DOCUMENT RESUME

ED 461 776 CG 031 523

AUTHOR Beamish, Patricia M.; Belcastro, Amy L.; Granello, Darcy Haag

TITLE Treatment of Panic Disorder: A Clinical Update.

PUB DATE 2001-00-00
NOTE 36p.
PUB TYPE Information Analyses (070)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adults; *Anxiety; Behavior Modification; *Cognitive Restructuring; Counseling; Intervention; Mental Health; Mental Health Workers; *Pharmacology; Psychopathology; Theory Practice Relationship
IDENTIFIERS *Panic Disorder

ABSTRACT

This article presents specific, practical information to guide mental health counselors in treating individuals who meet the criteria for panic disorder. It delineates the specific strategies identified in the research literature for use by mental health counselors. Full resolution of panic attacks by one form of treatment may not always be possible and based on current outcome research, a combined psychopharmacological and cognitive-behavioral approach is recommended. Although the prescription of pharmacological treatment for panic disorder is outside the scope of practice for the mental health counselors, knowledge and understanding of effective drug therapy is necessary and an extensive description is included of the most common drugs used. Cognitive and behavioral therapies have been found to be effective; research has focused on the efficacy of some combination of cognitive restructuring; focused cognitive therapy; panic education; guided imaginal coping; breathing retraining and respiratory control; interceptive exposure therapy; and panic inoculation. Several of these approaches are explained in this article. More research is suggested on the efficacy of specific combinations of interventions in the treatment of panic disorder. (Contains 116 references.) (JDM)

Running Head: TREATMENT OF PANIC DISORDER

Treatment of Panic Disorder: A Clinical Update

Patricia M. Beamish

Amy L. Belcastro

Ohio University

Darcy Haag Granello

Ohio State University

Abstract

This article presents specific, practical information to guide the mental health counselor in treating individuals who meet criteria for panic disorder. Based on the current outcome research a combined psychopharmacological approach is delineated.

Panic disorder is a major health problem (Barlow, 1997) and one of the most common psychiatric disorders in the United States. Prevalence rates have been estimated from 3 to 6 million in the general population of the United States (Foote & Seibert, 1999). Prevalence rates in clinical populations have been reported at approximately 10% (Raj, Corvea, & Dagon, 1993).

This disorder can wax and wane in severity of symptoms and, if left untreated, become chronic and severely reduce an individual's quality of life with disabling health consequences including increased risk for severe depression and substance abuse (Agras, 1993; Pollack et al., 1990). There is an increased likelihood of a suicide attempt for individuals with panic disorder. It has been suggested that panic disordered individuals are five times more likely to attempt suicide (Johnson, Weissman, & Klerman, 1990). Individuals diagnosed with substance abuse, depression, or personality disorders are also at risk for developing chronic panic disorder (Bowden, 1992). Panic disorder may have a severe impact on an individual's quality of life (Bowden, 1992; Margraf, Barlow, Clark, & Telch, 1993; Sherbourne, Wells, & Judd, 1996).

Effective and prompt diagnosis and treatment of panic disorder can contribute to a reduction in the chronicity of this disorder. Effective treatment of panic disorder may also result in the reduction in the development of agoraphobia (Michelson, Marchione, Greenwald, Testa, & Marchione, 1996).

Individuals suffering from this wide array of symptoms may seek relief either from a medical or mental health practitioner. These symptoms may either be treated from a medical, psychiatric, or mental health perspective, including psychiatric medication, medical treatment, or any number of therapies. Outcome research supports the treatment of panic disorder from a combination of cognitive-behavioral and psychopharmacological treatments (Beamish et al., 1996; Gorman & Coplan, 1996; Margraf et al., 1993; National Institutes of Health (NIH), 1991). Although these accounts report research findings, clear

cut clinical guidelines are often missing. The purpose of this article is to delineate the specific strategies identified in the research literature for use by mental health counselors in the treatment of panic disorder.

Treatment

The essential feature of panic disorder is the reoccurrence of panic attacks. Panic attacks are sudden episodes of intense fear and apprehension. They can occur independent of specific psychiatric or medical diagnoses. Unlike attacks associated with other anxiety disorders, they are not cued by external stimuli. According to the DSM - IV, common symptoms of an attack are shortness of breath, dizziness, heart palpitations, a fear of dying, and at least four of these symptoms must be experienced for a diagnosis of panic disorder. One of the panic attacks must be followed by at least 1 month of persistent concern about having additional attacks (American Psychiatric Association (APA), 1994). Panic attacks differ with regard to frequency, form, and severity from individual to individual and, at times, within the same individual. Full resolution of panic attacks by one form of treatment may not always be possible (Bowden, 1992).

Pharmacological Interventions

Although the prescription of pharmacological treatment for panic disorder is outside the scope of practice of the mental health counselor, knowledge and understanding of effective drug therapy can facilitate the treatment of panic disorder. Clients often present for counseling when they are already taking medications. Information regarding the commonly prescribed drugs, side effects, and recommended dosages is helpful in treating clients with panic disorder. Mental health counselors can better determine when to refer for medication, communicate more effectively with prescribing physicians, and evaluate changes in treatment with this basic knowledge.

Antidepressants and benzodiazepines are the main types of medications found to be effective in the treatment of panic disorder. Selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, and monoamine oxidase (MAO) inhibitors are the main types of

antidepressants used in treating panic disorder. Certain SSRIs, tricyclic antidepressants, and MOA inhibitors have been reported in being effective at reducing or eliminating panic attacks (Agras, 1993).

Selective Serotonin Reuptake Inhibitors

Results from recent empirical investigations suggest that SSRIs may be effective in the amelioration of panic symptoms. Fluoxetine (Prozac) has been reported to be effective in blocking panic attacks (den Boer, Westenberg, Kamerbeck, Verhoever, & Kahn, 1987; den Boer, Westenberg, DeLeeuw, & van Vilet, 1995; Gorman et al., 1987; Michelson et al., 1998). Several investigations found fluvoxamine (Luvox) to be more effective than placebo or cognitive therapy during eight weeks of treatment (Black, Wesner, Bowers, & Gabel, 1993; van Vliet, den Boer, Westenberg, & Slaap, 1996). Other investigations have found setrakline (Zoloft) (Londborg et al, 1998, Pohl, Wolkow, & Clary, 1998; Pollack, Otto, Worthington, Manfro, & Wolkow, 1998; Rapaport, Wolkow, & Clary, 1998), paroxetine (Paxil) (Ballenger, Wheadon, Steiner, Bushnell, & Gergel, 1998; Oehrberg et al., 1995), and citalopram (Celexa) (Wade, Lepola, Koponen, Pedersen, & Pedersen, 1997) to be more effective than placebo in the treatment of panic disorder. Newer antidepressants such as, venlafaxine (Effexor) (Pollack et al., 1996) and nefazodone (Serzone) (Bystritsky, Rosen, Suri, & Vapnik, 1999; DeMartinis, Schweizer & Rickels, 1996) have also been found to be more effective than placebo.

Fluoxetine (Prozac) and fluvoxamine (Luvox) are both serotonin reuptake inhibitors. The major advantage of these new antidepressants is their relative safety in overdose and reduced side effects. Coplan, Tiffon, and Gorman (1993) suggest the use of fluoxetine (Prozac) if the client has been resistant to more conventional pharmacological and psychological treatments. Jefferson (1997) reports that many psychiatrists choose SSRIs as the first line in the treatment of panic disorder. Hurst and Harriet (2000) suggest the use of SSRIs in the short-term treatment of panic disorder.

Recommended dosage and common side effects.

Roy-Byrne, Wingerson, Cowley, and Dager (1993) recommend an initial dose of fluoxetine (Prozac) at 2 to 5 mg., with a slow increase of 2 mg., every 2 to 3 days. If no problems are evident, the medication may increase more rapidly to 10 mg. and within another week, 20 mg. if possible (Roy-Byrne et al., 1993). Louie, Lewis, and Lannon (1993) concur that starting fluoxetine (Prozac) at doses lower than 20 mg. may be of particular benefit to people with panic disorder. Restlessness, insomnia, rash, central nervous system stimulation, headache, sedation, impaired memory, weight loss, impaired motor performance, anxiety, seizures, tremor, excessive perspiration, nausea, vomiting, abdominal pain, diarrhea, sexual dysfunction, and precipitation of mania are all possible side effects (Burwell, 1995; Massand & Gupta, 1999).

Tricyclic Antidepressants

A select number of tricyclic compounds have been demonstrated to be effective in the treatment of panic disorder (Klerman, 1992). Imipramine (Tofranil) and clomipramine (Anafril) have been used frequently in placebo-controlled trials with persons with panic disorder (Barlow, Gorman, Shear, & Woods, 2000; Lydiard et al., 1993). Ballenger (1986) noted other tricyclics that may be effective in treatment of panic disorder include desipramine (Norpramin), notriptlyine, (Pamelor) and amitriptyline (Elavil). However, studies of those drugs are not as numerous, well designed, or conclusive as those of imipramine. Klerman (1992) reports that the tricyclic antidepressants matprotiline (Ludiomil) and amoxapine (Asendin) are most likely ineffective for panic disorder.

Herrobin (1979) suggests that antidepressants block panic attacks by modifying thromboxane and prostaglandin regulated calcium movements. Klein (1967) theorizes that antipanic drugs raise specific releaser thresholds for mechanisms in the central nervous system governing separation anxiety.

The results of several controlled investigations suggest that imipramine (Tofranil) is more effective than placebo in treating panic symptoms (Barlow et al., 2000; Kahn, McNair, & Lipman, 1986; Mavissakalian & Perel, 1985; Sheehan, Ballenger, & Jacobson,

1980; Zitrin, Klein, & Woerner, 1980; Zitrin, Woerner, & Klein, 1981). Open trials with imipramine (Tofranil) (Garkani, Zitrin, and Klein, 1984; Muskin & Fryer, 1981) have reported complete cessation of panic attacks.

Recommended dosage and common side effects.

The tricyclics generally take up to eight weeks to become optimally effective (Alexander, 1991). This leads to a high dropout rate from treatment (Uhlenhuth, Balter, Ban & Yang, 1998). There is common agreement regarding the recommended dosage used in the treatment of panic disorder (Agras, 1993; Liebowitz, Fyer, Gorman, & Klein, 1998; Lydiard & Ballenger, 1988; Modigh, 1987; Noyes, Chaudry, & Domingo, 1986; Sheehan et al., 1980). It is recommended that tricyclic antidepressants, specifically imipramine, be initially administered at a dose of 25 mg at bedtime. Taking the medication in one dose in the evening allows side effects to dissipate during the night. The initial dose should be increased by 25 mg every three days as tolerated to 150 mg daily. Panic symptoms are generally considered to have a chronic course and a medication regimen is recommended for at least six to twelve months. Medication is gradually reduced until the level required for maintenance is found. As a general rule, medication is reduced once the client is free from panic attacks for some time.

Alexander (1991) suggests that the decision to begin tapering medication is important and psychologically complex. Although he suggests that reliance on medication should be avoided, he does suggest that clients must feel ready and confident when tapering begins. In addition, he recommends that clients be well informed about their condition and the possibility of either relapse or withdrawal symptoms. With tricyclic antidepressants, he advises a reduction of 25 mg every two to four weeks.

Common side effects include an anticholinergic effect often manifested by dry mouth, constipation, blurred vision, or memory difficulties (Noyes, Garvey, Cook, & Samuelson, 1989). Tricyclics also often produce an overstimulatory response during the first week or two of medication (Klerman, 1992). In such cases, many individuals find it

easier to tolerate the drug with only 10 mg daily, or if a benzodiazepine is used temporarily to counteract the jitteriness (Noyes et al., 1986). Other side effects may include weight gain, drowsiness, inhibition of sexual functioning, orthostatic hypotension (fall in blood pressure occurring upon standing or standing motionless in a fixed position), light-headedness, and skin rash (Agras, 1993; Klerman, 1992). Klerman (1992) reports that tricyclic antidepressants can precipitate mania in patients with bipolar disorder. Also, tricyclics should only be administered with extreme caution to persons with serious heart disease (Noyes et al., 1986). Considering the high frequency of suicide attempts by clients with panic disorder on imipramine (Bowden, 1992), the risk of overdose is a consideration.

Monoamine Oxidase (MAO) Inhibitors

Jefferson (1997) notes that the MAOs are considered by many to be the most potent antipanic medications. The effectiveness of MAO inhibitors has been demonstrated in double-blind placebo-controlled trials with phenelzine (Naradil) (Agras, 1993; Modigh, 1987). Phenelzine (Naradil) is the most studied of the MAO inhibitors used for treating panic attacks (Klerman, 1992). Sheehan et al. (1980) compared phenelzine(Naradil), imipramine, (Tofranil), and placebo in clients with panic symptoms and found no significant differences between the two treatment groups

Recommended dosage and common side effects.

There are a number of side effects that have contributed to the decline in the use of MAOs. A tyramine-free diet is necessary with the use of a MAO inhibitor, beginning a day or two before starting the drug and continued for two weeks after stopping the drug (Noyes et al., 1986). Tyramine in the diet (i.e., eating certain cheeses) precipitates hypertensive episodes (Klerman, 1992). Agras (1993) states that compliance with the dietary restrictions of a MAO may not be as high as with other antidepressants. The use of MAO inhibitors prohibits the use of many drugs (negative interactions), including most oral antibiotics. The

use of alcohol based products with MAO inhibitors can result in increased blood pressure, headache, and fever.

Withdrawal from antidepressants can produce both physical and psychological distress (Lejoyeux, Ades, Mourad, Solomon, & Dilsaver, 1996). Withdrawal symptoms can include influenza-like disturbances, gastrointestinal distress, arrhythmias, sleep disturbance, movement disorders, mania or hypomania, panic attacks and delirium. Gradual tapering of the medication is suggested to avoid withdrawal symptoms.

Benzodiazepines

Benzodiazepines are used in the treatment of panic disorder. The highly potent benzodiazepines alprazolam (Xanax) and clonazepam (Klonopin) are most used (Agras, 1993). The main physiological effects of benzodiazepines (muscle relaxant, anxiolytic, hypnotic) are the mirror images of major symptoms reported by anxious patients (muscle tension, anxiety, hyper-alertness) (Warneke, 1991). Higher potency benzodiazepines are widely prescribed for panic disorder because they are effective and provide rapid improvement (Alexander, 1991). They can be used on an as needed basis in single doses for clients who experience panic attacks infrequently (Antony & Swinson, 2000).

In a double blind placebo controlled study, Chouinard, Annable, Fontaine, and Solyom (1982) found that alprazolam (Xanax) possesses anti-panic properties. Sheehan (1982) also found alprazolam (Xanax)to be effective against panic disorder in preliminary trials. Ballenger et al. (1988) conducted a large, placebo-controlled, eight week trial of alprazolam (Xanax) in patients with agoraphobia and panic disorder. This drug was found to be effective and well tolerated. At the primary comparison point (week four), 50% of drug recipients vs. 28% of placebo recipients were free of panic attacks.

Noyes et al. (1989) conducted a multicenter placebo-controlled study of the safety, side effects, and patient acceptance of alprazolam (Xanax) for the treatment of agoraphobia with panic disorder. Acceptance of this drug treatment was found to be high, as 84% of the individuals receiving the drug completed the study compared with 50% receiving the

placebo. In a double-blind placebo-controlled study, Tesar et al. (1987) reported benzodiazepines superior to placebo and compared favorably to treatment with tricyclic antidepressants.

Clonazepam (Klonopin)

Spier, Pollack, Tesar, and Rosenbaum (1986) asserted the efficacy of clonazepam (Klonopin) due to a longer half-life than alprazolam (Xanax). Clonazepam (Klonopin) has a prolonged duration phase, which leads to a longer duration of action and is metabolized more slowly (Warneke, 1991). This helps in dosing schedules and clockwatching (Bowden, 1992). This drug is generally used as a back-up choice for clients that metabolize alprazolam (Xanax) so rapidly that they need to take more than four doses a day (Alexander, 1991). Empirical research of the efficacy of clonazepam (Klonopin) is limited. Further studies are in progress on this benzodiazepine in the treatment of panic disorders (Alexander, 1991).

Recommended dosage and common side effects.

Relatively high doses of alprazolam (Xanax) are required for the treatment of panic disorder (Bowden, 1992). Agras (1993) suggests that due to its short half-life, alprazolam (Xanax) should be taken every four hours during the waking day (three to four times daily) for continuous relief from anxiety. The dosage required for symptom control varies among clients, averaging between 2.0 and 6.0 mg/day in most studies. Bowden (1992) has noted that panic symptomotology can recur toward the end of a dosing interval.

Sedation and coordination difficulties are the most common side effects of alprazolam (Xanax). Tolerance tends to develop within a few days. These problems can be avoided with low doses and gradual increases (Alexander, 1991). Short term memory problems is a dosage related side effect (Bowden, 1992). Possible dependence reactions, with withdrawal and rebound symptoms are disadvantages with all benzodiazepines (Klerman, 1992). The severity of withdrawal appears less with alprazolam (Xanax) than with other medications studied (Noyes, Garvey, Cook, & Suelzer, 1991). Usually, these

effects can be managed with a very slow withdrawal program extending over two or three months (Agras, 1993). Clients with substance abuse histories may be particularly at risk for dependency problems with benzodiazepines.

Treatment with clonazepam (Klonopin) should begin with .25 mg at each dose, slowly increasing as necessary (Agras, 1993). Davidson (1990) reports that depression appears to occur more frequently in patients taking clonazepam (Klonopin) (5-10%) than in those taking alprazolam (Xanax) (less than 1%). Warneke (1991) states that clonazepam (Klonopin) has fewer side effects than either tricyclics or alprazolam.

Cognitive-Behavioral Interventions

Cognitive and behavioral therapy techniques have been found to be effective in treating panic disorder (APA, 1998; Barlow et al., 2000; Beamish et al., 1996; Dattilio & Salas-Auvert, 2000; Hofmann & Spiegal, 1999; NIH, 1991, National Institute of Mental Health (NIMH), 1993; Overholser, 2000). Although a definitive statement of which techniques to combine is premature, research has focused on the efficacy of some combination of cognitive restructuring, focused cognitive therapy, panic education, guided imaginal coping, breathing retraining and respiratory control, interoceptive exposure therapy, and panic inoculation.

Cognitive Interventions

Several types of cognitive interventions have been found to be effective in the treatment of panic disorder. These interventions are based on the theory that cognitive distortions and catastrophic misinterpretations of panic attacks maintain the disorder. As the individual focuses on these faulty cognitions, panic symptoms escalate (Clark, 1986; Sokol, Beck, Greenberg, Wright, & Berchick, 1989). Common cognitive distortions include believing that one will die, have a heart attack, lose consciousness, or go crazy (Rapee, Mattick, & Murrell, 1986). Such distortions are extremely prevalent among panic-disordered individuals (Cloitre & Leibowitz, 1991; Harvey, Richards, Dziadosz, & Swindell, 1993; Holt & Andrews, 1989; Ottaviani & Beck, 1987; Sargent, 1990; Rapee et

al., 1986). In addition, there is evidence that individuals who attribute their panic attacks to catastrophic medical problems, rather than simply manifestations of anxiety, have a significantly more rapid onset of agoraphobia (Breier, Charney, & Heninger, 1986). Therefore, cognitive interventions, which assist individuals in reinterpreting their somatic symptoms of panic, are an important component in the treatment of panic disorder.

Cognitive Restructuring

Cognitive restructuring consists of a combination of cognitive techniques and is based on the work of self-coping statement training of Meichenbaum (1977) and Beck's cognitive therapy. It encourages panic-disordered individuals to question the rationality of their beliefs, and when appropriate, modify their thinking (Clark, 1986).

Treatment begins with an explanation of the cognitive model of panic. Individuals are taught that negative thoughts are capable of increasing anxiety, while coping, adaptive thoughts can decrease it. Inner-dialogue, marked by self-defeating statements, is replaced with more productive statements (Meichenbaum, 1977). Panic disordered individuals are instructed to change their negative thoughts, such as "I can't handle this feeling of panic" to more positive adaptive thoughts, such as "I can cope with the anxiety" (Waddell, Barlow, & O'Brien, 1984). These self-coping statements are first done in a rehearsal stage, practiced during the therapy sessions before they are applied to external situations. During sessions, clients are asked to verbalize these positive self-instructional statements, and therapists provide feedback and model alternative statements (Hoffart, 1993). The use of a journal, in which clients record negative thoughts encountered when confronting panic, can be a useful adjunct to therapy (Clark, 1986).

In instances where it is perceived that illogical thought patterns are correlated with anxiety, attempts can be made to alter core maladaptive thought patterns, even if they may not initially appear to be associated with panic (Beck, Laude, & Bohnert, 1974). For example, clients who believe they must do everything perfectly may find that their panic disorder can erode self-esteem by making them feel out of control (Waddell et al., 1984).

Negative views of the self can be reattributed to an understanding of panic disorder, which can be effective in reducing the hopelessness and depression that often accompanies panic disorder (Alford, Freeman, Beck, & Wright, 1990).

Finally, disruption of catastrophic interpretations, thought-stopping techniques, and distraction techniques are often included in cognitive restructuring (Agras, 1993). In these instances, clients are encouraged to do something to jolt themselves from focusing on negative thoughts. Having clients splash water on their faces, snap a rubber-band on their wrist or shout out loud are all techniques that can break the cycle of negative thoughts.

Research suggests that cognitive restructuring is an effective treatment in the reduction of panic attacks (Clark, 1986; Clark, Salkovskis, Hackman, & Gelder, 1991; Margraf & Schneider, 1991; Waddell et al., 1984). Self-coping statements, changing maladaptive thought processes, and disruption techniques have all been used in the treatment of panic disorder.

Focused Cognitive Therapy

Focused or focal cognitive therapy is a brief, structured psychological intervention based on the hypothesis that panic attacks are the result of a vicious cycle involving fear of imminent physical or psychological disaster arising from misinterpreted bodily cues. In order to break the cycle, the bodily cues must be reinterpreted (Clark, 1986). Altering the misinterpretations of somatic sensations can markedly reduce the distress associated with the attacks (Rapee et al., 1986).

Treatment begins by educating clients about the cognitive model of panic. The therapist describes how anxiety is a function of perceived threat and how misinterpretations of that threat can maintain panic symptoms (Alford et al., 1990). Next, the client and therapist identify the exact sequence of bodily sensations and catastrophic interpretations for that individual which occur preceding and during a panic attack (Salkovskis, Clark, & Hackman, 1991). Next, the somatic symptoms are reproduced during therapy, either through verbalizations or imagery. Physiological symptoms can also be reproduced

through physical means, such as brief, rigorous exercise. For example, clients experiencing dizziness during panic attacks might be spun in chairs. Clients reporting sensations of breathlessness or heart racing might be asked to run up a flight of stairs or ingest 200-400 mg. of caffeine (Telch et al., 1993). When these symptoms of panic are reproduced through physical, rather than mental techniques, the term used is interoceptive exposure (Barlow, 1990).

After the symptoms are induced, whether through imagery, verbalizations, or physical methods, clients are then encouraged to test the validity of their catastrophic interpretations. Then they are taught to re-attribute their bodily sensations to the proper cause (Salkovskis et al., 1991; Sokol et al., 1989). Self-coping statements replace the previously employed distorted statements. For example, the idea "I'm having a heart attack" is replaced with "My heart is racing because I ran up the steps" or "My heart is racing because I imagined something that frightens me, but it will soon return to normal".

Salkovskis et al. (1991) recommend that this training during the therapy session be supplemented with homework in the form of a diary. Clients note the occurrence of panic and record the principal sensations experienced, as well as any misinterpretations of these sensations and belief in them at that time. Next, alternative explanations (rational responses) are recorded, followed by a rating of belief in the rational response. Finally, the catastrophic interpretations are re-rated. They found that when catastrophic instances are rated this second time, they are rated significantly less believable than they were initially.

Researchers have found focused cognitive treatment can reduce panic attacks to zero and significantly reduce misinterpretations of bodily cues after two (Salkovskis et al., 1991), four (Alford et al., 1990), eight (Beck, Sokol, Clark, Berchick, & Wright, 1992) and 10 to 26 (Sokol et al., 1989) sessions. There is also evidence that these results are maintained at one-year follow up (Beck et al., 1992; Sokol et al., 1989).

Panic Education

Panic education is based on the assumption that clients need to understand the cognitive model of panic and its relationship to life stressors and conflicts before they can engage in specific therapeutic interventions. Therefore, panic education is not intended as a stand-alone treatment, but an adjunct to other interventions.

Panic disordered individuals are educated on generic information about panic disorder, often in groups. Information about panic disorder is disseminated and discussed. Group sharing of personal experiences of panic is used to help individuals understand that they are not alone in the experience of panic. Clients are provided with success stories about the treatment of panic. Thus, panic education provides information, support, and encouragement as the first step in the treatment of panic disorder (Borden, Clum, & Salmon, 1991).

Guided Imaginal Coping

Guided imaginal coping is similar to focused cognitive therapy in that the client is exposed to somatic panic symptoms in order to learn to reattribute the misinterpretations. This exposure is done through imagination of situational, somatic, and cognitive stimuli associated with panic attacks (Watkins, Sturgis, & Clum, 1988). Imagined stimuli are matched to client report of actual physical or mental sensations during a panic attack. For example, to mimic physical catastrophes, clients may visualize having a heart attack, fainting, choking, or losing their breath. Mental catastrophes may include imagining loss of control, going crazy, humiliation, or helplessness (Ottaviani & Beck, 1987). The therapist then instructs the client to learn a variety of cognitive coping strategies to deal with these symptoms. Unlike focused cognitive therapy, these coping strategies can be any cognitive or behavioral technique that clients find useful to overcome their individual symptomology, and need only to be reinterpretations of somatic cues. Coping strategies such as relaxation, cognitive restructuring, and corrective breathing have all been used to treat panic disorder with guided imaginal coping (Borden, Clum, & Salman, 1991).

Guided imaginal coping is not well supported in the literature as a stand-alone technique for the treatment of panic disorder. There is evidence, however, that it may be an effective component when combined with other cognitive and behavioral techniques (Borden et al., 1991).

Behavioral Interventions

Several types of behavioral interventions have been found to be effective in the treatment of panic disorder. The behavioral model of panic disorder is based on the classical conditioning paradigm. Although this paradigm has not been especially useful for conceptualizing the etiology of panic disorder, it can explain how panic disorder is maintained (Beamish et al., 1996). Wolpe (1958) asserts that once the autonomic arousal associated with anxiety is experienced, a cycle of interoceptive exposure conditioning may be created so that future autonomic responses elicit anxiety. This model contends that somatic processes lead to autonomic arousal and are followed by physiological symptoms causing arousal and creating additional symptoms of panic (Hibbert & Chan, 1989).

Hyperventilation (Shulman, Cox, Swinson, Kuch, & Reichman, 1994), increased cardiac activity (Margraf & Ethlers, 1991), and additional symptoms of anxiety have been reported to precede a panic attack (Lelliott, Marks, McNamee, & Tiobena, 1989). The reestablishment of normal physiology aids in the reduction of somatic cues, decreasing the chance for panic attack (Beamish et al., 1996).

Research has suggested that exposure to internal cues, often experimentally induced by hyperventilation or exercise, can alleviate the symptomology experienced with anxiety attacks (Barlow, 1994; Clum & Surls, 1993; Margraf et al., 1993). Studies have shown that individuals who are able to identify and control internal somatic symptoms that trigger panic attacks are successful in reducing panic, thus providing support for a behavioral component of panic disorder (Beamish et al., 1996).

One of the primary causes of panic disorder is considered to be hyperventilation (Hibbert & Chan, 1989). The hyperventilation model (HV) suggests that panic comes from

the dysfunctional breathing patterns that can cause chronic hyperventilation (Michelson et al., 1990). When individual with panic disorder are asked to overbreathe for 2 minutes, they report experiencing symptoms similar to their attacks. This model of hyperventilation is grounded in the behavioral intervention of breathing retraining for treatment of panic disorder (Antony & Swinson, 2000; Hibbert & Chan, 1989). Therefore, behavioral interventions, which assist individuals in reducing physiological symptoms of panic, are an important component in the treatment of panic disorder.

Breathing Retraining and Respiratory Control

Breathing retraining is a specific technique to slow breathing during attacks (Rapee & Barlow, 1991). This technique promotes slow, regular breathing and demonstrates to clients that many of the sensations they experience during a panic attack are the result of overbreathing, rather than the actual manifestation of feared conditions. The overall goal of breathing retraining is to reduce the client's respiratory rate (Beamish et al., 1996), decrease the likelihood of hyperventilation and make it less likely for clients to catastrophize physiological symptoms. Breathing retraining (de Ruiter, Rijken, Garssen & Kraaimat, 1989; Garssen, de Ruiter & van Dyck, 1992; Ley, 1991) and respiratory control are essentially identical treatments based on the hyperventilation theory of panic. According to hyperventilation theory, clients with panic disorder experience uncomfortable physical symptoms during attacks that are similar to those produced by hyperventilation, such as dizziness, tachyarcardia, palpitations, cold hands, nausea, and breathlessness. The literature suggests that breathing retraining can teach clients to control panic attacks by avoiding hyperventilation when under stressful conditions (Craske & Barlow, 1993; Overholser, 2000; Rapee & Barlow, 1988).

In the first step of breathing retraining, clients are asked to breathe quickly and deeply through their mouths for approximately 90 seconds (Craske & Barlow, 1993; Antony & Swinson, 2000). They then are asked to rate the extent to which their symptoms they experience are similar to and different from those experienced during the onset of

panic attacks (Clark et al., 1985). The client is then asked to elaborate on these similarities and differences with assistance from the counselor. Through exploration with the counselor, the client may be able to identify the similarities between overbreathing and panic attacks. The literature contends that clients who perceive a similarity between symptoms will likely benefit from this treatment (Clark et al., 1985).

The second step is to give the client a detailed explanation on how hyperventilation may induce panic attacks (Antony & Swinson, 2000; Craske & Barlow, 1993; Rapee & Barlow, 1988). This explanation includes discussion on how the perceived threat, which triggers this vicious cycle, may come from both external and internal stimuli. While it may seem that the catalyst for an attack may be the perception of some bodily change, an external event may be the actual trigger, which subsequently lead to the physiological symptoms of the attack.

The third stage of breathing retraining teaches clients patterns of breathing that are easily learned, quickly applied in anxious situations, and are compatible with hyperventilation (Craske & Barlow, 1993). Diaphragmatic breathing is taught by directing the client to inhale into and exhale from the abdomen, rather than the chest. The client's hands may be held on the abdomen to insure proper inhalation and exhalation (Barlow & Cerny, 1988; de Ruiter et al., 1989; Sanderson & Wetzler, 1995). A pacing tape for breathing, which provides rhythmic counting for slow, regular breathing, may be used to guide clients in session and later used at home. Rapee and Barlow (1991) suggest that normal breathing is approximately 10 to 14 breathes per minute. Once the client is able to slow their breathing to 10 or less breaths per minute, they are encouraged to continue practicing at this speed. The breathing procedure is practiced repeatedly outside the session until the client is able to apply slow, regular breathing without the assistance of the tape. The final stage of training involves the introduction to interoceptive exposure, where clients induce hyperventilation, experience physiological symptoms of panic, and bring the

uncomfortable symptoms under control quickly with slow, regular breathing (Garssen et al., 1992).

Research suggests that breathing retraining is effective in treating panic disorder but appears most effective when paired with cognitive interventions. Research indicates that when breathing retraining is used alone, it is no more effective than a placebo treatment (Garssen et al., 1992; Hibbert & Chan, 1989; Klosko, Barlow, Tassinari, & Cerny, 1990).

Interoceptive Exposure Therapy

Interoceptive exposure is an intervention based on learning theory and the extinction model. This suggests that exposure to uncomfortable physiological sensations will eventually extinguish the fear associated with the physical symptoms of panic. The client and mental health counselor experiment with a number of different exercises to discover ones that are effective in recreating symptoms of panic in the client.

Interoceptive exposure combines techniques that attempt to gradually expose the individual to internal physiological cues and confront the physical sensations of panic (Barlow, 1994; Agras, 1993). By using techniques such as bodily spinning, imagery, or hyperventilation, physiological symptoms of panic can be induced (Overholser, 2000). Interoceptive exposure is an appropriate treatment strategy for clients who are especially fearful of the physiological sensations of panic or anxiety.

Interoceptive exposure generally involves three main steps. In the first step, the rationale is presented to the client (Antony, Craske, & Barlow, 1995; Barlow & Craske, 1994; Craske & Barlow, 1993). During this time, clients are provided with the explanation that interoceptive exposure may help decrease fear of physical sensations, just as situational exposure may decrease the fear of activities or objects.

The second step of interceptive exposure involves symptom induction testing which establishes what sensations are relevant to the individual's fear and finds appropriate exercises for exposure. The goal of this step is to identify exercises that will create

physiological symptoms similar to natural panic. Antony & Swinson (2000) describe a number of various exercises that are used in inducing physical sensations for interoceptive exposure.

Shaking the head from side to side for 30 seconds is one exercise used in interoceptive exposure. Symptoms may include dizziness, lightheadedness, racing or pounding heart, breathless, or smothering feelings. Another example is bending over and placing head between legs for 30 seconds while sitting, then quickly sitting up; symptoms may include dizziness, lightheadedness, or smothering feelings. Placing a tongue depressor on the back of the tongue is another exercise to induce symptoms. The depressor should stay for a few seconds or until the gaga reflex is induced; symptoms may include nausea, racing heart, choking feelings, or gag reflex. Wearing a tie, turtleneck shirt, or a scarf for approximately 5 minutes is another exercise used in interoceptive exposure. Symptoms that could be induced by this exercise include tightness in the throat, breathlessness, or smothering feelings. Another exercise involves breathing through a small and narrow straw for approximately 2 minutes, symptoms may include breathlessness, trembling, shaking, chest tightness, choking feelings, racing or pounding heart. Staring at a light for 60 seconds and then attempting to read is another exercise used to induce sensations of panic; symptoms from this exercise may include blurred vision, dizziness, or lightheadedness.

Each chosen exercise is demonstrated to the client (Antony & Swinson, 2000). Once the client has attempted each exercise, the client is asked to report the symptoms of their experience, intensity of fear, and similarities between natural fear and panic attacks. Clients who are unsure of which sensations are connected to fear may find this helpful in clarifying which exercises should be used.

In the third step, clients are assigned exercises identified in the preceding step. The client and counselor work together in developing a hierarchy of exercises that induce the least amount of fear to those that induce the most amount of fear. After the hierarchy has been established, the client practices the exercises identified to induce the least amount of

fear. The client and counselor continue to practice these identified exercises while gradually working towards the most difficult exercise on the hierarchy. These sessions continue until the fear has diminished.

Guided imagery can also be used in interoceptive exposure. It can assist the individual in imagining confronting feared situations that evoke anxious feelings or panic. After the client is able to imagine their most difficult situation, they then are asked to imagine successfully coping with these situations (Watkins et al., 1985).

Some problems may result from the amount of time the client is exposed to the physical sensations of panic (Barlow, 1994; Barlow & Cerny, 1988). The counselor exercises caution to avoid increasing the level of the client's anxiety by inappropriately prolonging the duration of exposure or moving too quickly through the hierarchy (Barlow, 1994; Walker, Hedberg, Clement, & Wright, 1981). An increase in anxiety by the client may result in premature drop out rate (Barlow, 1994). The client's anxiety response may be exacerbated, rather than quelled, if a scene in the hierarchy is terminated too quickly (Walker et al., 1981).

To prevent premature termination of therapy, the therapist takes great care in educating the client about procedures. In addition, prior to initiation of therapy, a good rapport between the client and the therapist is developed and the client's motivation to improve is strong (Barlow, 1994; Barlow & Cerny, 1988; Sanderson & Wetzler, 1995). A method used to assist motivation is frequent encouragement by the therapist, including pointing out noted improvements between sessions and significance of continuing treatment should be stressed, despite any discomfort the client may be experiencing.

The client is assessed for any medical conditions that may affect the safety of some exercises. For example, clients with back or neck problems should not participate in exercises that could exacerbate their conditions, such as stationary running or shaking their head. In addition, hyperventilation could aggravate the condition of clients with chronic

asthma. Antony and Swinson (2000) recommend that clients receive permission from their physician prior to using this technique if the client may have a possible medical condition.

Combined Treatment

Panic Inoculation

Panic inoculation, or panic control treatment, is a multimodal treatment that has received much support in eliminating panic symptoms (Barlow, 1990; Craske, Brown, & Barlow, 1991; Klosko et al., 1990; Shear et al., 1991; Telch et al., 1993). Panic inoculation consists of four basic interventions. The first component is panic education, focusing on the etiology, prevalence, and hypothesized maintenance of panic. Next, cognitive restructuring is added. Clients are encouraged to identify, monitor, and alter their self-defeating statements and negative thoughts that contribute to panic. The third step is breathing retraining to reduce or eliminate physical symptoms that often trigger panic attacks. The final step is the introduction of interoceptive exposure, a form of focused cognitive therapy that uses physical exercises to induce somatic sensations. When these sensations occur, they are reattributed to their proper cause.

Panic inoculation has been found to be significantly more successful in the elimination of panic attacks than progressive relaxation (Barlow, 1990) or a combination of progressive relaxation and panic inoculation (Craske et al., 1991), and as effective as alprazolam without the accompanying side effects of medication (Klosko et al., 1990). Number of sessions required range from 15 (Barlow, 1990; Klosko et al., 1990) to between 8 and 24, as needed (Shear et al., 1991). Using panic inoculation in a group format, Telch et al. (1993) was successful in eliminating the panic symptoms after 12 sessions.

Summary

In summary, there is strong empirical evidence for both psychopharmacological and cognitive-behavioral interventions. Specific knowledge of the psychotropic medications, side effects and dosages can assist the mental health counselor in treating individuals

meeting criteria for panic disorder. A combination of specific cognitive behavioral strategies have been identified and elucidated in this article. More research is needed on the efficacy of specific combinations of interventions in the treatment of panic disorder.

References

Agras, W. S. (1993). The diagnosis and treatment of panic disorder. Annual Review of Medicine, 44, 39-51.

Alexander, P. E. (1991). Management of panic disorders. Journal of Psychoactive Drugs, 23(4), 329-333.

Alford, B. A., Freeman, A., Beck, A. T., & Wright, F. D. (1990). Brief focused cognitive therapy of panic disorder. Psychotherapy, 27, 230-234.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

American Psychiatric Association. (1998). Practice guidelines for the treatment of patients with panic disorder. American Journal of Psychiatry, 155 (Suppl.), 1-34.

Antony, M. M., Craske, M. G., & Barlow, D. H. (1995). Mastery of your specific phobia: Client workbook. San Antonio TX: Psychological Corporation.

Antony, M. M. & Swinson, R. P. (2000). Phobic disorders and panic in adults: A guide to assessment and treatment. Washington, D.C.: American Psychological Association.

Ballenger, J. C. (1986). Pharmacotherapy of the panic disorders. Journal of Clinical Psychiatry, 47, 27-32.

Ballenger, J. C., Graham, D. B., Dupont, R. C., Lesser, I. M., Noyes, R., Pecknold, J., Rifkin, A, & Swinson, R. P. (1988). Alprazolam in panic disorder and agoraphobia: Patient acceptance, side effects, and safety. Archives of General Psychiatry, 45, 423-428.

Ballenger, J. C., Wheadon, D. E., Steiner, M., Bushnell, W., & Gergel, I. P. (1998). Double-blind, fixed-dose, placebo-controlled study of paroxetine in the treatment of panic disorder. American Journal of Psychiatry, 155, 36-41.

Barlow, D. H. (1990). Long-term outcome for patients with panic disorder treated with cognitive-behavioral therapy. Journal of Clinical Psychiatry, 51(suppl. A), 17-24.

Barlow, D. H. (1994). Effectiveness of behavior treatment for panic disorder with and without agoraphobia. In B. E. Wolfe & J. D. Maser (Eds.), Treatment of panic disorder (pp. 105-120). Washington, DC: American Psychiatric Press.

Barlow, D. (1997). Cognitive-behavioral therapy for panic disorder: Current status. Journal of Clinical Psychiatry, 58 (Suppl. 2), 32-36.

Barlow, D. & Cerny, J. (1988). Psychological treatment of panic. New York: Guilford.

Barlow, D. H. & Craske, M. G. (1994). Mastery of your anxiety and panic: II. San Antonio, Texas: Graywind Publications Inc/The Psychological Corp.

Barlow, D., Gorman, J., Shear, M. K., & Woods, S. W. (2000). Cognitive-behavioral therapy, imipramine, or their combination for panic disorder. Journal of the American Medical Association, 283, 2529-2536.

Beamish, P. M., Granello, P. F., Granello, D. H., McSteen, P. B., Bender, B. A., & Hermon, D. (1996). Outcome studies in the treatment of panic disorder: A review. Journal of Counseling and Development, 74, 460-467.

Beck, A. T., Laude, R., & Bohnert, M. (1974). Ideational components of anxiety neurosis. Archives of General Psychiatry, 31, 319-325.

Beck, A. T., Sokol, L., Clark, D. A., Berchick, R., & Wright, F. (1992). A crossover study of focused cognitive therapy for panic disorder. American Journal of Psychiatry, 149, 778-783.

Black, D. W., Wesner, R., Bowers, W., & Gabel, J. (1993). A comparison of fluvoxamine, cognitive therapy, and placebo in the treatment of panic disorder. General Archives of General Psychiatry, 50, 44-50.

Borden, J. W., Clum, G. A., & Salmon, P. G. (1991). Mechanisms of change in the treatment of panic. Cognitive Therapy and Research, 15, 257-272.

Bowden, C. L. (1992). Psychopharmacological treatment of panic disorder. Bulletin of the Menninger Clinic, 56 (Suppl. A), A29-A41.

Breier, A., Charney, D. S., & Heninger, G. R. (1986). Agoraphobia with panic attacks. Archives of General Psychiatry, 43, 1029-1036.

Burwell, L. (1995). Handbook of psychiatric drugs. Fountain Valley, CA: CCS Publishing.

Bystritsky, A., Rosen, R., Suri, R., & Vapnik, T. (1999). Pilot open-label study of nefazodone in panic disorder. Depression and Anxiety, 10, 137-139.

Chouinard, G., Annable, L., Fontaine, R., & Solyom, L. (1982). Alprazolam in the treatment of generalized anxiety and panic disorders: A double-bind placebo-controlled study. Psychopharmocology, 77, 229-233.

Clark, D. M. (1986). A cognitive approach to panic. Behaviour Research and Therapy, 24, 461-470.

Clark, D. M , Salkovskis, P. M., & Challey, A. J. (1985). Respiratory control as a treatment for panic attacks. Journal of Behavioural Therapy and Experimental Psychiatry, 16, 23-30.

Clark, D. M., Salkovskis, P. M. G., Hackman, A., & Gelder, M. (1991, November). Long-term outcome of cognitive therapy for panic disorder. Paper presented at the 25th Annual Meeting of the Association for the Advancement of Behavior Therapy. New York, NY.

Cloitre, M., & Leibowitz, M. R. (1991). Memory bias in panic disorder: An investigation of the cognitive avoidance hypothesis. Cognitive Therapy and Research, 15, 371-386.

Clum, G. A. & Surls, R. (1993). A meta-analysis of treatments for panic disorder. Journal of Consulting and Clinical Psychology, 61, 317-326.

Coplan, J. D., Tiffon, L. & Gorman, J. M. (1993). Therapeutic strategies for the patient with treatment-resistant anxiety. Journal of Clinical Psychiatry, 54 , 69-74.

Craske, M. G. & Barlow, D. H. (1993). Panic disorder and agoraphobia. In D. H. Barlow (Ed.), Clinical handbook of psychological disorders (2nd ed.), (pp. 1-47). New York: Guilford Press.

Craske, M. G. Brown, T. A., & Barlow, D. H. (1991). Behavioral treatment of panic disorder: A two-year follow-up. Behavior Therapy, 22, 289-304.

Dattilio, F. M. & Salas-Auvert, J. A. (2000). Panic disorder: Assessment and treatment through a wide-angle lens. Phoenix, AZ: Zieg, Tucker & Co., Inc.

Davidson, J. R. T. (1990). Continuation treatment of panic disorder with high potency benzodiazepines. Journal of Clinical Psychiatry, 51, 31-37.

DeMartinis, N. A., Schweizer, E., & Rickels, K. (1996). An open-label trial of nefazodone in high comorbidity panic disorder. Journal of Clinical Psychiatry, 57, 245-248.

den Boer, I. M., Westenberg, J. A., DeLeeuw, H. G., van Vilet, A. S. (1995). Biological dissection of anxiety disorders: The clinical role of selective serotonin reuptake inhibitors with particular reference to fluvoxamine. International Clinical Psychopharmacology, 9 (Suppl. 4), 47-52.

den Boer, J. A., Westenberg, H. G., Kamerbeck, H. G., Verhoever, W. M., & Kahn, R. S. (1987). Effect of serotonin uptake inhibitors in anxiety disorders: A double-blind comparison of clomipramine and fluvoxamine. International Clinical Psychopharmacology, 2, 21-32.

de Ruiter, C., Rijken, H., Garssen, B., & Kraaimatt, F. (1989). Breathing retraining, exposure and a combination of both, in the treatment of panic disorder with agoraphobia. Behaviour Research and Therapy, 27, 647-655.

Foote, D. & Seibert, S. (1999, Spring/Summer). The age of anxiety. Newsweek, Special Issue, 68-72.

Garakani, H., Zitrin, C., & Klein, D. F. (1984). Treatment of panic disorder with imipramine alone. American Journal of Psychiatry, 141, 446-448.

Garssen, B., de Ruiter, C., & van Dyck, R. (1992). Breathing retraining: A rational placebo? Clinical Psychology Review, 12, 141-153.

Gorman, J. M., & Coplan, J. D. (1996). Comorbidity of depression and panic disorder. Journal of Clinical Psychiatry, 57 (Suppl. 10), 34-41.

Gorman, J. M., Leibowitz, M. R., Fyer, A. J., Goetz, D., Campeas, R. B., Fyer, M. R., Davies, S. O., & Klein, D. F. (1987). An open trial of fluoxetine in the treatment of panic attacks. Journal of Clinical Psychopharmacology, 7, 329-332.

Harvey, J. M., Richards, J. C., Dziadosz, T., & Swindell, A. (1993). Misinterpretations of ambiguous stimuli in panic disorder. Cognitive Therapy and Research, 17, 235-247.

Herrobin, D. F. (1979). Tricyclic antidepressants, anxiety, thromboxane A2, and dipyridamole. American Journal of Psychiatry, 146, 124.

Hibbert, G. A., & Chan, M. (1989). Respiratory control: Its contribution to the treatment of panic attacks. British Journal of Psychiatry, 154, 232-236.

Hoffart, A. (1993). Cognitive treatments of agoraphobia: A critical evaluation of theoretical basis and outcome evidence. Journal of Anxiety Disorders, 7, 75-91.

Hofmann, S. G. & Spiegel, D. A. (1999). Panic control treatment and its applications. Journal of Psychotherapy Practice & Research, 8, 3-11.

Holt, P. E. & Andrews, G. (1989). Provocation of panic: Three elements of the panic reaction in four anxiety disorders. Behavioural Research and Therapy, 27, 253-261.

Hurst, M. L. & Harriet, M. (2000). Fluoxetine: A review of its use in anxiety disorders and mixed anxiety and depression. CNS Drugs, 14, 51-80.

Jefferson, J. W. (1997). Antidepressants in panic disorder. Journal of Clinical Psychiatry, 58, 20-25.

Johnson, J., Weissman, M. M., & Klerman, G. L. (1990). Panic disorder, cormorbidity, and suicide attempts. Archives of General Psychiatry, 47, 805-808.

Kahn, R. J., McNair, D. M., & Lipman, R. S. (1986). Imipramine and chordiazepoxide in depressive and anxiety disorders. II. Efficacy in anxious outpatients. Archives of General Psychiatry, 43, 79-85.

Klein, D. F. (1967). Importance of psychiatric diagnosis in prediction of clinical drug effects. Archives of General Psychiatry, 16, 118-126.

Klerman, G. J. (1992). Treatments for panic disorder. Journal of Clinical Psychiatry, 53 (Suppl.), 14-19.

Klosko, J. S., Barlow, D. H., Tassinari, R., & Cerny, J. A. (1990). A comparison of alprazolam and behavior therapy in the treatment of panic disorder. Journal of Consulting and Clinical Psychology, 58, 77-84.

Lejoyeux, S., Ades, M., Mourad, J., Solomon, I., & Dilsaver, J. (1996). Antidepressant withdrawal syndrome: Recognition, prevention and management. CNS Drugs, 5, 278-292.

Lelliott, P., Marks, I., McNamee, G., & Tiobena, A. (1989). Onset of panic disorder with agoraphobia. Archives of General Psychiatry, 46, 1000-1004.

Ley, R. (1991). The efficacy of breathing retraining and the centrality of hyperventilation in panic disorder: A reinterpretation of experimental findings. Behaviour Research and Therapy, 29, 301-304.

Liebowitz, M. R., Fyer, A. J., Gorman, J., & Klein, D. F. (1986). Recent developments in the understanding and pharmacotherapy of panic attacks. Psychopharmocology Bulletin, 22, 792-796.

Londborg, P. D., Wolkow, R., Smith, W. T., DuBoff, E., England, D., Ferguson, J., Rosenthal, M., & Weise, C. (1998). Sertraline in the treatment of panic disorder. British Journal of Psychiatry, 173, 54-60.

Louie, A. K., Lewis, T. B., Lannon, R. A. (1993). Use of fluoxetine in major depression and panic disorder. Journal of Clinical Psychiatry, 54, 435-438.

Lydiard, R. B. & Ballenger, J. C. (1988). Panic-related disorders: Evidence for the efficacy of the antidepressants. Journal of the Anxiety Disorders, 2, 77-94.

Lydiard, R., Morton, W., Emmanueal, N., Zealberg, J., Laraia, M., Stuart, G., O'Neil, P., & Ballenger, J. (1993). Preliminary support: Placebo-controlled, double-blind study of the clinical and metabolic effects of desipramine in panic disorder. Psychopharmacology Bulletin, 29, 183-188.

Margraf, J., Barlow, D. H., Clark, D. M., & Telch, M. J. (1993). Psychological treatment of panic: Work in progress on outcome, active ingredients, and follow-up. Behaviour Research and Therapy, 31, 1-8.

Margraf, J. & Ethlers, A. (1991). Recent research on panic disorder: Review of Marburg studies. German Journal of Psychology, 15, 302-319.

Margraf, J., & Schneider, S. (1991, November). Outcome and active ingredients of cognitive-behavioral treatments for panic disorder. Paper presented at the 25th Annual Meeting of the Association for the Advancement of Behavior Therapy. New York, NY.

Massand, P. S. & Gupta, S. (1999). Selective serotonin-reuptake inhibitors: An update. Harvard Review of Psychiatry, 7, 69-84.

Mavissakalian, M. & Perel, J. (1985). Imipramine in the treatment of agoraphobia: Dose-response relationships. American Journal of Psychiatry, 142, 1032-1036.

Meichenbaum, D. (1977). Cognitive-behavior modification: An integrative approach. New York: Plenum Press.

Michelson, D., Lydiard, R. B., Pollack, M. H., Tamura, R. N., Hoog, S. L., Tepner, R., Demitrack, M. A., & Tollefson, G. D. (1998). Outcome assessment and clinical improvement in panic disorder: Evidence from a randomized controlled trial of fluoxetine and placebo. The fluoxetine panic disorder study group. American Journal of Psychiatry, 155, 1570-1577.

Michelson. L., Marchione, K., Greenwald, M., Glantz, L., Testa, S., & Marchione, N. (1990). Panic disorder: Cognitive-behavioral treatment. Behavior Research and Therapy, 28, 141-151.

Michelson, L., Marchione, K., Greenwald, M., Testa, S., & Marchione, N. (1996). A comparative outcome and follow-up investigation of panic disorder with agoraphobia: The relative and combined efficacy of cognitive therapy, relaxation training, and therapist-assisted exposure. Journal of Anxiety Disorders, 10, 297-330.

Modigh, K. (1987). Antidepressant drugs in anxiety disorders, Acta Psychiatrica Scandinavica, 76 (Suppl. 335), 57-73.

Muskin, P. R. & Fryer, A. J. (1981). Treatment of panic disorder. Journal of Clinical Psychopharmacology, 1, 81-90.

National Institutes of Health. (1991). NIH consensus development conference statement, Vol. 9, No. 2: Treatment of panic disorder. Bethesda, MD: Author.

National Institute of Mental Health. (1993). Understanding panic disorder. Bethesda, MD: Author.

Noyes, R., Chaudry, D., & Domingo, D. (1986). Pharmacological treatment of phobic disorders. Journal of Clinical Psychiatry, 47, 445-452.

Noyes, R. Jr., Garvey, M. J., Cook, B. L., & Samuelson, L. (1989). Problems with tricyclic antidepressant use in patients with panic disorder or agoraphobia: Results of a naturalistic follow-up study, Journal of Clinical Psychiatry, 50, 164-168.

Noyes, R., Jr., Garvey, M. J., Cook, B. L., & Suelzer, M. (1991) Controlled discontinuation of benzodiazepine treatment for patients with panic disorder . American Journal of Psychiatry, 148, 517-523

Oehrberg, S., Christiansen, P. E., Behnke, K., Borup, A. L., Severin, B., Soegaard, J., Calberg, H., Judge, R., Ohrstrom, J. K., & Manniche, P.M. (1995). Paroxetine in the treatment of panic disorder: A randomized, double-blind, placebo-controlled study. British Journal of Psychiatry, 167, 374-379.

Ottaviani, R., & Beck, A. T. (1987). Cognitive aspects of panic disorders. Journal of Anxiety Disorders, 1, 15-28.

Overholser, J. (2000). Cognitive-behavioral treatment of panic disorder. Psychotherapy, 37, 247-254.

Pohl, R. B., Wolkow, R. M., & Clary, C. M. (1998). Sertraline in the treatment of panic disorder: A double-bind multicenter trial. American Journal of Psychiatry, 155, 1189-1195.

Pollack, M. H., Otto, M. W., Worthington, J. J., Manfro, G. G., & Wolkow, R. (1998). Sertraline in the treatment of panic disorder. Archives of General Psychiatry, 55, 1010-1016.

Pollack, M. H., Worthington, J. J., Otto, M. W., Maki, K. M., Smoller, J. W., Manfro, G. G., Rudolph, R., & Rosenbaum, J. F. (1996). Venlafaxine for panic disorder: Results from a double-blind, placebo-controlled study. Psychopharmacology Bulletin, 32, 667-670.

Pollack, M. H., Otto, M. W., Rosenbaum, J. F., Sachs, G. S., O'Neil, C., Asher, R., & Meltzer-Brody, S. (1990). Longitudinal course of panic disorder: Findings from the Massachusetts General Hospital naturalistic study. Journal of Clinical Psychiatry, 51, 12-16.

Raj, B. A., Corvea, M. H., & Dagon, E. M. (1993). The clinical characteristics of panic disorderly in the elderly: A retrospective study. Journal of Clinical Psychiatry, 54, 150-154.

Rapaport, M. H., Wolkow, R. M., & Clary, C. M. (1998). Methodologies and outcomes from the sertraline multicenter flexible-dose trials. Psychopharmacology Bulletin, 34, 183-189.

Rapee, R. M. & Barlow, D. H. (1988). Assessment of panic disorder. In P. McReynolds, S. C. Rosen, & G. Chelune (Eds.), Advances in psychological assessment, Vol. 7. New York: Plenum.

Rapee, R., Mattick, R., & Murrell, E. (1986). Cognitive mediation in the affective component of spontaneous panic attacks. Journal of Behavioural Therapy and Experimental Psychiatry, 17, 245-253.

Roy-Byrne, P., Wingerson, D., Cowley, D., & Dager, S. (1993). Pharmacological treatment of panic, generalized anxiety disorder, and social phobia. Psychopharmacology II, 16, 719-735.

Salkovskis, P. M., Clark, D. M., & Hackmann, A. (1991). Treatment of panic attacks using cognitive therapy without exposure or breathing retraining. Behavior Research and Therapy, 29, 161-166.

Sanderson, W. C. & Wetzler, S. (1995). Cognitive behavioral treatment of panic disorder. In G. M. Asnis & H. M. van Praag (Eds). Panic disorder: Clinical, biological, and treatment aspects. New York: Wiley.

Sargent, M. (1990). NIMH report: Panic disorder. Hospital and Community Psychiatry, 41, 621-623.

Shear, M. K., Ball, G., Fitzpatrick, M., Josephson, S., Klosko, J., & Frances, A. (1991). Cognitive-behavioral therapy for panic: An open study. Journal of Nervous and Mental Disease, 179, 568-472.

Sheehan, D. V. (1982). Current views on the treatment of panic and phobic disorders. Drug Therapy and Hospitalization, 77, 229-233.

Sheehan, D., Ballenger, J., & Jacobson, G. (1980). Treatment of endogenous anxiety with phobic, hysterical, and hypochrondrical symptoms. Archives of General Psychiatry, 37, 51-59.

Sherbourne C. D., Wells, K. B., & Judd, L. L. (1996). Functioning and well-being of patients with panic disorder. American Journal of Psychiatry, 153, 213-218.

Shulman, I. D., Cox, B. J., Swinson, R. P., Kuch, K., & Reichman, J. T. (1994). Precipitating events, locations, and reactions associated with initial unexpected panic attacks. Behaviour Research Therapy, 29, 137-145.

Sokol, L., Beck, A. T., Greenberg, R. L., Wright, F. D., & Berchick, R. J. (1989). Cognitive therapy of panic disorder: A nonpharmacological alternative. Journal of Nervous and Mental Disease, 177, 711-716.

Spier, S. A., Pollack, M. H., Tesar, G. E., & Rosenbaum, J. F. (1986). Clonazepam in the treatment of panic disorder and agoraphobia: A one year follow-up. Journal of Clinical Psychopharmacology, 6, 302-304.

Telch, M. J., Lucas, J. A., Schmidt, N. B., Hanna, H. H. Jaimez, T. L., & Lucas, R. A. (1993). Group cognitive-behavioral treatment of panic disorder. Behaviour Research and Therapy, 31, 279-287.

Tesar, G. E., Rosenbaum, J. F., Pollack, M. H., Herman, J. B., Sachs, G. S., Mahoney, E. M., Cohen, L. S., McNamara, M., & Goldstein, S. (1987). Clonazepan versus alprazolam in the treatment of panic disorder: Interim analysis of data from a prospective, double-blind, placebo-controlled trial. Journal of Canadian Psychiatry, 48 (Suppl.), 16-19.

Uhlenhuth, K., Balter, E. H., Ban, M. B., & Yang, T. A. (1998). International study of expert judgment on therapeutic use of benzodiazepines and other psychotherapeutic medications: V. Treatment strategies in panic disorder, 1992-1997. Journal of Clinical Psychopharmacology, 18 (Supple. 2), 27S-31S.

van Vliet, I. M., den Boer, J. A., Westenberg, H. G. M., & Slaap, B. R. (1996). A double-blind comparative study of brofaromine and fluvoxamine in outpatients with panic disorder. Journal of Clinical Psychopharmacology, 16, 299-306.

Waddell, M. T., Barlow, D. H., & O'Brien, G. T. (1984). A preliminary investigation of cognitive and relaxation treatment of panic disorder: Effects on intense anxiety vs. background anxiety. Behaviour Research and Therapy, 22, 393-402.

Wade, A. G., Lepola, U., Koponen, H. J., Pedersen, V., & Pedersen, T. (1997). The effect of citalopram in panic disorder. British Journal of Psychiatry, 170, 549-553.

Walker, C. E., Hedberg, A. G., Clement, P. W., & Wright, L. (1981). Implosion and flooding. Clinical procedures for behavior therapy (pp. 115-133). Englewood Cliffs, NJ: Prentice-Hall.

Warneke, L. B., (1991). Benzodiazepines abuse and new use. Canadian Journal of Psychiatry, 36, 194-205.

Watkins, P. L., Sturgis, E. T., & Clum, G. A. (1988). Guided imaginal coping: An integrative treatment for panic disorder. Journal of Behavioral Therapy and Experimental Psychiatry, 19, 147-155.

Wolpe, J. (1958). Psychotherapy by reciprocal inhibition. Stanford, CA: Stanford University.

Zitrin, C., Klein, D. F., & Woerner, M. G. (1980). Treatment of agoraphobia with group exposure in vivo and imipramine. Archives of General Psychiatry, 37, 63-72.

Zitrin, C. M., Woerner, M. G., & Klein, D. F. (1981). Differentiation of panic anxiety from anticipatory anxiety and avoidance behavior. In D. F. Klein & J. Rabbkin (Eds.), Anxiety: New research and changing concepts. New York: Raven Press.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Treatment of Panic Disorder: A Clinical Update	
Author(s): Patricia M. Beamish, Amy L. Belcastro & Darcy Haag Granello	
Corporate Source:	Publication Date:

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1 ☑

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A ☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B ☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: Patricia M Beal	Printed Name/Position/Title: Patricia Beamish, Assoc. Prof.
Organization/Address: Ohio University 201 McCracken Hall Athens, OH 45701	Telephone: 740-593-4996 FAX:
	E-Mail Address: beamish@ohio.edu Date: 2-8-02

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC/CASS
University of NC at Greensboro
201 Ferguson Building
PO Box 6171
Greensboro, NC 27402-6171