Abstract

Objective: Panic disorder is a common mental health condition which causes substantial disability. It is well known that cognitive-behavioural therapy (CBT) is an effective treatment for panic disorder and this treatment is generally provided in 8-14 weekly sessions. A small number of preliminary studies have now investigated the efficacy of accelerated or intensive CBT in the treatment of panic disorder and have found promising results. However many of these existing treatment formats do not allow for optimal learning, since sessions are administered daily which does not allow time for the client to practice the skills between sessions. *Method:* The aim of this study was to investigate the feasibility of an accelerated CBT (aCBT) approach where treatment was provided three times per week (90-minute sessions) over a 2 week period (6 sessions in total) using a case study design. The participant completed a structured diagnostic interview to confirm diagnosis and outcome measures were administered at baseline, post-treatment and 3-month follow up. *Results:* The results indicated that the participant significantly reduced symptoms of panic disorder over a 2-week period and no longer met diagnostic criteria for panic disorder at 3-month follow up. Importantly, the participant also found the treatment format to be highly acceptable. *Conclusions:* The results demonstrate the preliminary acceptability and efficacy of this aCBT approach in the treatment of panic disorder.

Keywords: panic disorder; cognitive-behaviour therapy; accelerated; intensive; treatment; anxiety

Key Points

- Existing accelerated treatment approaches for panic disorder may not allow for optimal learning.
- A novel accelerated cognitive-behavioural therapy format for panic disorder was investigated.
- The results demonstrate preliminary data on the acceptability and efficacy of a new accelerated treatment approach for panic disorder.

Panic disorder is a common psychological condition with a 12-month prevalence rate of approximately 2.4% (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). The disorder is characterised by recurrent, unexpected panic attacks, with associated catastrophic interpretations about the meaning of the physical symptoms, which are usually accompanied by avoidance behaviours (American Psychiatric Association, 2013). The age of onset for panic disorder is generally in the early 20s (Kessler et al., 2012) and the disorder has high rates of remission and relapse over time (Nay, Brown, & Roberson-Nay, 2013). The symptoms of the disorder cause substantial disability in functioning and lead to high rates of medical service utilisation (Bystritsky et al., 2010).

Panic disorder is effectively treated with cognitive-behaviour therapy (CBT) (Sánchez-Meca, Rosa-Alcázar, Marín-Martínez, & Gómez-Conesa, 2010) and generally this treatment is provided in 8-14 weekly treatment sessions (Marchand, Roberge, Primiano, & Germain, 2009; Vos, Huibers, Diels, & Arntz, 2012). More recent research however has demonstrated that panic disorder can be effectively treated in as little as five weekly sessions (Otto et al., 2012). However, symptom relief may be enhanced by providing treatment in an intensive or accelerated format. Accelerated cognitive behaviour therapy (aCBT) is characterised by the provision of multiple sessions per week and due to this enhanced learning potential, may potentially be more potent than CBT that is delivered in the standard weekly treatment session format.

The use of aCBT in the treatment of anxiety and depression is generally under-utilised (Jónsson, Kristensen, & Arendt, 2015). There is currently only a small amount of research that demonstrates the efficacy of outpatient aCBT for the anxiety and related disorders and this literature generally focusses on social anxiety disorder (Chaker,

Hofmann, & Hoyer, 2010; Donovan, Cobham, Waters, & Occhipinti, 2014; Mörtberg, Berglund, & Sundin, 2005; Mörtberg, Clark, Sundin, & Åberg Wistedt, 2007), obsessive compulsive disorder (Foa et al., 2005; Storch et al., 2007), and posttraumatic stress disorder (Ehlers et al., 2014). The preliminary results from these studies demonstrate that aCBT is efficacious, as well as acceptable to clients with anxiety and related disorders (Bevan, Oldfield, & Salkovskis, 2010).

A small number of studies, encompassing three main treatment formats, have now demonstrated that individual and group aCBT for panic disorder can be efficacious. Firstly, an 8-day accelerated treatment where daily treatment sessions are conducted on days 1-5, followed by self-practice over the weekend (day 6 and 7), and a final therapist assisted session on the last day (day 8), has been investigated in both adult and adolescent panic disorder samples (Angelosante, Pincus, Whitton, Cheron, & Pian, 2009; Bitran, Morissette, Spiegel, & Barlow, 2008; Chase, Whitton, & Pincus, 2012). In an open trial with 40 adult participants, Bitran et al. (2008) demonstrated significant reductions in panic symptoms from pre-treatment to post-treatment with a large effect size (partial eta squared = .90) using this treatment approach. Chase et al. (2012) also demonstrated significant within-group reductions with large effect sizes, but further compared the outcomes of the accelerated treatment in a non-randomised design with those who obtained weekly treatment for panic disorder. The study found that while both treatment approaches resulted in significant improvements in symptoms of panic disorder, the weekly treatment approach resulted in significantly larger reductions in symptoms of depression, which may potentially take longer to shift than symptoms of panic disorder.

Secondly, a two day accelerated treatment approach has been investigated using both an individual (Deacon & Abramowitz, 2006) and group (Teng et al., 2015) treatment format. Deacon and Abramowitz (2006) report the results of a two day accelerated treatment for 10 patients with panic disorder consisting of 6 hours of treatment the first day and 3 hours of treatment the second day (9 hours total). Prior to commencing the treatment the clients were provided with a self-help workbook to facilitate treatment. The results from this study indicated large effect sizes on the Panic Disorder Severity Scale (PDSS) from pre-treatment to 1 month follow-up (d = 1.73) (Deacon & Abramowitz, 2006). In addition, Teng et al. (2015) studied the efficacy of a group aCBT protocol consisting of 2 days over a weekend (a total of 12 hours) in 10 military veterans who also had comorbid post-traumatic stress disorder. Moderate to large effect sizes were seen on panic related measures from pre-treatment to post-treatment (range d = 0.66-2.53), which increased to large effect sizes at 7 months post treatment (range d = 1.25-2.37) (Teng et al., 2015). In addition, participants also found the intensive treatment to be acceptable (Teng et al., 2015).

Thirdly, Bohni, Spindler, Arendt, Hougaard, and Rosenberg (2009) used a three week group treatment consisting of daily four hour sessions in week one, two 2-hour sessions in week 2, and one 2-hour session in week 3. In this study the efficacy of this treatment was compared to standard weekly treatment in a randomised controlled design. The results of this study demonstrated large within-group effect sizes for both the accelerated treatment and the standard weekly treatment (d = 0.93 and 1.01 respectively on the PDSS) and did not find any significant differences between the groups in terms of efficacy (between-group effect size d = 0.11) or client satisfaction (Bohni et al., 2009).

To date all of the aCBT studies in panic disorder samples have used a format of treatment where sessions are administered in a daily fashion. The delivery of aCBT in this manner may not allow for optimal learning to take place as the client has limited time to practice skills between sessions. This is problematic because it has been found that outcome in CBT for anxiety disorders is related to the quality and quantity of between session homework adherence (Rees, McEvoy, & Nathan, 2005). Therefore the aim of the current study is to extend the literature by evaluating the efficacy and feasibility of aCBT for panic disorder when delivered three times per week for 2 weeks (a total of 6 treatment sessions) using a single case study design.

Method

Client Information

The client (Ms. A) was a 40-year-old Anglo Australian female who was working full time. At the initial intake assessment Ms. A reported experiencing multiple unexpected panic attacks per week, which included the following symptoms: 1) sensations of shortness of breath or smothering; 2) feelings of choking; 3) heart palpitations; 4) trembling and shaking; 5) fear of losing control or going crazy; 6) derealisation; and 7) sweating. Ms. A. also reported significant anticipatory anxiety of future panic attacks, and reported significant maladaptive changes in behaviour including the avoidance of driving, being alone, shopping centres, exercise, caffeine, and stairwells. Ms. A also demonstrated a number of safety behaviours including searching for exits, carrying her phone and handbag at all times, chewing gum to prevent choking, drinking wine while alone to feel relaxed, and monitoring breathing using breathing techniques. She also reported holding objects in her hands, such as leaves or hot tea, to be used as distractions and help her to reduce her anxiety

symptoms. At the time of the initial assessment, Ms. A. met DSM-5 criteria for panic disorder (300.01) and agoraphobia (300.22). She also met criteria for a major depressive disorder (single episode; moderate) in full remission (296.26). At baseline Ms. A was medicated on Fluoxetine (Lovan), 100mg daily, Amitriptyline (Endep), 25mg daily, and Diazepam (5mg) as required. At the time of assessment Ms. A reported experiencing symptoms of panic disorder for more than 20 years.

Measures

Diagnostic status was assessed at baseline with the Diagnostic Interview for Anxiety, Mood, Obsessive-Compulsive and Other Related Neuropsychiatric Disorders (DIAMOND) (Tolin et al., 2016), a new clinician-administered diagnostic interview that is consonant with the DSM-5 criteria for the anxiety, mood, and obsessive-compulsive disorders. The primary outcome measure was the self-report version of the Panic Disorder Severity Scale (PDSS) (Shear et al., 1997). When clients also have agoraphobia the PDSS can be interpreted in the following way: scores > 16 (‘markedly ill’), scores 11-15 (‘moderately ill’), scores 8-10 (‘slightly ill’), scores 3-7 (‘borderline ill’) (Furukawa et al., 2009). Current guidelines indicate that a decrease in scores of 75-100% on the PDSS is considered ‘very much improved’, 40-74% as ‘much improved’ and 10-39% as ‘minimally improved’ (Furukawa et al., 2009). A second measure of panic disorder symptomatology was the Body Sensations Questionnaire (BSQ) (Chambless, Caputo, Bright, & Gallagher, 1984). Symptoms of depression were measured with the depression subscale of the Depression, Anxiety and Stress Scale (DASS-21) (Lovibond & Lovidond, 1995) and overall level of disability was measured with the Sheehan Disability Scale (SDS) (Sheehan, 1983). The participant also completed an acceptability questionnaire, which has been used in previous clinical

studies (Wootton, Dear, Johnston, Terides, & Titov, 2013, 2014). The DIAMOND was administered at pre-treatment, post-treatment, and 3-month follow up. The PDSS was administered at pre-treatment, post-treatment, prior to every treatment session, and at 3-month follow up. All other outcome measures were administered at pre-treatment, post-treatment, and 3-month follow-up with the exception of the acceptability questionnaire, which was administered at post-treatment only.

Treatment

The aCBT treatment manual was developed for the purpose of this study and was based on existing empirically supported treatments for panic disorder. The treatment was provided by the author A.M (supervised by B.W) and included six 90-minute sessions, three times a week (Mondays, Wednesdays, and Fridays), for two consecutive weeks (total of 6 sessions across 9 hours). The content of the sessions is outlined in Table 1.

[INSERT TABLE 1 HERE]

Interoceptive exposures were conducted in the office setting. An initial symptom challenge was used in Session 2 to identify the interoceptive exposure tasks that were most difficult for the client. The top 3 most anxiety inducing tasks were then used in the remaining interoceptive exposure sessions. The exercises used included chair spinning to induce sensations of dizziness, straw breathing to induce sensations of shortness of breath or smothering, and fast swallowing to induce sensations of choking. In-vivo exposures were conducted outside of the office. Some examples of in-vivo exposures used include walking alone down a quiet street and walking into the centre of a field alone. Both interoceptive and in-vivo exposures were also set as homework tasks throughout the treatment.

Data Analysis

Data was evaluated using a single case pre-treatment to post-treatment, and pre-treatment to 3-month follow-up design. Treatment response was measured in three ways; 1) by examining changes in diagnostic status based on the DIAMOND; 2) by examining the percentage reduction in symptoms on the primary and secondary outcome measures; and 3) by examining whether the change in symptoms on the primary outcome measure met the reliable change index (RCI) criteria (Jacobson & Truax, 1991). The RCI was calculated according to the following formula $\frac{X_2 - X_1}{SD_{diff}}$ where X_2 is the post-treatment (or 3-month follow up) score, X_1 is the pre-treatment score and SD_{diff} is the standard error of the difference between the two scores (calculated as $\sqrt{2(SE)^2}$). The SE was calculated according to the following formula $S_1\sqrt{1 - r_{xx}}$ where S_1 is the standard deviation of PDSS using a clinical sample (i.e., 3.8; Furukawa et al., 2009) and r_{xx} is the test retest reliability of the PDSS (i.e., .83; Houck, Spiegel, Shear, & Rucci, 2002). In order to meet reliable change the RCI needs to be > 1.96 (Jacobson & Truax, 1991).

Results

Treatment Response

Diagnostic status. Diagnostic status at pre-treatment, post-treatment and 3-month follow-up was assessed with the DIAMOND. At pre-treatment, Ms. A met criteria for a primary diagnosis of PD. At post-treatment, Ms. A continued to meet diagnostic criteria for a diagnosis of PD. However, at the 3-month follow-up assessment Ms. A no longer met criteria for a diagnosis of PD.

Symptom change. Ms. A's scores on the primary and secondary outcome measures at pre-treatment, post-treatment and 3-month follow-up are outlined in Table

2. Ms. A's scores on the primary outcome measure (the PDSS) reduced from 20 ('markedly ill') to 9 ('slightly ill') at post-treatment and 8 ('slightly ill') at 3-month follow up. This is a reduction of 55% from pre-treatment to post-treatment ('much improved'), and a reduction of 60% from pre-treatment to 3-month follow-up ('much improved'). Figure 1 presents the session-by-session change in scores on the PDSS.

[INSERT TABLE 2 HERE]

[INSERT FIGURE 1 HERE]

On the secondary measures Ms. A experienced a 21% reduction on the BSQ from pre-treatment to post-treatment and a 28% reduction from pre-treatment to 3-month follow up. On the SDS, Ms. A's scores reduced 18% from pre-treatment to post-treatment and 82% from pre-treatment to 3-month follow-up. On the depression scale of the DASS Ms. A's scores reduced 80% from pre-treatment to post-treatment and 20% from pre-treatment to 3-month follow up.

Reliable change. Ms. A met the RCI criteria from pre-treatment to post-treatment and from pre-treatment to 3-month follow up on the PDSS.

Treatment acceptability

Acceptability of treatment was assessed at post-treatment. In response to the question *"how satisfied were you with the treatment",* Ms. A indicated that she was *"very satisfied".* In response to the question *"how logical was the treatment*" Ms A indicated that the treatment was *"very logical"* and finally, when asked if *"the treatment was worth your time"*, Ms. A. responded that is was *"very worth her time".*

Discussion

The aim of this study was to investigate the feasibility of an aCBT treatment program for panic disorder where the participant attended three, 90 minute sessions per

week for 2 weeks. This is the first study to date to test this accelerated treatment format. Currently most other accelerated or intensive treatments provide daily treatment sessions (Angelosante et al., 2009; Bitran et al., 2008; Bohni et al., 2009; Chase et al., 2012; Deacon & Abramowitz, 2006), which may not allow for optimal learning, as the client has limited time to practice the CBT skills between sessions. This may be problematic because between-session homework compliance has been found to be related to treatment outcome in anxiety disorders (Rees et al., 2005). However further research is required to ascertain whether between-session homework is a critical component of aCBT treatment for panic disorder as existing daily aCBT treatments obtain good outcomes. Overall the results from this case study demonstrate the feasibility of aCBT in this treatment format as the client no longer met diagnostic criteria for panic disorder at 3-month follow up, experienced reduction in symptoms that were in the 'much improved' range on the primary outcome measure (the PDSS) and met criteria for reliable change using the Jacobson and Truax (1991) criteria. Importantly, the client also found the treatment format to be acceptable.

It is important to note that the participant in this study continued to meet diagnostic criteria for panic disorder at post-treatment, but did not meet diagnostic criteria at 3-month follow up. It is likely that this was impacted by the required symptom timeframes listed in the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013), which outlines that if the patient has experienced anticipatory anxiety or behavioural changes related to the panic attacks in the previous 4 weeks then the client meets criteria for panic disorder. Because this accelerated treatment takes only 2 weeks to complete, the assessment period (4 weeks) starts prior to the commencement of treatment, thus it is extremely unlikely that

any client undertaking an accelerated treatment of 4 weeks or less would meet diagnostic remission at post-treatment. However, based on her scores on the PDSS and the BSQ it is clear that Ms. A. experienced significant symptom reduction at the post-treatment period, but that this was not reflected on the DIAMOND because of the DSM-5 timeframes.

A number of studies now demonstrate that it can be difficult for many individuals to access evidence-based CBT for panic disorder due to a number of barriers including lack of knowledge about these treatments and not receiving CBT referrals from medical providers (Arch, Twohig, Deacon, Landy, & Bluett, 2015; Craske et al., 2005; Marcks, Weisberg, & Keller, 2009). As a result individuals with panic disorder more commonly are prescribed pharmacological agents, and when they are offered psychological treatment, they will most likely receive supportive counselling (Wolitzky-Taylor, Zimmermann, Arch, De Guzman, & Lagomasino, 2015). Additionally, there are far fewer therapists trained to deliver CBT than there are patients needing these treatments (Lovell & Richards, 2000). Accelerated treatments, whether provided in the format described in this case study, or in one of the alternative formats, may help to improve access to treatment for individuals with panic disorder. Such aCBT treatments may allow the client to travel to a clinic that provides the treatment and complete the treatment in a shorter amount of time than is typical of standard treatment, allowing for minimal disruption to their life. This treatment format may also be appealing for those who wish to complete their treatment faster than the usual 8-14 weeks, or those who may require more immediate symptoms relief.

While it is difficult to compare the outcomes from this case study with the wider panic disorder treatment outcome literature it demonstrates findings that indicate further

investigation into the efficacy of accelerated treatment for panic disorder (and other anxiety and related disorders) is warranted. Currently the treatment format is under-utilised (Jónsson et al., 2015), but may provide 1) increased treatment options for people with panic disorder; 2) reduce dropout rates over a course of CBT for panic disorder due to reduced treatment timeframes; and 3) potential for improved outcomes over standard treatment. Further research is required to ascertain whether aCBT results in reduced dropout rates or improved outcomes over standard treatment.

Furthermore, this format of treatment, which relies heavily on exposure based interventions, as opposed to cognitive (e.g., (Clark et al., 1994)) or arousal-reduction techniques (such as breathing retraining) (Barlow, Gorman, Shear, & Woods, 2000), may be a more efficient use of time as it may focus on the most effective aspects of the treatment. While understanding the most effective treatment components for panic disorder requires further investigation, there is preliminary evidence that cognitive techniques and arousal reduction techniques may not add any additional benefit over and above exposure based treatments (Craske, Rowe, Lewin, & Noriega-Dimitri, 1997; Sánchez-Meca et al., 2010; Schmidt et al., 2000; Siev & Chambless, 2007).

In summary, panic disorder is a common and disabling psychiatric condition. Cognitive-behavioural therapy is an effective treatment and a number of studies demonstrate that this treatment can be provided in an accelerated format. Despite the promising findings of this case study the conclusions to be drawn are preliminary at this stage and require replication in larger, controlled trials.

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Table 1

Overview of treatment protocol

Session number	Session content
Session One	Psychoeducation and cognitive restructuring
Session Two	Cognitive restructuring and interoceptive exposure
Session Three	Interoceptive exposure
Session Four	Interoceptive exposure
Session Five	Interoceptive exposure and in-vivo exposure
Session Six	Interoceptive exposure, in-vivo exposure and relapse prevention

Table 2

Scores on the primary and secondary outcome measures at pre-treatment, post-treatment and 3-month follow-up

Measure	Pre-treatment	Post-treatment	3-month follow-up
PDSS Total	20	9	8
BSQ Total	39	31	28
SDS	11	9	2
Depression subscale of the DASS	10	2	8

Figure 1. Change in scores on the PDSS across each of the six treatment sessions.