panic to the emotion of fear. They proposed two crucial elements in the development of panic disorder. First is the experience of a conditioning episode involving early panic attacks. Often these early panic attacks are preceded by a period of stress and are referred to as false alarms due to the fact that they trigger the emotion of fear in absence of imminent threat. The second crucial element is the conditioning of anxiety which is
focused on the anticipation of and apprehension about future panic attacks. The conditioning of anxiety can involve both exteroceptive and interoceptive cues. Exteroceptive cues refer to the context in which a panic attack occurs, which becomes associated with the panic symptoms and, therefore, becomes feared, leading to agoraphobic avoidance. Interoceptive cues refer to benign bodily sensations that may occur in the early onset of a panic attack, which the individual learns to associate with the attack as a whole. The individual misinterprets such cues in the future, leading to the onset of a full panic attack. In addition to these exteroceptive and interoceptive cues, cognitions may also become a conditioned stimulus through a process of verbal conditioning. Once a thought occurs during an episode of panic, the thought may then become associated with the panic attack and, in the future, the thought itself may become capable of triggering panic in a similar way that the other conditioned stimuli do.

To answer the question of why some individuals develop panic disorder and others do not, Bouton, Mineka, and Barlow (2001) proposed several potential vulnerability factors. Biological factors include the heritability of the trait referred to as trait anxiety, neuroticism, or negative affect. The authors stated that although a genetic predisposition for this trait would not be a direct cause of panic, it may lead to the conditions necessary for the onset of panic. Furthermore, this trait may also have an effect on the potency of panic attacks and may influence the degree to which panic and anxiety can be conditioned. These authors also proposed psychological factors. First, the ability of panic attacks to initiate conditioning is likely influenced by their perceived controllability and predictability. Therefore, individuals who developed a sense of mastery and control over their environments may be less likely to develop panic disorder. In addition, vicarious and instrumental learning throughout life may play a role. Specifically, any situations in which sick role behavior is encouraged, or in which excessively
negative evaluations of somatic symptoms are witnessed, may provide further vulnerability to developing panic disorder.

Putting this all together, Bouton, Mineka, and Barlow’s (2001) integrated model of panic disorder proposes that certain biological and psychological factors lead an individual to be vulnerable to the development of panic disorder. In addition, stressful life events provide additional vulnerability as they may trigger the initial conditioning episode of panic. From there, exteroceptive, interoceptive, and verbal conditioning lead to the development of anticipatory anxiety and agoraphobic avoidance which serve to maintain panic disorder. Given this framework, Bouton, Mineka, and Barlow proposed that treatments that involve extinction or counterconditioning exposure to the conditioned stimuli are likely to be the most promising interventions for panic disorder.

Cognitive-Behavioral Treatments for Panic Disorder

Cognitive-behavioral therapy (CBT) for panic disorder traditionally involves some combination of the following treatment components: psychoeducation, self-monitoring, breathing retraining, applied relaxation, cognitive restructuring, interoceptive exposure, in vivo exposure, and relapse prevention. Overall, outcome research has demonstrated panic-free rates in the range of 50-70% after treatment with CBT (e.g., Barlow, Craske, Cerny, & Klosko, 1989; Clark et al., 1994). In addition, Mitte (2005) and Westen and Morrison (2001) conducted meta-analyses of CBT for panic disorder and reported large effect sizes of 1.55 and 0.90, respectively.

One of the most well-recognized and empirically supported cognitive-behavioral treatments for panic disorder is Craske and Barlow’s (2007) Panic Control Treatment (PCT). This treatment has evidenced panic-free rates in the range of 70-78% and high end-state rates (i.e., within normative ranges of functioning) in the range of 50-70% (Barlow et al., 1989).
Furthermore, results have been shown to be maintained for as long as two years (Craske, Brown, & Barlow, 1991). PCT has also been shown to be effective in the treatment of panic disorder when comorbidity is present, with improvements being found in comorbid conditions as well (Brown, Antony, & Barlow, 1995). The current literature continues to support the effectiveness of PCT for panic disorder and PCT has been classified as an empirically validated treatment (Chambless et al., 1996).

Treatment Components

PCT consists of the following treatment components: psychoeducation, self-monitoring, breathing skills training, cognitive restructuring, interoceptive exposure, and in vivo exposure. Craske and Barlow (2007) divided these treatment components up into four main sections of PCT. The first section, the basics, includes psychoeducation and self-monitoring. Second is coping skills which includes breathing skills training and cognitive restructuring. The third section is exposure, including both interoceptive and in vivo exposure. Lastly, in addition to the active treatment components, Craske and Barlow included a section on planning for the future which entails a discussion of medication and relapse prevention. Each of the above treatment components is designed to target one or more of the mechanisms at work in the etiology of panic disorder and will be discussed in detail below.

Psychoeducation. The main purpose of psychoeducation is to provide the client with information regarding the nature of panic disorder, the causes of panic and anxiety, and the maintenance factors of panic and anxiety. The goal is to correct common myths and misconceptions about panic disorder and panic symptoms so as to demystify the client’s experience and to begin to provide a rationale for the treatment to come (Craske & Barlow, 2007). In addition, psychoeducation communicates to clients that they are not alone in their
experience of panic and anxiety; therefore, assuring them that they are not insane nor unusual. To this end, the survival value of anxiety and alarm reactions is emphasized throughout treatment. The fight or flight response is explained in detail from both the psychological and physiological perspectives. According to Craske and Barlow, this psychobiological model introduces to clients the idea that the actual panic attacks are not the main problem, but that the anticipation and avoidance of panic attacks are the key factor and thus, key targets of treatment.

In addition to demystifying the experience of panic and normalizing the client’s experience, psychoeducation provides a conceptual framework that leads into a discussion of treatment. A rationale for treatment is provided and explained to the client in terms of targeting the mechanisms of panic disorder described above. In this process, the client is also educated about the difference between the state of anxiety and the emotion of fear or panic, with anxiety being a state of preparation for future threat and panic being the fear response brought about by imminent threat (Craske & Barlow, 2008).

Information regarding common unhelpful coping mechanisms, such as avoidance or substance use, is provided including the fact that these behaviors are understandable given the client’s experience, but are also likely to contribute to the continued experience of panic. When providing the treatment rationale, Craske and Barlow (2008) stressed the importance of explaining to the client that PCT is designed to provide him or her with more helpful coping strategies that can then replace the less adaptive strategies described above. The treatment rationale is also designed to assure the client that any predispositional variables or psychological vulnerabilities he or she may possess do not mean that the client will inevitably experience panic disorder for the rest of their lives as the rationale informs clients that there is a good chance for successful treatment.
In addition to the theoretical basis for providing clients with psychoeducation, the current literature also supports its use. Sorby, Reavley, and Huber (1991) examined the effects of the addition of an anxiety management booklet to treatment as usual by a general practitioner with individuals diagnosed with either panic disorder or generalized anxiety disorder. They found that the addition of this booklet evidenced clinically and statistically significant improvements in anxiety symptoms. Furthermore, Sorby et al. emphasized the importance of the finding that individuals provided with the booklet began to show improvements very quickly with the booklet group found to be significantly less anxious than the control group at two weeks into treatment.

Dannon, Iancu, and Grunhaus (2002) also examined the effects of adding a self-information booklet to treatment. In this study, 84 patients were randomly assigned to one of two groups: paroxetine and the self-information booklet (Group A) or paroxetine alone (Group B). Three weeks into treatment, clients in Group A evidenced significantly greater improvements in anxiety symptoms and lower scores on the Hamilton Anxiety Scale, the Panic Self Questionnaire, and the Visual Analog Scale than did clients in Group B. Twelve weeks into treatment, this result faded and both groups were found to be significantly improved as compared to baseline. Dannon et al. concluded that the self-information booklet evidenced the beneficial effect of shortening the duration of time between the beginning of treatment and the commencement of improvements. They noted that this may be a very significant finding as the first few weeks of treatment are known to be crucial to treatment compliance. In addition, it is noteworthy that the results of this study appear to corroborate those found by Sorby et al. (1991) described above.
Both theory and empirical evidence currently support the use of psychoeducation in the treatment of panic disorder. Specifically, it is evident that this should always be the first component of treatment as providing the client with information regarding their disorder and potential treatment appears to result in speedy improvement which is likely to lead to a higher degree of treatment compliance. These early improvements may further provide the client with hope, providing the motivation necessary to follow through with treatment.

**Self-Monitoring.** Self-monitoring is designed to provide both the therapist and the client with objective information regarding the client’s experience of anxiety and panic. In addition, self-monitoring allows for the tracking of progress throughout treatment. The rationale behind the use of self-monitoring has to do with the idea that retrospective recall of past experiences of anxiety and panic may lead to an inflated estimate of the frequency and intensity of panic (Rapee, Craske, & Barlow, 1990). Furthermore, it is likely that such inflated estimates contribute to apprehension about future experiences of anxiety and panic. Self-monitoring has been found to lead to more accurate and less inflated estimates, thus providing the objective awareness that is the goal of self-monitoring (Craske & Tsao, 1999).

Self-monitoring involves the client keeping a record of the panic attacks they experience that is to be completed as soon as possible after the actual panic attack. To facilitate this, the panic attack record is typically wallet size so it can be carried by the client at all times. In addition to recording panic attacks, clients are also asked to record daily levels of anxiety, depression, and worry about panic with a daily mood record. The most common problem experienced with self-monitoring is client noncompliance. Craske and Barlow (2008) stated that this may be due to a misunderstanding or to a lack of the perceived worth of self-monitoring, but most often it is due to the anticipation of increased anxiety as a result of self-monitoring. These
issues point to the importance of providing the client with a clear rationale and clear instructions regarding self-monitoring prior to its implementation. Craske and Barlow also suggested that if noncompliance occurs, implementing cognitive restructuring at this stage may help. Further, the importance of the therapist giving attention to the self-monitored information and providing corrective feedback about the process at the beginning of each session may be effective in increasing compliance.

**Breathing Retraining.** Many individuals with panic disorder describe the symptoms of their panic attacks as strikingly similar to the symptoms of hyperventilation (Craske & Barlow, 2008). Thus, early conceptualizations of panic disorder focus on the relationship between stress-induced respiratory changes and panic attacks. In these models, respiratory changes are hypothesized to elicit fear due to being perceived as threatening or to exacerbate fear that was previously provoked by other stimuli perceived as threatening, thus leading to the experience of panic. Based on this early conceptualization, breathing retraining was established as a central component in the treatment of panic disorder. In addition, early studies evidenced positive effects of breathing retraining (e.g., Kraft & Hoogduin, 1984).

Despite the apparent similarity of panic and the effects of hyperventilation, Craske and Barlow (2008) pointed out that the report of symptoms typically given by clients does not always accurately correspond to actual hyperventilation physiology. Furthermore, fewer than 50% of individuals with panic disorder actually evidence reductions in end-tidal carbon dioxide values during panic attacks (Hibbert & Pilsbury, 1989; Holt & Andrews, 1989). Recently, the literature shows less support for breathing retraining and its value as a treatment component for panic disorder has been questioned than would be expected from theory. Schmidt et al. (2000) examined the effectiveness of CBT including breathing retraining versus that of CBT without
breathing retraining. They found that the inclusion of breathing retraining led to significantly poorer outcomes. Craske, Rowe, Lewin, & Noriega-Dimitri (1997) examined the effectiveness of breathing retraining versus that of interoceptive exposure when each was added to cognitive restructuring and in vivo exposure. They reported that breathing retraining was found to be slightly less effective than interoceptive exposure. Furthermore, other studies suggested that the inclusion of breathing retraining does not lead to better outcomes than those found with vivo exposure (e.g., de Beurs, van Balkom, Lange, Koele, & van Dyck, 1995).

Garssen, de Ruiter, and van Dyck (1992) suggested that the positive effects of breathing retraining are likely due to distraction or a sense of control and are not actually due to specific effects of changes in breathing pattern. In addition, Eifert and Forsyth (2005) pointed out that the tolerance of anxiety and fear is likely more critical than the elimination of fear. Given these recent findings and the modification of the conceptualization of panic disorder, breathing retraining has been deemphasized. Furthermore, the possibility exists that techniques learned in breathing retraining may become a safety behavior or another method of avoidance (Craske & Barlow, 2008). Thus, if breathing retraining is to be included in the treatment of panic disorder, it is important to ensure that clients do not begin to rely on these techniques as methods of seeking safety or avoiding discomfort.

**Cognitive Restructuring.** Cognitive restructuring is designed to correct distorted thinking with the expectation that anxiety and fear will subside over time (Craske & Barlow, 2008). Specifically, cognitive therapy is targeted at thoughts pertaining to the misappraisal of bodily sensations. In addition, discussion of the relationship between thoughts and emotions continues to reinforce the treatment rationale. Prior to introducing cognitive restructuring, self-monitoring of panic attacks as well as mood and anxiety levels has already been implemented.
In this section of treatment, self-monitoring is expanded to include monitoring of emotions and the associated thoughts in order to identify the client’s distorted automatic thoughts, maladaptive assumptions, and schemas or core beliefs. The idea is introduced that thoughts are hypotheses and not facts which leaves them open to inquiry and challenge. Once relevant thoughts, assumptions, and schemas are identified through self-monitoring, these cognitions are categorized into the different types of cognitive distortions that typically occur in individuals with panic disorder. According to Craske and Barlow, the process of categorizing and labeling cognitions assists in the process of developing a more objective perspective regarding one’s own thoughts. This objectivity allows the client to evaluate the validity of their cognitions in a more effective manner. The therapist guides the client through this process using Socratic questioning and then more evidence-based alternative hypotheses are developed, with the goal of replacing the distorted cognitions with these more rational alternatives.

Current literature supports the use of cognitive restructuring in the treatment of panic disorder. Clark et al. (1994) examined the effectiveness of cognitive restructuring among 64 individuals diagnosed with panic disorder. The study participants were assigned to one of four conditions: cognitive therapy, applied relaxation, imipramine, or a 3-month wait followed by allocation to treatment. Assessments were conducted at 3, 6, and 15 months. Initial results indicated that all three treatment conditions were found to be more effective than wait-list control. At 3 months, cognitive therapy was found to be more effective than both applied relaxation and imipramine. At 6 months, both cognitive therapy and imipramine were found to be more effective than applied relaxation with no difference found between cognitive therapy and imipramine. At 15 months, cognitive therapy was again found to be superior to both applied relaxation and imipramine as a number of individuals in the imipramine treatment condition
relapsed between 6 and 15 months. Specifically, 40% of individuals in the imipramine condition and 26% in the applied relaxation condition relapsed, as compared to 5% in the cognitive therapy condition.

Bouchard et al. (1996) examined the effectiveness of cognitive restructuring versus exposure therapy among 28 individuals diagnosed with panic disorder. They found both treatments to be equally effective. Furthermore, they reported that any difference that may exist in the rate of improvement is marginal. Beck, Stanley, Baldwin, Deagle, and Averill (1994) examined the effectiveness of cognitive therapy versus relaxation training among 64 individuals diagnosed with panic disorder. Study participants were assigned to one of three conditions: cognitive therapy, relaxation training, or minimal-contact control. Both cognitive therapy and relaxation training were found to be more effective than minimal-contact control as a significantly greater proportion of individuals were classified as treatment responders after cognitive therapy (82%) and relaxation training (68%) as compared to minimal-contact control (36%). In addition, individuals in the cognitive therapy condition performed better than individuals in the relaxation training condition on measures of agoraphobic fear post-treatment. Furthermore, several other studies have evidenced results indicating that cognitive restructuring is either as effective as or superior to relaxation training (e.g., Arntz & van den Hout, 1996; Ost & Westling, 1995; Stanley et al., 1996).

**Interoceptive Exposure.** The interoceptive exposure component of treatment is designed to deliberately induce, in a systematic and controlled way, the physical sensations typically feared by individuals with panic disorder. The goal is to induce these sensations a sufficient number of times and long enough each time so that misinterpretations about the sensations are disconfirmed and conditioned anxiety responses are extinguished (Craske &
Barlow, 2008). As the misinterpretation of bodily sensations is known to be a key maintenance factor of panic disorder, interoceptive exposure is now a standard component of treatment. This treatment component typically begins by collaboratively creating a hierarchy of interoceptive exposures with the client, using a standard list of potential exercises such as hyperventilating and spinning. Next, exposure practice begins, starting with the exercise that is lowest on the hierarchy and then progressing upward. Craske and Barlow pointed out that it is necessary for the client to endure the sensations beyond simply noticing them. This may take 30 seconds to one minute and is essential because ending the exercise early will likely not provide the client the opportunity to learn that the feared sensations are, in fact, not harmful and can be tolerated. Following each exercise, cognitive restructuring and slow diaphragmatic breathing are used as coping skills and a discussion of what the client learned takes place. In addition to practicing these exercises in session, interoceptive exposures should be practiced daily by the client for homework in order to ensure that learning takes place. When practicing at home, exposure practices can extend to naturalistic activities, such as exercise, that would induce the feared bodily sensations.

The current literature supports the utilization of interoceptive exposure in the treatment of panic disorder. This research began by looking at how clients responded to repeated exposure to things such as sodium lactate and CO$_2$ inhalation as these procedures are known to induce the feared bodily sensations of panic disorder. Studies have shown reduction in anxiety reactivity with repeated infusions of sodium lactate (e.g., Bonn, Harrison, & Rees, 1971; Haslam, 1974). In addition, Griez and van den Hout (1986) examined the effectiveness of six sessions of graduated CO$_2$ inhalations versus treatment with propanolol. Individuals in the CO$_2$ condition evidenced a mean reduction from 12 to 4 panic attacks with this result being significantly
superior to that of individuals in the propanolol condition. The participants in the CO2 condition also reported greater reduction in fear of the sensations. Further, treatment gains were maintained at a 6 month follow up.

Barlow et al. (1989) compared four different conditions: applied Progressive Muscle Relaxation (PMR) alone; applied PMR plus interoceptive exposure, breathing retraining, and cognitive restructuring; interoceptive exposure plus breathing retraining and cognitive restructuring; and a wait-list control. They found the two treatment conditions involving interoceptive exposure to be significantly superior to applied PMR alone and wait-list control. Furthermore, gains were maintained at a 24 month follow up for the group receiving interoceptive exposure plus breathing retraining and cognitive restructuring. Craske et al. (1997) compared interoceptive exposure plus cognitive restructuring and in vivo exposure to breathing retraining plus cognitive restructuring and in vivo exposure. The interoceptive exposure condition was found to be superior to the breathing retraining condition with gains being maintained at a 6 month follow up. Lastly, adding interoceptive exposure to in vivo exposure has been found to make it more likely that clients will achieve at least a 50% reduction in fear and avoidance (Ito, Noshirvani, Basoglu, & Marks, 1996).

**In Vivo Exposure.** In vivo exposure involves repeated, systematic exposure to situations that the client fears and, therefore, avoids. It is designed to extinguish conditional emotional response to these external stimuli (Craske & Barlow, 2008). As with interoceptive exposure, this process typically begins by collaboratively creating a fear hierarchy with the client and then proceeds by starting with the least anxiety provoking situation and then moving up the hierarchy. Again, as with interoceptive exposure, practice should extend beyond sessions with the therapist in order to facilitate learning. Furthermore, Craske and Barlow pointed out that not only is
between-session exposure practice essential for the consolidation of learning, but without it, the small amount of in vivo practice done in session may be detrimental. When not extended beyond therapeutic encounters, the client may begin to view the presence of the therapist as essential for the reduction of anxiety. In addition, many real world scenarios cannot be dealt with in session making it necessary for the client to continue exposure practice on their own.

Another important consideration is the removal of safety signals and behaviors that the client has developed throughout their experience of panic. Some examples of common safety behaviors include having other people around, drinking water, and having medication nearby. Typically, clients report that safety behaviors provide reassurance and a feeling of safety and comfort during times when they are feeling anxious or experiencing panic-like symptoms. The problem is that while safety behaviors attenuate anxiety in the short term, they work against treatment progress by maintaining anxiety in the long term. If the client continues to rely on these behaviors throughout exposure practice, the goal of learning that avoided stimuli are harmless will be thwarted. Therefore, part of exposure practice involves the therapist guiding the client to identify what safety behaviors they have developed and eliminating these behaviors.

Craske and Barlow (2008) suggested that the involvement of significant others in the client’s life may be beneficial during treatment, particularly during the exposure phase of treatment as many exposure practices will take place outside of the therapeutic environment. Evidence suggests that the inclusion of significant others may improve treatment outcomes and that the benefit of including significant others likely depends on the pervasiveness of agoraphobic avoidance and the extent to which the client’s behaviors have affected the roles and interactions of the client’s family and friends (Craske & Barlow, 2008). This may involve inviting the client’s significant others in for part of a session in order to provide them with some
psychoeducation regarding the client's disorder and the treatment they are currently involved in. It would also be essential to alert significant others to the potential for becoming part of the client’s repertoire of safety behaviors.

Craske and Barlow (2008) noted that in addition to being theoretically sound, the current literature, as well as a long history of research, supports the use of in vivo exposure for panic disorder. It is thought that in vivo exposure primarily targets the agoraphobic piece of the disorder and will serve to reduce avoidance behavior. Several studies have shown in vivo exposure to be at least as effective as cognitive restructuring in reducing panic symptoms. Bouchard et al. (1996) compared the effectiveness of in vivo exposure with that of cognitive restructuring. They reported that both treatment conditions led to significant improvements in symptoms and that no group x time interaction reached statistical significance, indicating that both treatment strategies reduce symptoms at the same pace. Ost, Thulin, and Ramnero (2004) compared three conditions: cognitive restructuring, in vivo exposure, and wait-list control. They reported that both cognitive restructuring and in vivo exposure led to significant improvement on both panic and agoraphobia measures but that there was no significant difference between the two treatment components. Lastly, de Ruiter, Ruken, Garssen, and Kraaimaat (1989) compared three conditions: breathing retraining plus cognitive restructuring, in vivo exposure, and in vivo exposure plus breathing retraining and cognitive restructuring. Similar to the above two studies, they reported that all treatment conditions led to a reduction in symptomatology with no evidence of differential efficacy.

**Therapeutic Mechanisms**

All of the above treatment components have both theory and empirical research supporting their use in treating individuals with panic disorder. Another important question
involves the mechanism of change. Craske and Barlow (2007) provided a review of the therapeutic mechanisms at work in these treatment components. The first is habituation which refers to repeated contact with a stimulus leading to a reduced response strength. In this way, the fear and anxiety response declines over time as the feared stimulus is faced over and over again as in both interoceptive and in vivo exposure. Craske and Barlow pointed out that both high levels of arousal and lengthy intervals between exposure exercises are likely to impede the process of habituation. Therefore, it is important to monitor a client’s level of arousal during exposure practice and to ensure that the client is regularly practicing exposure on their own between sessions. Although habituation leads to a decrease in fear and anxiety, it is not a learning process and is unlikely to be responsible for long-term fear and anxiety reduction as habituated response tend to fade over time through the process of dishabituation (Craske & Barlow, 2007).

A second therapeutic mechanism is extinction which refers to a reduction in response strength through repeated encounters with a feared stimulus without there being any aversive consequences (Craske & Barlow, 2007). This is another therapeutic mechanism at work in the interoceptive and in vivo exposure components. Craske and Barlow recommended that exposure be conducted in as many contexts as possible due to the fact that recent conditioning models propose that extinction does not involve the unlearning of conditioned stimulus (CS)-unconditioned stimulus (US) associations but, rather, that it involves the learning of a new, inhibitory CS-US association. This results in the CS having a dual, ambiguous meaning that depends on the context in which the CS is being encountered. Therefore, conducting exposure in as many contexts as possible increased the likelihood that the new, inhibitory association will prevail when the CS is encountered once treatment has ended. As extinction is a learning
process, this therapeutic mechanism is likely responsible for more long-term fear and anxiety reduction.

The third therapeutic mechanism is self-efficacy and control. Craske and Barlow (2007) hypothesized that reduction of the fear response and of cognitive and behavioral avoidance leads the client to perceive events and emotions as being more controllable and predictable thereby increasing the client’s sense of self-efficacy and control. This therapeutic mechanism is likely at work in all treatment components as self-efficacy judgments derive from four main sources: performance accomplishment (interoceptive and in vivo exposure), verbal persuasion (psychoeducation and cognitive restructuring), vicarious experience, and physiological arousal (breathing retraining and interoceptive exposure) with performance accomplishment being the strongest source of information (Craske & Barlow, 2007). Craske and Barlow argued that, therapeutic gains are dependent on the degree to which self-efficacy and control are developed and enhanced.

The fourth therapeutic mechanism posited by Craske and Barlow (2007) is emotional processing which involves a combination of habituation and cognitive modification. They explained that in order for fear and anxiety reduction to occur, two conditions are necessary: activation of fear and the incorporation of new evidence that is not compatible with memories of fear. In this way, new memories are formed. This process is at work in both interoceptive and in vivo exposure as repeated exposure to feared stimuli leads to short-term physiological habituation which leads to a dissociation of stimulus and response thus producing incompatible information. Craske and Barlow stated that that habituation that occurs between sessions is likely due to changes in the client’s meaning of the stimulus and response thus leading to altered outcome expectancies. When treating individuals with panic disorder, Craske and Barlow
pointed out three things to look for that indicate emotional processing is occurring: initial physiological arousal and distress, a reduction in these reactions during exposure, and a reduction in initial reactions across exposure practices.

The final therapeutic mechanism put forth by Craske and Barlow (2007) is the violation of expectancies and fear toleration. As it has been suggested that tolerance of fear and anxiety may be more crucial than the elimination of fear and anxiety, the length of exposure exercises is no longer based on fear reduction, but on the time necessary for new learning to occur (Eifert & Forsyth, 2005). In addition, the amount of fear reduction in any given exposure practice is not considered to be a measure of learning but a measure of performance with learning being most accurately measured by the level of fear and anxiety the client experiences during subsequent practices (Craske & Barlow, 2007).

**Summary of the Cognitive Behavioral Literature**

It is evident from the review of the literature above that great strides have been made in the understanding and treatment of panic disorder from a cognitive behavioral perspective. Outcome research cited above indicates that a large percentage (50-70%) of individuals respond positively to current cognitive behavioral treatments. However, this also means a significant percentage of individuals do not respond and continue to experience the symptoms of panic disorder. This leads to the question of what can be done to assist those who do not respond to current treatments. Looking to alternative theoretical approaches may help to answer this question. As such, a review of mindfulness-based approaches follows. This includes a discussion of the definition and theory of mindfulness as well as an examination of current mindfulness-based interventions and proposed mechanisms of action.

**Mindfulness-Based Interventions**
Definition of Mindfulness

Before discussing mindfulness-based interventions and their effectiveness, it is essential to understand exactly what mindfulness is. Mindfulness had been defined as a particular way of paying attention: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 1994). This is in contrast to the habitual mental functioning people typically engage in, which can be described as operating on automatic pilot (Allen, Chambers, & Knight, 2006). Several researchers have attempted to dismantle the above definition of mindfulness in order to better understand exactly what it entails. For example, Bishop et al. (2004) proposed dividing the definition into two parts: the self-regulation of attention and the attitude or orientation that one brings to present experience. Self-regulation of attention allows the individual to maintain their attention on the present moment whereas the attitude one brings allows present moment experiences to be observed with curiosity, openness, and acceptance. Similarly, Shapiro, Carlson, Astin, and Freedman (2006) suggested that there are three axioms of mindfulness: intention, attention, and attitude. Intention involves the first part of Kabat-Zinn’s definition of paying attention on purpose. In other words, mindfulness is not something that happens accidentally or by chance. Shapiro et al. noted that intention serves the purpose of reminding individuals why they are practicing mindfulness in the first place. Attention involves the observation of one’s moment-to-moment experiences, both internal and external. Shapiro et al. stated that there are three different aspects involved in paying attention: sustained attention, switching, and cognitive inhibition. It is suggested that if all three of these abilities are enhanced, the self-regulation of attention would therefore be enhanced. Lastly, attitude involves the last part of Kabat-Zinn’s definition: paying attention in a particular way. Shapiro et al. stated that it is essential to bring attitudes of patience, compassion, and non-striving to attentional
practice as attention without these qualities is likely to result in mindfulness practice that is condemning or judgmental.

Many individuals associate mindfulness with specific cultural or philosophical traditions such as Buddhism. However, Kabat-Zinn (2003) noted that there is nothing particularly Buddhist about mindfulness. He went on to explain that as mindfulness is about attention, it is inherently universal and that everyone is mindful to one degree or another. As such, mindfulness practice can be adopted by anyone despite any particular philosophical, religious, or cultural traditions ascribed to. Having said that, Kabat-Zinn also stated that while mindfulness is an inherent human capacity, it is not something that someone can simply decide to do and will happen instantaneously. To the contrary, he described mindfulness as an art form that one must develop over time and that will be enhanced by regular practice.

This leads to the next question of how exactly does one become mindful? It is understood at this point that enhancing one’s capacity for mindfulness takes personal commitment and practice, but what exactly does the practice entail? It is thought that the ability to direct one’s attention in the particular way described above can be developed by means of meditation (Bandolfi, 2005). Thus, mindfulness practice involves training and practice in meditative techniques including formal procedures such as sitting meditation and less formal practices such as mindful movement. During these meditation practices, one will likely experience a variety of phenomena entering their field of consciousness such as thoughts, emotions, images, or physical sensations. Individuals are encouraged to carefully observe these phenomena without evaluating them in any way. This trains individuals to allow these experiences to come and go without placing judgment or getting caught up in them. Kabat-Zinn (2003) explained that mindfulness is not about attempting to get anywhere or fix anything; it is
about allowing oneself to be where one already is and to become aware of the full spectrum of our moment-to-moment experience. He explained that as practice continues, one comes to the realization that typical experience of the present moment is severely edited and distorted due to habitual and routinized attentional processes. While mindfulness practice involves a variety of specific techniques, Kabat-Zinn explained that practice is best understood as a way of being, with the techniques described above being launching platforms or a type of scaffolding to assist in the cultivation of mindful attention. It is thought that the cultivation of mindful attention will lead to changes in thought patterns or to a change in one’s relationship to thoughts, images, and other stimuli that enter consciousness (Baer, 2003). In addition, Baer noted that improvements in self-observation are likely to lead to an ability to recognize signs of a problem early. Early recognition may lead to an increase in use of a range of coping skills facilitating more effective behavior change.

**Therapeutic Mechanisms**

How exactly does mindfulness work? Several mechanisms of action of mindfulness have been proposed. Shapiro et al. (2006) suggested that intentional, non-judgmental awareness leads to a shift in one’s perspective called reperceiving. They explained that reperceiving involves a rotation of consciousness in which what was subject becomes object meaning that the ability to observe contents of consciousness allows one to no longer be embedded or fused with said contents. This allows greater clarity and objectivity to be brought to one’s thoughts and emotions and enables one to view constructs that were once viewed as being part of the self to be viewed instead as impermanent and fleeting. Shapiro et al. were careful to note that reperceiving does not mean distancing oneself from contents of consciousness to the point of numbness, but to the contrary, to deeply experience these contents without the need to identify with or get caught
up in them. Reperceiving is viewed as a meta-mechanism of action which overarches direct mechanisms of action: self-regulation; values clarification; cognitive, emotional, and behavioral flexibility; and exposure.

Self-regulation of attention allows for more objective observation of emotional states. This leads to a clearer and more accurate view of what exactly is happening which increases one’s range of response to emotional states, likely leading to freedom from habitual behavior patterns. This freedom allows one to choose to respond in ways that will promote health and well-being (Shapiro et al., 2006). Furthermore, as stated above, self-regulation of attention improves early recognition of the first signs of problems which is likely to contribute to the use of adaptive responses (Bondolfi, 2005). Regarding values clarification, Shapiro et al. pointed out that values are often shaped by family, culture, and society. Mindfulness facilitates the ability to separate from and observe one’s own values and to reflect on them objectively. True values can then be rediscovered and chosen, leading to meaningful behavior that is in line with these values. Mindfulness also enables individuals to observe internal and external experiences leading to clarity of mental-emotional content. This clarity is thought to facilitate cognitive-behavioral flexibility and to reduce automaticity and reactivity. According to Bondolfi, cognitive flexibility also fosters modification in cognitive patterns and in one’s relationship toward one’s thoughts which leads to a decreased need to attempt to avoid one’s negative thoughts or to respond with avoidance behaviors. Shapiro et al. proposed that, similar to some cognitive-behavioral interventions, exposure may constitute a mechanism of action in mindfulness-based interventions. Through mindfully attending to negative emotions, thoughts, images, and/or sensations, one learns that such phenomena do not need to be feared or avoided and that they are
impermanent and will pass away on their own. This fosters the extinction of fear and avoidance responses as such negative phenomena are no longer viewed as frightening or overwhelming.

In addition to the above proposed mechanisms of action, Bondolfi (2005) suggested two additional mechanisms: acceptance and relaxation. Mindfulness-based approaches place an emphasis on the acceptance of negative or uncomfortable experiences without making attempts to modify or escape them. Similar to exposure, such practice is likely to reduce fear and avoidance responses. Bondolfi noted that while relaxation is not the purpose of mindfulness, meditative practices have been known to induce states of relaxation which may aid in soothing various emotional disorders. While this may be the case, it is important to remember that the objective of mindfulness is to develop the capacity to nonjudgmentally observe phenomena that are typically incompatible with relaxation such as physical symptoms of anxiety.

Taking all of these mechanisms of action into consideration, it is logical to assume that individuals suffering from a wide variety of physical and emotional conditions may benefit from mindfulness practice. The aim of many psychological interventions is symptom reduction. While this makes sense as individuals suffering from psychological disorders strive to become free from symptoms, freedom from symptoms is not always realistic. In addition, individuals may leave treatment early due to the fact that relief from symptoms does not occur as quickly as desired. Thus, the stance of acceptance which is central to mindfulness-based interventions is likely to be a valuable addition to the current repertoire of psychological interventions. That being said, there are two cautions to take into consideration regarding mindfulness practice. First, Kabat-Zinn (2003) stressed the point that instructors of mindfulness must have experience with the practice in their own life. Without this, it is unlikely that mindfulness will be taught in an authentic way. In addition, the instructor must be able to understand the ways in which
clients respond to mindfulness practice and to assist clients in overcoming obstacles to practice. This is unlikely to be done effectively without personal experience in the practice. Second, Allen et al., (2006) pointed out that mindfulness practice involves a considerable time investment. It would be essential to prepare clients for this and to provide them with a rationale that will enable clients to believe that their time and effort will lead to positive results. A few mindfulness-based interventions have now been established: Mindfulness-Based Stress Reduction, Mindfulness-Based Cognitive Therapy, and Acceptance and Commitment Therapy. A description and the effectiveness of these interventions will be addressed next.

**Mindfulness-Based Stress Reduction**

Mindfulness-Based Stress Reduction (MBSR) was developed in 1979 and was originally offered through a stress reduction clinic at the University of Massachusetts Medical Center (Kabat-Zinn, 2003). Kabat-Zinn explained that this clinic was originally developed to serve as a place various health providers could refer patients suffering from a variety of conditions who were not responding completely to traditional treatments or those who were unsatisfied with the outcome of their medical treatments. He went on to say that the intention behind developing MBSR was twofold. The first intention was to develop a training program for the relief of suffering – a program that would allow individuals to fully participate in their own recovery and assume responsibility for their own well-being. The second intention was to develop a program that would be adaptable to other contexts in which stress, illness, pain, or emotional problems were a concern. Such a program could potentially serve as a model for other medical centers and health providers. It appears that Kabat-Zinn’s goals have been achieved. First, mindfulness programs are currently offered in a wide range of settings including hospitals, clinics, schools, corporate offices, and adult and juvenile prisons among others. Second, MBSR is considered to
be an approach that conforms to the criteria of “probably efficacious treatments” according to the
definition proposed by the Task Force on Promotion and Dissemination of Psychological
Procedures, Division 12 (as cited by Baer, 2003). This designation is based upon research that
has been conducted thus far on the effectiveness of MBSR which will be reviewed below after a
brief description of what the program entails.

The MBSR program is conducted as an 8-10 week group intervention. Groups consist of
up to 30 participants who meet weekly for 2-2.5 hours for instruction in mindfulness meditation
skills mixed with discussions regarding stress and coping. In addition to this training, around the
sixth week, a 7-8 hour intensive mindfulness session is conducted. Specific mindfulness skills
taught include body scan meditation, sitting meditation, hatha yoga postures, and practicing
mindfulness in ordinary activities such as eating and walking. In addition to in class practice,
participants are instructed to practice the skills on their own for at least 45 minutes per day, six
days per week. When practicing these skills, participants are encouraged to focus their attention
on some target of observation (e.g., breathing, walking) and to be aware of the target moment-to-
moment. Furthermore, during practice, when other thoughts, emotions, or sensations arise,
participants are to observe these phenomena objectively and not become absorbed in their
content. Goldin and Gross (2010) noted that two specific forms of attention-focusing skills are
introduced in MBSR: focused attention and open monitoring. Focused attention involves the
ability to selectively sustain attention on some target in the present moment with ongoing
assessment of the quality of the attention. Open monitoring involves settling into a state of pure
observation in the present moment without any explicit focus on a target. As described above,
one important consequence of mindfulness practice is the realization that most thoughts,
emotions, and sensations are impermanent and will pass away on their own (Linehan, 1993).
Outcome research has shown that MBSR is effective in treating patients with chronic pain (Kabat-Zinn, 1982), binge-eating disorder (Kristeller & Hallett, 1999), fibromyalgia (Goldenberg et al., 1994), psoriasis (Kabat-Zinn et al., 1998), and cancer (Speca et al., 2000). In addition, MBSR has been shown to be effective in the treatment of anxiety disorders. This research will be described in more detail as it is pertinent to the current discussion.

Kabat-Zinn et al. (1992) studied the effectiveness of MBSR in the treatment of anxiety disorders among 24 participants who were diagnosed with either generalized anxiety disorder or panic disorder, with or without agoraphobia. All participants went through the MBSR protocol described above. Scores from the Hamilton Rating Scale for Anxiety, the Hamilton Rating Scale for Depression, the Beck Anxiety Inventory, and the Beck Depression Inventory were used to monitor progress. Results showed small, statistically nonsignificant reductions from baseline to pre-treatment, statistically significant decreases from pre- to post-treatment, and maintenance of these decreases from post-treatment to 3-month follow up. In addition, a statistically significant linear decrease in number of participants reporting panic attacks from pre-treatment to post-treatment to follow-up was found. Lastly, at follow-up, 91% of the participants reported keeping up with their practice of mindfulness meditation techniques.

Goldin and Gross (2010) studied the effects of MBSR on emotion regulation in 16 individuals diagnosed with social anxiety disorder. All participants received the standard MBSR protocol described above. The results from paired t tests evidenced decreased social anxiety, depression, rumination, and state anxiety. Furthermore, results showed increases in self-esteem. Vollestad, Sivertsen, and Nielsen (2011) examined the effectiveness of MBSR among 76 individuals diagnosed with generalized anxiety disorder, social anxiety disorder, or panic disorder with or without agoraphobia. Participants were randomly assigned to either the MBSR
protocol or to a wait-list control. Treatment completers evidenced statistically significant improvements on all measures as compared to controls. Medium to large effect sizes were found on measures of anxiety ($d = 0.55-0.97$) and large effect sizes on measures of depression ($d = 0.97$). In addition, gains were found to be maintained at a 6-month follow up.

The current research on MBSR has been criticized for methods used, particularly the lack of randomized clinical trials. The study completed by Vollestad et al. (2011) described above is one of the rare exceptions to this, therefore, it remains true that research on mindfulness is in need of randomized clinical trials and dismantling studies of treatment packages. Kabat-Zinn (2003) has responded to these criticisms by admitting that, currently, the scientific study of MBSR suffers from a variety of methodological problems. He went on to explain that when a field is in its infancy, it is typical for the first studies to be more descriptive in nature as opposed to definitive demonstrations of efficacy. From there, the research tends to evolve over time once the potential value has been tentatively established. It appears that the research on mindfulness-based interventions is in this phase of early studies beginning to lead to more methodologically sound research.

**Mindfulness-Based Cognitive Therapy**

When called upon to develop a maintenance therapy for patients who have recovered from depression; Segal, Williams, and Teasdale (2002) first looked at patterns in relapse rates. They found that there was a rather significant difference in relapse rates for individuals who had a history of only one Major Depressive Episode (MDE) versus individuals who had a history of multiple episodes with the latter having greater risk for relapse. Therefore, it is thought that patients who have recovered from their first episode of depression are at a critical period in that if the depressive cycle is not stopped quickly, the likelihood for a lifetime of relapse is high.
Segal et al. first believed that their relapse prevention treatment would focus on helping patients maintain skills they learned during the acute phase of treatment as cognitive therapy has been shown to be an effective approach with patients suffering from depression. Once they looked into the theories behind relapse more closely, their focus shifted.

Segal et al. (2002) rapidly discovered that vulnerability to relapse likely does not involve the persistence of previously held dysfunctional assumptions or attitudes. Ingram, Miranda, and Segal (as cited in Segal et al.) found that scores of dysfunctional attitude were no different between patients who had recovered from a MDE and individuals who had no history of depression. This means that something else must be different between these two categories of individuals to account for the relapse rates. Segal et al. decided to examine a reciprocal view: the effect that mood has on thinking. The authors came upon several studies that found, when recovered patients were experimentally induced into a depressed mood, they then demonstrated negative biases in memory. Therefore, they hypothesized that the important difference between recovered patients and those with no history of depression may have less to do with cognitive patterns during times when their moods are fine and more to do with cognitive processes that arise when they are feeling sad.

It is well known that during a MDE individuals experience both depressed mood and negative thinking. Segal et al.’s (2002) thinking was that perhaps during a MDE, individuals learned to associate the sad mood with the negative thinking which would explain why future sad moods would automatically bring about negative thinking. This theory of differences in cognitive response to negative mood states is called the differential activation hypothesis (Teasdale, as cited in Segal et al.). Once the negative thinking is triggered, it serves to maintain the negative mood state and forms a vicious cycle. In addition, Segal et al. noted that this type of
cognitive reactivity may have a cumulative effect which would explain why the relapse rates tend to rise with a greater number of past MDEs.

Individuals with depression tend to react to their negative thoughts and feelings with a ruminative response style whereas others tend to busy themselves with things that take their minds away from thinking about themselves (Segal et al., 2002). Patients typically think that ruminating will help them better understand their negative thoughts and feelings when, in reality, ruminating typically has the opposite effect. Therefore, Segal et al. noted, individuals with depression and non-depressed individuals differ in two ways: in the content of their thinking when in a negative mood and in the way they deal with the mood itself. The authors then identified these key differences as approaches for therapy. One approach would be to address the cognitive reactivity and the other to address the ruminative response style. The next question was how to go about doing this.

It is well known that cognitive therapy is an effective treatment for depression in the acute phase and it has been suggested that one mechanism through which it has its positive effects is by helping patients to disengage from rumination by distancing themselves from their negative thoughts (Segal et al., 2002). This distancing occurs by teaching patients to switch to controlled, metacognitive processing, or basically to think about their thoughts. Segal et al. decided that their maintenance therapy needed to directly get at the processes of distancing from thoughts and disengaging from rumination. They then discovered that mindfulness may be able to do just that.

Mindfulness fosters a distancing from mental contents by training patients to widen their perspective and to observe their thoughts, feelings, and bodily sensations fully and in the present moment (Segal et al., 2002). This involves purposeful awareness. This type of awareness not
only takes up some of the limited mental capacity that may otherwise be used for rumination, but also allows patients to recognize the first signs that their mood might be deteriorating. Therefore, mindfulness provides new ways to help patients distance themselves from their thoughts and promotes new mental modes that allow patients to disengage from the ruminative response style: the two main goals of the new maintenance therapy Segal at al. hoped to create.

Looking at the process of rumination in more depth, Segal et al. (2002) noted that a “discrepancy monitor” is involved. This discrepancy monitor is a mental process where individuals with depression continuously monitor and evaluate the current state of themselves and their current situation against some sort of ideal that is desired or expected. This monitoring inevitably identifies mismatches between the two. These mismatches automatically lead patients to attempt to rectify the discrepancies found, which leads to rumination and rumination then serves to maintain and intensify the negative mood state that started the process. An important aspect of this process is that it is automatic. Segal et al. compared the modes of mind to the gears of a car which can be changed automatically (automatic transmission) or manually (manual transmission). The automatic mode described above is also known as the “doing mode” whereas the manual mode is also known as the “being mode.” The being mode involves accepting and allowing thoughts and feelings without the need to change them. Instead of evaluating the thoughts and feelings as good or bad, they are viewed as passing phenomena that come into awareness and then pass away. Without evaluation, there is no need to attempt to change the thoughts and feelings and, therefore, no need for rumination. As stated above, mindfulness training involves present moment awareness. This awareness allows individuals to be more aware of their current mode of mind. Furthermore, once aware of the mode of mind, mindfulness training teaches individuals to learn how to manually disconnect from the unhelpful
mode (the doing mode) and to engage in a more helpful mode (the being mode). This is done by learning to view thoughts and feelings as passing events that will eventually pass away.

Thus, Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002) was developed, originally, as a treatment to help prevent depressive relapse. MBCT is a manualized 8-week group intervention based, in large part, on the MBSR program. In addition, it incorporates elements of cognitive therapy that foster a detached or decentered view of one’s cognitions, emotions, and bodily sensations. As such, many of the mindfulness skills taught in the MBSR protocol are also used in the MBCT protocol, such as body scan meditation, sitting meditation, and mindfulness in daily activities. Participants are instructed to practice these skills in class as well as outside of class, six days per week. As stated above, traditional cognitive-behavioral exercises are also incorporated into the MBCT program. Examples of this include training in the ABC model of emotional distress and discussion of incorporating pleasant activities into daily life. Lastly, the program ends with a discussion of relapse prevention such as learning to utilize skills learned to deal with future moods.

Not surprisingly, the current literature includes research on the effectiveness of MBCT in regards to depression and depressive relapse. Teasdale et al. (2000) examined the effectiveness of MBCT for preventing relapse among recovered, recurrently depressed individuals. It was found that individuals who had experienced three or more previous major depressive episodes were less likely to relapse after MBCT versus treatment as usual (TAU) with 40% in the MBCT condition relapsing and 66% in the TAU condition relapsing within 120 weeks. Ma and Teasdale (2004) also examined the effectiveness of MBCT for preventing relapse among recovered, recurrently depressed individuals. Their results replicated the results found above by Teasdale et al. with 36% of individuals in the MBCT condition relapsing and 78% in the TAU
condition relapsing within one year. Kenny and Williams (2007) examined the effectiveness of MBCT among acutely depressed, treatment resistant individuals meaning that the participants met criteria for depression at the time of the study and were partial responders to antidepressant medication and/or CBT. The authors reported statistically significant change in BDI scores following the MBCT protocol and a large effect size of 1.04. The authors noted that the study did not have a control group and that four participant’s BDI scores actually increased indicating that further research should look into potential adverse effects of using MBCT with acutely depressed individuals.

MBCT has also been applied to various anxiety disorders. Kim et al. (2009) examined the effectiveness of MBCT as an adjunct to pharmacotherapy among 46 participants diagnosed with either generalized anxiety disorder or panic disorder with or without agoraphobia. Participants were assigned to either MBCT or to an anxiety disorder education (ADE) program for a period of 8 weeks. Those in the MBCT group participated in the full MBCT protocol described above whereas the ADE group received presentations from a psychiatrist regarding education about the biological aspects of anxiety disorders. Results showed that the MBCT group evidenced significantly greater improvement than the ADE group on all anxiety and depression measures. Furthermore, 16 participants in the MBCT group were deemed to have remitted at the end of the program as compared to none in the ADE group. Follow-up data was only available for 10 participants, however, for these participants, results were maintained at the 6-month follow-up.

Evans, Ferrando, Findler, Stowell, Smart, and Haglin (2008) examined the effectiveness of MBCT in 11 individuals diagnosed with generalized anxiety disorder. All 11 subjects completed the MBCT protocol. Evans et al. reported that significant decreases in anxiety,
tension, worry, and depressive symptoms were found at the end of treatment. Craigie, Rees, and Marsh (2008) also examined the effectiveness of MBCT for generalized anxiety disorder. Participants included 23 individuals diagnosed with generalized anxiety disorder, all of whom completed the MBCT protocol. Results showed significant improvements in pathological worry, stress, and quality of life. Effect sizes observed post-treatment for key symptoms were large and results were found to be maintained at follow-up. In addition, qualitative analysis revealed that participants viewed MBCT as a credible and acceptable intervention.

Similarly, Finucane and Mercer (2006) studied the acceptability and effectiveness of MBCT in 13 participants with recurrent depression or recurrent depression and anxiety. Qualitative data indicated that MBCT was both acceptable and beneficial for the majority of participants. Participants reported that being part of a group was a normalizing and validating experience. In addition, more than half of the participants reported continuing use of mindfulness techniques at a 3-month follow-up. The only complaint reported by participants was that the program was too short and that additional follow-up would be helpful. As for effectiveness, results showed significant reductions in mean depression and anxiety scores.

As stated above regarding research on MBSR, the current literature regarding MBCT is subject to methodological problems. Specifically, the lack of random assignment and of a control group. That being said, the current research is promising and additional randomized clinical trials are likely to arise in the near future.

**Acceptance and Commitment Therapy**

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is, at its core, a behavioral therapy in that it is about taking values-guided action. It is included in this
section on mindfulness-based interventions because it is also about mindful action. Mindful action is described as action that is taken consciously, with full awareness (Harris, 2009). In addition, several of the strategies utilized in ACT are consistent with mindfulness approaches. For example, clients are encouraged to recognize an observing self. The observing self is that which is capable of observing one’s own thoughts, emotions, and sensations and of viewing these phenomena as separate from the self. Also in line with mindfulness approaches, clients are encouraged to experience these phenomena as they arise without judging or attempting to change or avoid them. Thus, the goal of ACT is twofold: fostering acceptance of unhelpful thoughts, feelings, and sensations and committing to values-guided action (Eifert, Forsyth, Arch, Espejo, Keller, & Langer, 2009). According to Harris, ACT attempts to achieve these goals through the training of mindfulness skills which are meant to help individuals deal with painful thoughts and feelings effectively as well as by helping clients clarify their values.

Harris (2009) has identified six core therapeutic processes of ACT, the first of which is contacting the present moment. This involves being psychologically present and fully connecting with whatever arises in the moment as opposed to operating on automatic pilot. The second core process is defusion. Defusion means learning to separate oneself from one’s thoughts, images, and memories as opposed to becoming entangled with these phenomena. This allows clients to see their thoughts for what they really are: simply words and/or pictures. Third, acceptance means making room for painful thoughts, emotions, and sensations. This allows clients to abandon the struggle with these phenomena and to let them simply be as they are. Fourth, self-as-context involves the difference between the thinking self and the observing self. The thinking self is that which generates thoughts, beliefs, judgments, etc. The observing self is that which simply observes and is fully aware of these phenomena as they occur, in the present
moment. The fifth core process is values. Values are what truly matters or what one wants one’s life to be about. Values serve the purpose of providing direction for our behavior. Lastly, committed action is the sixth core process. This involves taking effective action that is guided by one’s values. Clients learn that this may involve doing whatever it takes to live in accordance with their values even if the action brings about discomfort. Together, these six core therapeutic processes bring about psychological flexibility which is the ability to be present, open, and commit to doing what matters.

The current literature includes research on the effectiveness of ACT with various psychological disorders, including anxiety disorders. For example, Eifert et al., (2009) conducted three case studies on the effectiveness of ACT with anxiety disorders. All three participants reported less distress at the end of treatment. These results were evidenced by significant changes in anxiety and mood-related measures. Clients reported defusion of anxiety related thoughts and beliefs and reduction in avoidance behaviors. In addition, clients reported feeling empowered by the focus on values-guided living.

In summary, taking into consideration the definition and mechanisms of mindfulness, mindfulness-based approaches have a strong theoretical backing. In addition, although the current literature regarding established mindfulness-based interventions is rather limited compared to that of cognitive-behavioral interventions, results are promising. It appears that there is a sufficient rationale for the continued implementation of mindfulness-based approaches and that additional research regarding effectiveness will continue to proliferate.

**Proposed Mindfulness-Based Etiological Model of Panic Disorder**

While cognitive-behavioral etiological models of panic disorder can be found in the current literature, there is a paucity of information regarding mindfulness-based models. In order
to delineate how mindfulness-based interventions may be useful in the treatment of panic disorder, an understanding of how panic disorder begins and is maintained from a mindfulness perspective is necessary. As such, based on current knowledge of panic disorder and mechanisms of mindfulness, I propose a mindfulness-based etiological model of panic disorder.

The first consideration is vulnerability factors. Why are certain individuals more likely than others to develop panic disorder? In agreement with Bouton, Mineka, and Barlow (2001), a biological component of inherited trait anxiety likely exists. In addition, various ways of thinking and behaving contribute to the conditions necessary for the onset of panic. As stated above, mindfulness is best thought of as a way of being. Therefore, it is logical to assume that there is a way of being that would be best thought of as the opposite of mindfulness and it is this opposite way of being that I propose to contribute to vulnerability to panic disorder. There are several factors to consider. It may be helpful to return to the general definition of mindfulness, which is, a particular way of paying attention: on purpose, in the present moment, and non-judgmentally. It follows that an opposite way of being would involve operating on autopilot. In other words, attention is fleeting and rarely focused on the present moment. In addition, a condemning and judgmental attitude would be brought both to the self and to experiences. Mindfulness also involves openness, acceptance, and a sense of impermanence. The opposite of this entails a view that constructs are permanent and part of the self. Furthermore, despite this idea of permanence, a desire to fight against and attempt to change constructs or experiences judged as negative is anticipated. This would likely lead the individual to become embedded and fused with negative thoughts and sensations, therefore producing intense frustration and feelings of helplessness.
The literature on experiential avoidance lends support to the idea that the desire to fight against and change negative experiences serves to maintain anxiety. Experiential avoidance is defined as an unwillingness to stay in contact with unwanted experiences such as anxiety (Harris, 2009). This unwillingness leads to attempts to suppress or get rid of anxiety symptoms. Experiential avoidance is negatively reinforced by short-term relief from anxiety; however, in the long-run the intensity of the anxiety will increase and the individual will likely begin to severely restrict his or her life in an attempt to avoid the anxiety symptoms (Lopez & Salas, 2009). In this way, the individual’s life becomes dominated by attempts to get rid of anxiety. In addition, the more an individual focuses on avoiding anxiety, the more he or she is likely to be sensitive to and catastrophically react to signs of anxiety, serving to exacerbate symptoms (Harris, 2009). Harris goes on to note that higher levels of experiential avoidance are associated with the development of anxiety disorders. Furthermore, attempts at symptom reduction serve to reinforce experiential avoidance.

Once the conditions necessary for the onset of panic are present, what exactly precipitates the initial panic attack? Again in agreement with Bouton, Mineka, and Barlow (2001), the first panic attack is likely preceded by a period of stress or a specific stressful event. A heightened level of stress, mixed with the vulnerability factors described above, appears to be a plausible recipe for the onset of a panic attack.

After an initial panic attack, what maintains the disorder and leads to future panic attacks? In their integrated model, Bouton, Mineka, and Barlow (2001) pointed to various types of conditioning as the maintenance factors for panic disorder. Indeed, some form of conditioning is likely, probably taking the form of classical conditioning, in which the individual learns to associate certain thoughts or sensations with the experience of panic. However, from a
mindfulness perspective, there are likely other maintenance factors at work. Mindfulness involves both the self-regulation of attention and the attitude one brings to present experience. It is logical that both of these components would be involved in the maintenance of panic disorder. Individuals with panic disorder are known to be hyperaware of thoughts and sensations related to panic and, therefore, are able to focus and attend. However, this type of attention typically leads to catastrophic thoughts and the development of future panic attacks. The difference here is likely the attitude that the individual brings to present experience. Considering the vulnerability factors described above, an attitude of permanence and judgment is likely brought to any panic-related thoughts or sensations that arise. This attitude likely pulls the individual away from the physical or psychological phenomena initially experienced and leads to catastrophic thoughts about what might happen next and how awful and unbearable it would be. In addition, it is logical that this type of attitude would lead to feelings of helplessness and an overall lack of control. These feelings, mixed with the negative memories of past panic attacks, may understandably lead to the onset of additional panic attacks, thus maintaining the disorder.

In summary, a lack of a mindful way of being and inherited trait anxiety bring about the conditions necessary for the onset of an initial panic attack. A period of stress or a specific stressful event mixes with these conditions to induce an initial panic attack. The thoughts and sensations surrounding this initial attack are then associated to the experience of panic through classical conditioning. In the future, when one attends to these panic-related thoughts and sensations, an attitude of permanence and judgment are brought to the experience, thus leading to feelings of helplessness and a lack of control. Thus a vicious cycle is created, maintaining panic disorder. Given this model, it follows that mindfulness-based interventions have the potential to
break this vicious cycle and thus help individuals who do not respond to current cognitive-behavioral treatments.

**Rationale for the Integration of CBT and Mindfulness**

As stated previously, overall, CBT has evidenced panic-free rates in the range of 50-70%. While these are very promising results, indicating that CBT is an effective treatment for panic disorder, this also means that 30-50% of individuals are not responding to this gold-standard of treatment. Therefore, there is a need for additional approaches that may be able to help these individuals. One such approach is to integrate mindfulness-based interventions with those that have already been shown to be efficacious (i.e., CBT). There are several reasons, both practical and theoretical, why this is likely to be a valid approach. First, it has been asserted that CBT and mindfulness-based approaches have much in common and are congruent, both involving similar mechanisms of action (Emmert, 2007). For example, as stated previously, both may involve relaxation, cognitive change, and exposure. The main difference between the two techniques is how exactly these mechanisms are implemented, with CBT focusing on altering the content of private experiences and mindfulness seeking to alter the way in which these events are experienced. Thus, an integration of CBT and mindfulness would continue to utilize mechanisms of action that have been shown to efficacious by using an alternative approach to implementation which may appeal to a higher proportion of individuals with panic disorder.

Second, as reviewed in the section above on mindfulness-based interventions, although the research is in its infancy, these techniques are already evidencing promising results in working with individuals suffering from various anxiety disorders. Levitt and Karekla (2005) have suggested that experiential avoidance is a key maintenance factor in panic disorder as well as other anxiety disorders. Experiential avoidance, as stated earlier, is defined as unwillingness
to remain in contact with specific experiences and attempts to alter the form and/or frequency of these experiences. According to Levitt and Karekla, the problem is that these attempts to alter these experiences may actually exacerbate the experiences, thus maintaining the disorder.

Research supports this assertion, showing that attempts at thought or emotional suppression lead to paradoxical effects, while acceptance-based approaches lead to more positive outcomes. Campbell-Sills, Barlow, Brown, and Hofmann (2006) conducted research with participants diagnosed with anxiety and mood disorders. Participants were instructed to either accept or suppress emotional responding while viewing upsetting film clips. Those in the suppression group evidenced increased sympathetic responding and a slower recovery from self-reported distress as compared to those in the acceptance group. Eifert and Heffner (2003) examined the difference between a brief acceptance intervention and breathing retraining among participants with high anxiety sensitivity. All participants were exposed to a carbon dioxide challenge. Those in the acceptance group evidenced less avoidance behavior and reported fewer catastrophic thoughts and a lower intensity of fear as compared to those in the breathing retraining group. Lastly, Levitt, Brown, Orsillo, and Barlow (2004) examined the effects of acceptance versus suppression of emotion among 60 participants diagnosed with panic disorder. Participants were randomly assigned to one of three conditions: brief instruction on either acceptance or suppression strategies, or a neutral narrative. Participants in the acceptance group were found to be significantly less anxious and less avoidant than those in both the suppression and neutral groups. This research provides evidence that an acceptance/mindfulness-based approach may lead to more positive outcomes than attempts to control or alter negative experiences.
Research on the impact mindfulness-based interventions may have on exposure therapy and extinction learning also support the use of mindfulness in treating anxiety. It was discussed previously, in the section on etiological models, that the negative sensations individuals experience during a panic attack become associated with the experience of panic itself through classical conditioning. In other words, the individual begins to view the benign sensations as the best predictor of ensuing panic. Treaner (2011) states that the strength of the conditioning is affected by the salience of the cue and that the enhanced attentional capacity that develops from mindfulness practice many benefit the extinction learning that happens during exposure by making the cues more salient. Treaner goes on to say that the presence of multiple cues at once during exposure practice may actually enhance treatment effectiveness. Mindfulness practice may also add benefit here by increasing the awareness of multiple cues when present during exposure. It was stated earlier, in the section on cognitive-behavioral treatment mechanisms, that during exposure the associations between the sensations and panic are not unlearned, but that a new inhibitory association is formed. Thus the individual’s reaction to the sensations is likely to be context dependent leading to the return of fear to be relatively common. Treaner reports that the use of retrieval cues (i.e., contextual cues related to when the extinction learning occurred) can lessen the return of fear. He suggests that mindfulness may act as a retrieval cue the client can use when encountering a previously feared sensation in a new context.

Emmert (2007) proposed some additional benefits of mindfulness-based approaches. Due to the fact that mindfulness is presented more as a way of living as opposed to specific time-limited techniques, it is more likely that clients will practice these techniques during periods of remission which may lead to a reduced likelihood of relapse. In addition, mindfulness-based approaches may help to reduce the stigma associated with mental health problems and seeking
treatment as mindfulness is based on an acceptance model as opposed to a deficit model. The intention of CBT is typically to reduce or eliminate symptoms (e.g., thoughts, behaviors, sensations) that the client finds troublesome. This goal, in and of itself, leads to the implication that the symptoms are bad and that something is wrong with the client that needs fixing. For example, interventions such as cognitive restructuring teach the client how to challenge and dispute their own automatic thoughts, implying that the thoughts are wrong and need to be eliminated. On the other hand, mindfulness-based interventions are aimed at developing a new relationship with one’s thoughts – one of curiosity and non-judgmental awareness. Thus, the thoughts are not viewed as “wrong,” but as natural.

Lastly, the potential for integrating mindfulness into already existing CBT protocols may lead to increased flexibility for the clinician in working with various individuals. For some clients, mindfulness may be more appealing, leading to an improved fit between client values and treatment protocol. Taking all of the above into consideration, it appears that there is a sound rationale for integrating CBT and mindfulness-based approaches, with the goal of helping a higher proportion of individuals with panic disorder lead a more fulfilling life.

Results

This dissertation was intended to explore the integration of mindfulness-based and cognitive-behavioral interventions in the treatment of panic disorder. I explored the diagnosis of panic disorder itself including definition, course and prevalence, comorbidity and risk factors, and costs to the individual and society. In addition, I examined relevant etiological models of the cause and maintenance of panic disorder. The process of reviewing the literature revealed that there is currently no established mindfulness-based etiological model of panic disorder. Therefore, after careful review of established mindfulness-based practices and the mechanisms
of mindfulness, I proposed such a model. I reviewed current evidence-based cognitive-behavioral treatments for panic disorder including the therapeutic mechanisms at work. Although there is not an established mindfulness-based treatment specifically for panic disorder, I examined other mindfulness-based treatments, including therapeutic mechanisms.

This research culminated in the development of a treatment manual, presented in Appendix A. The treatment manual utilizes well-established cognitive-behavioral interventions and therapeutic mechanisms; however, the proposed protocol implements them through a mindfulness-based perspective. For example, a cognitive-behavioral treatment typically would involve interoceptive exposure exercises with the intent of extinguishing the anxiety response. The integrative treatment will also involve interoceptive exposure, but the goal will be to experience feared sensations in a different way - without judgment and with curiosity. The treatment manual is structured into eight modules. The term “modules” was used instead of “sessions” to call attention to the fact that although the manual is structured, it is also flexible and some clients will require more than one session for certain modules. Each module is divided into five sections: Materials Needed, Outline, Goals and Rationale, Therapist Tasks, and At Home Practice. The necessary worksheets for both the client and therapist are provided at the end of the treatment manual.

The first module, titled *Panic Disorder Psychoeducation and Self-Monitoring*, is intended to provide the client with information regarding the causes and maintenance factors of panic disorder as well as to correct common myths and misconceptions. The rationale for self-monitoring is also introduced and the client is provided with the Panic and Mood Record to fill out between sessions. The second module is titled *Treatment Psychoeducation and Automatic Thoughts/Sensations*. The purpose of this module is to provide the client with information
regarding cognitive-behavioral therapy, mindfulness, and the integrated treatment. This includes explaining the rationale for treatment and explaining how the interventions will target the client’s presenting problems. This module is also intended to help the client identify their own automatic thoughts and sensations and to help the client understand the ways in which these thoughts and sensations add to their experience of panic and anxiety.

The third module is called *Body Scan Meditation*. The goal of this module is for the client to begin his or her mindfulness practice. This starts with an explanation of the body scan exercise and then guiding the client through the exercise in session. Time is also spent discussing the rationale for the time commitment involved in mindfulness practice. At the end of this module the client is provided with a Mindfulness Record to fill out between sessions. The title of the fourth module is *Daily Mindfulness and Problem-Solving*. The first purpose of this module is for the client to learn that mindfulness can happen in everyday life activities and is not just for certain dedicated exercises. The goal is to help the client develop an overall mindful way of being as opposed to only being mindful while participating in specific exercises such as the body scan. The client is also introduced to the problem-solving model during this module. Effective problem solving will help the client through treatment and in everyday life.

The fifth module is titled *Sitting Meditation* and is intended to allow the client to practice their new mindfulness skills without being given anything in particular to focus on (e.g., bodily sensations). The exercise is mostly in silence and the client observes any thoughts, sensations, sounds, smells, or any other experience that comes into their awareness. This practice is intended to further foster the development of a mindful way of being. The sixth module is called *Symptom Induction and Interoceptive Exposure*. This module involves collaboratively creating a hierarchy of feared bodily sensations and then teaching the client ways of deliberately inducing
the sensations. Exposure practice is then conducted, both in session and out, starting at the least anxiety provoking sensation and working up the hierarchy.

The seventh module is titled *In Vivo Exposure*. This module begins by collaboratively creating a hierarchy of feared situations. If possible, in vivo exposure will start by practicing it in session. The client will then continue to work up the hierarchy outside of session. The eighth and final module is titled *Relapse Prevention*. The first goal of this module is to discuss accomplishments made and skills learned. The second goal is to help the client develop a maintenance plan. This involves finding ways to continue mindfulness practice on a long-term basis. Working on the maintenance plan also involves helping the client identify potential problems in the future and ways of dealing with these problems.

**Discussion**

The integration of two different treatment approaches comes with both benefits and challenges. One substantial benefit is that the theories and interventions associated with each approach have been empirically tested and shown to be effective methods of treatment for a subset of the population. That being said, one challenge is that there is no current evidence that the integration of two effective treatments will itself be efficacious. The treatment manual I have proposed in this dissertation is based on theory and an integration of the current empirical literature. As such, the integrative treatment is in need of empirical support.

This provides a direction for future research. Whenever a new treatment is developed, it is essential to test the treatment to evaluate effectiveness. The proposed treatment should not only be evaluated for effectiveness in its own right, but should also be tested in comparison to current established treatments. If found to be effective, this treatment should also be evaluated with diverse populations. It would also be worthwhile to evaluate the effectiveness of this
treatment in a group context. Lastly, when reviewing any psychological treatment it is helpful to establish what the most helpful components of the treatment are, delineating therapeutic mechanisms of action.

Another limitation of this research is the imbalance of available research on the two theories being integrated: cognitive-behavioral theory and mindfulness theory. Cognitive-behavioral interventions are well-established, and there is an abundance of high quality research backing their effectiveness. On the other hand, mindfulness-based interventions are relatively new in the field of psychology and, therefore, the research is limited. In addition, much of the research has been done on heterogeneous groups and with the lack of a control group. Although this research has evidenced promising results, there is still the possibility that improvements found were due to factors other than mindfulness-based interventions. Another important factor to consider is the lack of research done with diverse populations. While the current literature has evidenced positive results in regards to mindfulness-based interventions, further research would need to be conducted to evaluate the effectiveness of these interventions with individuals of various ethnicity, sexual orientation, gender, socioeconomic status, religion, etc.

An additional challenge to consider when integrating two different treatment approaches is treatment fidelity. It should be noted that in some ways cognitive-behavioral theory and mindfulness approaches are contradictory. For example, cognitive-behavioral interventions tend to focus on the elimination of symptoms that cause discomfort whereas mindfulness-based interventions focus on accepting these discomforts for what they are by carefully and non-judgmentally observing them. The proposed integrative treatment attempts to implement well-established cognitive-behavioral interventions via a mindfulness perspective. The ability to adopt a mindfulness perspective in everyday life can be challenging and will take a great deal of
hard work and dedication on the part of the client. As such, to ensure treatment fidelity, it is crucial that the clinician exemplify a mindfulness perspective through language used and ways of dealing with problems that arise throughout therapy. Given this requirement, it is highly recommended that any clinician using the proposed integrative treatment manual have taken part in their own mindfulness practice. This will help to ensure that the clinician will be able to maintain a mindfulness perspective throughout treatment. It will also be useful in understanding the challenges the client is facing as they attempt mindfulness practice.


Appendix A

Treatment Manual
MINDFULNESS-SUPPORTED COGNITIVE BEHAVIORAL
THERAPY FOR PANIC DISORDER

Samantha Forsythe, M.S.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panic Disorder: The Basics and Etiological Model</td>
<td>73</td>
</tr>
<tr>
<td>Introduction to the Treatment Manual</td>
<td>78</td>
</tr>
<tr>
<td>Module #1: Panic Disorder Psychoeducation and Self-Monitoring</td>
<td>80</td>
</tr>
<tr>
<td>Module #2: Treatment Psychoeducation and Automatic Thoughts/Sensations</td>
<td>84</td>
</tr>
<tr>
<td>Module #3: Body Scan Meditation</td>
<td>88</td>
</tr>
<tr>
<td>Module #4: Daily Mindfulness and Problem-Solving</td>
<td>94</td>
</tr>
<tr>
<td>Module #5: Sitting Meditation</td>
<td>98</td>
</tr>
<tr>
<td>Module #6: Symptom Induction and Interceptive Exposure</td>
<td>102</td>
</tr>
<tr>
<td>Module #7: In Vivo Exposure</td>
<td>106</td>
</tr>
<tr>
<td>Module #8: Relapse Prevention</td>
<td>109</td>
</tr>
<tr>
<td>Appendix A</td>
<td></td>
</tr>
<tr>
<td>Client Worksheets</td>
<td>111</td>
</tr>
<tr>
<td>Appendix B</td>
<td></td>
</tr>
<tr>
<td>Therapist Worksheets</td>
<td>121</td>
</tr>
<tr>
<td>References</td>
<td>128</td>
</tr>
</tbody>
</table>
Panic Disorder: The Basics and Etiological Models

The key feature of panic disorder is recurrent, unexpected panic attacks. In addition, at least one of the panic attacks must be followed by one month or more of persistent concern about the possibility of future attacks, worry about the implications or consequences of the attack, or a significant behavior change related to the attack (APA, 2000). Another consideration is whether or not the individual experiencing these symptoms meets criteria for agoraphobia. Agoraphobia is defined as “anxiety about being in places or situations from which escape might be difficult (or embarrassing) or in which help may not be available in the event of having an unexpected or situationally predisposed panic attack or panic-like symptoms” (APA, 2000, p. 433). These situations must either be avoided or endured with significant distress.

Panic disorder is a relatively common mental health disorder with a prevalence rate of 4.7% (Kessler, Berglund, et al., 2005). The disorder is associated with great costs both to the individual and to society. Some of these costs include loss of employment, disability benefits, and health care costs. In fact, panic disorder has been ranked among the most expensive mental health disorders (Smit et al., 2006). The typical age of onset for panic disorder is late adolescence or early adulthood (Roy-Byrne et al., 2006). The typical course of panic disorder is chronic, with a waxing and waning of symptoms (APA, 2000).

Currently, the gold standard treatments for panic disorder have their basis in cognitive-behavioral theory. Outcome research has demonstrated panic-free rates in the range of 50-70% after treatment with CBT (e.g., Barlow, Craske, Cerny, & Klosko, 1989; Clark et al., 1994). Therefore, while these treatments are successful for many individuals diagnosed with panic disorder, a large number (30-50%) do not respond to these treatments. This fact points to an opportunity for alternative treatments that may help those who do not respond to current
cognitive-behavioral treatments. This treatment manual is one such alternative treatment. This treatment utilizes well-established cognitive-behavioral interventions and mechanisms of action and implements them through a mindfulness-based perspective.

A mindfulness-based etiological model is the foundation for this integrative treatment. The first consideration of this model is vulnerability factors. Why are certain individuals more likely than others to develop panic disorder? In agreement with the established cognitive-behavioral etiological model, a biological component of inherited trait anxiety likely exists. In addition, various ways of thinking and behaving contribute to the conditions necessary for the onset of panic. As stated above, mindfulness is best thought of as a way of being. Therefore, it is logical to assume that there is a way of being that would be best thought of as the opposite of mindfulness and it is this opposite way of being that is proposed to contribute to a higher probability of developing panic disorder. There are several factors to consider. It may be helpful to think about the general definition of mindfulness, which is, a particular way of paying attention: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 1994). It follows that an opposite way of being would involve operating on autopilot. In other words, attention is fleeting and often focused on ruminations of the past or worry about the future. In addition, a condemning and judgmental attitude would be brought both to the self and to experiences. Mindfulness also involves openness, acceptance, and a sense of impermanence. The opposite of this entails a view that any thoughts, feelings, or physical sensations experienced are permanent and part of the self. Furthermore, despite this idea of permanence, a desire to fight against and attempt to change experiences judged as negative is anticipated. This would likely lead the individual to become embedded and fused with negative thoughts and sensations, therefore producing intense frustration and feelings of helplessness.
The literature on experiential avoidance lends support to the idea that the desire to fight against and change negative experiences serves to maintain anxiety. Experiential avoidance is defined as an unwillingness to stay in contact with unwanted experiences such as anxiety (Harris, 2009). This unwillingness leads to attempts to suppress or get rid of anxiety symptoms. Experiential avoidance is negatively reinforced by short-term relief from anxiety; however, in the long-run the intensity of the anxiety will get higher and the individual will likely begin to severely restrict his or her life in an attempt to avoid the anxiety symptoms (Lopez & Salas, 2009). In this way, the individual’s life becomes dominated by attempts to get rid of anxiety. In addition, the more an individual focuses on avoiding anxiety, the more he or she is likely to develop anxiety about his or her anxiety, serving to exacerbate symptoms (Harris, 2009). Harris goes on to note that higher levels of experiential avoidance are associated with the development of anxiety disorders. Furthermore, attempts at symptom reduction serve to reinforce experiential avoidance.

Once the vulnerability factors for the onset of panic are present, what exactly precipitates the initial panic attack? Again in agreement with cognitive-behavioral theory, the first panic attack is likely preceded by a period of stress or a specific stressful event. A heightened level of stress, mixed with the vulnerability factors described above, is the likely recipe for the onset of a panic attack.

After an initial panic attack, what is it that maintains the disorder and leads to future panic attacks? In their cognitive-behavioral model, Bouton, Mineka, and Barlow (2001) pointed to various types of conditioning as the maintenance factors for panic disorder. Indeed, some form of conditioning is expected, likely taking the form of classical conditioning in which the individual learns to associate certain thoughts or sensations with the experience of panic.
However, from a mindfulness perspective, there are likely other maintenance factors at work. Mindfulness involves both the self-regulation of attention and the attitude one brings to present experience. It is logical that both of these components would be involved in the maintenance of panic disorder. Individuals with panic disorder are known to be hyperaware of thoughts and sensations related to panic and, therefore, are able to focus and attend. However, this type of attention typically leads to catastrophic thoughts and the development of future panic attacks. The difference here is likely the attitude that the individual brings to present experience.

Considering the vulnerability factors described above, an attitude of permanence and judgment is likely brought to any panic-related thoughts or sensations that arise. This attitude likely pulls the individual away from the physical or psychological phenomena initially experienced and leads to catastrophic thoughts about what might happen next and how awful and unbearable it would be. In addition, it is logical that this type of attitude would lead to feelings of helplessness and an overall lack of control. These feelings, mixed with the negative memories of past panic attacks, may understandably lead to the onset of additional panic attacks, thus maintaining the disorder.

In summary, a lack of a mindful way of being and inherited trait anxiety bring about the conditions necessary for the onset of an initial panic attack. A period of stress or a specific stressful event mixes with these conditions to induce an initial panic attack. The thoughts and sensations surrounding this initial attack are then associated to the experience of panic through classical conditioning. In the future, when one attends to these panic-related thoughts and sensations, an attitude of permanence and judgment are brought to the experience, thus leading to feelings of helplessness and a lack of control. Thus a vicious cycle is created, maintaining panic disorder. Given this model, it follows that mindfulness-based interventions have the potential to
break this vicious cycle and thus help individuals who do not respond to current cognitive-behavioral treatments.
Introduction to the Treatment Manual

This treatment manual is intended to integrate principles of cognitive-behavioral therapy with mindfulness-based interventions for the treatment of panic disorder. Although meant for individual therapy, modifications could be made to make the treatment acceptable for group therapy as well. One key modification would be to extend session length in order to accommodate all of the client’s needs. The manual includes eight modules. They have been titled “modules” instead of “sessions” to call attention to the fact that some topic areas may require more than one session depending on the individual needs of the client. It should also be noted that sessions involving long meditation exercises should be scheduled for 90 minutes. This may also be necessary for sessions involving exposure exercises depending on the client’s needs. Each module in this treatment manual contains the following subsections: materials needed, outline, goals and rationale, therapist tasks, and at-home practice. Following each module are any client or therapist forms needed for the module.

As stated above, this treatment manual is intended to be used with individuals diagnosed with panic disorder. As such, it is expected that prior to treatment a comprehensive intake assessment has taken place. As for continued assessment throughout treatment, there are many ways to monitor progress (e.g., brief symptom inventories, client report). The method used will be left to the discretion of the clinician; however, monitoring progress is an essential component of treatment. In this way, treatment can be better tailored to the individual client leading to a greater likelihood of positive treatment outcomes. This leads to another important consideration: Although this is a manualized treatment, it is important for the clinician to remain flexible and respond to individual needs of the client throughout treatment. In addition, it is important to keep in mind that it is essential for any mindfulness-based training to be experiential as opposed
to conceptual. Mindfulness is viewed as a way of being, not simply a way of practicing specific exercises. In order for the client to incorporate mindfulness into their lives, he or she will need to devote a great deal of time to practice. This practice, both in-session and out-of-session, will likely bring up thoughts, feelings, sensations, obstacles, or other experiences for the client. The use of these personal experiences for any mindfulness training, as opposed to using abstract concepts, will facilitate the client’s integration of mindfulness into their lives.

Lastly, it should be noted that in some ways cognitive-behavioral theory and mindfulness approaches are contradictory. For example, cognitive-behavioral interventions tend to focus on the elimination of symptoms that cause discomfort whereas mindfulness-based interventions focus on accepting these discomforts for what they are by carefully and non-judgmentally observing them. This integrative treatment attempts to implement well-established cognitive-behavioral interventions via a mindfulness perspective. The ability to adopt a mindfulness perspective in everyday life can be challenging and will take a great deal of hard work and dedication on the part of the client. As such, it is crucial that the clinician exemplify a mindfulness perspective through language used and ways of dealing with problems that arise throughout therapy. Given this requirement, it is highly recommended that any clinician using this manual have taken part in their own mindfulness practice. This will help to ensure that the clinician will be able to maintain a mindfulness perspective throughout treatment. It will also be useful in understanding the challenges the client is facing as they attempt mindfulness practice.
Module #1: Panic Disorder Psychoeducation and Self-Monitoring

Materials Needed

- Client form #1: Panic and mood record

Outline

- Check-in
- Discuss agenda
- Provide psychoeducation regarding panic disorder
- Introduce self-monitoring
- At home practice
- Summary and feedback

Goals and Rationale

The first goal of this module is to provide the client with information regarding the nature of panic disorder, the causes of panic and anxiety, and the maintenance factors of panic and anxiety. The purpose is to correct common myths and misconceptions about panic disorder and panic symptoms so as to demystify the client’s experience and to begin to provide a rationale for the treatment to come (Craske & Barlow, 2007). Furthermore, psychoeducation communicates to clients that they are not alone in their experience of panic and anxiety, thereby, assuring them that they are not insane nor unusual. According to Craske and Barlow, explaining the psychobiological model introduces to clients the idea that the actual panic attacks are not the main problem, but that the anticipation and avoidance of panic attacks are the key factor and thus, key targets of treatment. Information regarding common unhelpful coping mechanisms,
such as avoidance or substance use, will also be provided including the fact that these behaviors are understandable given the client’s experience, but are also likely to contribute to the continued experience of panic. As such, in addition to demystifying the experience of panic and normalizing the client’s experience, psychoeducation provides a conceptual framework that leads into a discussion of treatment.

The second goal of this module is to introduce the client to self-monitoring. Self-monitoring is designed to provide both the therapist and the client with objective information regarding the client’s experience of anxiety and panic. In addition, self-monitoring allows for the tracking of progress throughout treatment. The rationale behind the use of self-monitoring has to do with the idea that retrospective recall of past experiences of anxiety and panic may lead to an inflated estimate of the frequency and intensity of panic (Rapee, Craske, & Barlow, 1990). Furthermore, it is likely that such inflated estimates contribute to apprehension about future experiences of anxiety and panic. Self-monitoring has been found to lead to more accurate and less inflated estimates, thus providing the objective awareness that is the goal of self-monitoring (Craske & Tsao, 1999).

*Therapist Tasks*

The session begins by briefly checking in with the client and reviewing the agenda. It is likely that this module is the first encounter with the client since the intake interview. As such, this module includes presenting the client with the diagnosis decided upon (i.e., panic disorder with/without agoraphobia). This is followed by an explanation of what exactly panic disorder is, providing the client with the common symptoms involved. Many times the client will feel a sense of relief to discover that what they are experiencing has a name and can be identified. This
sense of relief may be enhanced by sharing prevalence rates with the client and by explaining that all individuals with panic disorder experience very similar symptoms to those the client has experienced.

Many clients express a desire to know why they have panic disorder or, in other words, what caused it? At this point an explanation of the causes and maintenance factors of panic and anxiety helps to answer the client’s questions. This discussion also begins to lay the foundation for a later discussion of the rationale for treatment. As such, the explanation follows the cognitive-behavioral/mindfulness-based integrative etiological model of panic disorder presented in the introduction of this treatment manual. This discussion also serves to identify common unhelpful coping strategies the client may use. While explaining to the client why these strategies are not helpful, it is important to also point out that these strategies are very common and understandable given the difficulties experienced by the client.

One important reason for providing the client with psychoeducation regarding panic disorder is to correct any myths or misconceptions the client may have about the disorder. The explanations described above help to accomplish this, however, it may also be useful to ask the client what they know about panic disorder and if there is anything in particular they are concerned about regarding the diagnosis. Furthermore, throughout the discussions included in this module, one point to remember is that although this module is more didactic in nature than most, it is important to keep the client involved and to check in with them throughout the discussion. This can be accomplished by pausing and asking the client if the explanations make sense and if he or she agrees that the diagnosis of panic disorder is appropriate. Also, before beginning each new topic, be sure to check with the client to see if they have any remaining questions.
Once the psychoeducational discussion is complete, self-monitoring is introduced. This involves explaining to the client what self-monitoring is and what the rationale is behind it. The rationale emphasizes the fact that retrospective recall is not reliable and objective information is more helpful. In addition, self-monitoring helps to identify unknown triggers or maintenance factors as well as provides a way to track progress throughout therapy. Because self-monitoring is frequently undermined by non-compliance, it is very important to provide the client with both a clear rationale and clear instructions on how to fill out the form. If a client appears confused or unsure, it may be helpful to fill out a form with the client as an example. Lastly, provide the client with instructions regarding the at home practice and the Panic and Mood Record for the week and briefly summarize what was discussed during the session.

At Home Practice

Between sessions the client should be asked to begin self-monitoring by filling out the Panic and Mood Record provided. Instruct the client to fill out the Panic and Mood Record any time they experience panic-like symptoms and to record their daily mood and anxiety level. The client should bring the record to the next session.
Module #2: Treatment Psychoeducation and Automatic Thoughts/Sensations

Materials Needed

- Therapist Form #1: Brief meditation script
- Client Form #1: Panic and mood record

Outline

- Check-in
- Discuss agenda
- Brief mindfulness exercise
- Provide psychoeducation regarding cognitive-behavioral therapy and mindfulness
- Identify automatic thoughts and sensations
- At home practice
- Summary and feedback

Goals and Rationale

The first goal of this module is to provide the client with psychoeducation regarding cognitive-behavioral therapy, mindfulness, and the integrated treatment. This discussion will help clear up any misconceptions the client may have about these psychological treatments. It will also help prepare the client for the interventions that will be implemented. It is important for the client to have a good understanding of what exactly they are signing on for so there are no surprises regarding this later in treatment. This discussion will also provide the client with a rationale for why you will be implementing the interventions to come. This treatment will
require a great deal of dedication, involving both time and energy, on the part of the client and providing them with solid reasons why they should invest that time and energy will be crucial for treatment adherence.

The second goal of this module is to help the client identify their own automatic thoughts and sensations. This is important because often the client isn’t aware of the ways in which these thoughts and sensations are affecting them. Furthermore, due to the fact that these thoughts and sensations are automatic, often the client may not truly be aware of them at all. Once mindfulness practice begins in the next module, the client will be asked to notice and observe any thoughts and sensations that they experience. Prior to the start of this practice it will be helpful for the client to already have an idea of their own personal automatic thoughts and sensations. In addition, an awareness of the ways in which these thoughts and sensations are affecting them will continue to add to the rationale for treatment.

**Therapist Tasks**

The session begins by checking in with the client and asking if they have brought in any questions to discuss. Next, the agenda is reviewed. In this module mindfulness is introduced to the client and begins to be incorporated into treatment. As stated in the introduction of this treatment manual, the majority of sessions begin with a brief mindfulness exercise. This starts with module two. Once the mindfulness exercise is complete, check in with the client to see what the exercise was like for them. For some clients this may be the first time they have ever attempted any type of mindfulness practice and they may have questions and concerns. Once these have been addressed, self-monitoring forms are reviewed. It is essential that time be spent reviewing at-home practice materials in order to increase likelihood of compliance.
Psychoeducation regarding cognitive-behavioral therapy and mindfulness-based therapy is presented next. Basic concepts of each theory should be reviewed, discussing the potential benefits of each type of treatment. A discussion of the proposed treatment follows. An explanation for the rationale of integrating the two types of treatment should be provided and all of the client’s questions answered. Specific information should be provided explaining exactly how the proposed interventions are meant to help with the client’s unique symptoms. It may be helpful to remind the client of the discussion from module one explaining the causes and maintenance factors of panic disorder.

The last section of this module involves helping the client identify automatic thoughts and sensations. This begins by explaining to the client what is meant by automatic thoughts and sensations and then asking them to identify some on their own. The client may need help and it is the therapist’s task to guide the client in discovering these for him or herself. It may be helpful to use the self-monitoring sheets reviewed at the beginning of the session in order to see what the client has already identified they were thinking or feeling during times in which panic-like symptoms were experienced. A discussion about the ways in which these thoughts and sensations serve to maintain panic disorder is provided as well so the client understands the importance of this exercise. Lastly, provide the client with instructions for at home practice, provide them with the record form, and briefly summarize the session with the client.

At Home Practice

Between sessions the client should be asked to continue self-monitoring by filling out the Panic Record provided. Remind the client to fill out the Panic and Mood Record any time they experience panic-like symptoms and to record their daily mood and anxiety level. The client
should bring the record to the next session. Lastly, inform the client that he or she will be practicing a mindfulness exercise during the next session and that although a floor mat will be provided, they are welcome to bring their own mat or blanket if they prefer.
Module #3: Body Scan Meditation

Materials Needed

- Therapist Form #1: Brief meditation script
- Therapist Form #2: Body scan instructions
- Body scan audio tape or CD for client
- Client Form #1: Panic and mood record
- Client Form #2: Mindfulness record
- Floor mat (such as a yoga mat)

Outline

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Introduce body scan meditation
- Introduce mindfulness record
- At home practice
- Summary and feedback

Goals and Rationale

The first goal of this module is for the client to begin their mindfulness practice. This will be accomplished by conducting a body scan meditation with the client during session. By experiencing their first body scan meditation with the therapist in session, the client will be able
to ask any questions that arise and to work with the therapist to problem-solve any difficulties before being asked to conduct this practice on their own. This leads to the second goal of this module: to instruct the client to continue practice at home and to teach them how to fill out the mindfulness record.

In presenting the rationale behind mindfulness meditation practice, the following are some points to consider including in the explanation given to the client. First, take a look at the definition of mindfulness: a particular way of paying attention: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 1994). This is in contrast to the habitual mental functioning people typically engage in, which can be described as operating on automatic pilot (Allen, Chambers, & Knight, 2006). It is thought that the ability to direct one’s attention in the particular way described above can be developed by means of meditation (Bandolfi, 2005). Thus, mindfulness practice involves training and practice in meditative techniques including formal procedures such as body scan or sitting meditation and less formal practices such as mindful eating. During these meditation practices, the client will likely experience a variety of phenomena such as thoughts, emotions, images, or physical sensations. Clients are encouraged to carefully observe these phenomena without evaluating them in any way. This trains the client to allow these experiences to come and go without placing judgment or getting caught up in them.

Kabat-Zinn (2003) explained that mindfulness is not about attempting to get anywhere or fix anything; it is about allowing oneself to be where one already is and to become aware of the full spectrum of our moment-to-moment experience. He explained that as practice continues, one comes to the realization that typical experience of the present moment is severely edited and distorted due to habitual and routinized attentional processes. While mindfulness practice
involves a variety of specific techniques, Kabat-Zinn explained that practice is best understood as a way of being, with the techniques described above being launching platforms or a type of scaffolding to assist in the cultivation of mindful attention. It is thought that the cultivation of mindful attention will lead to changes in thought patterns or to a change in one’s relationship to thoughts, images, and other stimuli that enter consciousness (Baer, 2003).

The next point of discussion with the client is regarding how the changes described above will benefit them. Levitt and Karekla (2005) have suggested that experiential avoidance is a key maintenance factor in panic disorder as well as other anxiety disorders. Experiential avoidance is defined as when an individual is unwilling to remain in contact with specific experiences and makes attempts to alter the form and/or frequency of these experiences. According to Levitt and Karekla, the problem is that these attempts to alter these experiences may actually exacerbate the experiences, thus maintaining the disorder. Although it may seem paradoxical, often the best way for things to change for the client is to accept things as they are. Acceptance runs counter to the habit of attempting to change or get rid of certain experiences, thus breaking the maintenance cycle of anxiety. Mindfulness-based interventions are intended to foster this type of acceptance in the client. Therefore, the cultivation of mindful attention is a way to stop this pattern of experiential avoidance with the hope of breaking the maintenance cycle of panic disorder. Furthermore, the aim of many psychological interventions is symptom reduction. While this makes sense as clients suffering from psychological disorders strive to become free from symptoms, freedom from symptoms is not always realistic. In addition, clients may leave treatment early due to the fact that relief from symptoms does not occur as quickly as desired. Thus, the stance of acceptance which is central to mindfulness-based interventions is likely to be a valuable addition to the current repertoire of psychological interventions.
Lastly, a client may inquire as to why they have to spend so many hours practicing mindfulness meditation throughout treatment. Kabat-Zinn (2003) stated that while mindfulness is an inherent human capacity, it is not something that someone can simply decide to do and will happen instantaneously. To the contrary, he describes mindfulness as an art form that one must develop over time and that will be enhanced by regular practice.

**Therapist Tasks**

The session begins with a brief mindfulness exercise. Next the therapist checks in with the client regarding any questions that may have arisen since the last session. The agenda is then discussed and the Panic and Mood Record reviewed. It is essential to continue to review this with the client in order to monitor progress and to increase compliance.

The body scan meditation is then introduced to the client. Remind the client of the rationale for mindfulness-based interventions that was discussed in the previous module. Also, emphasize the importance of regular mindfulness practice, explaining that time and effort will be required in order to reap the benefits of mindfulness-based interventions. Explain to the client that they will be practicing a technique called body scan meditation in session today. It may be helpful at this point to explain to the client the rationale for focusing on the body. Often emotions are not only expressed in the form of thoughts, but also through our body. This is a concept that individuals with panic disorder will likely easily understand. For example, the emotions of fear or trepidation may be expressed not only through racing thoughts, but also through bodily effects such as raised heart rate, abdominal distress, or muscle tension. Therefore, increasing awareness of the body as well as of thoughts will be helpful in being aware of and dealing with emotion.
Inform the client that they will be practicing this technique on their own as part of their at home practice so to take note of any questions or concerns that arise during the body scan. Instruct the client to lie on the ground using their choice of mat/blanket. If the client is unable to lie on the ground it is acceptable for them to sit in a chair. Explain to the client that you will be providing instructions throughout the practice and that they will receive a recording of these instructions for use at home. Ask the client to close their eyes and begin to follow the body scan instructions provided at the end of this module. The body scan meditation should take about 45 minutes.

At the end of the body scan meditation, give the client a couple minutes to bring their attention back to the room and ask the client to return to his or her seat. Debrief with the client regarding what the practice was like for them. Ask the client what they liked about the body scan meditation. Also, address any frustrations and/or concerns the client has about the technique. Assure the client that the majority of individuals find mindfulness techniques to be difficult at first and that this is one of the reasons regular practice is necessary.

Introduce the client to the mindfulness record form and present the client with the at home practice. Let the client know you realize that the time and effort required for the practice is more than it has been in previous weeks. Ask the client how they feel about this and if they anticipate any problems in completing the practice. Address any problems the client is concerned about and, if necessary, remind the client why they are being asked to do this and of the potential benefits. Lastly, briefly summarize the session with the client and provide them with the body scan recording to use during at home practice. Also provide the client with a new Mindfulness Record and Panic and Mood Record.
At Home Practice

Between sessions the client should practice the body scan meditation on their own using the audio tape or CD provided. Instruct the client to practice the body scan meditation five times before the next session (if you have one week between sessions, 10 times if two weeks and so on). Show the client how to record their mindfulness practice on the Mindfulness Record provided. Also, remind the client to continue self-monitoring by filling out the Panic and Mood Record.
Module #4: Daily Mindfulness and Problem-Solving

Materials Needed

- Therapist Form #1: Brief meditation script
- Therapist Form #3: Mindful eating script
- Food for mindful eating
- Client Form #1: Panic and mood record
- Client Form #2: Mindfulness record
- Client Form #3: Mindfulness of everyday activities
- Client Form #4: Problem-solving

Outline

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Introduce problem-solving
- Introduce mindfulness of everyday activities
- At home practice
- Summary and feedback

Goals and Rationale

The first goal of this module is to introduce the client to daily mindfulness techniques.

At this point the client’s mindfulness practice has consisted of 45 minute body scan meditation
sessions. The introduction of daily mindfulness is meant to show the client that mindful thought and action can occur throughout the day in many different situations. Therefore, one purpose of this module is to continue the cultivation of a mindful way of being as discussed in the rationale section for module #3 through incorporating mindfulness techniques in additional aspects of the client’s life. This module also introduces the client to the flexibility of mindfulness and to the idea that the techniques being learned can be applied to a wide variety of thoughts and behaviors including those related to anxiety and panic attacks.

The second goal of this module is to introduce the client to the problem-solving model. The at-home practice for module #3 involves a great deal of time and energy on the part of the client and it is likely that some problems have arisen in the client’s attempt to complete the mindfulness practice. These problems provide practical and relevant material for use in teaching the client the problem-solving model. Not only will effective problem-solving help the client throughout treatment, but it can be useful in the client’s everyday life which can also help to reduce anxiety.

**Therapist Tasks**

The session begins with a brief mindfulness exercise. Next, check in with the client and inquire as to any problems or questions that came up since the last session in regards to the mindfulness practice. If problems did arise, assure the client that one of the items on the agenda for this session is to discuss problem-solving techniques and that these problems will be addressed. Continue to review the client’s self-monitoring forms including both the Mindfulness Record and the Panic and Mood Record. Discuss the rest of the agenda with the client and then transition into problem-solving training.
Introduce the client to the five-step problem solving model. The five steps include: (1) Define the problem, (2) Brainstorm potential solutions, (3) Evaluate potential solutions, (4) Put chosen solution into action, and (5) Evaluate the results. Point out to the client that there is no need to be critical of potential solutions in the brainstorming phase as they will all be evaluated in the next step. Once the client understands the model, use the problems the client experienced since the last session to practice the model. If the client reports that they did not experience any problems, use a hypothetical problem for practice. For example, not being able to find time in a busy schedule to fit in all of the mindfulness practice.

The second part of the session is spent introducing the client to daily mindfulness. Explain to the client that mindfulness is not just about long meditative exercises but is also about a general way of life or way of being. Therefore, mindfulness can be incorporated in daily life in a variety of ways. Lead the client through the mindful eating exercise using the script provided at the end of the module. It is a good idea to have a couple different types of food the client could eat in the event of any food allergies. Debrief with the client after the exercise and discuss the experience. Work with the client to identify many different daily activities he or she could practice doing mindfully such as brushing teeth or making coffee. Address any questions or concerns the client may have about daily mindfulness.

Provide the client with instructions for at home practice. Emphasize again the importance of completing the mindfulness exercises and filling out both the Mindfulness Record and the Panic and Mood Record. Ask the client if he or she anticipates any problems completing the practice and if so, use the problem-solving model to address the concerns. Lastly, summarize the contents of the session with the client and provide them with the forms they need to complete at home practice.
At Home Practice

Between sessions the client should practice daily mindfulness and continue practicing the body scan meditation. Instruct the client to choose one simple activity (e.g., brushing teeth, eating breakfast) per day to do mindfully. Also, instruct the client to practice the body scan meditation another five times before the next session (again, this is if you have one week between sessions). Remind the client to continue to fill out both the Mindfulness Record and the Panic and Mood Record. Lastly, inform the client that he or she will be practicing a new mindfulness exercise during the next session and that although a sitting pillow will be provided, they are welcome to bring their own pillow if they prefer.
Module #5: Sitting Meditation

Materials Needed

- Therapist Form #1: Brief meditation script
- Therapist Form #4: Sitting meditation instructions
- Audio tape or CD for client
- Pillow for sitting meditation
- Client Form #1: Panic and mood record
- Client Form #2: Mindfulness record

Outline

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Introduce sitting meditation
- At home practice
- Summary and feedback

Goals and Rationale

The goal of this module is to introduce the client to sitting meditation. At this point the client’s mindfulness practice has consisted of body scan meditation sessions and daily mindfulness exercises each of which provide the client with some sort of specific thoughts or sensations to focus on. The introduction of sitting meditation is meant to allow the clients to
practice their new mindfulness skills without purposefully attempting to focus on anything in particular. During the sitting meditation the client will sit in silence a majority of the time and will have the opportunity to practice observing whatever sounds, smells, thoughts, and any other experiences that come into their awareness. Therefore, the purpose of this module is to continue the cultivation of a mindful way of being as discussed in the rationale section for module #3. This module also enhances the flexibility of mindfulness in showing the client that they can be mindful not only during periods of purposeful action, but also during times of silence and in the absence of activity.

**Therapist Tasks**

The session begins with a brief mindfulness exercise. Next the therapist checks in with the client regarding any issues that may have arisen since the last session. The agenda is then discussed and the Panic and Mood Record and Mindfulness Record reviewed. As stated previously, it continues to be important to review these records with the client in order to monitor progress and to increase compliance. This review can also help the client to remember any other questions or concerns that may have come up for them.

The sitting meditation is then introduced to the client. Remind the client of the importance of regular mindfulness practice, explaining that today they will be learning another type of mindfulness meditation that they can add to their practice. Explain to the client that they will be practicing a technique called sitting meditation in session today. Inform the client that they will be practicing this technique on their own as part of their at home practice so to take note of any questions or concerns that arise during the sitting meditation. Instruct the client to sit on the ground using their choice of pillow. If the client is unable to sit on the ground it is
acceptable for them to sit in a chair. Explain to the client that you will be providing instructions throughout the practice and that they will receive a recording of these instructions for use at home. Ask the client to close their eyes and begin to follow the sitting meditation instructions provided at the end of this module. The sitting meditation has many more long pauses than the body scan meditation and it will be important to ensure that these pauses are taken in order to provide the client with a full sitting meditation. The exercise should take about 45 minutes.

At the end of the sitting meditation, ask the client to open their eyes and return to his or her seat when they are ready. Debrief with the client regarding what the practice was like for them. Ask the client what they liked and did not like about the sitting meditation. Also, address any frustrations and/or concerns the client has about the technique. Clients may find the sitting meditation to be more difficult than the body scan meditation as there is a lot more time devoted to sitting with silence. If this is the case, assure the client that many individuals experience similar feelings and remind them of the goals they are working toward.

Present the client with the at home practice and provide them with a recording of the sitting meditation instructions for use at home as well as the necessary record forms. Address any problems the client is concerned about and encourage the client to congratulate themselves on the work they have done thus far. Lastly, briefly summarize the session with the client.

*At Home Practice*

Between sessions the client should practice the sitting meditation on their own using the audio tape or CD provided and continue to practice daily mindfulness. Instruct the client to practice the sitting meditation five times before the next session (again, this is if you have one week between sessions) and to continue to choose one simple activity per day to do mindfully.
Also, remind the client to continue filling out the Panic and Mood Record and the Mindfulness Record.
Module #6: Symptom Induction and Interoceptive Exposure

Materials Needed

- Therapist Form #1: Brief meditation script
- Client Form #2: Mindfulness record
- Client Form #5: Symptom induction exercises
- Client Form #6: Exposure record
- Client Form #7: Fear hierarchy

Outline

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Introduce symptom induction exercises
- Develop a fear hierarchy
- Introduce interoceptive exposure
- At home practice
- Summary and feedback

Goals and Rationale

The first goal of this module is to teach the client ways of deliberately inducing the physical sensations that they fear (e.g., shortness of breath, rapid heart rate). The reason for purposefully inducing these sensations leads us to the second goal of this module: to practice
interoceptive exposure. Prior to the start of exposure practice a hierarchy will be collaboratively developed. From a cognitive-behavioral perspective, the rationale behind interoceptive exposure is to induce these sensations a sufficient number of times and long enough each time so that misinterpretations about the sensations are disconfirmed and conditioned anxiety responses are extinguished (Craske & Barlow, 2008). Since we are approaching treatment from a mindfulness-based perspective, the rationale is a bit different. At this point in treatment the client has learned new ways of dealing with uncomfortable sensations through mindfulness training yet, until now, the mindfulness practice has not focused specifically on panic-like symptoms. Through interoceptive exposure, the client will be able to experience their feared physical sensations in a systematic and controlled way and have the ability to practice their new mindfulness skills with these feared sensations. Thus, the rationale is that through this practice, the client’s response to their panic-like symptoms will be altered from one of criticism and judgment to one of observation and acceptance.

*Therapist Tasks*

The session begins with a brief mindfulness exercise. Next, check in with the client regarding their ongoing mindfulness practice including a review of the Mindfulness Record. Also review the Panic and Mood Record and discuss any issues or questions that may have come up since the last session. Briefly discuss the agenda with the client before beginning the main topics of the module.

Introduce the client to symptom induction exercises. If the client appears hesitant or confused as to why they are being asked to purposefully make themselves uncomfortable, remind the client of the rationale for exposure therapy that was introduced during module #2.
Collaborate with the client to make a list of his or her main feared physical sensations and exercises that will work to induce these sensations. Some examples of symptoms induction exercises include: straw-breathing, running in place, spinning, and tensing muscles. Once the list is complete, work with the client to put these exercises into a fear hierarchy starting with the least anxiety provoking and working up to the most anxiety provoking.

The next task is to teach the client how to conduct interoceptive exposure using the exercises in the fear hierarchy. Explain to the client that they are to start with the least anxiety provoking exercise first. The exercise will be done a minimum of three times per day. When the exercise is performed and the feared sensation arises, the client is to use their new mindfulness skills and attempt to carefully observe the sensation without judgment. The goal is for the client to notice the thoughts that arise and simply acknowledge them as events in the mind as opposed to facts that require action. This does not mean that the client’s anxiety will automatically disappear. Explain to the client that when conducting these exercises the actual sensation (e.g., rapid heart rate, dizziness) may or may not go away or decrease but the fear of the sensation, and thus the panic-like response, will lessen over time. The client will begin to develop a new relationship to the sensations. Instead of viewing the sensation as negative and fearful which leads to attempts to get rid of the sensation, the client will view the symptom with nonjudgmental curiosity and thus accept the sensation for what it is. The client will be given an exposure record on which he or she will record each interoceptive exposure practice including what they did, negative thoughts/fears, whether or not the fears actually happened, and a rating of the maximum anxiety experienced. Practice this with the client before the end of the session. Have the client try one symptoms induction exercise and have them record it.
After this practice, check in with the client about what this was like for them and address any questions or concerns that arise. Present the client with their at home practice for the week and provide them with an Exposure Record and a Mindfulness record. Lastly, briefly summarize the session with the client and attend to any remaining concerns.

At Home Practice

Between sessions the client should practice symptom induction exercises/exposure and should continue mindfulness practice. Instruct the client to complete exposure exercises three times per day until the next session. Also, instruct the client to practice the sitting meditation five times before the next session (again, this is if you have one week between sessions). Show the client how to fill out the Exposure Record provided and remind them to continue to fill out the Mindfulness Record.
Module #7: In Vivo Exposure

**Materials Needed**

- Therapist Form #1: Brief meditation script
- Client Form #2: Mindfulness record
- Client Form #6: Exposure record
- Client Form #7: Fear hierarchy

**Outline**

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Develop fear hierarchy
- Introduce in vivo exposure
- At home practice
- Summary and feedback

**Goals and Rationale**

The first goal of this module is to identify with the client any external stimuli that the client fears and, therefore, avoids. Once this is completed, the next goal is to collaboratively develop a fear hierarchy. This hierarchy will be used for in vivo exposure practice. In vivo exposure involves repeated, systematic exposure to the situations the client has identified as problematic. From a cognitive-behavioral perspective, the purpose of in vivo exposure is to
extinguish conditional emotional responses to these external stimuli (Craske & Barlow, 2008). As stated previously in the rationale section of the interoceptive exposure module, because we are approaching treatment from a mindfulness-based perspective, the rationale is a bit different. At this point in treatment the client has had the opportunity to practice their new mindfulness skills with their most feared physical sensations. Now, through in vivo exposure, the client will have the chance to practice these skills with feared external stimuli. Thus, the rationale is the same as that for interoceptive exposure with the only difference being the target of the exposure: through this practice, the client’s response to their feared external stimuli will be altered from one of criticism and judgment to one of observation and acceptance.

**Therapist Tasks**

The session begins with a brief mindfulness exercise. Next, check in with the client regarding both their mindfulness practice and exposure practice since the last session. Exposure practice can be very difficult and frustrating for clients so there may be many questions and/or concerns to address during this check in. During this time also review the Mindfulness Record and the Panic and Mood Record.

Introduce the client to in vivo exposure. Explain to the client that while they have been working on facing their feared internal sensations, now it is time to face any feared external stimuli that is associated with panic and anxiety. Work with the client to identify what these external situations are. Some examples may be driving or meeting new people. Once the list is complete, assist the client in placing these situations into a fear hierarchy, again starting with the least anxiety provoking and working up to the most anxiety provoking. Explain to the client that he or she will face these situations in much the same way as with the internal physical sensations.
The client will engage in whatever the feared situation is and when the anxiety response begins, the client is to use their mindfulness skills and carefully observe the thoughts and sensations that arise without judgment. Again, this does not mean that the anxiety will go away or lessen immediately – the point is that with repeated exposure and practice, the anxiety response will lessen over time.

If at all possible, practice one in vivo exposure exercise with the client during the session. This will enable the client to address any questions and concerns that arise before attempting the practice on their own. Present the client with their at home practice for the week and provide them with an Exposure Record and a Mindfulness record. Lastly, briefly summarize the session with the client and attend to any remaining concerns.

At Home Practice

Between sessions the client should practice in vivo exposure exercises and should continue mindfulness practice. Instruct the client to complete in vivo exposure exercises at least three times before the next session (assuming one week between sessions). Also, instruct the client to practice either the body scan meditation or the sitting meditation five times before the next session (again, assuming one week between sessions). Remind the client to continue to fill out both the Mindfulness Record and the Exposure Record.
Module #8: Relapse Prevention

Materials Needed

- Therapist Form #1: Brief meditation script
- Client Form #8: Anxiety tool box

Outline

- Brief mindfulness exercise
- Check-in
- Discuss agenda
- Discuss accomplishments and skills learned
- Develop maintenance plan
- Good-byes

Goals and Rationale

The first goal of this module is to discuss with the client their accomplishments throughout treatment. As change sometimes appears to happen slowly, the client may have forgotten how far they have come since the beginning of treatment. This reminder serves to enhance the client’s sense of self-efficacy in their ability to take care of themselves. The second goal of this module is to have a discussion of all the skills the client has learned throughout treatment. This serves as a reminder for the client that they have a whole new set of tools to work with in dealing with panic-like symptoms again enhancing the client’s sense of self-efficacy. The third goal of this module is to develop a maintenance plan with the client. This
will help to identify potential problem areas down the road and to come up with ways to deal with future problems. In addition, as mindfulness is considered to be a way of life, developing a plan to continue mindfulness practice will be useful.

**Therapist Tasks**

The session begins with a brief mindfulness exercise. Check in with the client regarding their continued progress and address any issues that have arisen. Next, briefly discuss the agenda with the client.

As this is the final module of the treatment manual, it is assumed that at this point the client has made some significant accomplishments and is ready to terminate therapy. Therefore, this session is used to discuss these accomplishments with the client and to review the many new skills the client has acquired throughout treatment. It may be helpful to provide the client with a complete set of all of the worksheets provided during treatment as some may have gotten lost along the way.

This session is also a time to work together with the client to develop a long-term maintenance plan. Explain to the client that regular mindfulness practice would contribute greatly to maintaining the results he or she has achieved. Help the client figure out a way to continue to incorporate mindfulness in their everyday life. In addition, help the client to think about potential stumbling blocks that may arise in the future such as stressful life events. Discuss with the client how to identify the first signs that his or her anxiety is beginning to worsen and the steps to take in order to keep the anxiety under control.

Lastly, it is time to say good-bye to the client. If appropriate, let the client know that booster sessions are available should they feel the need for them in the future.
Appendix A

Client Worksheets
## Panic and Mood Record

*Whenever a rating is asked for, use the scale below.*

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10

None        Mild        Moderate       Strong       Severe

**Use this portion to record your experiences of panic symptoms**

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Triggers (if any)</th>
<th>Rating (0-10)</th>
<th>Thoughts</th>
<th>Sensations</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Use this section to record your daily mood. For overall mood, write in an answer.**
For the other three categories, rate on a scale of 0-10.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Overall Mood</th>
<th>Overall Anxiety</th>
<th>Maximum Anxiety</th>
<th>Worry About Panic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Mindfulness Record**

**Use the space below to record your mindfulness practice**

<table>
<thead>
<tr>
<th>Date</th>
<th>Type of Activity</th>
<th>How long</th>
<th>Thoughts during exercise</th>
<th>Thoughts/feelings after exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mindfulness of Everyday Activities

Mindfulness practice does not always have to be its own specific event. We can practice mindfulness in our everyday activities. We do this by choosing an activity and allowing ourselves to be completely present during that activity – noticing what we see, hear, smell, feel, and think. This practice helps us to become better and better at being mindful in our everyday lives. Below is a list of daily activities that can be done mindfully. This list is a sample of ideas – almost anything (except sleeping) can be done mindfully. Choose one activity every day to do mindfully.

- Brushing your teeth
- Taking a shower
- Making coffee
- Making a meal
- Eating a meal
- Driving
- Household chores (e.g., laundry, dishes)
- Walking
**Problem Solving**

**Use the space below to work through the problem solving model**

<table>
<thead>
<tr>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the problem</td>
</tr>
<tr>
<td>Brainstorm potential solutions</td>
</tr>
<tr>
<td>Evaluate potential solutions</td>
</tr>
<tr>
<td>Chosen solution</td>
</tr>
<tr>
<td>Evaluate results</td>
</tr>
</tbody>
</table>
**Symptom Induction Exercises**

**Use the following exercises to induce panic-like symptoms when practicing interoceptive exposure**

<table>
<thead>
<tr>
<th>Exercise</th>
<th>What It Does</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run in place for one minute</td>
<td>Raises heart rate and breathing</td>
</tr>
<tr>
<td>Spin around at a moderate pace for one minute</td>
<td>Dizziness/lightheadedness</td>
</tr>
<tr>
<td>Breathe through narrow straw for one minute (no breathing through nose)</td>
<td>Sensation of shortness of breath</td>
</tr>
<tr>
<td>Hold your breath for 30 seconds</td>
<td>Feelings of smothering</td>
</tr>
<tr>
<td>Hyperventilate (rapid breathing) for one minute</td>
<td>Dizziness/lightheadedness</td>
</tr>
<tr>
<td>Place a tongue depressor at the back of the tongue for one minute</td>
<td>Choking sensation</td>
</tr>
<tr>
<td>Tense all of your muscles for one minute</td>
<td>Trembling muscles</td>
</tr>
<tr>
<td>Sit facing a heater for two minutes</td>
<td>Hot flushes/sweating</td>
</tr>
<tr>
<td>Place your head between your knees for 30 seconds then lift head quickly</td>
<td>Lightheadedness</td>
</tr>
</tbody>
</table>
Exposure Record

*To rate anxiety use the scale below*

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10
None Mild Moderate Strong Severe

**Use the space below to record your exposure exercises**

<table>
<thead>
<tr>
<th>Date</th>
<th>Feared Sensation/Situation</th>
<th>Maximum Anxiety</th>
<th>Ending anxiety</th>
<th>Thoughts/feelings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Fear Hierarchy**

*To rate anxiety use the scale below*

0-----1-----2-----3-----4-----5-----6-----7-----8-----9-----10
None       Mild       Moderate       Strong       Severe

**Use the space below to create your own hierarchy to use in exposure practice**

<table>
<thead>
<tr>
<th>Sensation or Situation</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anxiety Tool Box

Throughout this treatment program you have put in a lot of hard work! Because of that hard work, you have developed several new skills to help you deal with your anxiety and panic. Below is a list of all the new tools you have added to your anxiety tool box.

✓ You have gained a lot of knowledge about anxiety and panic attacks
✓ You have learned how to monitor your own anxiety
✓ You have learned how to identify your automatic thoughts and sensations
✓ You have learned a set of problem-solving skills
✓ You have learned several mindfulness practices
  ▪ Brief mindfulness of the breath
  ▪ Body scan meditation
  ▪ Sitting meditation
  ▪ Mindfulness of everyday activities
✓ You have learned you can use your new mindfulness skills to face your fears
Appendix B

Therapist Worksheets
**Brief Meditation Script**

*Note to clinicians: Read the following script slowly, with a calm voice, observing pauses. It is not necessary to read the script verbatim. Clinicians are encouraged to make changes in order to make the script sound natural for you.*

I invite you now to find a comfortable position in your chair, with your feet flat on the floor, arms in a comfortable position, and your back straight yet supported. If it’s comfortable for you, go ahead and close your eyes. If not, choose a spot in the room and fix and soften your gaze on that spot. (short pause) Take a moment to notice some of the sensations going on around you. Perhaps things you can hear inside or outside of the room...maybe something you smell...or maybe things you can feel such as air or clothing on your skin or the feeling of the chair supporting you. Just take a moment and notice the sensations. (pause) Now I invite you to turn your attention to your breath. Your breath is something that is always with you...always there for you. There is no need to attempt to manipulate your breath in any way...simply observe the sensations that go along with breathing. The rise and fall of your chest...the expanding and contracting of your rib cage...and perhaps the feeling of the air hitting the back of your throat as you breathe in - maybe noticing that air is cooler when you breathe in and warmer when you breathe out. Take a moment to notice these sensations that go along with breathing. (pause) As you’re focusing on your breathing, it is likely that things such as thoughts, memories, fantasies, or worries will begin to enter your mind...perhaps thoughts of what happened earlier today or what you need to do after this appointment or whatever else. When you notice these things have entered your
awareness, simply acknowledge them and gently bring your attention back to your
breath. There is no need for judgment or criticism, just gently refocus your attention on
your breath. (longer pause) Now, as this exercise comes to an end, begin to bring your
attention back to the room. Notice where you are and your purpose for being here
today. When you’re ready, slowly open your eyes and we will continue.
Body Scan Instructions

Note to clinicians: These instructions were taken with permission from Jon Kabat-Zinn’s book, *Full Catastrophe Living* (1990). As such, clinicians are encouraged to make changes in order to make the script appropriate for in-session use. Sentences written in italics below were added by the author of this treatment manual.

1. Lie down on your back in a comfortable place, such as on a foam pad on the floor or on your bed (but remember that for this use you are aiming to “fall awake,” not fall asleep). Make sure that you will be warm enough. You might want to cover yourself with a blanket or do it in a sleeping bag if the room is cold.

   **If client is not comfortable lying down in session, sitting in a chair is acceptable.**

2. Allow your eyes to gently close.

3. Feel the rising and falling of your belly with each inbreath and outbreath.

4. Take a few moments to feel your body as a “whole,” from head to toe, the “envelope” of your skin, the sensations associated with touch in the places you are in contact with the floor or the bed.

5. Bring your attention to the toes of the left foot. As you direct your attention to them, see if you can “direct,” or channel, your breathing to them as well, so that it feels as if you are breathing in to your toes and out from your toes. It may take a while for you to get the hang of this. It may help to just imagine your breath traveling down the body from your nose into the lungs and then continuing through the abdomen and down the left leg all the way to the toes and then back again and out through your nose.

6. Allow yourself to feel any and all sensations from your toes, perhaps distinguishing between them and watching the flux of sensations in this region. If you don’t feel anything at the moment, that is fine too. Just allow yourself to feel “not feeling anything.”
7. When you are ready to leave the toes and move on, take a deeper, more intentional breath in all the way down to the toes and, on the outbreath, allow them to “dissolve” in your “mind’s eye.” Stay with your breathing for a few breaths at least, and then move on in turn to the sole of the foot, the heel, the top of the foot, and then the ankle, continuing to breathe in to and out from each region as your observe the sensations that you are experiencing, and then letting go of it and moving on.

**Instead of providing instruction on several areas of the body at once, it is suggested to go through them one at a time as was done above in steps 5 and 6.**

8. As with the awareness of breathing exercises and the sitting meditation practices, bring your mind back to the breath and to the region you are focusing on each time you notice that your attention has wandered off.

**Sitting meditation practice will be done in module #5.**

9. In this way, continue to move slowly up your left leg and through the rest of your body as you maintain the focus on the breath and on the feeling of the particular regions as you come to them, breathe with them, and let go of them. If you are experiencing pain, consult the sections in this chapter that suggest how to work with it.

**Again, it is suggested to go through the areas of the body one at a time instead of providing instruction to go “through the rest of your body.”**

10. Practice the body scan at least once a day. It helps to use the practice tape in the beginning so that the pace is slow enough and to help you remember the instructions accurately.

**This treatment manual instructs clients to complete the body scan five times per week.**

11. Remember that the body scan is the first formal mindfulness practice that our patients engage in intensively and that they do in forty-five minutes per day, six days per week for at least two weeks straight in the beginning of their training.

**This step could be a way of encouraging clients to conduct the body scan more often than instructed.**

12. If you have trouble staying awake, try doing the body scan with your eyes open.

---

**Mindful Eating Script**

Note to clinicians: Read the following script slowly, with a calm voice, observing pauses. It is not necessary to read the script verbatim. Clinicians are encouraged to make changes in order to make the script sound natural for you.

Stay seated in your chair and hold your hands out in front of you. I am now going to place an object or two in your hands. Simply observe this object with curiosity as if you have never seen one of these objects before. Notice what it looks like...maybe the color or texture. Is it hard or soft or something in between. (short pause) Maybe you want to see what the object smells like. Continue to observe the object with curiosity for a few moments. (short pause) Notice any thoughts or feelings that come up when observing this object. (pause) Now place the object in your mouth...no need to chew the object...simply observe the sensations that go along with placing the object in your mouth. (short pause) Notice how the object feels on your tongue...maybe you’re noticing a taste or texture. Maybe your mouth is beginning to salivate. Take a few moments and notice any thoughts, feelings, or sensations that arise. (pause) Now bite down on the object slowly, one bite at a time. Notice the sensations that go along with chewing...the muscles in your jaw working, your teeth touching the object in your mouth, any taste you’re experiencing. Take a moment to notice these sensations. (pause) Maybe you’re noticing the desire to swallow. Go ahead and slowing, with purpose, swallow the object noticing the sensations that go along with swallowing. (short pause) Now take a few more moments to reflect on the object you just ate and any thoughts, feelings, or sensations that arose during the exercise.
**Sitting Meditation Instructions**

Note to clinicians: These instructions were taken with permission from Jon Kabat-Zinn’s book, *Full Catastrophe Living* (1990). As such, clinicians are encouraged to make changes in order to make the script appropriate for in-session use. The portion written in italics below was added by the author of this treatment manual.

Just sit. Don’t hold on to anything, don’t look for anything. Practice being completely open and receptive to whatever comes into the field of awareness, letting it all come and go, watching, witnessing in stillness.

**It is recommended that every 5-10 minutes the clinician state a reminder to simply be open to whatever comes into awareness and to carefully observe these things with curiosity and non-judgmental awareness.**

References


Appendix B

Rights and Permissions
Samantha Forsythe, M.S.
16472 SW Spindler Court
Tigard, OR 97224
Phone: (503)734-9975
sforsyth@pdx.edu

October 25, 2012

Random House
1745 Broadway, 3rd Floor
New York, NY 10019

Attention: Permissions & Copyright Department

To Whom It May Concern:

I am writing to request information regarding how to go about acquiring permission to use copyrighted material. I am a doctoral candidate at Pacific University and am currently working on my doctoral dissertation. I would like to adapt material presented in Full Catastrophe Living by Jon Kabat-Zinn, Ph.D. in order to write my own script for a Body Scan Meditation and a Sitting Meditation. These scripts will be used in the appendix section of my doctoral dissertation and all dissertations are published online through Dissertation Abstracts International. The material will not be sold for commercial use. If you could advise me on the process I need to go through it would be greatly appreciated. My contact information is listed above. Please feel free to contact me via email, phone, or mail. Thank you for your time.

Sincerely,

[Signature]

Samantha Forsythe, M.S.
Doctoral Candidate, Pacific University
Psychology Intern, Portland State University
November 9th, 2012

Samantha Forsythe
16472 SW Spindler Court
Tigard, OR 97224

Re: FULL CATASTROPHE LIVING by Jon Kabat-Zinn

Dear Sir or Madam:

We have no objection to your use of the above material in your dissertation, as requested in your letter, subject to the following conditions:

1. Such material must be reproduced exactly as it appears in our publication;

2. Full acknowledgment of the title, author, copyright and publisher is given;

3. If your dissertation is ever considered for publication or broadcast, commercially or privately reproduced in any manner not specified in your request, you must reapply for permission.

Best wishes for the success of your paper.

Sincerely,

[Signature]
Alicia Dercole
Copyright & Permissions