Cognitive Behavior Therapy for Social Anxiety Disorder in the Context of Asperger's Syndrome: A Single-Subject Report

LeeAnn Cardaciotto and James D. Herbert, *Drexel University*

Asperger's Syndrome (AS) is a developmental disorder characterized by social impairment, highly circumscribed interests, repetitive behaviors, and motor clumsiness. The social impairment features of AS are similar to characteristics of social anxiety disorder (SAD). However, little is known about the comorbidity of these disorders or the treatment of social anxiety in the context of AS. The present single-subject report examines the use of cognitive-behavior therapy (CBT) in treating SAD in an adult with comorbid AS. The results suggest that a 14-week course of CBT was successful in reducing symptoms of anxiety and comorbid depression. In addition, improvements in social skills were observed (e.g., appropriate eye contact, conversational skills). Limitations and future directions for research and treatment are discussed.

ASPERGER'S SYNDROME (AS) is a relatively new diagnosis, receiving official recognition in 1994 in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*; American Psychiatric Association, 1994). Studies of AS were uncommon until the 1980s; thus, prevalence rates are not established. According to the only published epidemiological research, the rate of AS may be between 3.6 and 7.1 in 1,000 children ages 7 to 16 years (Ehlers & Gillberg, 1993). However, there has been no research examining the prevalence of AS in adults.

Beginning in young childhood, AS is a lifelong disorder characterized by social impairment, highly circumscribed interests, repetitive behaviors, and motor clumsiness (Volkmar & Klin, 2000). In contrast to autism, there are no significant delays in language or cognitive development. Although most research has examined the features of AS in children, differences in the presentation of adults with AS have been noted (Jordan & Powell, 1996). Whereas a common feature of AS in children is a narrow range of interests, adults with AS have a wider range of activities but may be more resistant to change. Because learning is often rigid and rule-governed, individuals with AS may have a dependency on routine and familiarity, and they may experience difficulty when their expected environment is disrupted. Individuals with AS also tend to engage in stereotyped thinking, exhibit a lack of spontaneity and initiative, experiencing difficulty with activities that require creativity, imagination, abstraction, and integration of multiple elements (Jordan & Powell, 1996; Tantam, 2000).

Social impairment is one of the marked features of AS. It is manifested through deficits in nonverbal behaviors, such as idiosyncratic facial expressions, gestures, or posture, the inability to recognize social cues, difficulty behaving according to social conventions, lack of close peer relationships, and deficits in social or emotional reciprocity (Tantam, 1991). There are often deficits in receptive language, which seem to fall within three main areas: the ability to make inferences from behavior, elements of speech, and information that is not immediately available (Twachtman-Cullen, 1998). Individuals with AS have difficulty "reading" social situations, making it difficult to draw inferences from others' behaviors and to engage in perspective-taking. Elements of speech, such as nonverbal (e.g., eye contact, facial expression), paralinguistic (e.g., tone, inflection), and meaning (e.g., literality, sarcasm), are often not interpreted. Individuals with AS also have difficulty engaging in inferential reasoning, or making judgments that depend on indirect cues or cues not immediately present in their environment. Features of language and communication characteristic of AS include the use of literal and concrete language, rule-governed behavior, and preference for factual information (Twachtman-Cullen, 1998). In addition, a pedantic speech style has been noted (Wing, 1981). The social impairment experienced by individuals with AS compromises their ability to make sense of social situations and regulate their communicative behavior accordingly.

Some of the social impairments of AS, such as limited social support networks and deficits in social skills, overlap with features of social anxiety disorder (SAD). SAD is an anxiety disorder characterized by intense fear of negative evaluation in social situations. Lifetime prevalence rates have been reported to range between 3% and 13% (Kessler et al., 1994). SAD is associated with significant social and occupational impairment, as individuals with the disorder often avoid social and performance situations

where they fear negative evaluation by others (Heimberg, Liebowitz, Hope, & Schneier, 1995; Hofmann & DiBartolo, 2001). Thus, social impairments, such as deficits in the use of verbal, nonverbal (e.g., eye contact, body posture and gestures), and paralinguistic (e.g., voice volume, rate of speech, tone of voice) aspects of social skills, as well as difficulty developing peer relations, can be found in individuals who are diagnosed with AS or SAD.

Although AS has been associated with other psychiatric disorders such as Tourette's syndrome (Kerbeshian & Burd, 1986), obsessive-compulsive disorder (Thomsen, 1994), and schizophrenia (Clarke et al., 1989), research has not examined the relationship between AS and SAD. Furthermore, there has not been evaluation of the prevalence of comorbid depression and anxiety in an adult population with AS. Research examining high-functioning children with autism and AS suggests clinically relevant levels of depression and generalized anxiety (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). However, prevalence rates of mood and anxiety disorders in adults with AS are unknown.

In addition to the paucity of information regarding the comorbidity of AS, little is known about the treatment of the disorder. No systematic studies examining the efficacy of interventions for AS have been conducted; only suggestive information from clinician observations and case studies has been published. Case studies have described the use of systems-based individual and family therapy (Stoddart, 1999), group therapy (Mishna & Muskat, 1998), and social skills training (Nakamura, Iwahashi, Fukunishi, & Suwaki, 1998); however, all were conducted with children and adolescents. A short-term social skills group was conducted with young boys (ages 8 to 12) with AS, utilizing techniques such as role-plays, videotaping and viewing exercises, games, and homework to promote the acquisition and generalization of skills (Marriage, Gordon, & Brand, 1995). The authors reported negligible differences between pre- and post-group ratings in social skills and little generalization to home, school, and community, although some individual gains were observed. In addition, there are only a few case studies examining the treatment of other psychiatric conditions in individuals with comorbid AS, including the pharmacologic treatment of bipolar disorder (Duggal, Dutta, & Sinha, 2001) and antisocial personality characteristics (Raheja, Libretto, & Singh, 2002). In addition, there is only one case study examining the use of cognitive-behavior therapy (CBT) with an adult diagnosed with AS and depression, which suggested a decrease in levels of depression and self-injury following treatment (Hare, 1997).

In contrast, a large literature documents the effectiveness of CBT for SAD (for recent reviews, see Craske, 1999; Gould & Johnson, 2001; Heimberg & Juster, 1995).

Most CBT treatments for SAD combine exposure and cognitive therapy, and the most widely used protocol is known as Cognitive Behavioral Group Therapy (CBGT; Heimberg, 1991; Heimberg & Becker, 2002). Social effectiveness training is also a comprehensive treatment package that combines exposure with social skills training in both individual and group formats (Turner, Beidel, Cooley, Woody, & Messer, 1994). Four meta-analyses of studies of behavioral and cognitive behavioral therapies for SAD have been conducted to date, each revealing substantial effects of these interventions (Feske & Chambless, 1995; Fedoroff & Taylor, 2001; Gould Buckminster, Pollack, Otto, & Yap, 1997; Taylor, 1996).

Given the overlap of some of the symptoms of AS with SAD, the present single-subject study examined the use of CBT for symptoms of social anxiety and impairment in an individual with AS.

Method

Client

The client was a 23-year-old Caucasian male diagnosed by the authors with SAD, generalized type, and AS according to DSM-IV criteria (American Psychiatric Association, 2000). The SCID-IV (First, Spitzer, Gibbon, & Williams, 1994) was used to make the diagnosis of SAD. The client reported fearing and avoiding situations such as talking to authority figures, speaking in front of a group, interviewing, being assertive, and initiating conversations, particularly with individuals with whom he was familiar. He also expressed the desire to make friends and to date. The client met criteria for AS according to the Asperger Syndrome Diagnostic Interview (ASDI; Gillberg, Gillberg, Rastam, & Wentz, 2001). The diagnostic interview was conducted by the first author and was reviewed via audiotape by the second author, who concurred with the diagnostic judgments. Symptoms and features associated with AS included impairment in the use of nonverbal behavior (e.g., eye contact, facial expressions), lack of social and emotional reciprocity, limitations in abstract thinking, rigid adherence to routines (e.g., in daily functioning), and motor clumsiness. In addition, the client reported that he did not have any close friends. The client reported that although he had always been shy, he felt increased anxiety when talking to other people, which began when he was approximately 15 years old. In addition, the client endorsed depressive symptoms, including feelings of hopelessness, psychomotor agitation, indecisiveness, loss of energy, sleep disturbance, and concentration difficulties. At the time he presented for treatment he was near the completion of a bachelor's degree in finance, and was employed as a sales clerk. The client lived at home with his mother.

Measures

Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989). The SPAI is a 45-item self-report measure designed to assess somatic, cognitive, affective, and behavioral symptoms of social phobia. It has two sub-scales, a Social Phobia subscale and an Agoraphobia subscale, as well as a total score. Higher scores indicate higher levels of anxiety and agoraphobia. Reliability and validity of this measure is well documented (Beidel, Turner, Stanley, & Dancu, 1989; Herbert, Bellack, & Hope, 1991; Turner et al., 1989;).

Social Anxiety Scale (LSAS; Liebowitz, 1987). The LSAS is a 24-item self-report measure that assesses fear and avoid-ance of various social situations on a 4-point Likert scale (0 = *none/never*, 3 = *severe/usually*). Within the Fear and Avoidance subscales, the LSAS is further divided into Social Interaction and Performance subscales. The LSAS has been found to have good overall psychometric prop-erties (Baker, Heinrichs, Kim, & Hofmann, 2002; David-son et al., 1993; Liebowitz et al, 1988).

Beck Depression Inventory II (BDI-II; Beck et al., 1961, 1996). The BDI-II is a 21-item self-report measure of depression that is routinely used in studies of depression and anxiety. Dozois, Dobson, and Ahnberg (1998) established criteria for the BDI-II (0–12 = nondepressed; 13–19 = dysphoric; 20–63 = dysphoric-depressed) based on cutoffs es-tablished by Kendall et al. (1987) for the BDI. The BDI-II has good psychometric properties (Beck, Steer, Ball, et al., 1996).

Behavioral assessment. Three 3-minute behavioral role-play tasks were administered to assess social performance. The first task involved initiating a conversation with one confederate, the second task involved a conversation with two confederates, and the third task required the client to present a brief speech to the examiner and two confed-erates. After each task, the client completed thought-listing forms, reported self-ratings of his performance, and pro-vided a rating of his anxiety on a 0-to-100 Subjective Units of Discomfort Scale (SUDS; Wolpe & Lazarus, 1966). Two independent assessors viewed videotapes of the three tasks and rated the client's verbal content, nonverbal be-havior, paralinguistic behavior, and overall social skills on 5-point Likert scales. Examples of anchors for verbal con-tent are 1 = *barely speaking* and *refuses to answer confederate questions*, and 5 = *even exchange of conversation* and *appro-priate self-disclosure.* For nonverbal content, 1 = *no eye con-tact* and *excessive fidgeting*, and 5 = *excellent body posture* and *appropriate eye contact.* For paralinguistic social skills, 1 = *barely audible voice volume* and *poor enunciation*, and 5 = *au-dible and appropriate voice volume* and *proper voice inflection.* The Likert scale for the rating of overall social skills ranged from 1 = *poor overall social skills* to 5 = *excellent overall social skills.* In addition, the client's observed anxi-ety was rated on a scale from 0 to 100 (0–15 = *the client*

appears to be enjoying the conversation; 100 = *the client appears highly distressed and as if s/he may leave the room*). The asses-sors' ratings for each category were averaged to get a total observed anxiety and social skill rating for each role play. The videotaped tasks were presented in random order, and the raters were therefore blind to assessment occa-sion. The assessors were doctoral students in clinical psy-chology with experience in rating social skills of adults with social anxiety and control participants. These asses-sors' most recent ratings of social skills yielded an inter-rater reliability alpha of .96, and most recent ratings of observed anxiety yielded an alpha of .97 (Herbert et al., 2003).

Clinical Global Impression (CGI; National Institute of Mental Health, 1985). The CGI scales were created to evaluate symptom change in psychopharmacological studies (National Institute of Mental Health, 1985). Vari-ous subscales have been created, including the Clinical Global Impression–Severity (CGI-S) and Clinical Global Impression–Improvement (CGI-I). The CGI-S rates se-verity on a 7-point Likert scale (1 = *normal, not at all ill* to 7 = *among the most extremely ill patients*). The CGI-I rates overall therapeutic effect on a 7-point Likert scale as well (1 = *very much improved*, 4 = *no change*, 7 = *very much worse*).

Overall rating of impairment. The client was asked to rate overall impairment resulting from the social anxiety on a 0-to-4 Likert scale (0 = *none* to 4 = *very severe*). The im-pairment rating was obtained from Question 6 on the Social Phobia section of the Anxiety Disorders Interview Schedule–Revised (ADIS-R; Brown, DiNardo, & Barlow, 1994).

Assessment

Assessments were conducted at the diagnostic assess-ment (6 months prior to treatment), pretreatment (2 weeks prior to treatment), Session 1 (immediately before the start of the first treatment session), midtreatment, posttreatment, and follow-up (2 months following the client's last treatment session). At the diagnostic assess-ment, the client was diagnosed with AS and SAD, and a CGI-S rating was made. The client also provided an over-all rating of impairment, and completed the behavioral assessment. At the pretreatment assessment, the client completed self-report questionnaires, and AS and SAD symptoms were reassessed to determine that there was no change in the client's symptomology or functioning. Be-fore the start of Session 1, the client once again com-pleted the self-report measures.

At each assessment point following the initiation of treatment, an independent assessor (i.e., a graduate stu-dent with 4 years of assessment and diagnostic experi-ence of SAD) administered the social phobia section of the SCID-IV to determine whether the client met diag-nostic criteria for SAD, and completed the CGI-S and

CGI-I ratings. The client also completed the role-play tests at posttreatment and follow-up, the self-report questionnaires at mid-, posttreatment, and follow-up, and provided overall ratings of impairment at midtreatment. In addition, the LSAS and BDI-II were administered weekly at the beginning of each session throughout treatment.

Treatment

The client received 14 weeks of individual CBT based on a version of a treatment protocol developed by Heimberg and Becker (2002) and modified by Herbert, Rheingold, and Goldstein (2002). Treatment focused on the reported feared and avoided social situations, including initiating, maintaining, and ending conversations, meeting new people, dating, assertiveness, and job interviewing. Intervention techniques included cognitive restructuring, role-playing, and weekly homework assignments. Homework assignments included performing thought-listing and cognitive restructuring exercises both prior to and immediately after social situations and in vivo exposure exercises of situations practiced in session. The CBT protocol was modified to include an emphasis on social skills training to attend to the client's deficits in verbal (e.g., introductions, maintaining conversation), nonverbal (e.g., eye contact, posture), and paralinguistic (e.g., rate of speech, voice volume) social skills. Specific social skills were identified and rehearsed during role-play exercises in each session, and were applied during the in vivo exercises performed for homework. For example, prior to role-playing an interview scenario, the therapist provided the client with instructions for how to maintain appropriate eye contact, the client practiced maintaining eye contact with the therapist, and the client was instructed to concentrate on maintaining eye contact during the role play and homework exercises. The CBT protocol was also modified to include step-by-step explanations of the social skills training and cognitive restructuring processes, modifications that are similar to those made in CBT treatments with adolescents diagnosed with SAD (Kashdan & Herbert, 2001).

Results

Regarding the independent assessor ratings, at the diagnostic assessment, the client received a CGI-S rating of Severely Ill; at midtreatment, he received a CGI-S rating of Markedly Ill with a CGI-I rating of Minimal Improvement; and at posttreatment, a CGI-S rating of Moderately Ill with a CGI-I rating of Much Improvement. At follow-up, the client no longer met criteria for SAD; he received a CGI-S rating of Mildly Ill and a CGI-I rating of Very Much Improved. At follow-up, the client reported significantly reduced anxiety in and avoidance of social situations and increased coping skills for dealing with anxiety-provoking situations.

Questionnaire data revealed consistent decreases in symptoms of social anxiety and depression throughout the course of treatment. As seen in Figure 1, there was a steady decline in Social Phobia subscale scores on the SPAI; in terms of clinical significance, the posttreatment SPAI score fell near the 50th percentile for nonanxious controls, and the follow-up score fell near the 40th percentile for nonanxious controls. Figure 2 shows that fear ratings on the LSAS increased during the initial few sessions, peaked at midtreatment, and declined thereafter; however, fear ratings did not decrease below the rating at pretreatment. Avoidance ratings tended to decrease steadily following the third treatment session. Figure 3 shows a steady decrease in depression on the BDI-II; at posttreatment and at follow-up, BDI-II scores remained at 4, which is well within the normal range.

Self-report ratings of impairment also indicate improvement. At the diagnostic assessment, the client reported an overall impairment rating of 4 (*very severe*). At midtreatment, overall impairment was rated as a 2 (*moderate*). Self-ratings of impairment remained at 2 during the posttreatment and follow-up assessments.

Regarding the ratings from the behavioral role-play tests, minimal changes were observed. Observed anxiety and performance ratings were generally stable for each of the behavioral tasks. Although minimal changes in social skill and observed anxiety ratings were evident on the role-play test, qualitative improvements in the client's social functioning were reported by the client himself and
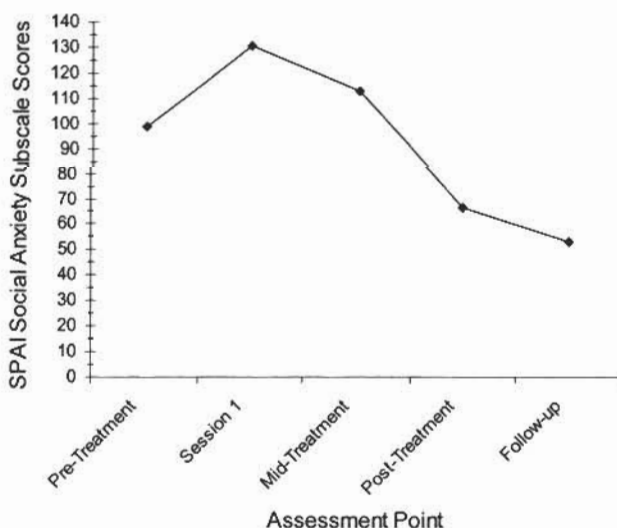
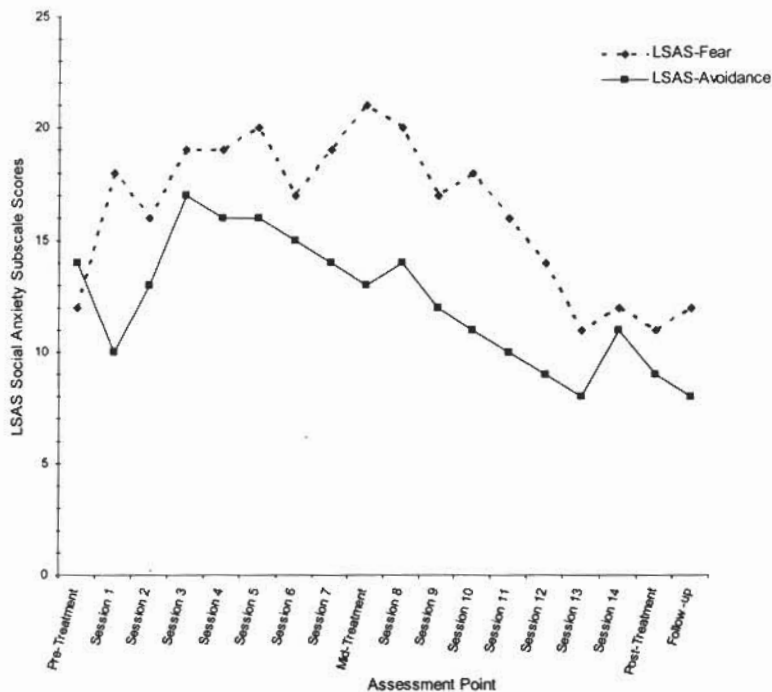**Figure 1.** SPAI Social Anxiety Subscale scores by assessment point.

Figure 2. LSAS Social Anxiety Subscale Fear and Avoidance scores by session.

were observed by the therapist in treatment sessions. Positive statements were noted on the client's thought-listing forms during the behavioral assessment at follow-up, including thoughts such as "I found the conversation to be entertaining," and "Having the conversation was not as horrible as I expected it to be." By the end of treatment, the client had expanded his social network by joining an arts group.
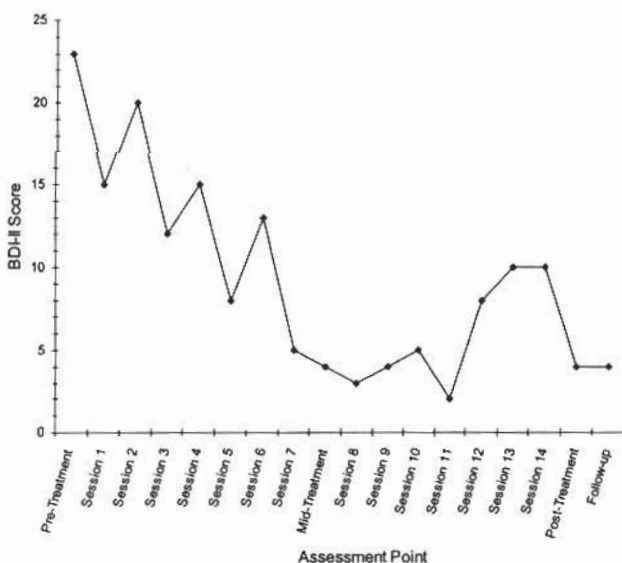

Figure 3. BDI-II scores by session.

Discussion

The results suggest that CBT was successful in reducing symptoms of social anxiety, as well as comorbid depression, in an individual diagnosed with comorbid AS and SAD. Two months following treatment, the client no longer met diagnostic criteria for SAD. There was evidence of the maintenance of treatment gains, as the client's anxiety symptoms and avoidance of social situations generally decreased 2 months following treatment, and depressive symptoms remained within the normal range. One interesting finding was that the client's fear rating of social situations seemed to slightly increase from posttreatment to follow-up, while his avoidance rating decreased. This finding was congruent with the client's report of decreased avoidance, resulting in continued anxiety as he confronted new social situations. He reported a general sense of increased self-efficacy regarding his ability to handle social situations, and reported that his anxiety no longer interfered with daily functioning (e.g., he was able to engage in conversation with individuals he did not know).

Although there were clinically significant decreases in symptoms of anxiety and depression, improvements in the client's social skills were limited, especially with regard to maintenance over time. This finding is consistent with research that has examined the use of short-term social skills training with individuals with AS (Marriage et al., 1995). Limited improvement may reflect the more profound impairments in social skills associated with AS. Individuals with AS have difficulties in perceiving social-emotional reciprocity, engaging in perspective-taking, and in perceiving social nuances in general. A longer course of social skills training may be required to remediate these more fundamental deficits.

The design of this study obviously precludes definitive statements about the specific benefits of the treatment. Nevertheless, it seems likely that changes were related to treatment since both AS and SAD are known to follow a chronic course, and are widely held to be unremitting without treatment. Although symptoms of anxiety and depression improved through the course of treatment, the symptoms of AS were not directly assessed, precluding evaluation of the treatment's effect on that disorder. This report suggests the need for further research examining the comorbidity of anxiety disorders and AS. This case further suggests that short-term interventions for anxiety disorders may be successful even in the context of a pervasive developmental disorder such as AS. Further

research is needed to examine any possible effects of such interventions on the symptoms of AS.

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Interoceptive Assessment and Exposure in Panic Disorder: A Descriptive Study

Norman B. Schmidt, *The Ohio State University*
Jack Trakowski, *Uniformed Services University of the Health Sciences*

Cognitive behavioral treatment (CBT) protocols for panic disorder (PD) typically include some form of interoceptive exposure (IE)—repeated exposure to internal sensations. Despite the widespread clinical use of IE, there is a notable absence of empirical reports about the nature of interoceptive assessments and IE. The present study was designed to describe the type, frequency, and typical anxiety extinction for a variety of interoceptive exercises typically used to treat panic disorder. Interoceptive assessment and IE data were compiled for patients with PD completing a CBT protocol. Data suggest that interoceptive assessment typically provokes fairly specific symptoms that often result in anxiety and even panic. On average, patients completed approximately 25 IE sessions during the course of treatment. Despite the use of a wide variety of interoceptive exercises, 4 exercises (hyperventilation, breathing through a narrow straw, breath holding, and spinning) accounted for the majority of IE sessions, and the majority of IE sessions led to within-session anxiety reduction.

THE EVOLUTION in psychological treatments for panic disorder has been rapid and exciting during the past 15 years (Wolfe & Maser, 1994). Historically, the practice of encouraging patients to repeatedly confront situations that produce intense fear and avoidance has been the hallmark of behavioral treatments for agoraphobia and panic. Cognitive models of panic have offered new directions for intervention (Barlow, 1988; Clark, 1986). Within the cognitive framework, panic attacks are conceptualized as the result of catastrophic misinterpretation of benign bodily sensations that are typically involved in the normal anxiety response (e.g., heart palpitations, dizziness, dyspnea). Cognitive behavioral therapy (CBT), derived from this cognitive framework, typically focuses on correcting the patient's hypersensitivity to bodily sensations and the misinterpretation of these sensations as signaling immediate threat. These treatments are multimodal, meaning that they consist of a set of interventions including (a) education, (b) training in cognitive reappraisal, (c) repeated exposure to bodily sensations connected to the fear response (i.e., interoceptive exposure; IE), (d) repeated exposure to external situations connected to the fear response (i.e., in vivo exposure), and (e) training in breathing control techniques such as diaphragmatic breathing. Overall, CBT for panic disorder has been found to demonstrate good efficacy in controlled trials using both individual (Barlow, Craske, Cerney, & Klosko, 1989) and group-administered (Telch, Lucas, et al., 1993) treatment.