The Contribution of David Barlow to the Understanding and Treatment of Panic Disorder

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Panic disorder (PD) is among the most distressing and impairing of all the mental disorders. PD is characterized by recurrent, seemingly spontaneous panic attacks that are often accompanied by persistent anticipatory anxiety, avoidance, and concern about the implications of the attacks (APA, 2000). Sufferers often worry that their panic attacks will have catastrophic consequences including loss of consciousness, insanity, and even death (Raffa, White, & Barlow, 2004). Not surprisingly, individuals with PD are disproportionately high utilizers of mental health and medical services (Boyd, 1986) and suffer considerable social and economic costs (Leon, Portera, & Weissman, 1995). With its substantial lifetime prevalence (4.7%; Kessler, Berglund, Demler, Jin, & Walters, 2005) and ubiquity in clinical settings, PD represents a significant public health problem.

Fortunately, individuals who receive the best available psychological treatment for PD today enjoy a historically unprecedented prognosis. Most will improve substantially; many will even experience a complete and prolonged recovery. More than any other individual, Dr. David Barlow is the person most directly responsible for this state of affairs. The purpose of the present article is to highlight his contributions to the understanding and treatment of panic disorder. We also consider the larger impact of Dr. Barlow’s work on the science and practice of clinical psychology.

Prior to the mid-1980s, behavioral approaches to PD emphasized fears of agoraphobic situations and relied on situational exposure as the primary treatment procedure. Although this treatment was generally effective in reducing avoidance, it failed to eliminate panic attacks in most patients (Michelson, Mavissakalian, & Marchione, 1985). The growing realization that
individuals with PD are more afraid of panic attacks than open spaces per se led to an increasing focus on panic itself as the central target in PD. The tendency of PD patients to fear their own panic symptoms prompted cognitive theorists (e.g., Clark, 1986) to propose that panic is caused by the catastrophic misinterpretation of arousal-related body sensations. Conditioning theorists (e.g., Goldstein & Chambless, 1978) posited that the “fear of fear” observed in PD was the result of Pavlovian interoceptive conditioning. As competing theories the cognitive and conditioning accounts of PD both suffered from conceptual shortcomings (see McNally, 1990, for a review). More recently, the work of Dr. Barlow and colleagues has been instrumental in integrating these views into a single, coherent theoretical model.

Barlow and colleagues (Barlow, 2002; Bouton, Mineka, & Barlow, 2001) proposed an integrative theory of PD based on current perspectives on conditioning and associative learning. This model acknowledges the distinction between panic and anxiety and begins with the premise that panic attacks seem to be relatively common in the population at large. Within this framework, what separates individuals with panic disorder from “non-clinical” panickers is the conditioning of anxiety focused on the next panic attack. Specifically, PD is proposed to develop because exposure to panic attacks causes the conditioning of anxiety (and sometimes panic) to exteroceptive and interoceptive cues (Bouton et al., 2001). As a result of this conditioning process, even mild panic-like symptoms (e.g., dizziness, palpitations) may come to be viewed as “warning sings” that signal a full-blown attack. While Barlow and colleagues acknowledge that catastrophic cognitions often accompany panic attacks, they propose that such cognitions contribute to panic symptoms through operating as conditioned stimuli (in the same manner as mild panic-like symptoms as described above).
The work of Barlow and colleagues provides an instructive example of how to derive an intervention from an empirically supported model of the psychopathology of a disorder. The new cognitive-behavioral conceptualization of PD described above led directly to the development of an innovative and highly effective approach to treating PD. Given the role of interoceptive conditioning in the development of panic, effective treatment for PD should attempt to extinguish the association between panic-like symptoms and panic itself. Likewise, individuals with PD should discover that their catastrophic cognitions about the consequences of panic are inaccurate. Accordingly, patients should be exposed to panic itself in order to learn that its associated signs (e.g., shortness of breath) and symptoms (e.g., depersonalization) are harmless. As a result of this new understanding of panic, the focus of treatment shifted from agoraphobic avoidance to eliminating the fear of panic. The resulting treatment protocol developed by Barlow and colleagues, termed Panic Control Treatment (PCT), has proven to be a significant leap forward in the treatment of individuals with PD.

PCT, as described in the third edition of the Mastery of Your Anxiety and Panic workbook (MAP-III; Barlow & Craske, 2000), is typically administered in 12-15 sessions over the course of three-to-four months. The essential components of PCT involve: (a) education about the nature and physiology of anxiety and panic, (b) breathing and relaxation training for managing bodily symptoms, (c) cognitive techniques designed to modify the tendency to catastrophically misinterpret bodily sensations, (d) exposure to feared bodily sensations (i.e., “interoceptive exposure”), and (e) situational exposure for agoraphobic avoidance. The goals of PCT for patients include “controlling your physical sensations, changing what you say to yourself, and facing more comfortably things that you fear and avoid” (Barlow & Craske, p. 40).
During the educational component of PCT the therapist and patient review the cognitive-behavioral model of PD as well as the cognitive, behavioral, and physiological features of the fight-or-flight response. Avoidance and mistaken beliefs are said to contribute to the maintenance of PD, and participation in PCT entails eliminating avoidance and challenging one’s beliefs about panic. Providing accurate information about panic helps patients better understand the nature of their symptoms and begins the process of correcting mistaken beliefs about the harmful consequences of panic. The educational phase socializes patients to the cognitive-behavioral model and rationale for PCT, facilitates a new and more accurate understanding of the nature of panic, and lays the groundwork for subsequent treatment procedures.

The second component of PCT is focused on coping techniques designed to help patients manage the physiological symptoms of PD. Patients are taught that overbreathing may lead to physical symptoms, which may in turn contribute to panic attacks. Instruction in diaphragmatic breathing is designed to help patients reduce the physical symptoms associated with panic. Likewise, because muscle tension may contribute to panic symptoms, patients are taught to use progressive muscle relaxation as a coping strategy. In PCT these strategies are designed to be used by those patients for whom overbreathing and/or muscle tension directly contribute to panic symptoms. Even for such individuals, however, there is a danger that these strategies may be used to avoid the sensations of panic. Accordingly, experts are increasingly advocating the elimination of these coping strategies (e.g., Huppert & Baker-Morissette, 2003). Indeed, a recent dismantling study demonstrating that breathing retraining does not contribute to the efficacy of treatment (Schmidt et al., 2000) suggests that therapists may omit physiological coping strategies without detracting from patient outcomes in PCT.
Although patients are encouraged to re-appraise their misinterpretations about panic symptoms early in PCT, this process becomes the focus of therapy during the cognitive restructuring component. After learning about the relationship between thoughts and emotions, patients are encouraged to identify the ways in which they misinterpret their panic symptoms. Two types of thinking errors are emphasized: jumping to conclusions (i.e., exaggerating the probability of a negative outcome) and blowing things out of proportion (i.e., exaggerating the cost of a negative outcome). Patients are taught how to think like scientists by objectively evaluating the available evidence with the goal of arriving at more accurate estimates of the probability and cost of their panic-related feared consequences. By the end of the cognitive restructuring phase, patients should doubt the dangerousness of their panic symptoms enough to be willing to face them directly via exposure.

Perhaps the most innovative and important component in PCT is interoceptive exposure. This procedure aims to break the association between body sensations and panic and provide corrective information about the harmlessness of feared sensations. During this treatment phase patients repeatedly engage in exercises that elicit their most feared body sensations. For example, an individual distressed by dizziness might be asked to repeatedly spin in a swivel chair. Likewise, an individual distressed by heart palpitations might be encouraged to vigorously run in place. Prolonged interoceptive exposure allows patients to habituate to their feared sensations and provides powerful evidence that helps to disconfirm mistaken beliefs about the dangerousness of panic-related symptoms. More than any other procedure in PCT, interoceptive exposure most closely targets the core psychopathology of PD as described in the theoretical model proposed by Barlow and colleagues.
The final component of PCT involves situational exposure for patients with agoraphobic avoidance. After developing a fear hierarchy, patients progress through a series of increasingly anxiety-evoking exposures to feared situations. Typical examples of situational exposures include driving a car, riding a bus, and walking in a crowded shopping mall. In this treatment phase patients acquire corrective information about the consequences of entering and remaining in feared situations. For many patients, successful participation in interoceptive exposure greatly facilitates the process of situational exposure. Indeed, once an individual comes to view panic itself as harmless, it becomes easier to approach situations that were previously avoided due to the fear of having a panic attack.

The popularity of PCT among scientist-practitioners is largely a result of its well-established efficacy in numerous clinical trials. No clinical researcher has contributed more to the investigation and dissemination of PCT than David Barlow. In the first published controlled clinical trial of PCT, Barlow, Craske, Cerny, and Klosko (1989) randomly assigned patients to 15 weeks of PCT, progressive muscle relaxation, their combination, or wait list. All three treatments were superior to the wait list condition at post-treatment, and the most impressive gains were evidenced by the patients who received PCT. In fact, more than 85% of those in the two PCT conditions had stopped panicking entirely at post-treatment. A follow-up study of patients in the original trial (Craske, Brown, & Barlow, 1991) demonstrated that PCT was superior to progressive muscle relaxation at six-month and two-year assessments. Moreover, most patients who received PCT alone maintained or even improved upon their post-treatment status over the two-year follow-up interval, whereas patients receiving the combination of PCT and relaxation experienced more panic attacks than they did at post-treatment. These results
provided initial support for the specific efficacy of PCT and suggested that the therapeutic effects of PCT might actually increase over time.

PCT has since been investigated in dozens of randomized controlled trials involving comparisons with a variety of psychological and pharmacological treatments. Although a comprehensive review of these studies is beyond the scope of the present article (interested readers are referred to Taylor, 2000, for an excellent review), a number of generalizations can be made from the treatment outcome literature on PCT. First, PCT (and highly similar variants developed by other researchers) has consistently been shown to be more effective than other psychological treatments such as client-centered therapy (Beck, Sokol, Clark, Berchick, & Wright, 1992) and applied relaxation (Clark et al., 1994). In fact, PCT’s specific efficacy for PD has earned it a well-deserved place on the list of “well-established” empirically supported treatments by the American Psychological Association’s EST task force (Chambless & Ollendick, 2001).

Second, PCT appears to be at least as effective as pharmacological treatment of PD, particularly when long-term outcomes are considered (Taylor, 2000). Moreover, relative to pharmacotherapy PCT appears more cost-effective (Heuzenroeder et al., 2004), more acceptable and preferable to patients (Deacon & Abramowitz, 2005), and less likely to result in attrition (Hofmann et al., 1998). Despite this evidence, however, pharmacotherapy remains by far the most utilized treatment in the community (Stein et al., 2004) and the relative benefits of PCT are understated in current treatment guidelines (APA, 1998). Unfortunately, comparisons between PCT, medication, and their combination are sometimes less straightforward than one might hope. An unusually large and highly influential clinical trial conducted by Barlow and colleagues illustrates this point well.
In the largest study of PCT and pharmacotherapy conducted to date, Barlow, Gorman, Shear, and Woods (2000) examined the separate and combined effects of PCT and the antidepressant medication imipramine. Three-hundred and twelve patients at four study sites received one of five treatments: (a) PCT, (b) imipramine, (c) PCT + imipramine, (d) PCT + pill placebo, or (e) pill placebo. PCT included 11 therapy sessions over 12 weeks, and patients in the imipramine and placebo groups received 11 weekly 30-minute medical management sessions. Patients were assessed by independent evaluators at pre-treatment and after acute treatment, after six months of maintenance treatment, and six months after treatment discontinuation.

Following acute and maintenance treatment, PCT and imipramine were equally effective, while patients receiving the combination of PCT and imipramine had significantly better outcomes than those receiving PCT alone. However, the opposite pattern emerged six months after treatment was discontinued: patients receiving combined treatment had the worst outcomes of patients in any active intervention, while PCT without imipramine proved most beneficial. Taken together, these findings demonstrate that adding imipramine to PCT may improve short-term efficacy but impedes the durability of therapeutic gains after medication is discontinued. Moreover, PCT appears to be as effective as imipramine in the short-term and more effective after treatment discontinuation. An important take-home message of this study is that when long-term outcomes are considered, PCT alone appears to be the treatment of choice for PD.

A third generalization supported by the treatment outcome literature is that PCT is effective across many different methods of delivery. PCT administered in group format appears to be both highly efficacious (e.g., Telch et al., 1993; Schmidt et al., 2000) and particularly cost-effective (Gould, Otto, & Pollack, 1995). Efforts to increase the dissemination and accessibility of PCT have led to the development of innovative methods of administering PCT. Studies
examining bibliotherapy (e.g., Gould, Clum, & Shapiro, 1993), computer-guided self-exposure (Marks, Kenwright, McDonough, Whittaker, & Mataix-Cols, 2004), palmtop-computer assisted PCT (Kenardy et al., 2003), internet-based treatment (e.g., Carlbring, Westling, Ljungstrand, Ekselius, & Andersson, 2001), and teletherapy (e.g., Swinson, Fergus, Cox, & Wickwire, 1995) indicate that brief, reduced therapist contact interventions may be viable options for many individuals with PD. Notably, several studies indicate that very brief, intensive PCT produces outcomes comparable to standard-length PCT in a matter of weeks (Westling & Ost, 1999) or even days (Evans et al., 1991).

A final generalization about PCT concerns its real-world effectiveness. Numerous studies indicate that the beneficial effects of PCT demonstrated in highly controlled clinical trials generalize to real-world settings in which complex patients are treated in a less structured manner by non-expert therapists. For example, Wade, Treat, and Stuart (1998) found that 87% of PD patients who received PCT from master’s level clinicians in a community mental health center were panic-free at the end of treatment. A follow-up study of these patients indicated that the vast majority had maintained or improved upon their gains one year later (Stuart, Treat, & Wade, 2000). More recently, Addis et al. (2004) reported that PCT delivered by minimally trained therapists was more effective than treatment-as-usual in a managed care setting. These studies indicate that PCT can be effectively transported to real-world settings in which it is administered to complex patients by therapists with only minimal training in the cognitive-behavioral treatment of anxiety.

Despite his seminal contributions to the conceptualization and treatment of PD, Dr. Barlow’s efforts to increase the scientific rigor of clinical practice may eventually prove to have a more profound effect on the field of clinical psychology. Given the availability of highly
effective treatments like PCT, the failure of most clinicians in the community to provide such
treatments to eligible patients (Goisman, Warshaw, & Keller, 1999) represents an important
public health problem. Dr. Barlow has been a key figure in the movement to address this
problem by identifying and disseminating empirically supported psychological treatments. His
writings on this topic (e.g., Barlow, 1996; Barlow, Levitt, & Bufka, 1999) have focused on
reviewing research methods used to evaluate treatments, highlighting treatments that work,
discussing how to implement these treatments in the community, and debunking myths that
prevent clinicians from adopting empirically supported treatments. By spreading the word that
treatments like PCT are uniquely effective, transportable to different settings, and easily adopted
by non-expert clinicians, Dr. Barlow has been instrumental in the ongoing struggle to adopt
evidence-based standards of practice in clinical psychology.

Consistent with psychology’s growing status as a health care profession, Barlow (2004)
recently argued for the adoption of an important change in the language used to describe its
treatments. Rather than characterizing all psychological interventions with the term
“psychotherapy,” Barlow suggested that the label of “psychological treatments” be used to
describe specific interventions developed for specific disorders (e.g., PCT for PD). By adopting
this new terminology, psychologists (and the public) can distinguish the more generic
“psychotherapy,” which consists of treatments often applied outside of health care systems, from
empirically supported psychological treatments that have been developed to target the specific
pathological processes associated with specific psychological problems. If psychology comes to
adopt this proposed terminological change, an important step will be taken in the effort to
identify and promote evidence-based psychological practices.
References


