ELSEVIER

Transdiagnostic Internet-delivered cognitive behaviour therapy in Canada: An open trial comparing results of a specialized online clinic and nonspecialized community clinics

CrossMark

H.D. Hadjistavropoulos [a,*], M.M. Nugent [b], N.M. Alberts [c], L. Staples [d], B.F. Dear [e], N. Titov [f]

[a] Department of Psychology, University of Regina, 3737 Wascana Parkway, Regina, SK, S4S 0A2, Canada
[b] Department of Psychology, University of Regina, 3737 Wascana Parkway, Regina, SK, S4S 0A2, Canada
[c] Department of Rehabilitation Medicine, University of Washington, Seattle, WA, United States
[d] MindSpot Clinic, Australian Hearing Hub Building, Macquarie University, Sydney, NSW 2109, Australia
[e] eCentreClinic, Department of Psychology, Macquarie University, Sydney, NSW 2109, Australia
[f] MindSpot Clinic, Australian Hearing Hub Building, eCentreClinic, Department of Psychology, Macquarie University, Sydney, NSW 2109, Australia

ARTICLE INFO

ABSTRACT

Effects of Internet-delivered cognitive behaviour therapy (ICBT) for anxiety and depression are not well understood when delivered in non-specialized as compared to specialized clinic settings. This open trial ($n = 458$ patients) examined the benefits of transdiagnostic-ICBT when delivered in Canada by therapists (registered providers or graduate students) working in either a specialized online clinic or one of eight nonspecialized community clinics. Symptoms of depression and anxiety were assessed at pre-treatment, post-treatment and at 3-month follow-up. Completion rates and satisfaction were high. Significant and large reductions (effect sizes 1.17–1.31) were found on symptom measures. Completion rates, satisfaction levels and outcomes did not differ whether ICBT was delivered by therapists working in a specialized online clinic or nonspecialized community clinics. Differences were also not found between registered providers and graduate students, or therapists trained in psychology or another discipline. The findings support the public health potential of ICBT.

© 2016 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Depression and anxiety disorders are highly prevalent, disabling, and costly conditions, (Kessler, Berglund, Demler, Jin, & Walters, 2005), but are frequently undertreated (Wang et al., 2005). There is a need for accessible, efficient and effective models of treatment to reduce the burden of these disorders. Internet-delivered cognitive behavioural therapy (ICBT) represents a promising approach for increasing access to treatment (Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014; Kazdin, 2015). In ICBT, the Internet is used to provide patients with educational and therapeutic information about managing symptoms; this is commonly delivered on a weekly basis over several months.

When ICBT is combined with support from a therapist (most often weekly contact by telephone or secure emails), large symptom improvements are found (Hedman, Ljotsson, & Lindefors, 2012). Furthermore, when compared to face-to-face cognitive behaviour therapy, the two approaches appear to produce equivalent effects (Andersson et al., 2014).

Importantly, a number of replication studies have examined the generalizability of ICBT when delivered in routine clinical settings (defined as a setting where there is ongoing delivery of services), outside of the research settings in which ICBT programs are initially developed (e.g., Hadjistavropoulos et al., 2014). Replication trials serve to establish the ecological validity or generalizability of efficacious interventions in new settings (APA Presidential Task Force on Evidence-Based Practice, 2006) and are regarded as necessary for establishing interventions as evidenced-based (APA Presidential Task Force on Evidence-Based Practice, 2006). While it is widely acknowledged that establishing generalizability is a priority, there are challenges to replication in clinic settings, such as greater severity and comorbidity of conditions, dilution of treatment, and lack of specialized training or supervision of therapists in these settings (Kazdin, 2015).

* Corresponding author at: 3737 Wascana Parkway, Department of Psychology, University of Regina, Regina, SK, Canada, S4S 0A2.
E-mail addresses: hadjista@uregina.ca (H.D. Hadjistavropoulos), marcie.nugent@uregina.ca (M.M. Nugent), albertsn@uw.edu (N.M. Alberts), lauren.staples@mq.edu.au (L. Staples), blake.dear@mq.edu.au (B.F. Dear), nick.titov@mq.edu.au (N. Titov).

Despite these potential challenges to replication in clinic settings, in a recent review of the literature (examining a combined sample of 3888 patients), it was concluded that ICBT for a range of conditions, such as depression, generalized anxiety, panic disorder, and social anxiety, was effective when delivered in routine clinic settings (Andersson & Hedman, 2013). However, it was also emphasized that in most of the studies reviewed, ICBT was delivered by therapists in clinics in Sweden, the Netherlands and Australia that specialized in delivering ICBT. Additional research was recommended on the delivery of ICBT in nonspecialized clinical settings, that is, routine clinical settings that do not specialize in ICBT and where the majority of treatment delivered is not ICBT. Consistent with this call for research, in a recent study, researchers examined the use of ICBT for depression in a nonspecialized primary care setting (Gilbody et al., 2015) and found no differences between participants who received ICBT and those who received usual care from a general practitioner. In this case, ICBT was delivered with technical support rather than therapist support and the patient completion of ICBT lessons was very low (most patients completed only one lesson). In another recent study, the uptake and effectiveness of ICBT was examined in a nonspecialized mental health clinic when ICBT was offered to patients who were waiting for face-to-face treatment for anxiety, depression and/or burnout (Kenter, Warmerdam, Brouwer-Dudokdewit, Cuijpers, & van Straten, 2013). In this study, only 53% of patients indicated an interest in ICBT while waiting for treatment and, while patients receiving ICBT improved during the waiting period, this did not reduce their subsequent interest in face-to-face treatment (Kenter et al., 2013). Thus, to date, the literature indicates there may be poorer outcomes in nonspecialized clinic settings.

In Canada, a large country with a geographically dispersed population, methods for increasing access to clinically effective and efficient mental health care are of great interest (Mental Health Commission of Canada, 2014). To date, there has only been one previous report of ICBT in one Canadian province (Hadjistavropoulos et al., 2014). Preliminary results were encouraging for patients who received ICBT for depression, anxiety or panic disorder administered either by therapists from a specialized online clinic or by therapists in five nonspecialized community mental health clinics distributed across the province. Approximately 50% of patients completed the prescribed ICBT program and obtained large effect sizes on measures of anxiety or depression, indicating the potential of ICBT in Canada. Unfortunately, a comparison of outcomes between patients treated by therapists from the specialized online clinic as compared to nonspecialized community clinics was not possible due to a limited sample size.

The primary aim of the current study was to examine the clinical effectiveness of ICBT when deployed in this same province by either therapists in a specialized online clinic or therapists in one of eight nonspecialized community clinics. The specialized clinic was exclusively focused on the delivery of ICBT and was also responsible for training all therapists in the province as well as screening all patients for ICBT and matching patients to all therapists. The nonspecialized community clinics were primarily focused on the delivery of face-to-face therapy and ICBT represented a very small percentage of their caseload. In the present study, we examined whether rates of ICBT usage, satisfaction and outcomes were consistent across the two settings. We also examined potential differences in intervention usage, satisfaction and outcomes when ICBT was delivered by graduate students versus registered providers and by therapists trained in psychology versus other disciplines (i.e., social work, nursing, counselling). These additional questions were posed because of their importance in informing fiscal and operational decisions about implementation of ICBT.

The ICBT program that was used in the present study was a transdiagnostic-ICBT program (TD-ICBT) which was designed and validated by a group in Australia to simultaneously treat symptoms of depression and anxiety disorders (Dear et al., 2015; Titov et al., 2014; Titov, Dear, Staples, Terides, et al., 2015), and has been demonstrated as clinically effective when administered to over 1700 patients in a specialized online public mental health service in Australia (Titov, Dear, Staples, Bennett-Levy, et al., 2015). Hence, the secondary aim of the present study was to explore the generalizability of the TD-ICBT intervention in a Canadian context.

It was hypothesized that there would be high completion rates and satisfaction with TD-ICBT and large improvements on measures of depression, anxiety, distress and disability. Given the equivocal reports noted above, no hypotheses were made regarding outcomes between the specialized online clinic and the nonspecialized community clinics, or due to level of therapist training or background of therapist.

2. Method

2.1. Design and ethics

The current study employed an uncontrolled open trial design with patients completing electronic measures pre-treatment, post-treatment and at 3-month follow-up. Patients provided informed consent for the use of their data and research ethics board approval was obtained from the Universities of Regina and Saskatchewan, as well as the participating health regions. The trial was registered (ISRCTN42729166).

2.2. Patient recruitment and screening

This study includes all patients who were screened to determine whether they were appropriate for TD-ICBT beginning November 1, 2013 and ending July 30, 2015. Patients learned of treatment via community mental health clinics (36.5%; $n = 170$), family physicians (21.7%; $n = 101$), word of mouth (14.8%; $n = 69$), media (12.2%; $n = 57$), online searches and email announcements (11.8%; $n = 55$), and printed posters/cards (3%; $n = 14$).

All screening was conducted in the specialized online clinic (Online Therapy Unit for Service Education and Research; www.onlinetherapyuser.ca). Of note, consistent with other online clinic settings (Titov, Dear, Staples, Bennett-Levy, et al., 2015), diagnostic interviews were not conducted as this online service was meant to be lower intensity than face-to-face services and symptom measures described below allowed for tracking of symptom severity. Screening began with patients ($n = 792$) completing a very brief online screening questionnaire, which was used to assess whether patients met the basic inclusion criteria, including ensuring patients were: (1) 18 years of age or older; (2) residents of Saskatchewan, Canada; (3) endorsing symptoms of depression or anxiety using two dichotomous questions; (4) able to access and comfortable using computers and the Internet; (5) reporting no past diagnosis of schizophrenia; (6) available to participate in treatment for 8 weeks; and (7) willing to provide a physician as an emergency contact. If patients did not meet basic eligibility criteria ($n = 113$), the online screening terminated and patients were encouraged to contact their family physician for care.

Patients who met these basic inclusion criteria ($n = 679$) completed additional online screening questions about their background (name, contact information, date of birth, sex, ethnicity, relationship status, level of education, employment status, occupation, marital status, referral source) and symptoms. Patients at this stage completed the *Kessler 10-Item Scale (K10;* Kessler et al., 2002) a measure of general psychological distress experienced over the

past month. Patients who scored ≥ 17 (M = 29.47; SD = 6.24) were considered for ICBT as sensitivity and specificity analysis suggests this score is associated with a high likelihood of a depressive or anxiety disorder (Andrews & Slade, 2001). In rare circumstances (n = 7 out of 679 cases), an exception to this inclusion criteria was made if the patient reported a recent improvement in symptoms of depression or anxiety and significant past history of depression or anxiety. Responses to all online questions were discussed with patients who could be reached by telephone (n = 610) in order to ensure the appropriateness of TD-ICBT. During the telephone interview, patients were excluded from treatment if they were: 1) identified as having high suicide risk (n = 39); 2) primarily seeking treatment for another disorder (e.g., obsessive compulsive disorder, post-traumatic stress disorder, bipolar disorder, psychotic symptoms, alcohol or drug problems; n = 38); 3) receiving regular in person therapy (n = 36); 4) no longer interested in starting treatment (n = 27); or 5) no longer residing in Saskatchewan (n = 4).

As displayed in Fig. 1, 792 individuals began the online screening during the study period, 610 completed the subsequent telephone screening, and 466 were accepted into treatment. Patients accepted into treatment were not randomized, but instead were assigned to the first available registered provider or graduate student (under supervision) working in either the specialized online clinic (research funded) or one of eight nonspecialized community mental health clinics distributed across one Canadian province (publically funded). Clinicians in the community clinics deliver outpatient mental health care and are not integrated into primary care. Each clinic is funded by the provincial government to provide outpatient mental health services to patients within a specific region of the province. The clinics vary in the population size they serve and as a result also vary in staffing. Services are typically delivered face-to-face and ICBT represents a very small percentage of the caseload. Therapists within the clinics could refer patients to ICBT, but for logistical reasons did not treat their own patients. Specifically, patients were screened centrally and assigned to the first available therapist. Consequently, patients had no previous face-to-face contact with therapists who delivered ICBT; contact with the therapist when treated with ICBT was through secure messages or telephone (due to symptom severity, there was one patient who received two sessions of face-to-face therapy concurrent with ICBT). A total of 458 participants started at least one lesson and were eligible for analysis.

2.3. Intervention

The current study employed the *Wellbeing Course* (a description of lessons is provided in Titov, Dear, Staples, Terides, et al., 2015) which was developed by the eCentreClinic (www.ecentreclinic.org) at Macquarie University, Sydney, Australia. The *Wellbeing Course* is a transdiagnostic intervention targeting symptoms of major depressive and anxiety disorders. It comprises 5 online lessons that provide psychoeducation and instructions about: 1) symptom identification and the cognitive behavioural model; 2) thought monitoring and challenging; 3) de-arousal strategies and pleasant activity scheduling; 4) graduated exposure; and 5) relapse prevention. Materials are designed to be appropriate for symptoms of both depression and anxiety and are presented in a didactic (i.e., text based information with visual images) and case-enhanced learning format (i.e., educational stories demonstrate the application of skills and problem resolution). Along with these lessons, patients are presented with 5 lesson summaries and homework assignments that are designed to facilitate acquisition of skills. Materials are released gradually over 8 weeks with regular automatic emails informing patients about the availability and content of the upcoming lesson. The *Wellbeing Course* is described in more detail elsewhere (Titov, Dear, Staples, Terides, et al., 2015). The

Wellbeing Course was available via a secure server located at the University of Regina. Patients used login credentials to access the course, message their assigned therapist and complete study measures. Therapists were given login credentials that allowed them to review patient responses to questionnaires, track patient progress on the lessons, and review and send secure messages to patients.

2.4. Therapists

Therapists worked either in the specialized online clinic (n = 2 registered psychologists; n = 1 registered social worker; n = 13 psychology graduate students; n = 9 social work graduate students) or in one of eight nonspecialized community mental health clinics (n = 10 registered psychologists; n = 25 registered social workers; n = 5 registered nurses and n = 1 registered counselor). There were between 2 to 10 therapists available to provide ICBT in each community clinic, with more therapists in larger communities. Therapists treated a variable number of patients (M = 7; SD = 13; Median = 4; Range 1–93). Some therapists treated one or two patients primarily to gain experience. Other therapists were available on a regular basis, but provision of TD-ICBT was only a small component of their workload. This collaborative model of providing TD-ICBT between the online clinic and community clinics was established as the online clinic was not able to meet the demands of all patients requesting services. Additionally, community clinic managers were interested in expanding service delivery options to include TD-ICBT.

Prior to delivering TD-ICBT, all therapists participated in a one-day workshop (Hadjistavropoulos, Thompson, Klein, & Austin, 2012). This workshop was both didactic and experiential in nature and covered research and professional practice issues related to TD-ICBT. On a weekly basis, therapists were instructed to: 1) highlight the lesson content; 2) answer questions; 3) assist patients with problem solving use of skills; 4) reinforce progress and practice of skills; 5) be supportive of patients and normalize patient challenges; and 6) assist patients with engagement with the course. Each week, therapists reviewed patient progress and messages from patients; they then tailored specific messages to their assigned patients on a set day following these guidelines. Therapists had the option to phone patients or send additional messages if they felt this would facilitate treatment. Therapists were instructed to spend 15–20 min per week with each patient (e.g., reviewing and composing messages, phoning patients).

All graduate students were directly supervised on all messages sent to the first four patients. Subsequently, a developmental approach was taken whereby graduate students received supervision on a weekly basis. Registered providers sought supervision as needed from a coordinator in the specialized online clinic. Emails sent by all therapists across the settings were audited on an ongoing basis, and, where issues arose, feedback was provided to ensure therapist adherence to the treatment guidelines.

2.5. Measures

All patients completed primary and secondary measures at pre-treatment, post-treatment, and at 3-month follow-up. Treatment satisfaction was administered at post-treatment only.

2.5.1. Primary measures
2.5.1.1. The Patient Health Questionnaire 9-Item Scale (Kroenke, Spitzer, & Williams, 2001).. The PHQ-9 is a 9-item measure of symptoms of depression based on the DSM-IV diagnostic criteria for major depressive disorder (Kroenke et al., 2001). Items are rated on a scale from 0 (*not at all*) to 3 (*nearly every day*) with a maximum score of 27 and a cut-off score of 10 or greater used to identify individuals with a likely diagnosis of major depression (Manea, Gilbody,
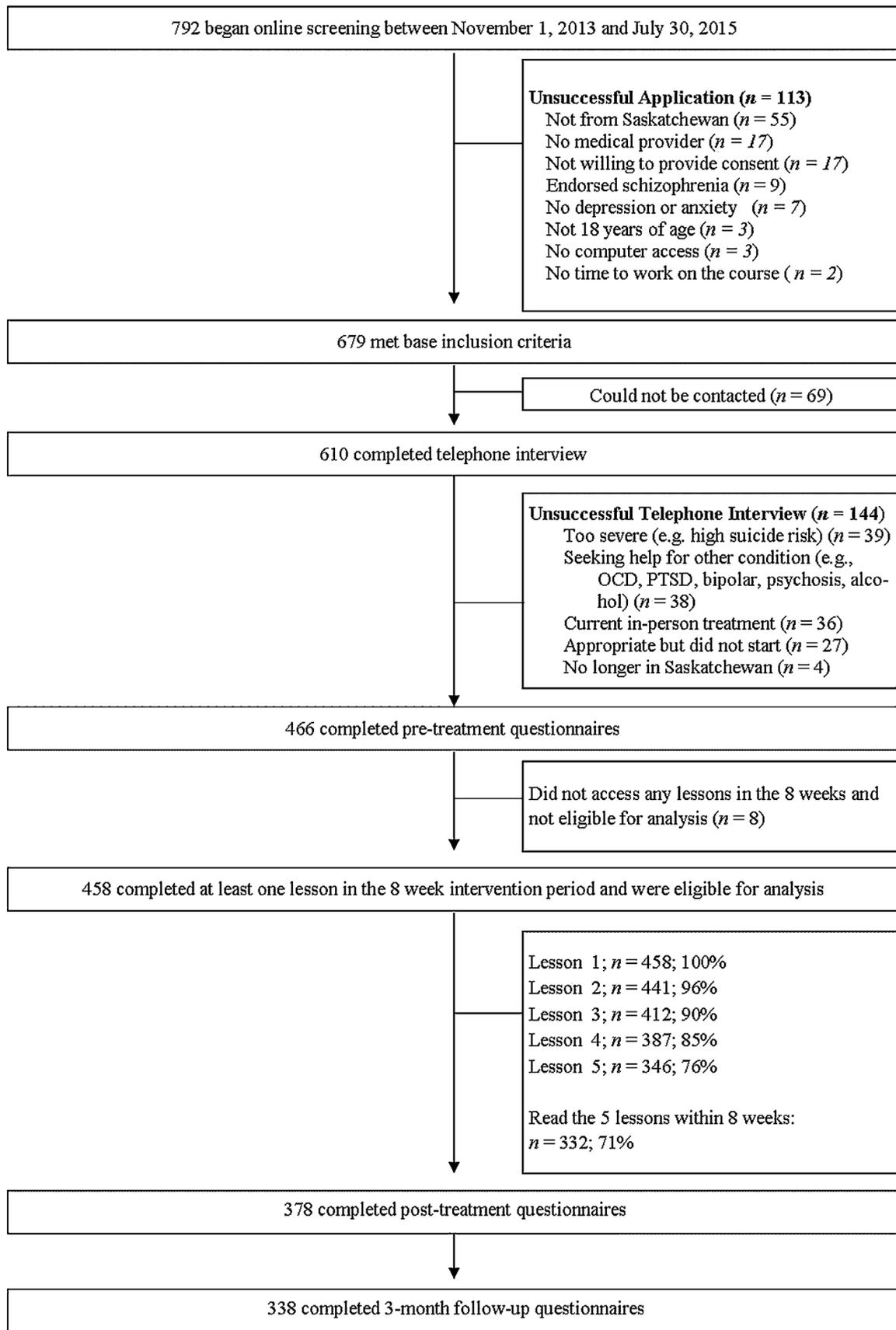
792 began online screening between November 1, 2013 and July 30, 2015

Unsuccessful Application (*n* = 113)
Not from Saskatchewan (*n* = 55)
No medical provider (*n* = *17*)
Not willing to provide consent (*n* = *17*)
Endorsed schizophrenia (*n* = 9)
No depression or anxiety (*n* = 7)
Not 18 years of age (*n* = *3*)
No computer access (*n* = *3*)
No time to work on the course (*n* = *2*)

679 met base inclusion criteria

Could not be contacted (*n* = 69)

610 completed telephone interview

Unsuccessful Telephone Interview (*n* = 144)
Too severe (e.g. high suicide risk) (*n* = 39)
Seeking help for other condition (e.g.,
    OCD, PTSD, bipolar, psychosis, alco-
    hol) (*n* = 38)
Current in-person treatment (*n* = 36)
Appropriate but did not start (*n* = 27)
No longer in Saskatchewan (*n* = 4)

466 completed pre-treatment questionnaires

Did not access any lessons in the 8 weeks and
not eligible for analysis (*n* = 8)

458 completed at least one lesson in the 8 week intervention period and were eligible for analysis

Lesson 1; *n* = 458; 100%
Lesson 2; *n* = 441; 96%
Lesson 3; *n* = 412; 90%
Lesson 4; *n* = 387; 85%
Lesson 5; *n* = 346; 76%

Read the 5 lessons within 8 weeks:
n = 332; 71%

378 completed post-treatment questionnaires

338 completed 3-month follow-up questionnaires

Fig. 1. Patient flow from screening to 3-month follow-up.

& McMillan, 2012). The PHQ-9 has strong psychometric properties (Kroenke, Spitzer, Williams, & Lowe, 2010). Cronbach's α in the current study was 0.84.

2.5.1.2. Generalized Anxiety Disorder 7-Item Scale (GAD-7; Spitzer, Kroenke, Williams, & Lowe, 2006). The GAD-7 is a 7-item measure of symptoms and severity of general anxiety based on the DSM-IV diagnostic criteria for GAD (Spitzer et al., 2006). Patients rate how often items have bothered them in the past 2 weeks on a scale from 0 (*not at all*) to 3 (*nearly every day*). The GAD-7 has good psychometric properties (Bandelow & Brasser, 2009) and a cut-off score of 10 or greater has been used to identify individuals likely to meet diagnostic criteria for GAD (Spitzer et al., 2006). Cronbach's α in the current study was 0.87.

2.5.2. Secondary measures

2.5.2.1. Kessler 10-Item Scale (K10; Kessler et al., 2002). The K-10 is a ten-item measure of general psychological distress experienced over the past month. Each item is rated on a scale ranging from 1 (*none of the time*) to 5 (*all of the time*) with total scores ranging from 10 to 50. The K10 has demonstrated strong psychometric properties (Kessler et al., 2002). Reliability and validity of the K10 are maintained when delivered online (Donker, van Straten, Marks, & Cuijpers, 2010). Examination of sensitivity and specificity statistics suggests that scores ≥ 17 are associated with having an anxiety or depressive disorder (Andrews & Slade, 2001). Cronbach's α in the current study was 0.87.

2.5.2.2. Sheehan Disability Scale (SDS; Sheehan, 1983). The SDS is a 3-item measure assessing disruption to work/school, social life and family home responsibilities on a 1–10 scale. The SDS has been found to have high internal consistency and sensitivity to treatment when used in TD-ICBT research (Titov, Dear, Staples, Terides, et al., 2015). Cronbach's α in the current study was 0.83.

2.5.2.3. Panic Disorder Severity Scale—Self Report (PDSS-SR; Houck, Spiegel, Shear, & Rucci, 2002). The PDSS-SR assesses panic disorder symptoms using 7-items rated on a 0–4 scale with total scores ranging from 0 to 28. Past research indicates the scale has high internal consistency, good test-retest reliability, and is sensitive to change (Houck et al., 2002). Consistent with past research, a cut-off score of 8 on the PDSS-SR was used to identify those likely to be experiencing symptoms of panic disorder (Allen et al., 2016). Cronbach's α in the current study was 0.93.

2.5.2.4. Social Interaction Anxiety Scale and Social Phobia Scale-Short form (SIAS-6/SPS-6; Peters, Sunderland, Andrews, Rapee, & Mattick, 2012). The SIAS-6 and SPS-6 each consist of 6 items rated on a 0 (not at all characteristic) to 4 (extremely characteristic) scale. Consistent with past research, the two scales were summed to create a total social anxiety score (e.g., Johnston, Titov, Andrews, Dear, & Spence, 2013). Following past research, a cut-off score of ≥7 on the SIAS-6 and ≥ 2 on the SPS-6 was used to identify those likely to be experiencing a social anxiety disorder (Peters et al., 2012). Cronbach's α of the SIAS6/SPS-6 in the current study was 0.92.

2.5.3. Treatment satisfaction

Consistent with past research on TD-ICBT (e.g., Titov, Dear, Staples, Terides, et al., 2015), patients responded "yes" or "no" to indicate whether they would feel confident recommending the treatment to a friend and whether completing the course was worth their time.

2.5.4. Intervention usage

Intervention usage was tracked by the web application and included the number of days patients participated in TD-ICBT from first access to last access of the course, number of messages sent to therapist, number of messages received from the therapist, number of phone calls with therapist, and number of lessons completed. Patients who completed 4 of 5 lessons were considered treatment completers since the last lesson primarily served as a reminder/summary of content rather than providing new content.

2.6. Statistical analyses

All analyses were conducted using SPSS Version 21. Participants who did not start any of the TD- ICBT lessons were not included in any analyses. Descriptive statistics were used to describe the participants, therapists, intervention usage and satisfaction. Consistent with previous research (Dear et al., 2015; Titov, Dear, Staples, Terides, et al., 2015) generalized estimating equation (GEE) models were used to examine changes in symptom measures over time and the main effects of setting (specialized online vs. non-specialized community clinic), therapist qualifications (registered provider vs. graduate student), and therapist background (psychology vs. other). Consistent with the principles of intention-to-treat analyses and previous research (Dear et al., 2015; Titov, Dear, Staples, Terides, et al., 2015), separate GEE models utilizing random intercepts were employed to impute missing data. An unstructured working correlation matrix and maximum likelihood estimation were used, and a gamma distribution with a log link response scale was specified to address positive skewness in the dependent variable distributions. Pairwise comparisons used a Bonferroni correction to adjust for repeated comparisons.

Several statistics were calculated for comparison and benchmarking purposes. The average percentage change across time was calculated from the GEE analyses for each of the outcome variables with 95% confidence intervals. Cohen's d effect sizes and 95% confidence intervals were also calculated for the within-group effects based on the estimated marginal mean values derived from the GEE models.

Additionally, we also calculated reliable recovery for patients who scored above clinical cutoffs on the PHQ-9 and GAD-7 at pre-treatment (scores ≥ 10). Reliable recovery was defined as the proportion of these patients who scored < 10 on the measure at post-treatment while also showing reliable improvement. Following past research on the PHQ-9 and GAD-7 (Gyani, Shafran, Layard, & Clark, 2013), patients who reported a 6 point change on the PHQ-9 and a 4 point change on the GAD-7 were considered to demonstrate a reliable change according to Jacobson and Truax's reliable change criteria (Jacobson & Truax, 1991). Specifically, on the PHQ-9, a reduction of 6 points was considered reliable improvement, an increase of 6 points was considered deterioration, and a change of less than 6 points in either direction was considered no change. On the GAD-7, a reduction of 4 points was considered reliable improvement, an increase of 4 points was considered deterioration, and a change of less than 4 points in either direction was considered no change.

3. Results

3.1. Patient characteristics

As reported in Table 1, the mean age of the patients was 39.0 years (SD = 12.61); 91.7% (n = 420) were Caucasian, 73.8% (n = 338) were women, 62.4% (n = 286) were married or in a common-law relationship, 51.1% (n = 234) reported having some university education and 63.6% (n = 291) reported being employed on a part- or full-time basis. Half (50.9%; n = 233) reported living in a large city (over 200,000), while the remainder lived in a small city (20.3%; n = 93) or small rural location (28.8%; n = 132). Psychotropic medi-

Table 1
Patient characteristics, therapist background and engagement by setting.

Variable	Specialized clinic ($n = 260$)		Nonspecialized clinics ($n = 198$)		Combined ($n = 458$)		Statistical significance
Patient Pre-Treatment Characteristics							
Age							
Mean (SD)	38.6 (12.28)	–	39.5 (13.06)	–	39.0 (12.61)	–	$F_{(1456)} = 0.52$; $p = 0.47$
Range	19 – 73	–	18 – 74	–	18–74	–	
Gender	n	%	n	%	n	%	
Male	65	25	53	26.8	118	25.8	
Female	193	74.2	145	73.2	338	73.8	Wald's $\chi^2 = 0.37$; $p = 0.55$
Choose not to disclose	2	0.7	–	–	2	0.4	
Marital status							
Single/never married	64	24.6	45	22.7	109	23.8	
Married/common law	158	60.8	128	64.6	286	62.4	Wald's $\chi^2 = 0.52$; $p = 0.47$
Separated/divorced/widowed	38	14.6	25	12.6	63	13.8	
Education							
Less than high school	3	1.2	2	1.0	5	1.1	
High school diploma	41	15.8	37	18.7	78	17.0	Wald's $\chi^2 = 0.22$; $p = 0.64$
Post high school certificate/diploma	80	30.8	61	30.8	141	30.8	
University Education	136	52.3	98	49.5	234	51.1	
Employment Status							
Employed part-time/full-time	162	62.3	129	65.2	291	63.6	
Unemployed	24	9.2	14	7.0	38	8.3	Wald's $\chi^2 = 1.37$; $p = 0.24$
Homemaker	9	3.5	14	7.0	23	5.0	
Student, retired, or disability	65	25	41	20.7	106	23.1	
Ethnicity							
Caucasian	236	90.8	184	92.9	420	91.7	
Indigenous	9	3.5	6	3.0	15	3.3	Wald's $\chi^2 = 1.79$; $p = 0.18$
Other	12	4.6	5	2.5	17	3.7	
Unknown	3	1.2	3	1.5	6	1.3	
Location							
Large city (over 200 000)	126	48.5	107	54.0	233	50.9	
Small city	47	18.1	46	23.2	93	20.3	Wald's $\chi^2 = 4.09$; $p = 0.04$
Small rural location	87	33.5	45	22.7	132	28.8	
Infrequent use of some form of mental health treatment	122	46.9	101	51.0	223	48.7	Wald's $\chi^2 = 0.80$; $p = 0.37$
Taking psychotropic medications	140	53.8	124	62.6	264	57.6	Wald's $\chi^2 = 3.57$; $p = 0.06$
Pre-treatment PHQ-9 $\geq$ 10	182	70.0	132	66.7	314	68.6	Wald's $\chi^2 = 0.58$; $p = 0.45$
Pre-treatment GAD-7 $\geq$ 10	178	68.5	124	62.6	302	65.9	Wald's $\chi^2 = 1.70$; $p = 0.19$
Pre-treatment PDSS-SR $\geq$ 8	124	47.7	93	47.0	217	47.4	Wald's $\chi^2 = 0.02$; $p = 0.88$
Pre-treatment SIAS-6 $\geq$ 7 and SPS-6 $\geq$ 2	131	50.4	87	43.9	218	47.6	Wald's $\chi^2 = 1.87$; $p = 0.17$
Mean number of measures above cut-off (SD)	2.37 (1.29)	–	2.20 (1.27)	–	2.29 (1.28)	–	Wald's $\chi^2 = 1.99$; $p = 0.16$
Therapist Background							
Registered Provider Psychology	94	36.2	77	38.9	171	37.3	
Registered Provider Other Discipline	7	2.7	121	61.1	128	27.9	Wald's $\chi^2 = 647.24$; $p < 0.001$
Graduate Student Psychology	149	57.3	0	0	149	32.5	
Graduate Student Other Discipline	10	3.8	0	0	10	2.2	
Engagement							
Completion of 4 Lessons	221	85.0	164	82.8	385	84.1	Wald's $\chi^2 = 0.39$; $p = 0.53$
Completion of 5 Lessons	207	79.6	151	76.3	358	78.2	Wald's $\chi^2 = 0.74$; $p = 0.39$
Mean number of log-ins (SD)	23.07 (13.72)	–	22.72 (13.69)	–	22.92 (13.69)	–	Wald's $\chi^2 = 0.07$; $p = 0.79$
Mean days between first and last log-in (SD)	102.35 (51.53)	–	103.35 (50.93)	–	102.78 (51.22)	–	Wald's $\chi^2 = 0.00$; $p = 0.97$
Mean number of phone calls with therapist(SD)	1.14 (1.47)	–	.53 (1.00)	–	.87 (1.32)	–	Wald's $\chi^2 = 28.22$; $p < 0.001$
Mean written messages sent to therapist (SD)	4.98 (4.33)	–	4.51 (3.35)	–	4.77 (3.94)	–	Wald's $\chi^2 = 1.74$; $p = 0.19$
Mean written messages received from therapist (SD)	8.87 (2.07)	–	9.51 (2.60)	–	9.15 (2.33)	–	Wald's $\chi^2 = 8.05$; $p = 0.005$

Note. PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder-7; PDSS-R = Panic Disorder Severity Scale-Self Report; SIAS-6/SPS-6 = Social Interaction Anxiety Scale-6 and Social Phobia Scale-6.

cation was used by 57.6% ($n = 264$) of the sample and 48.7% ($n = 223$) described receiving some form of infrequent mental health treatment (e.g., psychiatrist review of medication) at the time of enrollment. The only slight difference between patients treated by therapists in the specialized online was that these patents were more likely to live in a small rural location (33.5% of patients) compared to patients treated by community mental health clinicians (22.7% of patients).

In terms of symptom severity, 68.6% ($n = 314$) of patients had a score ≥ 10 on the PHQ-9 suggestive of a depressive disorder, 65.9% ($n = 302$) had a score ≥ 10 on the GAD-7 suggestive of generalized anxiety disorder, 47.4% ($n = 217$) had a score ≥ 8 on the PDSS-SR suggestive of panic disorder, and 47.6% ($n = 218$) had a score ≥ 7 on the SIAS-6 and ≥ 2 on the SPS-6 suggestive of social anxiety disorder. On average, patients scored above cut-off on 2.29 ($SD = 1.28$) of these measures; only 11% of patients did not report symptoms above the cut-off scores on one of these measures. There were no differences in symptom severity between patients who were treated by therapists in the specialized clinic as compared to the nonspecialized clinics (see Table 1).

3.2. Therapist setting, qualification or background

Two hundred and sixty patients (56.8%) were treated by therapists working in the specialized online clinic and 198 patients (43.2%) were treated by therapists working in one of eight community mental health clinics. In terms of therapist characteristics, 299 patients (65.3%) were treated by therapists who were registered providers and 159 (34.7%) were treated by graduate students; 320 patients (69.9%) were treated by therapists with a psychology background, and 138 (31.1%) by therapists with a social work, nursing or counselling background. The breakdown of patients by setting, therapist qualifications and background is presented in Table 1.

3.3. Intervention usage and satisfaction

Patients logged into the treatment program an average of 22.92 ($SD = 13.69$) times with an average of 102.78 ($SD = 51.22$) days between first and last access of the program. They sent an average of 4.77 ($SD = 3.94$) messages to their therapist and received an average of 9.15 ($SD = 2.33$) messages and 0.87 ($SD = 1.32$) phone calls from their therapist during treatment. Some minor differences were observed in terms of intervention usage as a function of therapist setting, qualifications and background. Community clinic therapists sent more emails to patients than online clinic therapists ($M = 9.52$; $SD = 2.60$ vs. $M = 8.87$; $SD = 2.07$; $Wald's\ \chi^2 = 8.05$, $p < 0.005$), but online clinic therapists were more likely to make phone calls to patients than community clinic therapists ($M = 1.14$; $SD = 1.47$ vs. $M = 0.53$; $SD = 1.00$; $Wald's\ \chi^2 = 28.22$, $p < 0.001$). Graduate student therapists made more phone calls to patients compared to registered providers ($M = 1.3$; $SD = 1.60$ vs. $M = 0.7$; $SD = 1.09$; $Wald's\ \chi^2 = 33.38$, $p < 0.001$). Therapists with a psychology background were more likely to make phone calls to patients than therapists with other professional backgrounds ($M = 1.0$; $SD = 1.42$ vs. $M = 0.5$; $SD = 0.98$; $Wald's\ \chi^2 = 21.85$, $p < 0.001$). No other differences were observed in intervention delivery by therapist setting, qualification or background ($ps > 0.05$).

In terms of completion rates, 78.2% of patients (358/458) completed all 5 lessons; 84.1% (385/458) of patients completed 4 of the 5 lessons. Of the patients completing post-measures, 94.8% (348/367) reported that participating in TD-ICBT was worth their time and 94.8% (348/367) reported that they would recommend TD-ICBT to others. No significant differences were found in terms of proportion of patients completing TD-ICBT or percentage of patients reporting satisfaction with TD-ICBT by therapist setting, qualifications or background ($ps > 0.05$)

3.4. Treatment outcomes—primary measures

Means, percentage reductions and effect sizes are shown in Table 2. Analysis revealed significant main effects over time on the primary measures: PHQ-9 ($Wald's\ \chi^2 = 410.91$, $p < 0.001$), and GAD-7 ($Wald's\ \chi^2 = 526.53$, $p < 0.001$). For both measures, pairwise comparisons revealed significant improvements in scores from baseline to post-treatment ($ps < 0.001$) and from baseline to 3-month follow-up ($ps < 0.001$). There were no significant differences between post-treatment and follow-up scores ($ps > 0.14$). There were no main effects of therapist setting, qualifications or background ($ps > 0.11$) on either of the primary measures.

3.5. Treatment outcomes—secondary measures

There were significant main effects over time for all secondary measures: K-10 ($Wald's\ \chi^2 = 610.79$, $p < 0.001$), SDS ($Wald's\ \chi^2 = 336.08$, $p < 0.001$), PDSS-SR ($Wald's\ \chi^2 = 120.26$, $p < 0.001$), and the SIAS-6/SPS-6 ($Wald's\ \chi^2 = 90.66$, $p < 0.001$). For all measures, scores improved significantly from baseline to post-treatment ($ps < 0.001$) and from baseline to 3-month follow-up ($ps < 0.001$). Scores on the K-10 and SDS also improved from post-treatment to follow-up ($p < 0.05$). There were no main effects of therapist setting, qualifications or background ($ps > 0.11$) for any of the secondary measures.

3.6. Reliable

Reliable recovery, reliable improvement, no change and deterioration on the PHQ-9 and GAD-7 at post-treatment by setting are reported in Table 3. Overall, on the PHQ-9, 53% of patients who had elevated PHQ-9 scores at pre-treatment showed reliable recovery. Reliable improvement on the PHQ-9 was observed in 46% of patients, no change in 53% of patients, and deterioration in 1% of patients. On the GAD-7, 64% of patients who had elevated GAD-7 scores at pre-treatment showed reliable recovery. Reliable improvement on the GAD-7 was observed in 61% of patients, no change in 37% of patients, and deterioration in less than 2% of patients.

4. Discussion

ICBT represents a promising approach for improving patient access to treatment, but only if the treatment can be offered effectively when delivered in routine clinic settings. While some past research suggests that ICBT is effective when delivered in routine clinic settings, most of this research has examined ICBT when delivered within highly specialized online clinic settings (Andersson & Hedman, 2013). Recent research suggests that results may not be as strong when delivered in nonspecialized routine clinic settings, such as primary care and community mental health clinics, especially in terms of uptake and completion rates (Gilbody et al., 2015; Kenter et al., 2013).

In the current study, we sought to examine the effectiveness of TD-ICBT when deployed in two different, but routine, clinic settings by either therapists in a specialized online clinic (where there was an exclusive focus on ICBT) or therapists in one of eight nonspecialized community clinics (where therapists primarily delivered face-to-face care and secondarily delivered ICBT). Large reductions were observed on standardized measures of depression (Cohen's $d = 1.17$; average improvement = 50%; reliable recovery 53%; reliable improvement 46%) and anxiety (Cohen's

Table 2
Means, percentage changes and effect sizes (Cohen's d) on primary and secondary outcomes by setting.

	n	Observed Means			Estimated Marginal Means			Percentage Changes from Pre-treatment[a]		Effect Sizes from Pre-treatment	
		pre-treatment	post-treatment	3-month follow-up	pre-treatment	post-treatment	3-month follow-up	to post-treatment	to 3-month follow-up	to post-treatment	to 3-month follow-up
PRIMARY OUTCOMES											
PHQ-9											
Combined	458	12.4 (5.61)	6.8 (5.73)	6.6 (5.68)	12.4 (5.61)	6.1 (5.18)	6.1 (4.89)	50%[45% – 54.0%]	51% [46% – 55%]	1.17[1.03 – 1.31]	1.20 [1.06 – 1.34]
Specialized	260	12.8 (5.78)	5.9 (5.32)	5.7 (5.20)	12.8 (5.78)	6.1 (5.17)	6.0 (4.92)	52 [47% – 57%]	53 [48–57]	1.22[1.03 – 1.41]	1.27 [1.08 – 1.45]
Nonspecialized	198	12.0 (5.38)	6.2 (5.66)	6.0 (5.40)	12.0 (5.38)	6.1 (5.20)	6.2 (4.86)	49 [42 – 55]	49 [43 – 54]	1.12 [.90 – 1.32]	1.13 [.92 – 1.34]
GAD-7											
Combined	458	11.7 (5.24)	5.4 (4.64)	5.1 (4.64)	11.7 (5.2425)	5.4 (4.3738)	5.3 (4.07)	53% [49% – 57%]	56% [52% – 60%]	1.31 [1.16 –1.45]	1.36 [1.22 – 1.51]
Specialized	260	12.1 (5.36)	5.2 (4.55)	4.9 (4.33)	12.1 (5.36)	5.3 (4.36)	5.2 (4.04)	56 [51 – 60]	57 [53 – 61]	1.39[1.20 – 1.58]	1.45 [1.26 – 1.64]
Nonspecialized	198	11.1 (5.06)	5.6 (4.77)	5.5 (4.64)	11.1 (5.06)	5.5 (4.42)	5.4 (4.11)	50 [44 – 55]	51 [46 – 56]	1.18 [.96 – 1.39]	1.24 [1.02 – 1.45]
SECONDARY OUTCOMES											
K-10											
Combined	458	27.4 (7.25)	19.5 (7.26)	18.5 (7.24)	27.4 (7.25)	19.8 (6.97)	18.8 (6.58)	42% [38% – 47%]	50% [45% – 54%]	1.07 [.93 – 1.21]	1.24 [1.10 – 1.38]
Specialized	260	27.7 (7.25)	19.2 (7.10)	17.9 (6.83)	27.7 (7.25)	19.6 (6.89)	18.4 (6.32)	46 [41 – 50]	53 [48 – 57]	1.15 [.96 – 1.33]	1.37 [1.17 – 1.56]
Nonspecialized	198	27.0 (7.25)	19.9 (7.49)	19.3 (7.74)	27.0 (7.25)	20.1 (7.07)	19.3 (6.88)	41 [35 – 46]	45 [40 – 51]	0.98 [.75 – 1.17]	1.09 [.88 – 1.30]
SDS											
Combined	458	17.7 (7.88)	10.0 (8.74)	9.0 (8.29)	17.7 (7.87)	10.2 (8.29)	9.5 (7.66)	43% [38% – 48%]	48% [43% – 53%]	0.93 [.79 – 1.06]	1.06 [.92 – 1.19]
Specialized	260	18.0 (7.92)	9.7 (8.74)	8.5 (8.42)	18.0 (7.92)	10.1 (8.39)	9.4 (7.91)	44% [38% – 49%]	48% [42% – 53%]	0.97 [.79 – 1.15]	1.09 [.90 – 1.27]
Nonspecialized	198	17.4 (7.82)	10.4 (8.74)	9.7 (8.09)	17.4 (7.82)	10.4 (8.16)	9.7 (7.33)	40% [33% – 46%]	44% [38% – 49%]	0.88 [.67 – 1.08]	1.02 [.80 – 1.22]
PDSS-SR											
Combined	458	7.6 (6.53)	4.5 (4.91)	3.7 (4.65)	7.6 (6.53)	4.9 (5.49)	4.9 (5.64)	35% [26% – 43%]	37% [27% – 44%]	0.45 [.32 – 0.58]	0.44 [.31 – 0.57]
Specialized	260	7.7 (6.83)	4.4 (4.86)	3.7 (4.89)	7.7 (6.83)	5.1 (5.74)	5.0 (6.06)	35% [25% – 43%]	35% [25% – 44%]	0.41 [.24 – 0.59]	0.42 [.24 – 0.59]
Nonspecialized	198	7.3 (6.13)	4.6 (5.01)	3.8 (4.32)	7.3 (6.13)	4.8 (5.14)	4.8 (5.04)	35% [25% – 44%]	35% [25% – 44%]	0.44 [.24 – 0.64]	0.45 [.25 – 0.64]
SIAS 6/SPS											
Combined	458	13.2 (10.18)	9.6 (8.59)	8.6 (8.36)	13.2 (10.18)	10.4 (9.94)	9.9 (10.20)	22% [13% – 30%]	26% [17% – 34%]	0.28 [.15 –0.41]	0.32 [.19 – 0.45]
Specialized		13.9 (10.38)	10.1 (8.74)	8.5 (8.65)	13.9 (10.38)	10.9 (10.03)	10.2 (10.59)	21% [12% – 30%]	26% [17% – 35%]	0.29 [.12 – 0.47]	0.35 [.18 – 0.53]
Nonspecialized		12.3 (9.89)	9.0 (8.38)	8.8 (8.00)	12.3 (9.89)	9.7 (9.80)	9.4 (9.67)	21% [9% – 31%]	23% [12% – 34%}	0.26 [.07 – 0.46]	0.30 [.10 – 0.49]

Note. PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder-7; K-10 = Kessler 10-item Scale; SDS = Sheehan Disability Scale; PDSS-R = Panic Disorder Severity Scale-Self Report; SIAS-6/SPS-6 = Social Interaction Anxiety Scale and Social Phobia Scale-6. Combined = combined sample; Specialized = Specialized Online Clinic; Non-specialized = nonspecialized community clinics. Observed means are based on actual scores at that time point. When data were not available, the most recent sessional data were used. Standard deviations are shown in rounded parentheses for the observed and estimated means; 95% confidence intervals are shown in square parentheses for the percentage changes and effect sizes.

[a] To calculate percentage change on the K10, baseline scores were standardized to zero.

Table 3
PHQ-9 and GAD-7 reliable recovery, reliable improvement, no change & deterioration.

PHQ9	Specialized Clinic	Nonspecialized Clinic	Combined
In clinical range at assessment	182/260 (70.0%)	132/198 (66.7%)	314/458(68.6%)
Reliable recovery	100/182 (54.9%)	66/132 (50.0%)	166/314(52.7%)
Reliable improvement	127 (48.8%)	85 (42.9%)	212/458(46.3%)
No change	130 (50.0%)	111 (56.1%)	241/458(52.6%)
Reliable deterioration	3 (1.2%)	2 (1.0%)	5/458 (1.1%)
GAD7			
In clinical range at assessment	178/260 (68.5%)	124/198 (62.6%)	302/458(65.9%)
Reliable recovery	114/178 (64.0%)	78/124 (62.9%)	192/302 (64%)
Reliable improvement	168/260 (64.6%)	112/198 (56.6%)	280/458(61.1%)
No change	91/260 (35.0%)	79/198 (39.9%)	170/458(37.1%)
Reliable deterioration	1/260 (0.4%)	7/198 (3.5%)	8/458 (1.7%)

Note. PHQ-9 = Patient Health Questionnaire-9 (clinical cut-off ≥ 10; reliable recovery = proportion of patients ≥ 10 on PHQ-9 at pre-treatment who are < 10 at post-treatment and improve ≥ 6 points; reliable improvement = reduction of 6 scale points; no change = less than 6 point change; deterioration = increase of 6 points); GAD-7 = Generalized Anxiety Disorder-7 (clinical cut-off ≥ 10; reliable recovery = proportion of patients who were ≥ 10 on GAD-7 at pre-treatment who score < 10 on GAD-7 at post-treatment and improve ≥ 4 points; reliable improvement = reduction ≥ 4 points; no change = less than 4 point change; deterioration = increase of 4 points;). When post-treatment data were not available *(n* = 80; 17% of cases), the most recent sessional data were used.

d = 1.31; average improvement = 53%; reliable recovery = 64%; reliable improvement = 61%) as well as distress (Cohen's *d* = 1.07; average improvement = 42%) and disability (Cohen's *d* = 0.93; average improvement = 43%). No differences in completion rates, satisfaction or clinical outcomes were found whether TD-ICBT was offered by therapists working in a specialized online clinic or nonspecialized community clinics. Furthermore, no differences were observed whether therapists were registered providers or graduate students or whether therapists were trained in psychology or another discipline. Among the 83% of individuals who completed post-treatment measures, high levels of treatment completion (84% of patients completed 4 out of 5 lessons) and treatment satisfaction (over 94% of patients reported ICBT was worth their time and they would recommend ICBT to others) were found. The strength of the findings serves to highlight the public health potential of TD-ICBT for increasing access to treatment for anxiety and depression.

The findings of the current study extend the existing literature in several important ways. First, the results complement past research showing that ICBT is not only effective in the context of controlled research (Andersson et al., 2014) but also when implemented into routine practice (Andersson & Hedman, 2013). The effect sizes reported in the current trial, for instance, are consistent with effect sizes reported in a review of the literature on the effectiveness of ICBT in regular clinical settings that for the most part specialized in online service delivery (Andersson & Hedman, 2013). In terms of specific comparison to a study of TD-ICBT in routine practice, the effect sizes are highly comparable to a group in Australia who studied TD-ICBT for anxiety (GAD-7 Cohen's *d* = 1.05) and depressive (PHQ-9 Cohen's *d* =0.94) symptoms in a primary care sample (*n* = 136) (Newby, Mewton, Williams, & Andrews, 2014). Second, the current study extends past research as it represents the only published study to compare the delivery of ICBT in a specialized online clinic to the delivery of ICBT via multiple nonspecialized distributed community clinics. Finding similar outcomes in both specialized and nonspecialized clinics is particularly important since several recent trials have raised questions about the use of ICBT in nonspecialized community settings (Gilbody et al., 2015; Kenter et al., 2013). The findings highlight the potential of ICBT in nonspecialized clinics, such as community health clinics, as a way of working with patients who might not otherwise be able to attend the clinics.

Of note, the findings of the present trial specifically support the generalizabiliy of the TD-ICBT program that was used in this study and was originaly designed and validated in Australia (Titov, Dear, Staples, Bennett-Levy, et al., 2015; Titov, Dear, Staples, Terides, et al., 2015). More specifically, when the TD-ICBT Wellbeing Course was implemented in a specialized online clinic in

Australia (*n* = 1793), 72% of patients completed four of the five lessons, over 95% reported that the course was worth their time and that they would recommend the course to a friend and large effects were found from pre- to post-treatment on the PHQ-9 (Cohen's *d* = 1.60) and GAD-7 (Cohen's *d* = 1.54) (Titov, Dear, Staples, Bennett-Levy, et al., 2015). Our findings are highly comparable to these and should be taken as evidence supporting the generalizability of TD-ICBT across countries.

The current study adds to past research that has suggested level of experience and training background may not be as important when providing ICBT (e.g., Baumeister, Reichler, Munzinger, & Lin, 2014). A strength of the current study is that it involved a large number of graduate students (*n* = 25) and providers (*n* = 41). The current study found no differences in outcomes, engagement or acceptability when treatment was provided by registered providers versus students or therapists with psychology versus other training backgrounds. The findings are consistent with the premise that the structure of ICBT (e.g., systematic delivery of clearly delivered psychoeducation over time) may result in less variation in the delivery of ICBT, and, therefore, similar outcomes across therapists regardless of experience or background (Andersson & Hedman, 2013).

In terms of future research directions, there is a clear need to better understand under what circumstances ICBT is most effective when delivered in routine care. While the current study found high levels of treatment completion and good clinical outcomes regardless of whether the setting was specialized or nonspecialized, other large studies have found low levels of ICBT treatment engagement and poorer clinical outcomes in nonspecialized routine clinic settings (Gilbody et al., 2015; Kenter et al., 2013). Unfortunately, there are currently too few studies examining the implementation of ICBT in nonspecialized routine clinical settings to understand, where, when and with whom ICBT may be effective in these settings. In terms of the current study, a number of factors may have contributed to high completion rates, satisfaction and outcomes regardless of setting, therapist training or background. First, there was a significant degree of training and supervision provided to all therapists regardless of whether they worked in the specialized online clinic or the nonspecialized community clinics. Second, the specific nature of the ICBT program used in this study may have standardized important elements of the treatment and reduced differences between therapists. The *Wellbeing Course*, for instance, consists of online lessons, patient stories, homework guides, automated emails, and weekly instruction guides for therapists. Standardization is known to enhance the integrity of implementation (Flay et al., 2005). Third, the TD-ICBT program itself may have contributed to higher completion rates and outcomes in this study as it addressed both depression and anxiety

simultaneously, which patients may have found particularly beneficial. Fourth, satisfaction and outcomes may have been high as patients in the current study actively sought out ICBT. In contrast, in the study by Gilbody et al. (2015) patients were approached by a physician or sent a letter of invitation following a review of their clinical record, and, in the study by Kenter et al. (2013) patients were informed of ICBT only after seeking face-to-face treatment. Overall, the current study highlights the need for more research to understand the factors that are associated with the successful implementation of ICBT within nonspecialized routine clinical settings.

In terms of comparison to past research on ICBT conducted in the same province (Hadjistavropoulos et al., 2014), the primary outcomes of the TD-ICBT program used in the current study ($d = 1.17\text{-}1.31$) were comparable to outcomes achieved previously using disorder-specific ICBT programs for anxiety, depression or panic ($d = 0.91\text{-}1.25$). Of importance, however, patient completion rates were considerably higher (78% completed all TD-ICBT lessons compared to 50% who completed all disorder-specific ICBT lessons). The TD-ICBT program was also less demanding to deliver than previous disorder-specific ICBT programs in terms of length of engagement with patients (e.g., ~9 weeks compared to 19 weeks) and therapist time needed to review (~5 vs ~11 patient messages to review) and send (~9 vs. ~20 messages to compose) messages. These specific findings suggest that TD-ICBT, in particular, represents an efficient way to deliver care. These observations parallel recent randomized controlled studies that demonstrated that TD-ICBT and disorder-specific ICBT are highly comparable in terms of outcomes (e.g., Dear et al., 2015; Titov, Dear, Staples, Terides, et al., 2015).

Given that ICBT appears to be effective when delivered in both specialized and nonspecialized clinics, it is interesting to compare the approaches in terms of other factors, such as reach, adoption, implementation and maintenance (Glasgow, McKay, Piette, & Reynolds, 2001). In terms of reach, therapists in the specialized online clinic were able to treat more patients than therapists in the community clinics (260 vs. 198 patients treated) during the same period of time, even though there were fewer therapists delivering ICBT in the specialized online clinic as compared to the community clinics (25 vs. 41 therapists). In terms of adoption, although there was significant variability in number of patients therapists treated, therapists in the online clinic treated more patients each than therapists in the community clinic (average of 10 compared to average of 7). This likely reflects that in the nonspecialized community clinics therapists had to balance ICBT with face-to-face therapy. In terms of implementation, offering ICBT within nonspecialized community clinics was complicated by the competing demands on therapist time and extra resources needed to coordinate ICBT across 8 community clinics and a greater number of providers (41 therapists in the community clinics as compared to 25 in the online clinic). With respect to maintenance of the service, the specialized online clinic was able to deliver services at a lower cost given that it was located within a University setting and graduate student therapists delivered care to 61% of patients under supervision. Taking these additional considerations into account, even though ICBT delivered in specialized and nonspecialized clinics was effective in both settings, the specialized clinic appears to confer some advantages in terms of reach, extent of adoption, ease of implementation and costs to maintain.

In terms of future directions, further study of facilitators and constraints to delivering ICBT in routine clinic settings (Damschroder et al., 2009) would provide valuable information to others who are seeking to implement ICBT broadly and improve patient access to service. Additionally, it would be valuable to further examine negative effects of ICBT when delivered in routine clinic settings. As has been previously recommended in the literature, more research is needed on the potential negative effects of ICBT (e.g., increased symptoms, new symptoms, demoralization), and the factors that contribute to negative effects (e.g., treatment, therapist, patient characteristics; Rozental et al., 2014). In the present study, we identified a very low percentage of patients who deteriorated during treatment on the PHQ-9 (1.1%) and GAD-7 (1.7%). Nevertheless, 16% of patients failed to complete at least four of the five lessons and 47% of the sample did not demonstrate reliable recovery on the PHQ-9 and 36% did not demonstrate reliable recovery on the GAD-7. It is evident that there is still work to be done to improve TD-ICBT for these patients.

While contributing to the current literature, there are a number of limitations to the present study that should be considered. We did not conduct diagnostic assessment interviews as this was not regarded as necessary for a low intensity service. Instead, we relied on cut-off scores on symptom measures to understand symptom severity. Using this method, we identified that 89% of patients scored in the clinical range on at least one of the measures of depression, generalized anxiety, panic disorder or social anxiety. Of note, effect sizes for measures of panic disorder and social anxiety were significant, but moderate in size (effect sizes 0.28–0.45; reductions 22% to 35%). This lower effect size may reflect that only 47.4% of patients in the sample had elevated symptoms of panic disorder on the PDSS-SR and only 47.6% of patients had elevated symptoms of social anxiety on the SIAS-6/SPS-6 pre-treatment. As symptoms were not elevated for many patients pre-treatment, there was less room for improvement in these symptoms.

Although completion of questionnaires following treatment was very good, we were missing data for 17% of patients at post-treatment and 26% of patients at 3-month follow-up. This limits our understanding of why patients left therapy. Also in terms of limitations, the study was naturalistic and it was not possible to administer follow-up measures beyond 3 months or randomly assign patients to be treated by therapists in the specialized online clinic as compared to the community mental health clinics. It was also not possible to balance therapist qualifications and background by setting. In the online clinic, for instance, ICBT was delivered by both graduate students and registered providers, whereas only registered providers delivered ICBT in the community clinics. The online clinic had more patients treated by psychology staff and the community clinics had more therapists with training in other disciplines. Additionally, given that this was an open dissemination trial, we did not include a waiting list control group as this would have been significant departure from the naturalistic routine clinic setting that we aimed to study and has been regarded as ethically questionable in the context of community-based care (Devilly & McFarlane, 2009). Importantly, it should be noted that while outcomes were similar across settings, therapist qualifications and background, it is not known if this would be the case if less attention was given to training, supervision and monitoring of the ICBT service.

5. Conclusion

The present study extends the literature on ICBT demonstrating the generalizability of past findings related to ICBT in routine clinic settings and specifically highlighted that results of ICBT can be obtained in both specialized and nonspecialized clinic settings and are also comparable across therapist qualifications (graduate students vs. registered providers) and therapist background (psychology vs. other). Generalizability of past research on ICBT was found with respect to completion rates, as well as satisfaction and outcomes measured post-treatment and at 3-month follow-up. The findings support the public health potential of ICBT in Canada.

Acknowledgements

References

APA Presidential Task Force on Evidence-Based Practice. (2006). Evidenced-based practice in psychology. *American Psychologist*, *61*(4), 271–285. http://dx.doi.org/10.1037/0003-066X.61.4.271

Allen, A. R., Newby, J. M., Mackenzie, A., Smith, J., Boulton, M., Loughnan, S. A., et al. (2016). Internet cognitive-behavioural treatment for panic disorder: randomised controlled trial and evidence of effectiveness in primary care. *British Journal of Psychiatry Open*, *2*(2), 154–162. http://dx.doi.org/10.1192/bjpo.bp.115.001826

Andersson, G., & Hedman, E. (2013). Effectiveness of guided internet-based cognitive behavior therapy in regular clinical settings. *Verhaltenstherapie*, *23*(3), 140–148. http://dx.doi.org/10.1159/000354779

Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., & Hedman, E. (2014). Guided Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. *World Psychiatry*, *13*, 288–295. http://dx.doi.org/10.1002/wps.20151

Andrews, G., & Slade, T. (2001). Interpreting scores on the Kessler Psychological Distress Scale (K10). *Australian and New Zealand Journal of Public Health*, *25*(6), 494–497. http://dx.doi.org/10.1111/j.1467-842X.2001.tb00310.x

Bandelow, B., & Brasser, M. (2009). Clinical suitability of GAD-7 scale compared to hospital anxiety and depression scale-A for monitoring treatment effects in generalized anxiety disorder. *European Neuropsychopharmacology*, *19*(Suppl. 3), S604–S605. http://dx.doi.org/10.1016/S0924-977X(09)70970-8

Baumeister, H., Reichler, L., Munzinger, M., & Lin, J. (2014). The impact of guidance on Internet-based mental health interventions—a systematic review. *Internet Interventions*, *1*(4), 205–215. http://dx.doi.org/10.1016/j.invent.2014.08.003

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science*, *4* http://dx.doi.org/10.1186/1748-5908-4-50

Dear, B. F., Staples, L. G., Terides, M. D., Karin, E., Zou, J., Johnston, L., et al. (2015). Transdiagnostic versus disorder-specific and clinician-guided versus self-guided internet-delivered treatment for generalized anxiety disorder and comorbid disorders: a randomized controlled trial. *Journal of Anxiety Disorders*, *36*, 63–77. http://dx.doi.org/10.1016/j.janxdis.2015.09.003

Devilly, G. J., & McFarlane, A. C. (2009). When wait lists are not feasible, nothing is a thing that does not need to be done. *Journal of Consulting and Clinical Psychology*, *77*(6), 1159–1168. http://dx.doi.org/10.1037/a0016878

Donker, T., van Straten, A., Marks, I., & Cuijpers, P. (2010). Brief self-rated screening for depression on the Internet. *Journal of Affective Disorders*, *122*(3), 253–259. http://dx.doi.org/10.1016/j.jad.2009.07.013

Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D., Kellam, S., et al. (2005). Standards of evidence: criteria for efficacy, effectiveness and dissemination. *Prevention Science*, *6*(3), 151–175. http://dx.doi.org/10.1007/s11121-005-5553-y

Gilbody, S., Littlewood, E., Hewitt, C., Brierley, G., Tharmanathan, P., Araya, R., et al. (2015). Computerised cognitive behaviour therapy (cCBT) as treatment for depression in primary care (REEACT trial): large scale pragmatic randomised controlled trial. *British Medical Journal*, *351* http://dx.doi.org/10.1136/bmj.h5627

Glasgow, R. E., McKay, H. G., Piette, J. D., & Reynolds, K. D. (2001). The RE-AIM framework for evaluating interventions: what can it tell us about approaches to chronic illness management? *Patient Education and Counseling*, *44*(2), 119–127. http://dx.doi.org/10.1016/S0738-3991(00)00186-5

Gyani, A., Shafran, R., Layard, R., & Clark, D. M. (2013). Enhancing recovery rates: lessons from year one of IAPT. *Behaviour Research and Therapy*, *51*(9), 597–606. http://dx.doi.org/10.1016/j.brat.2013.06.004

Hadjistavropoulos, H. D., Thompson, M. J., Klein, B., & Austin, D. W. (2012). Dissemination of therapist-assisted internet cognitive behaviour therapy: development and open pilot study of a workshop. *Cognitive Behaviour Therapy*, *41*(3), 230–240. http://dx.doi.org/10.1080/16506073.2011.645550

Hadjistavropoulos, H. D., Pugh, N. E., Nugent, M. M., Hesser, H., Andersson, G., Ivanov, M., et al. (2014). Therapist-assisted Internet-delivered cognitive

behavior therapy for depression and anxiety: translating evidence into clinical practice. *Journal of Anxiety Disorders*, *28*, 884–893. http://dx.doi.org/10.1016/j.janxdis.2014.09.018

Hedman, E., Ljotsson, B., & Lindefors, N. (2012). Cognitive behavior therapy via the Internet: a systematic review of applications, clinical efficacy and cost-effectiveness. *Expert Review of Pharmacoeconomics and Outcomes Research*, *12*(6), 745–764. http://dx.doi.org/10.1586/erp.12.67

Houck, P. R., Spiegel, D. A., Shear, M. K., & Rucci, P. (2002). Reliability of the self-report version of the Panic Disorder Severity Scale. *Depression and Anxiety*, *15*(4), 183–185. http://dx.doi.org/10.1002/da.10049

Jacobson, N. S., & Truax, P. (1991). Clinical-significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, *59*(1), 12–19. http://dx.doi.org/10.1037//0022-006x.59.1.12

Johnston, L., Titov, N., Andrews, G., Dear, B. F., & Spence, J. (2013). Comorbidity and Internet-delivered transdiagnostic cognitive behavioural therapy for anxiety disorders. *Cognitive Behaviour Therapy*, *42*(3), 180–192. http://dx.doi.org/10.1080/16506073.2012.753108

Kazdin, A. E. (2015). Evidence-based psychotherapies II: changes in models of treatment and treatment delivery. *South African Journal of Psychology*, *45*(1), 3–21. http://dx.doi.org/10.1177/0081246314538733

Kenter, R., Warmerdam, L., Brouwer-Dudokdewit, C., Cuijpers, P., & van Straten, A. (2013). Guided online treatment in routine mental health care: an observational study on uptake, drop-out and effects. *BMC Psychiatry*, *13* http://dx.doi.org/10.1186/1471-244x-13-43

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., et al. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, *32*(6), 959–976.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions' of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, *62*(6), 593–602. http://dx.doi.org/10.1001/archpsyc.62.6.593

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9—validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606–613. http://dx.doi.org/10.1046/j.1525-1497.2001.016009606.x

Kroenke, K., Spitzer, R. L., Williams, J. B., & Lowe, B. (2010). The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. *General Hospital Psychiatry*, *32*(4), 345–359. http://dx.doi.org/10.1016/j.genhosppsych.2010.03.006

Manea, L., Gilbody, S., & McMillan, D. (2012). Optimal cut-off score for diagnosing depression with the Patient Health Questionnaire (PHQ-9): a meta-analysis. *Canadian Medical Association Journal*, *184*(3), E191–E196. http://dx.doi.org/10.1503/cmaj.110829

Mental Health Commission of Canada. (2014). *E-mental health in Canada: transforming the mental health system using technology*. Ottawa, ON: Mental Health Commission of Canada. http://www.mentalhealthcommission.ca

Newby, J. M., Mewton, L., Williams, A. D., & Andrews, G. (2014). Effectiveness of transdiagnostic internet cognitive behavioural treatment for mixed anxiety and depression in primary care. *Journal of Affective Disorders*, *165*, 45–52. http://dx.doi.org/10.1016/j.jad.2014.04.037

Peters, L., Sunderland, M., Andrews, G., Rapee, R. M., & Mattick, R. P. (2012). Development of a short form Social Interaction Anxiety (SIAS) and Social Phobia Scale (SPS) using nonparametric item response theory: the SIAS-6 and the SPS-6. *Psychological Assessment*, *24*(1), 66–76. http://dx.doi.org/10.1037/a0024544

Rozental, A., Andersson, G., Boettcher, J., Ebert, D. D., Cuijpers, P., Knaevelsrud, C., et al. (2014). Consensus statement on defining and measuring negative effects of internet interventions. *Internet Interventions*, *1*, 12–19. http://dx.doi.org/10.1016/j.invent.2014.02.001

Sheehan, D. V. (1983). *The anxiety disease*. New York: Scribner.

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder—the GAD-7. *Archives of Internal Medicine*, *166*(10), 1092–1097. http://dx.doi.org/10.1001/archinte.166.10.1092

Titov, N., Dear, B. F., Johnston, L., McEvoy, P. M., Wootton, B., Terides, M. D., et al. (2014). Improving adherence and clinical outcomes in self-guided internet treatment for anxiety and depression: a 12-month follow-up of a randomised controlled trial. *PLoS One*, *9*(2), e89591. http://dx.doi.org/10.1371/journal.pone.0089591

Titov, N., Dear, B. F., Staples, L. G., Bennett-Levy, J., Klein, B., Rapee, R. M., et al. (2015). MindSpot Clinic: an accessible, efficient, and effective online treatment service for anxiety and depression. *Psychiatric Services*, *66*(10), 1034–1050. http://dx.doi.org/10.1176/appi.ps.201400477

Titov, N., Dear, B. F., Staples, L. G., Terides, M. D., Karin, E., Sheehan, J., et al. (2015). Disorder-specific versus transdiagnostic and clinician-guided versus self-guided treatment for major depressive disorder and comorbid anxiety disorders: a randomized controlled trial. *Journal of Anxiety Disorders*, *35*, 88–102. http://dx.doi.org/10.1016/j.janxdis.2015.08.002

Wang, P. S., Berglund, P., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Failure and delay in initial treatment contact after first onset of mental disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, *62*(6), 603–613. http://dx.doi.org/10.1001/archpsyc.62.6.603

UlrichswebUlrich's Serials Analysis System   SerialsSolutions®
A ProQuest Company

ULRICHSWEB™
GLOBAL SERIALS DIRECTORY

You are logged into UlrichsWeb   LOG OUT
Quick Search ISSN   SEARCH

Advanced SearchBrowseListsHelpMy Account Ulrich's AlertUlrich's Update

Journal of Anxiety Disorders

◀ BACK TO RESULTS

| Basic Description | Other Editions/ Formats | Abstracting/ Indexing & Article Access | Publisher & Ordering Information | Advertising, Rights, Demographics | Reviews |

JCR Web   ScienceDirect®

Click highlighted text for a new search on that item.

Table of Contents:	Click here to view
ISSN:	0887-6185
Title:	Journal of Anxiety Disorders
Publishing Body:	Pergamon
Country:	United Kingdom
Status:	Active
Start Year:	1987
Frequency:	8 times a year
Document Type:	Journal; Academic/Scholarly
Refereed:	Yes
Abstracted/Indexed:	Yes
Media:	Print
Alternate Edition ISSN:	1873-7897
Language:	Text in English
Price:	EUR 857 subscription per year in Europe to institutions JPY 113,900 subscription per year in Japan to institutions USD 958 subscription per year elsewhere to institutions (effective 2010)
Subject:	PSYCHOLOGY MEDICAL SCIENCES - PSYCHIATRY AND NEUROLOGY
Dewey #:	616.85, 152.4
LC#:	RC531
CODEN:	JADIE8
Special Features:	Illustrations
Article Index:	Index
Editor(s):	Michel Hersen (Editor-in-Chief)
URL:	http://www.elsevier.com/wps/find/journaldescription.cws_home /801/description#description
Description:	Features interdisciplinary research dealing with all aspects of anxiety disorders for all age groups (child, adolescent, adult and geriatric), including assessment, diagnosis, psychosocial and pharmacological treatment, epidemiology and prevention.
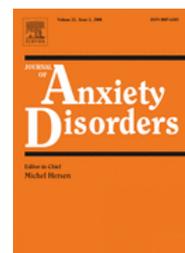
▼ Additional Title Information

ADDITIONAL TITLE INFORMATION

Alternate Title:	Medline Abbreviated title: J Anxiety Disord

▲ Back to Top

Add this item to: (select a list)   + ADD

Request this title:
I'd like to request this title.   GO
Corrections:
Submit corrections to Ulrich's about this title.   GO
Publisher of this title?
If yes, click GO! to contact Ulrich's about updating your title listings in the Ulrich's database.   GO

● Print ● Download ● E-mail

▲ Back to Top