AN EFFICACY TRIAL OF THERAPIST-ASSISTED INTERNET-DELIVERED COGNITIVE-BEHAVIOUR THERAPY FOR OLDER ADULTS WITH GENERALIZED ANXIETY

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Shannon Leigh Jones, candidate for the degree of Doctor of Philosophy in Clinical Psychology, has presented a thesis titled, *An Efficacy Trial of Therapist-Assisted Internet-Delivered Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety*, in an oral examination held on September 4, 2014. The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

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ABSTRACT

Generalized anxiety disorder (GAD) and subclinical anxiety symptoms are prevalent among adults aged 60 years and older. While cognitive-behaviour therapy (CBT) is efficacious for treating GAD, under treatment of GAD remains a problem in this age group. Therapist-assisted Internet-delivered CBT (TAICBT) has been developed and tested to increase accessibility to psychological treatment. TAICBT presents psychoeducational materials and CBT techniques using structured, interactive web pages, and involves a therapist who provides support via e-mail and/or telephone. The purpose of the current study was to: (1) establish the efficacy of TAICBT for treating GAD in adults aged 60 years and older, (2) examine how client engagement factors, such as website use, are related to treatment outcomes, and; (3) obtain and analyze feedback on participants’ experiences in using TAICBT.

Using a randomized controlled trial design, 46 community-dwelling older adults were randomized to receive seven modules of TAICBT \( (n = 24) \) or were placed on a 10-week waiting list \( (n = 22) \). All participants completed outcome measures on anxiety, worry, depression, and quality of life after randomization and again 10 weeks later. Data was also gathered on client engagement and at four-week follow-up. TAICBT participants responded to open-ended questions to obtain feedback regarding their experience with TAICBT. Data was analyzed using longitudinal mixed models analyses and repeated measures analyses of variance (ANOVA) to establish efficacy. Multiple linear regression was used to analyze the association between client engagement factors and treatment outcomes. Responses to open-ended questions were analyzed using thematic analysis.
As compared to the waiting list control group, TAICBT was efficacious at reducing general anxiety, worry, and depressive symptoms and for improving physical, psychological, and environmental quality of life over time. Large between-group effect sizes (Cohen’s $d$) were observed on the primary outcome measures, Generalized Anxiety Disorder-7 (GAD-7: .85) and the Patient Health Questionnaire-9 (1.17). About 86% of the TAICBT group reported GAD-7 scores $\leq 10$ at post-treatment, a cut-off score suggesting a probable diagnosis of GAD. TAICBT participants in this study experienced continued symptom improvement at four-week follow-up on all outcome measures.

Higher credibility of treatment ratings at pre-treatment predicted faster rates of decline in anxiety symptoms; however, expectancy of change, treatment satisfaction, and therapeutic alliance were not strong predictors of anxiety or depressive symptoms. Regarding website use, completing more treatment modules and writing more e-mails and lengthier Check-In responses to the therapist were associated with reduced anxiety, whereas taking longer to complete the program and writing lengthier e-mails to the therapist were linked to higher anxiety at follow-up. Thematic analysis revealed that older adults typically reported having positive experiences with TAICBT but also identified several challenges with TAICBT, including difficulties with the amount of content and the short timeframe to complete the program. Participants varied in their preferences for the program material versus contact with the online therapist.

Overall, the results of this RCT provides evidence that TAICBT is a feasible and efficacious way of reaching and providing mental health services to adults aged 60 years and older, while also enriching our knowledge of how we may better address older adults’ needs in the design of future therapy programs for this age group.
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DEDICATION

To my parents, Bill and Lorraine Jones, my sister, Krista Wilson, and other family and friends, thank you for always standing behind me (and, at times, holding me up) throughout my graduate school journey.

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1. INTRODUCTION

Anxiety is an emotional and physiological state that occurs when a possible threat or danger is perceived. Anxiety is distinguished from fear in that it can serve the adaptive purpose of preparation, whereas fear transpires in the face of a direct and imminent threat (Barlow, 1991). Anxiety and fear are rooted in the basic and innate human stress response, often referred to as the “fight or flight” response wherein fear activates the somatic nervous system with the purpose of motivating us to seek protection from a perceived threat by preparing to cope. When this fear response is repeatedly triggered when no objective danger is present over a long duration, and results in considerable disability, the person is said to have an anxiety disorder (Abramowitz & Deacon, 2010). In its maladaptive form, anxiety is future-oriented and involves a high degree of negative affect and apprehension, a sense of uncontrollability, hyperarousal and vigilance, and physiological symptoms such as palpitations, shortness of breath, and dizziness (DiTomasso, Freeman, Carvajal, & Zahn, 2009).

To date, anxiety disorders in late-life have received insufficient empirical attention compared to that of the general population despite prevalence rates of anxiety disorders in older adults ranging from 11.6 (Byers, Yaffe, Covinsky, Friedman, & Bruce, 2010) to 14.2% (Ritchie et al., 2004). While the age range of older adults varies across studies of anxiety disorders, it typically encompasses those 55 (e.g., Beekman et al., 1998) or 65 years and older (e.g., C. S. Mackenzie, Reynolds, Chou, Pagura, & Sareen, 2011), with the latter being the more common. Although prevalence rates are somewhat lower than what is observed in younger and middle-aged adults (Wolitzky-Taylor, Castriotta, Lenze, Stanley, & Craske, 2010), anxiety disorders are more common than
One of the most prevalent anxiety disorders affecting older adults is generalized anxiety disorder (GAD; Kessler et al., 2005). GAD is a DSM-5 condition characterized by persistent and excessive anxiety and uncontrollable worry about a number of events, topics, or activities that may include minor day-to-day matters (e.g., arriving to appointments on time), finances, health of self or loved ones, future events, etc. (American Psychiatric Association, 2013). The worry of a person with GAD is distinguished from nonpathological worry by its unrealistic and uncontrollable nature and its frequency and chronicity (Antony, Federici, & Stein, 2008). To be diagnosed with GAD, the worry must be present for at least six months and be accompanied by a minimum of three of the six following symptoms: irritability, restlessness, sleep disturbance, muscle tension, fatigue, or difficulty concentrating (American Psychiatric Association, 2013). Cases of generalized anxiety that exist in old age are typically chronic, with symptoms present for many years prior (Wittchen & Hoyer, 2001). In fact, generalized anxiety is of particular concern to treatment providers because many people with anxiety disorders either never seek help or do so only after years of suffering (Clark, 1999). GAD has been well-documented as one of the most difficult anxiety disorders to treat, yielding lower treatment response relative to other anxiety disorders (Gould, Safren, O’Neill Washington, & Otto, 2004).

The current study examines the efficacy of an innovative psychosocial treatment for GAD in older adults. This form of treatment, referred to as therapist-assisted Internet-delivered cognitive-behaviour therapy (TAICBT), has been rapidly gaining attention as a
means of increasing access to mental health services for adults with anxiety and depression. However, the use of such services with adults aged 60 years and older with GAD has not yet been comprehensively studied. As such, the current study addresses this gap in the literature by establishing whether TAICBT is efficacious for older adults with generalized anxiety, whether client engagement with TAICBT is associated with treatment outcomes in this age group, and what the experiences are of older adults who use TAICBT. Prior to describing the purpose and objectives of this study, the introduction will summarize the literature on GAD in older adults and the use of traditional face-to-face CBT to treat GAD. Despite the effectiveness of CBT for treating GAD, the literature review identifies that that many older adults go untreated due to problems with access, mobility difficulties, and stigma. This literature review will describe how the Internet is being used as a means to increase accessibility to mental health services and will explore research carried out on the treatment of GAD and other psychological conditions. It will highlight recent research emerging on the use of TAICBT in helping older adults with anxiety disorders, depression, and chronic pain, as well as limitations of the existing research. Finally, the potential role of client engagement with TAICBT will be discussed as a possible correlate of treatment outcome before the research questions and hypotheses of the current study are presented.

1.1 GAD in Older Adults

Compared to younger and middle adulthood, anxiety in older adults may differ with respect to worry content and the presentation and expression of symptoms. Although older adults report significantly fewer worries overall than those in younger age groups (Lindesay et al., 2006), older adults diagnosed with GAD report a higher
frequency of health worries and fewer work-related worries relative to younger adults with the disorder (Diefenbach, Stanley, & Beck, 2001). Likewise, when comparing older adults with clinical, non-clinical, and subthreshold general anxiety levels as measured by a diagnostic interview, older adults with GAD tend to have more health and personal worries than those in these other groups (Montorio, Nuevo, Márquez, Izal, & Losada, 2003). In general, the worries of this age group tend to center around health problems, concerns of aging, family issues, and less commonly, financial concerns (Gorenstein, Papp, & Kleber, 1999).

With respect to presentation, older adults have a tendency to emphasize the somatic symptoms of anxiety (Lenze, Karp, et al., 2005), despite not differing from younger adults on measures of somatic symptoms of anxiety (Brenes, 2006), and are more likely than younger adults to present with medical conditions with symptoms that may imitate or be reciprocal with anxiety (Gurian & Miner, 1991). Consequently, it becomes challenging to correctly identify and diagnose anxiety conditions like GAD in older adults with medical conditions (Blazer, George, & Hughes, 1991), often leading to misdiagnosis and under treatment of psychological symptoms in this age group (Kim, Braun, & Kunik, 2001). Expression of anxiety symptoms may also be dissimilar, as older adults are more apt to describe their experiences using words like ‘concern’ or ‘fret’, instead of ‘anxiety’ or ‘worry’ (Stanley & Novy, 2000).

1.2 Prevalence and Onset of GAD in Older Adults

Lifetime prevalence rates of GAD range from 3.3 to 3.6%, while the projected lifetime risk for developing GAD is as high as 8.3% (Gum, King-Kallimanis, & Kohn, 2009; Kessler et al., 2005). In general, prevalence rates of GAD decline with increasing
age, with twelve-month prevalence rates in older age groups ranging from 1.2 to 7.3% (Beekman et al., 1998; Gum et al., 2009; Trollor, Anderson, Sachdev, Brodaty, & Andrews, 2007).

It is estimated that less than 1% of individuals will develop an anxiety disorder after the age of 65 (Kessler et al., 2005). A community-based epidemiological study with a sample of nearly 2,000 older persons with GAD found that less than 7% reported onset of the disorder after age 60 years (Ritchie et al., 2004). Onset before the age of 50 is associated with higher rates of psychiatric comorbidity and more severe worry, whereas patients with late onset of GAD symptoms report having more functional limitations because of physical health problems (Le Roux, Gatz, & Wetherell, 2005).

1.3 Prevalence of Subthreshold Anxiety in Older Adults

Although the prevalence of GAD is lower in late-life than it is among younger cohorts, the statistics likely underestimate rates of anxiety, given that older adults often underreport or deny psychological symptoms (Kogan, Edelstein, & McKee, 2000). Moreover, feelings of anxiety (Forsell & Winblad, 1998) and subsyndromal anxiety disorders (Heun, Papassotiropoulos, & Ptok, 2000) are very common in this age group. Estimates of the prevalence of clinically significant anxiety symptoms in older adults have ranged from 8 to 19% (C. I. Cohen, Magai, Yaffee, & Walcott-Brown, 2006; Mehta et al., 2003; Scott, Mackenzie, Chipperfield, & Sareen, 2010). One study of a Canadian sample identified the 12-month prevalence rate of anxiety disorders in older adults to be 5.6% using DSM-IV criteria; however, when subthreshold manifestations were taken into account, these rates jumped to 26.2% (Grenier et al., 2011). These high rates of subsyndromal anxiety indicate that the present diagnostic criteria for GAD and other
anxiety disorders may be limited in adequately recognizing anxiety in older adults (Palmer, Jeste, & Sheikh, 1997), and may, in fact, be underestimating the prevalence of GAD and the resulting impairment and distress in this population (Fuentes & Cox, 1997).

1.4 Negative Consequences of GAD and Subthreshold Anxiety

The harmful impact of anxiety on older adults is becoming well-documented. Specifically, GAD in an older cohort is associated with reduced quality of life (Cully et al., 2006; Stanley, Diefenbach, et al., 2003) that is comparable to that found in those with major depression (Wetherell, Thorp, et al., 2004). Anxious seniors also report having higher likelihood of disability (de Beurs et al., 1999; Porensky et al., 2009) and lower physical functioning, including lower perceived general and mental health (Cully et al., 2006; Wetherell, Thorp, et al., 2004), sleep disturbance (Stanley, Diefenbach, et al., 2003), and reduced physical activity (de Beurs et al., 1999), with the negative effects nearly equivalent in those with subthreshold anxiety (de Beurs et al., 1999). Moreover, GAD leads to limitations in usual activities, including decreased social functioning in late-life (Wetherell, Thorp, et al., 2004). Rates of depressive disorders are also high in older adults with GAD (Beekman et al., 2000; Lenze et al., 2000), with anxiety often preceding depression in this age group (Lenze, Mulsant, et al., 2005). Ultimately, the negative repercussions of GAD and subclinical anxiety result in increased healthcare use among older adults (Porensky et al., 2009; Stanley, Roberts, Bourland, & Novy, 2001).

1.5 Psychosocial Treatment of Late-Life GAD

Traditionally, older adults with anxiety have been treated pharmacologically, and often with benzodiazepines (Krasucki, Howard, & Mann, 1999). Despite their short-term efficacy, it is now recognized that most anxiolytic medications have many unwanted side
effects in this age group, such as sedation, memory disruption, and psychomotor impairment (Baldwin & Polkinghorn, 2005), thus increasing the risk of falling and other accidents. Consequently, a growing body of literature has studied the effectiveness of psychotherapeutic treatments in treating late-life GAD, with cognitive-behavior therapy (CBT) garnering the most consistent support to date (Ayers, Sorrell, Thorp, & Wetherell, 2007).

1.6 Cognitive-Behaviour Models of Anxiety and GAD

Methods of CBT for generalized anxiety are based on the prevailing cognitive-behaviour model of anxiety in general and several cognitive models specific to GAD. The central feature of pathological anxiety according to the overarching cognitive model of anxiety disorders is the tendency to selectively attend to threat information and interpret stimuli as dangerous or threatening to one’s physical or psychological health and respond in ways that are not usually in proportion with the objective dangers of the environment (A. T. Beck & Clark, 1997). These biased interpretations or appraisals of danger lead to specific affective, physiological, and behavioural changes (A. T. Beck, Emery, & Greenberg, 2005), wherein the person feels frightened or apprehensive, experiences autonomic hyperarousal, mobilizes oneself to escape or defend against the perceived danger, inhibits risk-taking behaviour and engages in avoidance behaviour to enhance safety (A. T. Beck & Clark, 1997).

Specific cognitive-behaviour models of GAD and the core feature of worry have also been proposed and tested by several groups of researchers. The avoidance model of worry and GAD suggests that worry is experienced primarily as a verbal/linguistic activity as opposed to vivid mental imagery, and that it inhibits both somatic and
emotional activation associated with anxiety (Borkovec & Inz, 1990). The inhibition of
the somatic and emotional experience of anxiety is thought to be a form of cognitive
avoidance that prevents the emotional processing of fear that is theoretically necessary
for successful habituation and extinction to occur (Foa, Huppert, & Cahill, 2006). In this
model, worry is viewed as an ineffective cognitive attempt to problem solve and
eliminate the perceived threat while, at the same time, avoiding distressing emotional and
somatic experiences that would occur when confronting a fear (Borkovec, Alcaine, &
Behar, 2004). Worry becomes negatively reinforced as catastrophic mental images are
replaced by less distressing thoughts, and is positively reinforced by beliefs that worry is
helpful for increasing motivation, for avoiding future negative situations, and for
problem-solving. Borkovec and colleagues have also explored possible etiological
factors in the development of GAD. It has been posited that poor interpersonal skills,
including insecure attachment styles, may lead a person to perceive the world as unsafe
and feel unable to cope with uncertain events (Borkovec et al., 2004).

The metacognitive model of GAD put forward by Adrian Wells asserts that both
positive and negative metacognitive appraisals of worry contribute to the development
and maintenance of pathological worry in persons with GAD (A. Wells, 1995, 2004).
Specifically, the positive beliefs an individual holds regarding the value of worry (e.g.,
the belief that worrying helps to solve problems), is thought to reinforce the use of worry
as a coping strategy in the face of a threatening internal or external event. This type of
worry (type 1 worry) is activated after an individual appraises a situation as threatening,
leading to “what if” questioning to help identify coping strategies. Type 1 worry is
thought to continue in an attempt to work through a negative thought until the person is
distracted or some internal goal is satisfied. Negative metacognitive beliefs about worry, such as beliefs concerning the uncontrollability of worry and the mental/social dangers of worrying (type 2 worry), are also believed to be activated during a distressing worry episode, leading to an escalation of anxiety. The person with GAD will interpret the increasing anxiety as a likely coping failure, resulting in persistent type 1 worry so as to achieve an internal goal and deem it safe to cease the worry process.

The intolerance of uncertainty model emphasizes the key process wherein persons with GAD are unable to tolerate uncertain or ambiguous situations and, rather, find them upsetting and stressful, leading to chronic worry when confronted with such situations (Dugas, Gagnon, Ladouceur, & Freeston, 1998). Intolerance of uncertainty can also exacerbate initial “what if” questioning even in the absence of the immediate situation. According to this model, individuals perceive that worry will either help them cope with a feared event or will prevent these events from happening at all, reinforcing its use. Two other main features of this model include poor problem orientation (i.e., poor problem-solving confidence and poor perceived control over the problem-solving process) and cognitive avoidance (i.e., the avoidance of threatening images), which both serve to maintain the worry. In particular, worry and anxiety may cause an individual to lack confidence in problem solving abilities, perceive problems as threats, become easily frustrated when confronted with a problem, and be pessimistic about the outcome of problem-solving efforts (Koerner & Dugas, 2006). In line with Borkovec et al.’s (2004) model, the intolerance of uncertainty model highlights the use of cognitive strategies such as thought replacement and distraction by individuals with GAD to avoid somatic arousal and threatening images associated with worry. More recently, researchers have proposed
that mindfulness/acceptance-based theories be integrated into our conceptualization of GAD (Roemer & Orsillo, 2002). Overall, the prevailing cognitive-behaviour models of GAD emphasize the role of worry as a method of avoiding either internal emotion-laden experiences or somatic activation, and suggest that the beliefs an individual holds about worry will likely reinforce its use as a coping strategy when confronted with a perceived threat.

1.7 CBT for Late-Life GAD

Expanding interest in CBT for older adults follows from data demonstrating its efficacy with younger adults (e.g., Dugas et al., 2010), which highlights how older adults prefer therapy over medications for the treatment of mild to moderate mental health problems (Landreville, Landry, Baillargeon, Guérette, & Matteau, 2001; Wetherell, Kaplan, et al., 2004), and the time-limited and collaborative nature of a CBT approach that is suitable for an aging cohort (Zeiss & Steffen, 1996). Typical CBT protocols for GAD include education about anxiety, self-monitoring of cognitive and physiological cues that lead to anxiety, relaxation training, exposure to anxiety-provoking thoughts and situations using systematic desensitization, and cognitive restructuring, with some incorporating problem-solving skills training, behavioural activation, and sleep hygiene into therapy (Ayers et al., 2007). To date, a number of studies have demonstrated the efficacy of group or individual therapy for the treatment of late-life GAD. Several of these studies will in turn be reviewed in the following sections.

Group CBT. The first randomized control trial (RCT) for late-life GAD, carried out by Stanley, Beck, and Glassco (1996), compared 14 weeks of group-administered CBT to supportive psychotherapy. The sample consisted of 48 patients at least 55 years
of age with a primary diagnosis of GAD. Analyses revealed that both therapies were equally effective in reducing symptoms of anxiety and depression, with gains maintained or enhanced at 6-month follow-up. Post-treatment response rates did not differ significantly between the two treatments.

A second study compared the efficacy of group CBT to a minimal contact control group with 85 participants aged 60 years and older (Stanley, Beck, et al., 2003). At post-treatment, those participants who received group CBT made significant improvements on self-reported and clinician rated measures of worry, anxiety, depressive symptoms, and quality of life, whereas those in the control group did not. These findings held up with both completer and intent-to-treat analyses. Only 55% of participants in the CBT group continued to meet criteria for GAD at post-treatment, relative to 81% in the control group. Optimistically, the gains made by those who received CBT were maintained or enhanced at 1-year-follow up on most measures.

A third randomized controlled trial tested the effects of group CBT versus a discussion group that involved the discussion of worry-provoking topics and a waiting list control (WLC) group with 75 participants (Wetherell, Gatz, & Craske, 2003). Compared to the WLC group, participants who attended CBT and the discussion group improved significantly; however, only one difference was found between these two groups immediately after treatment. Specifically, CBT participants spent a lower percentage of the day worrying at post-treatment, compared to those in the discussion group. Overall, larger effect sizes were observed for each outcome variable for the CBT group as compared to the discussion group, and no effects were observed for participants on the WLC group. Also notable in this study was the observation that CBT participants
rated a higher preference for and satisfaction with their intervention and had greater perceived improvement as compared to those in the discussion group.

Researchers later merged the findings from the above three studies to determine what factors predicted response to group CBT at post-treatment and at 6 months follow-up (Wetherell et al., 2005). Participants were only included in the analyses if they completed outcome measures at both time periods. Roughly half of the 65 included participants achieved significant change in symptoms at post-treatment, while two-thirds of participants met these criteria at six-month follow-up. Factors that were linked to more improvement at these timeframes included better homework adherence, having a higher severity of GAD symptoms at baseline, and the presence of a comorbid psychiatric diagnosis, suggesting that at-home practice of techniques and greater need or motivation for therapy due to severity of symptoms is related to enduring effects from CBT in older adults with GAD.

**Individual CBT.** Individual CBT has also been studied in the treatment of older adults with GAD. With a small sample of eight older adults, Ladouceur, Léger, Dugas, and Freeston (2004) examined the effectiveness of a form of CBT that specifically addresses intolerance of uncertainty. This specialized form of CBT included awareness training, behavioural experiments to increase participants’ intolerance of uncertainty, reappraisal of beliefs about the usefulness of worry, exposure to worrisome beliefs, and prevention of worry behaviours. After 14 weeks of treatment, seven of the eight participants no longer met diagnostic criteria for GAD, and these effects were maintained at both 6- and 12-month follow-up.
Enhanced CBT. In two studies, another group of researchers evaluated standard individual CBT versus a waiting list and a version of CBT enhanced with learning and memory aids to increase homework compliance and strengthen the memory for CBT techniques with older adults (Mohlman et al., 2003). In the first study, 27 adults between the ages of 60 and 74 received either 13 weeks of standard CBT or were on a waiting list for this timeframe. At post-treatment, 50% of the CBT group and 31% of the waiting list group did not meet diagnostic criteria for GAD at post-treatment; however, these differences were non-significant. In study two, 15 adults aged 60 years and older either received 13 weeks of enhanced CBT or were placed on a waiting list. Those in the enhanced CBT group demonstrated a significant decrease in anxiety and worry, whereas no changes were observed for the waiting list participants on these measures. While only 14% of the WLC group was classified as treatment responders, 86% of the enhanced CBT group no longer met criteria for GAD at post-treatment. Although no direct comparisons were made, effect sizes were slightly larger for enhanced CBT versus standard CBT.

In a follow-up study, Mohlman and Gorman (2005) examined the effects of executive functioning on clinical outcomes for 32 older adults who received either enhanced individual CBT for GAD or were assigned to a waiting list. Participants were classified into ‘executive dysfunction’ or ‘intact’ groups, based on how they performed on several neuropsychological measures prior to receiving treatment; however, therapists were blind to these classifications. At post-treatment, five participants classified as ‘executive dysfunction’ showed substantial improvement on the neuropsychological measures, and were thus classified as ‘improved executive functioning’. Analyses
revealed that the clinical outcomes of participants depended on whether or not participants had intact or improved executive functioning. That is, the intact and improved executive functioning groups had greater decreases on outcome measures and higher rates of response at post-treatment and follow-up than those in the executive dysfunction and waitlist groups. These results provide support for the notion that executive skills play a part in the successful use of CBT, particularly because those participants with lower executive functioning showed decreased benefit from this form of therapy.

**CBT for primary care.** Recently, group CBT was modified to be more flexible for use with older primary care patients with GAD, given that many patients present for treatment in this setting (Pearson, 1998). Still delivered by psychologists, CBT for GAD in primary care was shortened to eight sessions, many of the procedures were simplified, and treatment components included education, relaxation, cognitive therapy, problem-solving skills, exposure, and sleep-management skills. A preliminary trial of this treatment with 12 participants demonstrated that, compared to usual care, participants receiving modified CBT experienced a significant reduction in symptoms of worry, GAD severity, and depression (Stanley, Diefenbach, et al., 2003). Moreover, all participants in the CBT group were classified as treatment responders at post-treatment, rated CBT as highly credible, and were very satisfied with their treatment.

A second, larger-scale randomized controlled trial compared the effects of group-administered CBT for primary care patients with GAD versus treatment as usual (TAU) with bi-weekly phone calls (Stanley et al., 2009). With 134 older adults enrolled in the study, CBT led to greater improvement in worry severity, depressive symptoms, and
general mental health, as compared to TAU. At three-month follow-up, participants who received CBT had lower worry severity, indicating higher treatment response for those completing CBT over participants in the TAU condition.

In general, it appears that group-administered CBT for late-life GAD is more effective than waiting list and control comparison groups, and may be better than other group activities (e.g., discussion group) for reducing time spent worrying. Group CBT also has longstanding effects for symptoms of anxiety, and participants endorse high rates of satisfaction with this form of treatment. At this time, it is difficult to draw clear conclusions about the efficacy of individual CBT for older adults due to small sample sizes in treatment trials; however, enhanced CBT may be more promising than standard CBT treatment for older clients. Likewise, group CBT for primary care shows potential for improving anxiety in the short- and long-term compared to TAU. Overall, homework adherence and intact/improved executive functioning have been identified as important contributing factors to treatment response in older adults.

1.8 Limitations of CBT for GAD Research

Despite some promising results from randomized and comparison trials of CBT for GAD, limitations of the existing research base should be acknowledged. First, many of these studies involved small samples, with as few as eight (Ladouceur et al., 2004) or 15 (Mohlman et al., 2003) participants in trials, and in those studies with larger sample sizes, attrition rates were relatively high during the active treatment and follow-up phases (e.g., Stanley et al., 2009). Likewise, the participants in these studies are mostly Caucasian, relatively healthy, and active, which may not be representative of the general anxious older adult population, particularly those who may be more disabled or medically
ill. Difficulties in recruiting and retaining large heterogeneous groups of older adults in treatment for anxiety have been documented (Radley, Redston, Bates, & Pontefract, 1997), and continue to be a source of attention by researchers. Some allude to the reluctance of older adults to seek treatment for anxiety (Blazer et al., 1991) and how many older adults fail to meet full diagnostic criteria for GAD (Wetherell & Gatz, 2001), whereas others highlight how logistical difficulties related to transportation and medical conditions contribute to lower numbers (Stanley, Hopko, et al., 2003).

On the whole, lower effect sizes are observed for trials of CBT for late-life GAD than that for the general adult population (Westen & Morrison, 2001). One possible reason is that the majority of CBT treatment studies for GAD have studied the group format rather than the individual format of therapy. This is important, given that individual therapy for GAD produces greater and more rapid rates of recovery than group CBT in trials with younger adults (Fisher & Durham, 1999). Although researchers have recently begun testing individual treatments, the earlier focus on group interventions may understate the effectiveness of this form of therapy in the older age group. To achieve larger effect sizes, it may be that further modifications of CBT are necessary to correspond to the needs of some older adults. For example, Lenze et al. (2003) recommend the use of memory and learning aids such as homework reminders, and more focus on review of sessions to help account for memory decline in old age. However, researchers and clinicians are cautioned that adaptations may not always be necessary, as therapists should always consider the needs of the person, which should not simply be based on the client’s age (Laidlaw & McAlpine, 2008).
1.9 Under Treatment of Anxiety in Older Adults

Despite the relatively high prevalence and significant impact of anxiety in older adults, such disorders frequently remain unrecognized and undertreated in this age group. Considerable evidence suggests that the vast majority of Canadians who suffer from mental health problems do not seek treatment, with only 32% of individuals reported to speak with a mental health professional about their problems in a given year (Statistics Canada, 2002). Even when older adults meet diagnostic criteria for a mental disorder, they are less likely to perceive a need for mental health care or to receive referrals from primary care to mental health specialty care than young- or middle-aged adults (Klap, Unroe, & Unützer, 2003). What is more, Canadians aged 55 years and older with an anxiety disorder are less likely to use mental health services than those with an anxiety disorder that is comorbid with a mood disorder, or those with a mood disorder alone (Scott et al., 2010). Seniors with clinically significant anxiety symptoms but no diagnosable anxiety disorder are more likely to seek treatment if they are younger, have more severe symptoms, and a comorbid mood disorder (Scott et al., 2010).

Another major factor in the under treatment of mental health conditions in many urban as well as rural and remote areas is a lack of access to providers (World Health Organization and World Organization of Family Doctors, 2008), particularly those who are trained in evidence-based treatment like CBT (Gega, Marks, & Mataix-Cols, 2004). Mobility difficulties due to the severity of the disorder or a co-occurring health condition (Stanley, Hopko, et al., 2003) and stigma that often accompanies mental disorders also results in underutilization of mental health services by older age groups (Sirey et al., 2001). The issues raised here underscore the need for researchers to examine the
effectiveness and feasibility of innovative psychosocial interventions that can be made available to larger numbers of patients.

1.10 Using the Internet to Deliver Therapy

One novel method for increasing accessibility and affordability of psychological assistance that has received attention by researchers and clinicians worldwide is the provision of therapy over the Internet. Given that the number of people using the Internet on a daily basis is increasing, this medium is a promising avenue for both reaching and providing support to sufferers of anxiety and other clinical problems. Canadians are the heaviest users of the Internet in the world, with 25.5 million Canadians using the Internet nearly every day (Canadian Internet Registration Authority, 2013). Data gathered in 2009 indicate that more than 80.3% of all households in Canada have access to the Internet (Statistics Canada, 2010a) and that 69.9% of individuals use the Internet to seek medical or health information (Statistics Canada, 2010b). Consequently, its widespread availability has spurred numerous studies on the use of the Internet to deliver therapy (Marks & Cavanagh, 2009). These treatments are commonly based on CBT techniques as it is well-suited to presentation by interactive yet standardized computer programs, it targets specific symptoms and behaviours, and it proceeds in a systematic manner (Ritterband et al., 2003).

Internet-based cognitive-behaviour therapy (ICBT) programs have been created to be either self-administered or therapist-guided (Ritterband et al., 2003). Self-administered ICBT is presented on structured web pages in a user-friendly format and is designed to be implemented by the client in the absence of the therapist. In the case of therapist-assisted ICBT, or TAICBT, this approach combines the benefits of structured
self-help materials with therapist involvement for support and direction in therapeutic activities by e-mail (Postel, de Haan, & De Jong, 2008). Contact with the client typically occurs prior to treatment and then after each module with the therapist responding after a brief delay (e.g., within one week). In a study where amount of contact was documented, it was found that, on average, clients and therapists were engaged in e-mail contact for two hours over a 6-week period (G. Andersson et al., 2005).

The appeal of TAICBT comes from the many benefits this form of delivery has to offer potential users and health care systems. TAICBT permits improved access to mental health services, is a convenient method of obtaining services, offers individuals the opportunity of working through treatment at their own convenience, and allows ongoing access to written therapy materials more so than is typically offered in face-to-face therapy (G. Andersson, 2009). Moreover, there is a recent trend for people choosing to take a central role in the management of their own health, with individuals increasingly turning to the Internet for information on mental health (Fox & Fallows, 2003). Thus, TAICBT provides an option for clients to not only manage their own mental health concerns but allows them to receive a service that is evidence-based with the input of a trained therapist. The relative anonymity and accessibility of the Internet also makes it appealing to users who want to confide sensitive information and who wish to avoid the stigma sometimes experienced when seeking face-to-face therapy (Gega et al., 2004). Likewise, the Internet may be preferred by those who like to deal with mental health problems privately (Leach, Christensen, Griffiths, Jorm, & Mackinnon, 2006). Thus, TAICBT might increase service utilization by people who would otherwise not seek treatment (Ruggiero et al., 2006).
Initial concerns that an Internet-based approach may be unacceptable to patients, impersonal, or lacking credibility have also been refuted (Graham, Franses, Kenwright, & Marks, 2000). In fact, patients consistently value this format and reportedly enjoy the multi-media features and like this approach the same as, if not more, than other forms of treatment for depression and anxiety (Proudfoot et al., 2003). Despite no face-to-face contact, patients who receive TAICBT report developing a strong therapeutic relationship with their Internet therapist (Knaevelsrud & Maercker, 2007), with some studies reporting that clients who received TAICBT rated aspects of the therapeutic alliance as stronger than in traditional therapy (Cook & Doyle, 2002; Preschl, Maercker, & Wagner, 2011). Greater satisfaction with the therapeutic alliance in ICBT versus face-to-face therapy has not been reported by all clients, however, as one study observed that face-to-face therapy clients reported higher enjoyment communicating with their therapist as compared to those in the TAICBT group (Kiropoulos et al., 2008).

From a provider’s perspective, Internet interventions like TAICBT have been found to be cost-effective financially (E. Andersson et al., 2011) and in the use of therapists’ time and resources (Marks, Kenwright, McDonough, Whittaker, & Mataix-Cols, 2004). Moreover, TAICBT may be one method of providing shorter and simpler interventions that are made accessible to clients as an initial step in preventing or treating clinical problems that are either subthreshold or have mild to moderate severity following a stepped-care approach (e.g., van't Veer-Tazelaar et al., 2009), before offering more complex, demanding, and expensive therapies to individuals who do not respond to the initial intervention. When offering TAICBT, providers must also be aware of the potential challenges involved. For example, clinicians must carefully assess which
clients are appropriate for such a service due to the need to manage any risks to the client (e.g., suicidality) by e-mail and phone. Furthermore, given the lack of non-verbal cues using TAICBT, the possibility of miscommunications to occur between therapist and client needs to be discussed openly with clients before commencing treatment.

1.11 Efficacy of ICBT

To determine the efficacy of ICBT with and without therapist support for major depression, social phobia, panic disorder, and generalized anxiety disorder, a meta-analysis of 22 RCT’s was conducted (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010). ICBT was superior to control groups, with large effect sizes both in the short- and long-term. Rates of adherence and satisfaction with ICBT were high, even with reduced contact with a clinician. Another meta-analysis of 12 RCT’s found TAICBT to be more effective than self-administered ICBT and was as effective as traditional face-to-face CBT in reducing clinical symptoms (Spek, Cuijpers, et al., 2007). These findings correspond with previous research demonstrating poor outcomes and high rates of attrition when no guidance was provided and the intervention was made freely available to clients (Farvolden, Denisoff, Selby, Bagby, & Rudy, 2005). Results from a systematic review also support the notion that dropout rates are highest when clients are delivered ICBT through an open access website (e.g., access service at own convenience without therapist involvement), as opposed to an RCT with therapist involvement (Christensen, Griffiths, & Farrer, 2009).

Findings from the following study are representative of most other TAICBT research in the area of anxiety disorders. Researchers randomized 55 patients with diagnosed panic disorder to TAICBT with e-mail contact, therapist-guided CBT over the
phone, or received information only (Klein, Richards, & Austin, 2006). Both CBT interventions were effective in reducing panic disorder symptoms, number of general practitioner (GP) visits, and in improving physical health ratings compared to the information-only control group. These effects were maintained for both CBT groups at follow-up; however, patients with TAICBT experienced greater improvements in physical health ratings and in reducing GP visits. Moreover, patients who received TAICBT also spent fewer days in treatment than those who received CBT over the phone. Since publication of this study, similar findings have been successfully replicated by other researchers comparing TAICBT for panic disorder to waiting list control groups (e.g., Ruwaard, Broeksteeg, Schrieken, Emmelkamp, & Lange, 2010). Results on the efficacy of TAICBT for other anxiety disorders such as post-traumatic stress disorder (Christensen et al., 2009) and social anxiety disorder (Andrews, Davies, & Titov, 2011; Titov, Andrews, Schwencke, Drobny, & Einstein, 2008), as well as mood disorders (G. Andersson et al., 2005) and other clinical problems (e.g., insomnia; Vincent & Lewycky, 2009) have also been promising.

1.12 ICBT for the Treatment of GAD

Studies examining the effectiveness of TAICBT treatment for GAD in the general population have lagged behind research conducted on other clinical problems but are now emerging. Thus far, several groups of researchers have directed their attention to Internet programs designed for either the prevention or the effectiveness of ICBT for treating GAD (Draper, Rees, & Nathan, 2008; Paxling et al., 2011; Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009). Earlier research used elevated anxiety sensitivity (e.g., the fear of the physiological, social, and cognitive symptoms of anxiety; Reiss, 1991) as
an indicated risk factor for the development of anxiety pathology, and compared the effects of an Internet-based program to a WLC group with 83 students with high anxiety sensitivity (Farvolden et al., 2005). This program involved six sessions on psychoeducation about anxiety, relaxation training, interoceptive exposure, cognitive restructuring, and relapse prevention, and did not involve any therapist assistance. At post-treatment, significant effects were observed for participants in the treatment group for anxiety-related cognitions and depressive symptoms; however, only a non-significant trend for improvement of anxiety sensitivity was found. Intervention credibility and satisfaction and frequency of program usage did not predict treatment outcomes, yet outcome expectancy predicted post-treatment changes in fear of bodily sensations and catastrophic cognitions. The initial effects of the Internet-based program for anxious cognitions and depressive symptoms were maintained six months after treatment (Kenardy, McCafferty, & Rosa, 2006).

To date, six known studies have been published on the treatment of GAD using Internet delivery. An initial study described the treatment response of three individuals with a primary diagnosis of GAD to ICBT that combined cognitive and behavioural components with metacognitive techniques into 11 modules (Draper et al., 2008). Although participants were instructed to complete one module per week, they underwent treatment at their own pace, with time to completion ranging from 13 to 22 weeks. Therapist guidance was not provided; however, participants received occasional phone call reminders to continue with the modules. All participants attained clinically significant improvements on measures of worry, GAD symptomatology, and metacognitions from baseline to post-treatment, and no longer met diagnostic criteria for
GAD at the completion of the study. These effects were sustained at five-month follow-up for two participants who completed measures.

In a second study, 48 individuals meeting diagnostic criteria for GAD were randomized to either a WLC group or received TAICBT for GAD (Titov, Andrews, Robinson, et al., 2009). Participants in the treatment group completed a Worry program consisting of six online lessons based on CBT psycho-education and techniques for GAD, weekly homework assignments, received weekly e-mails from a clinical psychologist, and were involved in an online discussion forum with other participants. Post-intervention assessment revealed that TAICBT group participants reported significantly reduced symptoms of anxiety, worry, and depression as compared to WLC participants, with 63% of TAICBT participants and 10% of controls meeting recovery criteria. Between-group Cohen’s $d$ effect sizes were 1.24 and .86 on the GAD-7 and PHQ-9. Participants who received treatment rated the Internet program as satisfactory, and most rated the quality of the treatment modules and correspondence with therapist as excellent/good.

Robinson and colleagues (2010) compared the effects of clinician- vs. technician-assisted ICBT to a delayed treatment group to examine clinical outcomes when support is provided by a person not trained to provide counselling or therapy. The delayed treatment group received no treatment for 11 weeks and then received clinician-assisted ICBT. The treatment components were based on the Worry program used by Titov, Andrews, Robinson et al. (2009); however, those in the technician-assisted condition did not have access to a discussion forum. Moreover, the technician was instructed to only provide encouragement and support, and respond to general questions without giving
clinical advice, whereas the clinician was advised to engage with each participant in treatment, and respond to participants’ questions via the discussion forum, e-mail, or telephone. Both were instructed to be in contact with each participant for up to 10 minutes per week. One-hundred forty-five participants with a diagnosis of GAD were randomized to one of the three conditions, and after a treatment period of 10 weeks, both treatment groups had significantly reduced worry and generalized anxiety scores compared to the delayed treatment group, but did not differ significantly from one another. Three months later, both treatment groups had sustained the gains made at treatment completion; however, participants in the clinician-assisted group had made further gains on a measure of worry.

Preliminary results for *GAD Online*, a self-guided ICBT program, also provided support for the use of Internet-based methods for treating persons with at least subclinical symptoms of GAD (Klein, Meyer, Austin, & Kyrios, 2011). *GAD Online* is a fully automated online program that consists of 12 modules based on CBT principles to be completed over 12 weeks. The program is text-based and contains numerous multimedia features, such as video and audio content, forms to download, and animations. In this study, the participants did not receive any therapist assistance; however, automated e-mails were sent at various points during the program, depending on the participants’ online behaviour. Through a naturalistic observation study, Klein et al. (2011) identified that 88 participants who completed *GAD Online* showed significant improvements on GAD severity, psychological distress, and quality of life from pre- to post-treatment. Further, participants reported between moderate and high satisfaction with the treatment program. This study’s findings are limited by the lack of a control group for comparison.
A large RCT on the efficacy of TAICBT as compared to a WLC group for the treatment of GAD randomized 89 participants who fulfilled diagnostic criteria for GAD were assigned to an Internet program consisting of 8 modules that was based on principles of CBT and applied relaxation with therapist guidance or to an 8-week WLC group (Paxling et al., 2011). Therapist guidance involved the provision of e-mail feedback on a weekly basis that was in association with the homework assignments. As compared to the WLC group, the treatment group demonstrated significant improvement on all outcome measures except a measure of quality of life at pre- and post-treatment. Such results were maintained or improved at one- and three-year follow-up. Of note is that among the TAICBT group participants, only 10.5% completed all of the treatment modules after 8 weeks. Even with only an average of 4.8 treatment modules completed by participants, large effect sizes were observed in favour of the TAICBT group.

To determine whether the efficacy findings of ICBT for GAD translate into effectiveness in practice, Mewton, Wong, and Andrews (2012) studied 588 patients who completed at least one ICBT lesson for GAD that was available through their primary care physician. Just over half of the patients completed all six lessons. There was a significant reduction in generalized anxiety and psychological distress scores from pre- to post-treatment, with roughly 61.7% of participants no longer with a probable diagnosis of GAD according to the GAD-7. When adjusting for pre-treatment scores, older individuals, females, and those with lower disability scores tended to have lower scores on all post-intervention measures. This study demonstrated that ICBT for GAD is effective in generating clinically significant outcomes among patients when treated under typical clinical conditions.
Considering the above findings, the literature on ICBT for the treatment of GAD with and without the support of a therapist or technician indicates that this therapy approach can be effective for reducing symptoms of anxiety and depression, worry, and anxiety-related cognitions, and may be a promising avenue for the prevention of anxiety disorders in the future.

1.13 ICBT and Older Adults

The majority of literature available on the efficacy of TAICBT has involved young or middle-aged adults, in spite of recommendations to researchers of ICBT to consider whether such programs can be used effectively by clients of all ages (National Institute for Health and Clinical Excellence, 2006). Internet-based therapies may be particularly beneficial for older adults, given that they constitute the fastest growing group of Canadian computer users and information seekers on the web (Veenhof & Timusk, 2009), with 71% of adults aged 55 to 64 and 41% of seniors using the Internet in 2009 (Statistics Canada, 2010a). Moreover, because TAICBT can be used by individuals with limited mobility and lower literacy levels and users can proceed with therapy at their own pace, this format of therapy may be especially relevant for reaching older adult clients with GAD or subthreshold symptoms.

A recent study sought to clarify the extent to which adults aged 65 years and older are represented in studies of computerized CBT for depression (Crabb et al., 2012). It was determined that roughly 3% of the study participants in the reviewed studies were older adults. Through contact with study authors, it was reported that older adults were less likely to drop out of computerized CBT in some studies; however, they tended to
require more guidance and precise instructions when using an online treatment program as compared to younger adults.

To understand what factors might influence older adults’ willingness to engage in ICBT, questionnaires were provided to 38 mental health service users aged 65 and older with anxiety and/or depression (Elsegood & Powell, 2008). Most respondents had no previous experience using a computer (84%); however, 45% of participants indicated an interest in ICBT and a willingness to learn computer skills necessary for ICBT use. Interest in ICBT was common among respondents who had benefited previously from self-help materials but was unrelated to confidence in computer skills. Qualitative data revealed that the most common reasons for lack of interest in ICBT were lack of motivation to try, fear or rejection of technology, and concern that cognitive abilities are inadequate.

Zou and colleagues (2012) carried out the first known feasibility trial on the use of TAICBT for older adults with a range of anxiety disorders. To be eligible, participants had to have a score of ≥ 8 on the Generalized Anxiety Disorder-7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006) and be aged 60 years and older. Participants were diagnosed via a telephone interview as having GAD, panic disorder, social phobia, or PTSD. The TAICBT program consisted of five lessons covering education about anxiety, cognitive restructuring, management of physical symptoms, graded exposure, and relapse prevention, homework tasks, resources to consult, a discussion forum, and weekly telephone support or e-mails from a clinical psychologist. Participants were expected to complete the program within eight weeks. Of the 38 applicants, 22 older adults (mean age = 66 years) met inclusion criteria and received the TAICBT program.
All participants completed the program within the expected timeframe. On measures of anxiety, depression, and stress, statistically significant improvements were observed from pre- to post-treatment; these measures also demonstrated large within-group effect sizes. Such findings held for three-month follow-up scores. Furthermore, 72% of participants met criteria for remission at post-treatment.

A similar study examined the feasibility of TAICBT for depression for older adults (Dear et al., 2013). In this study, 30 adults aged 60 years and older were screened for eligibility; 20 were eligible to participate and all had a score of ≥ 10 on the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001). Participants received access to a five-lesson TAICBT program over 8 weeks that included homework summaries, additional resources, a moderated discussion forum, and weekly telephone or e-mail contact from a clinical psychologist. Sixteen participants completed the program within the expected timeframe. Post-treatment data was collected from 17 participants; however, intent-to-treat (ITT) analyses were carried out. Significant improvements in symptoms were found on the PHQ-9, the Geriatric Depression Scale (GDS; Yesavage et al., 1983), the GAD-7, and a measure of disability, with large within-group effect sizes at post-treatment and three-month follow-up.

Other researchers have tested the efficacy of an ICBT program for persons aged 50 to 75 years old meeting criteria for subthreshold depression (Spek, Nyklícek, et al., 2007). The effects of ICBT without therapist guidance were compared to both an in-person group CBT condition and a waiting list control group, with depressive symptoms as the primary outcome measure. Average adherence to the intervention varied between the two protocols; 5.5 modules out of 8 were completed by ICBT participants and 9 out
of 10 sessions were completed by group CBT participants. Only 48% of the ICBT participants completed the Internet intervention, whereas 95% of group CBT participants completed their treatment. Nevertheless, the treatment conditions were equally effective at reducing depressive symptoms at post-treatment, and both were significantly better than the waitlist condition. Effect sizes for pre- to post-improvement were large for both interventions, suggesting that ICBT may be at least as effective as more traditional interventions for the older age group. Some caution must be given to the interpretation of these findings due to the high attrition across all three groups from pre- to post-treatment assessment (approximately 40% of participants).

Researchers followed up with participants from this initial study a year later (Spek et al., 2008). At follow-up, depression scores differed significantly between the ICBT participants and the waiting list control group, but were no different than the group CBT condition. However, a non-significant trend was observed towards better outcomes for the ICBT condition as compared to the group intervention. Again, attrition rates were high in this study, with 37% of participants not completing the follow-up measures.

Another study compared a mind-body online intervention for chronic pain for 78 adults aged 55 years and older to a WLC group (Berman, Iris, Bode, & Drengenberg, 2009). In general, the online intervention was significantly more effective for increasing participants’ awareness of their responses to pain and confidence with implementing non-medical self-care techniques for chronic pain. The sample size prevented detection of significant between-groups differences for other measures, but there was a trend for the online intervention being more effective for improving depression and anxiety, and both groups experienced significant improvements in pain intensity and pain interference at
post-treatment. Over 80% of participants who received the intervention believed it was helpful or very helpful and 88.4% found the website easy or very easy to navigate. Nearly all participants reported that they would recommend the intervention to others. Overall, these results provide support for the feasibility of online programs with an older age group.

Although ICBT research for older adults is in its infancy, the above literature review provides preliminary support for its use in treating anxiety, depression, and physical health problems. Specifically, ICBT holds promise as an effective method for treating a range of anxiety disorders, major depression, and subthreshold depressive symptoms. Likewise, study of an online intervention for chronic pain generated additional support for the feasibility of Internet-based treatment in an older adult population. Methodological weaknesses, such as a lack of control groups in studies by Zou and colleagues (2012) and Dear and colleagues (2013) and the high attrition rates noted by Spek and colleagues (2007; 2008) in both studies, limit our ability to draw any definite conclusions about the efficacy of ICBT in the older age group. Evidently, additional research is needed to determine whether this is an appropriate avenue for treating other clinical problems, including late-life GAD.

1.14 Client Engagement in TAICBT

An area that ICBT researchers have yet to comprehensively examine is how client engagement is associated with treatment outcomes in TAICBT. Although there is no agreed upon definition of client engagement in psychotherapy, previous research suggests that client expectations about treatment (e.g., R. P. Greenberg, Constantino, & N. Bruce, 2006), clients’ perceived credibility of treatment rationale and expectancy of
improvement (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011), the alliance formed between client and therapist (e.g., Horvath & Luborsky, 1993), and client attendance, involvement in, and satisfaction with therapy (e.g., Dearing, Barrick, Derme, & Walitzer, 2005) all contribute to or are influenced by client engagement in face-to-face therapy. Client engagement in psychotherapy may be regarded as one of the most robust change mechanisms of the numerous process variables studied thus far (Constantino, Castonguay, Zack, & DeGeorge, 2010). Indeed, in their influential review of psychotherapy outcome and process literature, Orlinsky, Grawe, and Parks (1994) pronounced that the “quality of the patient’s participation in therapy stands out as the most important determinant of outcome” (p. 361). Quantitative measures have been developed to assess aspects of client engagement, including client expectations of therapy and treatment rationale (Devilly & Borkovec, 2000) and ability to change symptoms (Dozois & Westra, 2005), therapeutic alliance (Luborsky et al., 1996), and client satisfaction with therapy. Treatment attendance is often assessed by number of therapy sessions attended and treatment duration (Reardon, Cukrowicz, Reeves, & Joiner, 2002).

To date, TAICBT research has descriptively shown that clients report a high level of therapeutic alliance (G. Andersson et al., 2012) and are mostly satisfied with TAICBT for posttraumatic stress disorder (Klein et al., 2010), depression (Kaltenthaler et al., 2008) and panic disorder (Kiropoulos et al., 2008). Positive expectations of improvement with TAICBT have been correlated with change in anxiety and depressive symptoms in some studies (Hedman et al., 2012; Titov, Andrews, & Schwencke, 2008), but not in others (Carlbring, Ekselius, & Andersson, 2003; Titov, Andrews, Choi, Schwencke, & Johnston, 2009). Mixed findings regarding the association between therapeutic alliance
and treatment outcomes have also been observed. It is recognized that therapist involvement is associated with better outcomes than self-guided ICBT (G. Andersson & Cuijpers, 2009), however, it’s importance in predicting improvement in anxiety and depression has not yet been firmly established. Likewise, the association between satisfaction with TAICBT and change in anxiety and depressive symptoms has not been reported on in the literature.

Due to the nature of the service, treatment involvement and attendance is more complex to operationalize in TAICBT. Given that clients do not have regularly scheduled sessions to attend, engagement in this modality relies more heavily on the client’s own motivation to log onto the website, read the content, and practice the skills by completing the online and offline exercises. Engagement also depends on the client interacting with the therapist over e-mail or via the website. In an attempt to assess client engagement with an Internet-based depression prevention program for adolescents, one study measured the adolescents’ patterns of use of the prevention program’s website (Van Voorhees et al., 2009). Website use was measured in numerous ways, including time spent on the website and on each module, duration of time the program was used (in days), number of modules completed, and number of online exercises completed, including the mean number of characters typed in for each online exercise.

Indeed, there are many unique ways of assessing client engagement when studying Internet-based interventions. A more detailed examination of engagement in TAICBT using such methods is warranted to gain a better understanding of how patterns of website use may be associated with treatment outcomes using this modality.
1.15 Purpose and Objectives of Present Study

The present study’s primary aim was to add to the growing literature on TAICBT by uniquely studying the efficacy of this method of therapy for treating older adults with GAD or subthreshold symptoms of GAD. To date, older adults have been rarely included in most TAICBT research (Crabb et al., 2012). Although the literature on TAICBT for the treatment of GAD is emerging, further study of this modality for the treatment of GAD is warranted. No known published studies have researched TAICBT with older adults specifically for the treatment of generalized anxiety. Therefore, this study sought to determine whether an online TAICBT program, adapted to meet the needs of an older cohort, is efficacious for reducing GAD symptom severity, anxiety, worry, and depression, and for improving quality of life from baseline to post-treatment when compared to a WLC group. This study compared groups on (1) rates of symptom improvement, (2) clinically significant change, (3) remission rates and rates of recovery, and; (4) effect sizes. This study also included a quasi-experimental design by incorporating data collected by participants who originated on the waiting list but converted to treatment later in the study. This allowed for the examination of three groups using a longitudinal design of multiple measurement points.

A secondary aim of the study was to examine how client engagement with TAICBT relates to treatment outcomes. Given that some members of this age group may have less experience with the distance technology TAICBT relies on, client engagement with TAICBT may be particularly important for treatment outcomes when offering therapy online to older adults. Based on approaches used in previous literature studying client engagement in face-to-face therapy (e.g., Dearing et al., 2005) and on Internet-
based programs (e.g., Van Voorhees et al., 2009), this study gathered information on TAICBT participants’ expectations of therapy and ability to change their anxiety, therapeutic alliance, treatment satisfaction, and patterns of website use to analyze how client engagement is associated with treatment outcomes in TAICBT.

Given that TAICBT services have not yet been widely offered to the older age group, a third aim of this study was to collect feedback regarding participants’ experiences in undergoing TAICBT and how this program may be improved for future service users. Open-ended questions asked participants what aspects of the program helped or hindered their progress, what techniques were most useful in reducing their anxiety, and whether the program was user-friendly or requires modification for the older age group.

1.16 Research Questions and Hypotheses

1. The first research question asked: Is TAICBT efficacious in treating generalized anxiety in older adults as compared to a WLC group? Based on the findings reported in recent research on the efficacy of TAICBT for general anxiety with the adult population (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009) and studies on the effectiveness of TAICBT for treating anxiety disorders in older adults (Zou et al., 2012), it was hypothesized that TAICBT participants would improve at a faster rate as compared to the WLC group participants on the primary outcome measures (GAD-7, PHQ-9) and that there would be significant differences in scores between the groups on the secondary outcome measures (PSWQ-A, GAI, GDS, WHOQOL-BREF) at post-treatment. When taking into account data obtained from participants who originated in the WLC group but converted to treatment (i.e.,
Converters), it was hypothesized that they and the Treatment-Only participants would improve at a faster rate as compared to those in the WLC-Only group on the GAD-7, PHQ-9, PSWQ-A, GAI, and GDS.

2. The second research question asked: Does TAICBT lead to greater clinically significant change for participants as compared to a waiting list? It was hypothesized that the TAICBT group would demonstrate greater clinically significant improvements on the primary outcome measure of generalized anxiety (i.e., GAD-7), and achieve medium effect sizes from pre-treatment to post-treatment on all symptom measures, when compared to WLC group participants.

3. The third research question asked: Are rates of recovery and remission similar to those observed in the general adult population? Regarding rates of recovery and change and as is consistent with other TAICBT for GAD research (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009) using the GAD-7 as a measure of generalized anxiety, it was hypothesized that approximately 80% of TAICBT participants would report symptoms below the optimum cut-off score (≤ 10) for a probable diagnosis at post-treatment.

4. The fourth research question asked: Are improvements from TAICBT maintained four weeks following the conclusion of treatment? For participants treated with TAICBT, it was predicted that all expected improvements on the GAD-7, PHQ-9, PSWQ-A, GAI, and GDS would be maintained at four-week follow-up.

5. The fifth research question asked: Is client engagement associated with treatment outcomes in TAICBT for older adults with generalized anxiety? It was hypothesized that higher client engagement with TAICBT would be associated with better
treatment outcomes. More specifically, it was hypothesized that (a) clients who rated TAICBT as credible and likely to be successful and had stronger belief in one’s ability to change at pre-treatment, (b) clients who rated therapeutic alliance and satisfaction with treatment as high at post-treatment, and; (c) clients who accessed and used the website more often (e.g., as measured number of logins) and completed more frequent and lengthier emails and/or Check-ins to their therapist, would be associated with lower symptoms of anxiety (GAD-7) and depression (PHQ-9) at post-treatment.

6. The sixth research question asked: What is the experience of older adults who use TAICBT for treatment of generalized anxiety? Given the qualitative nature of the final purpose of this study, no hypotheses were made regarding the experiences of participants who underwent TAICBT.

2. METHOD

2.1 Research Design

The Consolidated Standards of Reporting Trials (CONSORT) Check-List, an initiative developed by the CONSORT group to alleviate problems arising from inadequate reporting of RCT’s, were consulted in the design and write-up of this study. The study was also registered with Current Controlled Trials (ISRCTN83626400).

To determine the efficacy of TAICBT for older adults with generalized anxiety, the current study employed a two-part design. The first part was an RCT design that compared an active treatment (TAICBT) to a non-active control group (WLC group) using a between-subjects design. This design allowed for a direct comparison between the two groups to determine whether any change in symptoms could be attributed to
TAICBT or to the passage of time. Efficacy research is extremely valuable for identifying whether a therapy results in significant clinical improvement when applied under highly controlled settings (Depp & Lebowitz, 2007) and has been historically regarded as the gold standard of treatment outcome research (K. B. Wells, 1999). The second part was a quasi-experimental design that included data from those who originated in the TAICBT group (i.e., Treatment-Only), those who originated in the WLC group but converted to receive TAICBT after the waitlist period (i.e., Converters), and those who originated in the WLC group but did not opt to receive TAICBT after the waitlist period (i.e., WLC-Only). Employing a quasi-experimental design allowed for a potentially more accurate analysis of the efficacy of TAICBT because a larger number of measurement occasions were included in order to examine the possible impact of client engagement factors on improvement during TAICBT.

For the current study, eligible participants were randomly assigned to receive TAICBT immediately or were assigned to WLC group lasting between seven and 10 weeks. All participants completed several measures upon entry into the study (baseline, or at screening), additional measures at pre-treatment/pre-waitlist, and the same measures seven to 10 weeks later (post-treatment/post-waitlist). The duration of the waitlist depended on whether some TAICBT participants completed the intervention in a shorter timeframe (e.g., seven weeks). Attempts were made to match WLC group participants to the TAICBT participants on length of time between completing pre-treatment/pre-waitlist and post-treatment/post-waitlist measures. All participants in the WLC group were immediately offered treatment after the seven to 10 week waiting period. All participants who completed TAICBT, regardless of original group assignment, were asked to
complete follow-up measures four weeks after completion of post-treatment measures. Since the WLC group participants were offered treatment after the waiting list period, longer-term comparison between the groups was not possible.

To examine client engagement factors that may be associated with treatment outcomes in TAICBT, all participants who underwent TAICBT were asked to complete measures of client engagement at pre- and post-treatment. The participants included in these analyses included those originally randomized to receive TAICBT as well as those originally randomized to the WLC group and then underwent TAICBT. Combining data from Treatment-Only and Converter participants allowed for a larger sample to draw from for these analyses. Similarly, all participants who underwent TAICBT were asked open-ended questions via the online survey after completing the intervention to collect feedback regarding participants’ experiences in undergoing TAICBT.

2.2 Study Setting

**Online Therapy Unit.** This study was conducted in affiliation with the Online Therapy Unit for Service, Education, and Research (Online Therapy USER) at the University of Regina, which is under the leadership of Dr. Heather Hadjistavropoulos. The Online Therapy Unit is responsible for licensing access to TAICBT programs for GAD, depression, and panic disorder that were developed and tested by a team of researchers at Swinburne University of Technology in Melbourne, Australia (Drs. Britt Klein and David Austen) using the Anxiety Online website (www.anxietyonline.org.au/). These three programs were adapted by the Online Therapy Unit for use in Saskatchewan, Canada and were previously in use on the Online Therapy USER website (www.onlinetherapyuser.ca/). The Online Therapy Unit has provided education and
training to diverse registered health professionals and students in Clinical Psychology, Nursing, Social Work, and Medicine in southern Saskatchewan on how to deliver services online. The website and Online Therapy Unit provided TAICBT to residents of Saskatchewan experiencing depression, generalized anxiety, and/or panic disorder using the Anxiety Online programs from fall 2010 until summer 2013. To determine the effectiveness of this service, clients of the Online Therapy Unit were asked to routinely complete outcome measures and provide feedback on their experience. The TAICBT program used in the current study was adapted from the program for GAD that was offered by the Online Therapy Unit.

**GAD Online.** The Online Therapy Unit formerly offered the TAICBT program, *GAD Online*, to clients presenting with generalized anxiety. *GAD Online* includes 12 modules that each consist of CBT materials that are accessed online and educate the participant about an aspect of their symptoms or concern. The modules are presented through a variety of text-based and multimedia materials, including audio, animated graphics, and video to demonstrate therapy techniques. The modules provide suggested online and offline activities that help participants to apply the skills taught in the modules to their daily lives (e.g., monitoring forms). Although *GAD Online* is designed for clients to complete one module weekly for a total of 12 weeks in the program, it has been observed that participants of the Online Therapy Unit often take more than 12 weeks to finish the program and, in some cases, have taken twice as long to do so.

**GAD Online for Older Adults.** For the purposes of the present study, *GAD Online* was adapted to another version that was designated *GAD Online for Older Adults*. The number of modules in *GAD Online* was reduced from 12 to seven to encourage a
more timely completion of the program and to be more consistent with the CBT content included in other TAICBT programs for GAD. After a review and comparison of the modules included in other TAICBT for GAD research (e.g., Titov, Andrews, Robinson, et al., 2009), it was noted that nearly all emphasis is given to cognitive and behavioral skills in their programs, whereas *GAD Online* includes numerous supplementary components (e.g., education on lifestyle factors). See Table 1 for a comparison of the content in modules in *GAD Online* to the version of *GAD Online for Older Adults* that was used in the present study.

In addition to reducing the number of modules, slight modifications were made to some web pages to tailor most examples and content to an older adult audience. For instance, when discussing the applicability of skills to the real world, many web pages on *GAD Online* contain employment-related examples (i.e., would be less pertinent to individuals aged 60 years and older who may be in or close to retirement). These examples were replaced with those more relevant to this age group (e.g., health worries). After modifying the program, an older female adult with training in mental health piloted the program so as to make any suggestions or provide feedback on the usability of the website and the relevance of the examples to older adults. Her suggestions, including adding in detailed instructions on how to use the website, were used to improve the website prior to launching the RCT.

### 2.3 Ethics

Prior to proceeding with the present study, ethics approval was sought jointly from the Research Ethics Boards for the University of Regina, the University of Saskatchewan, and the Regina Qu’Appelle Health Region (see Appendices A-C).
<table>
<thead>
<tr>
<th>Module 1:</th>
<th>Introduction to the purpose and content of GAD Online; education about the nature of GAD; learn to monitor anxiety symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules 2 &amp; 3:</td>
<td>Education about relaxation; learn and practice specific relaxation techniques</td>
</tr>
<tr>
<td>Modules 4 &amp; 5:</td>
<td>Learn how to identify and challenge problematic thoughts, assumptions, and beliefs</td>
</tr>
<tr>
<td>Module 6:</td>
<td>Education about worry; learn how to reduce and control worry</td>
</tr>
<tr>
<td>Module 7:</td>
<td>Learn problem-solving, time-management, and assertiveness skills</td>
</tr>
<tr>
<td>Modules 8 &amp; 9:</td>
<td>Education about avoidance; learn how to confront and overcome avoidance; worry exposures; education about the nature and prevention of behaviours associated with worry</td>
</tr>
<tr>
<td>Modules 10 &amp; 11:</td>
<td>Education about lifestyle factors that influence GAD</td>
</tr>
<tr>
<td>Module 12:</td>
<td>Summary of GAD Online main messages, preparing to end the program, planning for after treatment, and relapse prevention</td>
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</tbody>
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**GAD Online for Older Adults**

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Module 2:</td>
<td>Education about relaxation; learn and practice specific relaxation techniques</td>
</tr>
<tr>
<td>Modules 3 &amp; 4:</td>
<td>Learn how to identify and challenge problematic thoughts, assumptions, and beliefs</td>
</tr>
<tr>
<td>Module 5:</td>
<td>Education about worry; learn how to reduce and control worry</td>
</tr>
<tr>
<td>Modules 6:</td>
<td>Education about avoidance; learn how to confront and overcome avoidance; worry exposures; education about nature and prevention of behaviours associated with worry</td>
</tr>
<tr>
<td>Module 7:</td>
<td>Education about problem-solving and sleep hygiene; summary of main messages; prepare to end program; plan for after treatment; relapse prevention</td>
</tr>
</tbody>
</table>
2.4 Participants and Recruitment

Eligibility criteria. To be consistent with previous online intervention research with older adults (Berman et al., 2009), participants were eligible for this study if they were aged 60 years and older. Participants had to meet either DSM-IV-TR criteria for GAD or subclinical criteria for GAD. To obtain larger numbers of participants, Wetherell and Gatz (2001) recommend that studies include older adults who may not meet the full DSM-IV-TR criteria for GAD, as this has historically been a common reason for excluding 20% of otherwise eligible participants. Existing literature on subclinical presentations of GAD in older adults suggest that three diagnostic criteria (i.e., worry more days than not, difficulty controlling worry, and clinically significant distress/impairment) are endorsed by relatively few participants with subclinical GAD (Diefenbach et al., 2003). Moreover, a previously proposed change for the DSM-5 was to reduce the time frame for experiencing excessive anxiety and worry from 6 months to 3 months (Andrews, Hobbs, et al., 2010); however, this change was not made. Nonetheless, individuals who did not endorse the diagnostic criteria identified by Diefenbach et al. (2003) or reported excessive worry for less than 6 months were categorized as subclinical but were still eligible for participation in the present study. This is consistent with recommendations from other researchers of GAD in older adults who suggest that studies should include older adults who may not meet the full criteria for GAD (Wetherell & Gatz, 2001). To be eligible, participants also needed to have regular access to a computer and the Internet and endorse familiarity and comfort in using a computer and the Internet. Participants taking psychotropic medication that had been stabilized for at least one month were also eligible.
**Exclusion criteria.** Participants were excluded if he/she: (a) was not a resident of Saskatchewan, (b) was less than 60 years of age, (c) had no regular access to a computer and/or the Internet, (d) was currently receiving psychotherapeutic treatment elsewhere or in some other form, (e) met criteria for current substance abuse (drugs or alcohol), (f) met current criteria for a psychotic disorder or bipolar disorder, or severe symptoms of depression, including suicidal ideation, (g) reported having a serious medical condition that may account for anxiety symptoms or may interfere with treatment (i.e., untreated thyroid disorder or other endocrine disorder, Parkinson’s disease, recent stroke, acute cardiac disease) as is consistent with prior CBT for late-life GAD research (Stanley, Beck, et al., 2003), or (h) was currently cognitively impaired.

**Recruitment methods.** Participants were recruited from across the province of Saskatchewan using numerous cost-effective methods. Recruitment efforts focused mostly on higher populated regions of the province (i.e., south, east, and western regions); however, some electronic recruitment strategies may have resulted in persons in northern regions learning about the study. Recruitment methods included print media in the form of newspapers (i.e., the Leader Post, Southwest Booster), seniors-focused newsletters for a range of organizations (i.e., Gray Matters for the Saskatchewan Seniors Mechanism, The Senior Paper, Senior Living, Saskatoon Council on Aging), and other print media (i.e., Coffee News, Java Jabber). Several free and paid online advertisements were posted (i.e., Facebook, Kijiji, UsedRegina, UsedStoon). Posters were placed or sent to hospitals, pharmacies, local seniors’ centers, continuing education facilities, seniors’ fitness facilities, and retirement communities (see Appendix D). Letters were sent to community physicians, psychiatrists and other health professionals with attached posters.
and advertisement cards, asking that they consider referring any eligible patients to the study. Two radio show interviews were carried out to discuss the study and TAICBT (i.e., CBC Radio, CJTR 91.3 Community Radio). E-mail announcements were sent out on the researcher’s behalf via the University of Regina list serve as well as to subscribers of *The Senior Paper*. Referrals were also made from the Online Therapy Unit or from intake offices for health regions involved with the Online Therapy Unit when a participant endorsed having generalized anxiety and was aged 60 or older.

**Assessment for inclusion.** Individuals interested in participating in the present study contacted the Online Therapy Unit by telephone or e-mail. Participants were provided with an initial description of TAICBT and of the research study. If interested in taking part, a telephone pre-screening was arranged with S. Jones or a student research assistant (see Appendix E). At this time, participants were informed of the randomized nature of the study, including the possibility to be assigned to a 7 to 10-week waitlist rather than to receive immediate treatment. During the telephone pre-screening, participants were asked questions to determine whether they met the inclusion criteria for the study. This included questions regarding how they learned of the study, their age, their province of residence (to confirm residence in Saskatchewan), whether they have regular access to a computer, Internet, and a printer, and their comfort in using the Internet and writing e-mails.

Participants were also asked screening questions to determine the presence of generalized anxiety and depressive symptoms, whether they were currently involved in psychotherapy, and their use of psychotropic medications to ensure medication had been taken for longer than a month and that they did not intend to change the dosage.
Participants were also screened for the presence of health conditions that may interfere with treatment and for cognitive impairment. After the initial screening, if a participant was determined to be eligible to participate in the study, he/she was asked to continue with or schedule a clinical diagnostic interview by telephone. Excluded participants were thanked for their interest and referred to self-help materials if they did not have significant symptoms, to the general Online Therapy USER programs if too young, and to other mental health services in their region if they did not have access to a computer or had severe symptoms (e.g., at risk for suicide).

**Screening questions.** To screen for generalized anxiety symptoms by telephone, participants were asked questions from the GAD-7 (Spitzer et al., 2006) (see Appendix F). The GAD-7 was developed to identify probable cases of GAD and to assess symptom severity in clinical practice and research. Containing eight items, the GAD-7 asks participants how often they have been bothered by a list of seven problems in the past 2 weeks (e.g., “trouble relaxing”), and how difficult the problems have made it to do their work, take care of things at home, or get along with other people. The latter item is not included in the scoring but is used more descriptively to assess the level of interference the symptoms cause the participant. Each item is rated on a 0 (not at all) to 3 (nearly every day) scale and ratings are summed for a total score that ranges from 0 to 21. Spitzer and colleagues suggest that a cut-off score $\geq 10$ maximized sensitivity and specificity of the use of GAD-7 in identifying people meeting diagnostic criteria for GAD on the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I). Further, severity scores on the GAD-7 were divided into Minimal (0-4), Mild (5-9), Moderate (10-14), and Severe (15-21). With increasing severity of GAD-7 scores, participants
report a decrease in health-related quality of life, an increase in the average number of
disability days and physician visits, and endorse greater difficulty in work, home, and
relationships due to symptoms experienced.

Convergent validity of the GAD-7 was demonstrated with strong and significant
correlations with already established measures of anxiety (Bandelow & Brasser, 2009;
Spitzer et al., 2006). Spitzer et al. (2006) found the test-retest reliability of the GAD-7 to
be satisfactory ($r = .83$) and Cronbach’s alpha values for the GAD-7 range from .89
(Löwe et al., 2008) to .92 (Spitzer et al., 2006). Validity for use of the GAD-7 in older
adults was established in a sample of over 1000 participants aged 65 years and older
(Löwe et al., 2008). The mean score on the screener in a sample of patients diagnosed
with GAD was 14.18 (Löwe et al., 2008). The GAD-7 is commonly used in Internet-
based treatment studies (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009).
To meet inclusion criteria for the present study, participants had to endorse at least
moderate symptoms of GAD during the telephone screening, which is equal to a score of
$\geq 10$ on the GAD-7.

To screen for depressive symptoms and potential suicidality, the PHQ-9 was used
(Kroenke et al., 2001) (see Appendix G). The PHQ-9 is a nine-item self-report tool that
assesses depression symptoms based on DSM-IV criteria. Participants are asked to
indicate how often they have been bothered by any of nine problems within the previous
two week period using a rating scale of 0 (not at all) to 3 (nearly every day). Responses
are summed for a total severity score ranging from 0 to 27. Kroenke et al. (2001) suggest
that scores between 0 to 4 are categorized as no depression, 5 to 9 are categorized as
mild, 10 to 14 are categorized as moderate, 15 to 19 are categorized as moderately severe,
and scores 20 or greater are categorized as severe depression. If the participant indicates that five or more of the symptoms occur on more than half the days and the endorsed symptoms include either anhedonia (item 1) or depressed mood (item 2), a diagnosis of major depression can be inferred. The PHQ-9 appears to be a reliable diagnostic tool, with moderate-to-high agreement ($\kappa = .50-.61$) with diagnoses of mood disorders made with the SCID-I, and it is effective for detecting change in depressive symptoms over time (Löwe, Kroenke, Herzog, & Gräfe, 2004). Cronbach’s alpha values for the PHQ-9 have ranged from .89 (Kroenke et al., 2001) to .92 (Cameron, Crawford, Lawton, & Reid, 2008). To pass the screening phase of the present study, participants could not endorse severe depressive symptoms (a maximum score of 23), and could not endorse current suicidality (a rating of 2 or less on item 9).

All potential participants were screened using the Six-Item Screener (SIS; Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002) to ensure that they had the cognitive capacity to adequately participate in TAICBT and provide self-report data (see Appendix H). The SIS is an efficient tool for excluding individuals with moderate to severe cognitive impairment, and was developed for the purpose of screening participants of a large-scale depression treatment trial. The six questions are taken from the widely used and valid Mini Mental State Exam (MMSE; Folstein, Robins, & Helzer, 1983). The SIS is comprised of a three-item recall (apple, table, penny) to assess short-term memory, and three items that assess temporal orientation (day of the week, month, and year). This unobtrusive screener was considered ideal for the purposes of the present study as it lasts only one to two minutes, could be administered by telephone, and is simple to score. To score the SIS, the number of errors made is added together, and a score of three or more
errors is indicative of cognitive impairment (Callahan et al., 2002). The SIS has excellent
sensitivity, specificity, and substantial overall agreement with the MMSE (κ = .70)
(Wilber, Lofgren, Mager, Blanda, & Gerson, 2005).

**Assessment phase.** Participants who met eligibility criteria after the screening
phase and were interested in TAICBT services participated in a clinical diagnostic
interview by telephone with S. Jones or a graduate student research assistant (see
Appendices I-K). This took place immediately after screening or at a scheduled time that
was convenient for the participant and interviewer. Through this interview, it was
established whether a participant: (a) met either DSM-IV-TR diagnostic criteria for GAD
or subclinical criteria for GAD, (b) met current DSM-IV-TR diagnostic criteria for
bipolar disorder, psychosis, or substance abuse or dependence, or endorsed severe
symptoms of depression, and/or current suicidal ideation. Demographic questions were
also asked to supplement the background information gathered during the screening
interview. Participants were asked to provide information about their sex, ethnicity,
marital/relationship status, employment status, and education level. The telephone
interview took approximately 30-60 minutes. Any participants who fulfilled exclusion
criteria during the assessment phase were referred to more suitable mental health services
in their area.

**Assessment interview.** The Mini-International Neuropsychiatric Interview
(M.I.N.I.; D. V. Sheehan et al., 1998) and the M.I.N.I. Plus are both semi-structured
interviews developed to diagnose DSM-IV disorders and were used to determine
eligibility to participate by telephone (See Appendix I). The modules from the M.I.N.I.
used in the present study assessed for dysthymia, suicidality, manic episodes, social
phobia, obsessive-compulsive disorder, post-traumatic stress disorder, alcohol abuse and dependence, non-alcohol psychoactive substance use disorders, psychotic disorders, and mood disorder with psychotic features. The modules from the M.I.N.I. Plus assessed for major depressive episodes, panic disorder, agoraphobia, specific phobia, and GAD. The M.I.N.I. can be used effectively by telephone (Fattal, Link, Quinn, Cohen, & Franco, 2007) and has previously been used to assess for GAD in ICBT research (Titov, Andrews, Robinson, et al., 2009). Inter-rater reliability for diagnosing GAD is excellent ($\kappa = .98$), test-retest reliability ($\kappa = .78$) is good, and concordance in diagnosis of GAD between the M.I.N.I. and the Structured Clinical Interview for Diagnosis ($\kappa = .70$) is satisfactory (Sheehan et al., 1998).

2.5 Randomization Process

Following the pre-screening and diagnostic assessment, participants meeting eligibility criteria were randomly assigned to immediately receive TAICBT or to the seven to 10 week WLC group. Randomization was determined using Research Randomizer (http://www.randomizer.org), a website designed for researchers to generate random numbers or assign participants to experimental conditions. A list of random numbers was generated prior to beginning data collection, where 1 = TAICBT and 2 = WLC. After a person was deemed eligible to and consented to participate, the password protected file containing the random numbers was opened and the participant was assigned based on the next random number on the list. After a random number was assigned, it was changed in the document to reflect it had been used. Access to the random number list was limited to when random assignment was being carried out and was concealed from the researcher prior to and during the assessment process.
**TAICBT group procedure.** Participants randomized to receive TAICBT were e-mailed a website link to surveymonkey.com where they were presented with an information page and consent form (see Appendix M) and the Time 1 outcome measures to complete prior to beginning treatment. Completion of the consent page was required by the participant before he/she could continue with the study. Also, with client consent, a letter was sent to a family physician informing them that their patient was participating in a TAICBT program. After consent was obtained and the Time 1 outcome measures were submitted to the researcher, TAICBT participants were contacted by telephone and/or were e-mailed and provided with a login ID and password to the Online Therapy USER website and were assigned a therapist. The login ID was not linked in any way to the participant’s real name. When a participant logged in to the system for the first time, he/she was prompted to change their password and given instructions on how to make it as secure as possible.

**Intervention.** TAICBT participants completed the seven-module program, *GAD Online for Older Adults*, designed to provide psycho-education material and CBT strategies for coping with GAD. Prior to beginning the program, participants were provided with detailed instructions on features of the website, how to navigate the website, and how to download audio files and Adobe documents. After reading these instructions, participants clicked through to begin the first module. Each module includes web pages pertaining to an aspect of GAD (e.g., unhelpful thoughts or beliefs) and exercises to target that aspect of GAD (e.g., a Thought Record). Throughout the program, examples are used in text and/or via video to show case examples of how to apply the skills. At the end of each module, participants were given suggestions for
offline exercises to practice the skills taught in the module. See Table 2 for a detailed breakdown of what is covered in each module and examples of offline exercises for each. Participants were presented with a Check-In page at the beginning of every new module. In the Check-In page, participants were asked to submit examples of their completed offline exercises. There was also a communication box where participants could share openly with their therapist on how the program has been going, what has been giving them difficulties, and how the skills have applied to their life more generally. After completing the Check-In, this information was submitted to the participant’s therapist to review the participant’s progress and address any questions or concerns he/she has about the online material or their symptoms.

**Clinician support.** The therapist for all participants was S. Jones. The role of the therapist was to guide and support the participant, direct therapeutic activities, and provide advice when participants had questions or difficulty applying the skills to their own concerns. The therapist contacted the participant via e-mail over the Online Therapy USER website once per week on a set day. In this Check-In e-mail, the therapist reviewed the participant’s progress, any e-mails the participant sent, as well as the Check-In information submitted to the therapist when the participant began a new module. The therapist referred to this information in the weekly Check-In e-mail. The participants were advised that the Online Therapy Unit policy was that they log onto the website at least once per week. If a participant did not log on for seven days, the therapist or a research assistant would call the participant to check in with them by phone to ensure they were okay and to remind them to continue with the program.
<table>
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<tr>
<th>Module 1</th>
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<tbody>
<tr>
<td>Module Content</td>
<td>Offline Exercises</td>
</tr>
<tr>
<td>Introduction to the purpose and content of GAD Online</td>
<td>Keep a Worry Record</td>
</tr>
<tr>
<td>Education about the nature of GAD, fight or flight response, and anxiety and worry cycle</td>
<td>Monitor Mood</td>
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<tr>
<td>Learn to monitor anxiety symptoms</td>
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<tbody>
<tr>
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<td>Offline Exercises</td>
</tr>
<tr>
<td>Education about relaxation</td>
<td>Keep a Worry Record</td>
</tr>
<tr>
<td>Planning enjoyable activities</td>
<td>Schedule Enjoyable Activities</td>
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<tr>
<td>Learn and practice relaxation training (deep breathing, progressive muscle relaxation, mental imagery)</td>
<td>Practice Relaxation Training</td>
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<tbody>
<tr>
<td>Module Content</td>
<td>Offline Exercises</td>
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<tr>
<td>Learn about CBT model</td>
<td>Automatic Thought Record</td>
</tr>
<tr>
<td>Learn how to identify unhelpful ways of thinking, including common assumptions and beliefs in GAD</td>
<td>Practice Relaxation Training</td>
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<td>Schedule Enjoyable Activities</td>
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<tr>
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<tbody>
<tr>
<td>Module Content</td>
<td>Offline Exercises</td>
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<tr>
<td>Learn how to challenge problematic thoughts, assumptions, and beliefs</td>
<td>Challenging Automatic Thoughts Record</td>
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<td></td>
<td>Practice Relaxation Training</td>
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<td>Schedule Enjoyable Activities</td>
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<tbody>
<tr>
<td>Module Content</td>
<td>Offline Exercises</td>
</tr>
<tr>
<td>Education about types of worry, negative and positive beliefs about worry</td>
<td>Worried versus Actual Situations Record</td>
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<tr>
<td>Learn several worry control strategies</td>
<td>Tolerating Uncertainty</td>
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<tr>
<td>Introduce shorter progressive muscle relaxation exercise</td>
<td>New Endings for Worried-About Scenarios</td>
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<td>Addressing Indecisiveness</td>
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<td></td>
<td>Clearing the Mind of Worry Technique</td>
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<td>Challenging Automatic Thoughts Record</td>
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<td>Short Progressive Muscle Relaxation Exercise</td>
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<tr>
<td>Education about avoidance</td>
<td>Worry Exposure Practice</td>
</tr>
<tr>
<td>Learn how to confront and overcome avoidance</td>
<td>Worry Behaviour Prevention</td>
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<tr>
<td>Learn and practice worry exposures</td>
<td>Challenging Automatic Thoughts Record</td>
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<tr>
<td>Education about nature and prevention of behaviours associated with worry</td>
<td>Short Progressive Muscle Relaxation Exercise</td>
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<tr>
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<tbody>
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<td>Offline Exercises</td>
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<tr>
<td>Education about problem-solving</td>
<td>Problem-Solving Worksheet</td>
</tr>
<tr>
<td>Education about improving sleep hygiene</td>
<td>Sleep Diary</td>
</tr>
<tr>
<td>Summary of main messages</td>
<td>Anxiety Management Plan</td>
</tr>
<tr>
<td>Preparing to end program, preparing for setbacks, and developing plan for coping with anxiety in the future</td>
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**Supervision.** S. Jones provided eTherapy to all clients under the supervision of Dr. H. Hadjistavropoulos. S. Jones assisted in the development of eTherapy training for the Online Therapy Unit and treated several clients through the Online Therapy Unit prior to initiating treatment through this study. S. Jones also underwent a CBT practicum with Dr. H. Hadjistavropoulos that included treatment of GAD in a group setting and received additional in-depth training in CBT during her pre-doctoral residency. Clinical supervision for the current RCT varied from week to week, depending on the nature of participants’ questions or concerns, but typically consisted of consultation with Dr. H. Hadjistavropoulos when a client had difficulty with some of the CBT exercises or presented with a challenging problem. Dr. H. Hadjistavropoulos was also to be contacted in the event of any client emergencies, such as suicidal risk or the disclosure of probable abuse of a child.

**Length of treatment and outcome measures.** TAICBT participants were informed at the beginning of treatment that it was expected that they would complete all seven modules in 10 weeks or less. Ideally, if participants completed one online module per week, all participants would have completed TAICBT within 7 weeks. Realistically, we expected participants to take longer than 7 weeks to complete treatment when illness, vacations, and the demands of the program were taken into account. As a result, a standard 10-week follow-up was selected to give TAICBT participants some flexibility in treatment completion times and to control for time passed with the WLC group. After completion of the program, or after 10 weeks (depending which came first), TAICBT participants were e-mailed a second www.surveymonkey.com link to complete Time 2 outcome measures. If a TAICBT participant completed treatment prior to 10 weeks, they...
were sent the post-treatment outcome measures at this time and efforts were made to contact a WLC group participant to complete measures within the same timeframe. All TAICBT participants were also contacted four-weeks after completing post-treatment outcome measures to complete five follow-up measures.

**Waiting list group procedure.** Participants randomized to the WLC group were e-mailed a website link to surveymonkey.com where they were presented with an information page and consent form (see Appendix L) and the pre-treatment outcome measures to complete. Persons assigned to the WLC group were contacted again by e-mail 7 to 10 weeks later and were asked to complete post-treatment outcome measures. Once completed, participants were offered the opportunity to receive TAICBT. If they still wanted to undergo treatment, they received an additional survey link containing a treatment consent form and were asked to complete two client engagement measures (CEQ and the ACES). The data collected from WLC group participants who underwent TAICBT (i.e., Converters) was used in some of the analyses as part of the quasi-experimental research design.

### 2.6 Outcome Measures

Tables 3 and 4 illustrate which questions and scales were administered to TAICBT and waitlist participants at baseline, pre-treatment, post-treatment, and four-week follow-up. The primary outcome measures used to assess the efficacy of TAICBT for the treatment of anxiety included the GAD-7 and the PHQ-9.

**Secondary outcome measures.** The secondary outcome measures used to assess the efficacy of TAICBT included the Penn State Worry Questionnaire-Abbreviated (PSWQ-A; Hopko et al., 2003), the Geriatric Anxiety Inventory
<table>
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<tr>
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<th>Baseline</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
<th>Follow-up</th>
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<td>Treatment Satisfaction Questionnaire-Modified</td>
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<td>Therapeutic Alliance Questionnaire</td>
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<td>Treatment Satisfaction Questionnaire</td>
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<td>Client Feedback Questions</td>
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(GAI; Pachana et al., 2007), the GDS, and the World Health Organization Quality of Life-BREF (WHOQOL-BREF; The WHOQOL Group, 1998). The PSWQ-A is a shortened version of the Penn State Worry Questionnaire (PSWQ; Meyer, M. L. Miller, Metzger, & Borkovec, 1990) that assesses the frequency, severity, and perceived controllability of worry, irrespective of the topic of worry (see Appendix O). The 8-item version was developed by Hopko and colleagues (2003) after confirmatory factor analysis revealed that the previously reported one (Brown, 2003) and two-factor structure (J. G. Beck, Stanley, & Zebb, 1995) of the original 16-item version did not adequately fit the data when studied with a large sample (n = 160) of older adults diagnosed with GAD. Five items that were worded reversely and three other items were eliminated until an acceptable fit to the data was obtained.

On the PSWQ-A, participants are asked to rate how applicable each statement is to their experience on a 1 to 5 point scale ranging from not at all typical of me to very typical of me. Items are added together for a total score. Previously reported mean scores on the PSWQ-A for older adults range from 15.99 for non-clinical samples (Knight, McMahon, & Skeaff, 2008) to 30.9 (SD = 6.6) for patients diagnosed with GAD (Hopko et al., 2003), with a cut-off score of 22 being most indicative of the presence of GAD (Webb et al., 2008). The construct validity of the PSWQ-A is supported by strong correlations with the PSWQ in clinical (r = .92; Hopko et al., 2003) and non-clinical older adult samples (r = .65; Crittendon & Hopko, 2006). Correlations with other anxiety and worry measures (r = .46 to .60) demonstrate the measure’s moderate to strong convergent validity (Crittendon & Hopko, 2006), and lower observed correlations with
both self- \((r = .16)\) and clinician-rated \((r = .11)\) symptoms of depression provide support for the measure’s divergent validity (Hopko et al., 2003). Test-retest reliability of the PSWQ-A was excellent \((r = .92)\) in a sample of community-dwelling older adults who completed the measure twice over a two-week period (Crittendon & Hopko, 2006), and the Cronbach’s alpha values for the PSWQ-A range from .87 (Hopko et al., 2003) to .89 (Crittendon & Hopko, 2006).

The GAI is a 20-item measure designed to assess the severity of common anxiety symptoms across a range of anxiety presentations in older adults (see Appendix N). Specifically, it measures the experience of anxiety across many anxiety disorders, rather than reflecting the diagnostic criteria of one particular disorder such as GAD (Pachana & Byrne, 2012). The GAI contains minimal somatic symptom questions to reduce overlap with symptoms of general medical conditions. Questions are answered in a dichotomous manner (agree vs. disagree) and can be self-rated or administered by a trained health professional. The GAI has excellent concurrent validity with already established measures of anxiety and worry \((r = .57-.82)\) (Cheung, 2007; Pachana et al., 2007) and the internal consistency of the GAI in a psychogeriatric sample was excellent \((\alpha = .93)\) (Pachana et al., 2007). Through receiver operating characteristic analysis, Pachana and colleagues established that a cut-off score of 10/11 was optimal, with 83% of patients correctly classified as having GAD with a specificity of 84% and a sensitivity of 75%.

The GDS is a unique depression assessment tool designed specifically for use in geriatric patients, with questions that distinguish depressive symptoms from age-related cognitive decline or somatic concerns (see Appendix P). Comprised of 30 dichotomous items, participants are asked to respond yes or no in reference to how they felt over the
past week. This format makes comprehension easier for this age group when compared with instruments that present multiple-choice answers. A score of 10 or higher has been suggested as a possible indicator of depression (Lyness et al., 1997). Convergent validity has been supported by strong correlations between the GDS and other commonly used measures of depression (Yesavage et al., 1983), and the criterion validity of the 30-item GDS is satisfactory, and has higher sensitivity for detecting depression among outpatients than the 15-item GDS (Wancata, Alexandrowicz, Marquart, Weiss, & Friedrich, 2006). The Cronbach’s alpha value for the scale was also adequate ($\alpha = .86$) in 327 older adults (Adams, 2001).

The WHOQOL-BREF assessed the quality of life of participants (see Appendix Q). The WHOQOL-BREF contains 26 items that were extracted from the original World Health Organization Quality of Life-100 (WHOQOL-100; Power, Bullinger, & Harper, 1999). Two items ask about overall quality of life and general health and are not included in the scoring, and the remaining 24 items measure four domains of quality of life. These are: (a) Physical Health, which asks about items such as activities of daily living, sleep, and mobility; (b) Psychological Health, which includes items such as positive and negative feelings, body image, and self-esteem; (c) Social Relationships, which asks about personal relationships, social support, and sexual activity, and; (d) Environment, which assesses items such as financial resources, accessibility and quality of health care, and opportunities for recreation. Questions are rated with reference to the past two weeks on a Likert type scale ranging from 1 to 5. Four domain scores are obtained by calculating the mean score of the items within each domain. The mean scores are then multiplied by four to obtain domain scores comparable to the scores used
in the WHOQOL-100 and higher scores denote higher quality of life. The WHOQOL-BREF is effective for discriminating between individuals who are ill and well, has good construct validity according to factor analysis and strong correlations of items to their intended domain, and has adequate internal consistency as per Cronbach’s alpha values of domains ranging from 0.68 to 0.81 (Skevington, Lotfy, & O’Connell, 2004).

**Client engagement measures.** Measures of client engagement were only administered to individuals who received TAICBT. The Credibility / Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000) measured treatment expectancy and credibility prior to initiating TAICBT (see Appendix R). Consisting of six items, the CEQ assesses the participants’ expectations of what improvements they believe will be achieved through treatment and how believable, convincing, and logical participants think the treatment is. Factor analysis indicates that the CEQ contains two factors that are stable across populations: 1) cognitively based credibility (items 1-3), and 2) affectively based expectancy (items 4-6) (Devilly & Borkovec, 2000). Items 1-3 and 5 are rated on a 1-9 Likert scale, whereas items 4 and 6 are rated on a 0-100% scale. The percentage ratings for items 4 and 6 are subjected to a linear transformation with a minimum of 1 and a maximum of 9 to be consistent with the other four items. A sum score for each factor is formed ranging from 3 to 27. When used with patients with GAD, the CEQ demonstrates good internal consistency within each factor (α = .79 for expectancy and α = .81 for credibility) and for the whole scale (α = .84), and moderate test-retest reliability for whole scale (r = .83). The CEQ has shown good incremental validity in the prediction of treatment outcomes in a sample of individuals undergoing treatment for posttraumatic stress disorder (Devilly & Borkovec, 2000).
The Anxiety Change Expectancy Scale (ACES; Dozois & Westra, 2005) assessed change expectancy specific to anxiety and was administered at pre- and post-treatment (see Appendix S). Consisting of 20 items, the ACES is a measure of participants’ beliefs regarding controllability and anticipation of successful management of anxiety in a broad sense. Items are scored on a 1 (strongly disagree) to 5 (strongly agree) Likert scale. Total scores range from 20 to 100, with higher scores indicating greater positive expectancy for changing anxiety. The ACES demonstrated excellent psychometric properties across student, community, and clinical samples, and factor analysis suggests the items are best represented as one principal factor (Dozois & Westra, 2005). In a sample of individuals diagnosed with GAD, the average score was 71.81. The internal consistency (α = .91) and convergent validity was excellent, with the ACES correlating significantly with changes in anxiety (r = .44) and worry scores (r = .46) from pre- to post-CBT. The ACES also demonstrated incremental validity in predicting change in anxiety and worry at post-treatment over and above baseline symptoms and general hopelessness.

Consistent with data collection by the Online Therapy Unit, the Treatment Satisfaction Questionnaire-Modified (TSQ; B. J. Cox, Fergus, & Swinson, 1994) assessed the client’s perceived satisfaction with treatment (see Appendix T). TAICBT participants responded to 31 items regarding how useful they found the treatment components, how much they personally liked the treatment components, perceived symptom improvement, and lifestyle improvement on a scale from 0 (not at all) to 7 (very much so). The version that was used in the present study was modified from that being used by the Online Therapy Unit to reflect the treatment components in the GAD Online
for Older Adults program. Three additional items ask participants “How much did you like the treatment program?” “How much did you enjoy communicating with your therapist?” and “Overall, how much improvement do you believe occurred, after completing the treatment program?” using the same Likert scale. Although no known psychometric evaluations have been conducted on the TSQ, it has been used in Internet-based treatment studies of panic disorder (Kiropoulos et al., 2008; Klein et al., 2006).

The Therapeutic Alliance Questionnaire measured the degree to which participants perceived the relationship with their therapist as helpful (see Appendix U). The TAQ contains 17-items and was developed from the 19-item revised Helping Alliance Questionnaire-II (HAQ-II; L. Luborsky et al., 1996). A sample item is “I had meaningful communications with my therapist.” Items are rated on a 6-point scale from 1 (strongly disagree) to 6 (strongly agree). The items are summed to produce a total score ranging from 17 to 102, with higher scores indicative of stronger therapeutic alliance between the client and therapist. Although the HAQ has demonstrated excellent test-retest reliability and good convergent validity (Luborsky et al., 1996), no psychometric studies have been conducted specifically on the TAQ. The TAQ has been used extensively in TAICBT research for anxiety disorders, including that of panic disorder (Kiropoulos et al., 2008) and posttraumatic stress disorder (Klein et al., 2010).

Patterns of website use by TAICBT participants were assessed with numerous methods meant to capture the various ways a client may be engaged with the GAD Online for Older Adults program. These included: (a) number of logins to the website, (b) program use: duration of program involvement (number of days it takes for the client to complete modules 1-7) (c) check-ins: number of characters in open-ended weekly check-
in being submitted to the therapist, (d), e-mails: number of emails to therapist (in response to or initiating a new email) and number of characters in e-mails to therapist, and; (d) phone calls: total number of phone calls from therapist to urge the client to continue on with the program.

**Client feedback.** Following treatment completion, all participants who received TAICBT were asked ten open-ended questions via the online survey to collect feedback about their experiences with TAICBT (see Appendix V). Typed responses from participants could be up to 1000 characters in length. It was not mandatory for participants to provide responses to the open-ended questions. Two example questions are: “What was most helpful about this program?” and “What do you think was lacking in this program that was relevant to your experience as an older adult?”

### 2.7 Sample Size

The target sample size required was determined by G*Power 3.1.2 (Faul, Erdfelder, Lang, & Buchner, 2007). For the analyses proposed for this dissertation, \( n = 46 \) participants were required to detect a medium effect size (\( f = 0.25 \)) on the primary and secondary outcome measures using repeated measures within-between interaction analyses of variance (ANOVAs) for three measurements with power at 90% or higher. Repeated measures ANOVA was selected because it closely parallels the mixed models (longitudinal) repeated measures analysis and gives a readily obtained and reasonably accurate estimate of the sample size required for longitudinal mixed models analyses.

### 2.8 Statistical Analyses

**Hypothesis one.** To test Hypothesis one that participants receiving TAICBT would evidence greater improvements in anxiety and depression, longitudinal mixed-
effects multilevel models were computed. When missing data is present, intention-to-treat (ITT) analysis designs are widely recommended as the favoured method of analyzing outcomes of treatment trials because it more accurately emulates treatment non-adherence that may occur in clinical practice and reduces bias (Gutman, 2010). In ITT analysis, all participants who intended to participate are considered as part of the trial, regardless of whether they complete the treatment program or drop out of the study (Hollis & Campbell, 1999). Several techniques exist for the imputation of missing data in ITT analysis, with the last observation carried forward (LOCF) analysis (where all missing data from randomized participants is replaced with the scores from the last known outcome assessment) being the most commonly published in existing ICBT research (e.g., Mackinnon, Griffiths, & Christensen, 2008).

However, many researchers argue against the use of LOCF analysis, given that this method may introduce significant bias in the results (Salim, Mackinnon, Christensen, & Griffiths, 2008; Streiner, 2008). Other sophisticated imputation methods, such as a mixed effect model, appear to be superior to LOCF analysis in terms of minimizing bias and not misrepresenting treatment findings (Lane, 2008). Results of several studies suggest that a mixed effect model provides the best solution for reducing bias in RCTs (DeSouza, Legedza, & Sankoh, 2009). The use of longitudinal mixed-effects models has substantially increased during the last 10 years (Gueorguieva & Krystal, 2004).

Given the potential for LOCF to misrepresent treatment findings, imputing missing data used a longitudinal mixed effects model, which is a likelihood-based multivariate normal linear model that predicts missing values by means of multiple regression using other variables in the data set as the independent variables (Streiner,
Since the GAD-7 and PHQ-9 were administered at four time points (i.e., baseline, pre-treatment, post-treatment, four-week follow-up for the TAICBT group) and other measures were administered at three time points (i.e., pre-treatment, post-treatment, four-week follow-up), this model provided a flexible framework for the analysis of repeated measures while also allowing for estimation of average time trends for treatment groups and of individual response to treatment over time. An assumption of mixed-effects models is that individuals deviate randomly from the overall average responses, as such, missing data were accounted for. In all mixed-model analyses, random intercept models were used and a Maximum Likelihood method and unstructured covariance-type were employed to provide the estimates.

Two mixed models analyses were conducted for the RCT design, which evaluated the impact of group and time on symptoms of anxiety (GAD-7) and depression (PHQ-9). Repeated measures within-between interaction analyses of variance (ANOVAs) were conducted to assess changes in participants’ scores on secondary outcome measures (PSWQ-A, GAI, GDS, and WHOQOL-BREF) from baseline to post-treatment. Five additional mixed models analyses were conducted for the quasi-experimental design, which evaluated the impact of group and time on symptoms of anxiety, depression, worry, geriatric anxiety, and geriatric depression using additional measurement points and treatment data from the Converter participants.

**Hypothesis two.** To further assess the efficacy of TAICBT on general anxiety symptoms, Hypothesis two examines the extent to which the treatment had a meaningful impact on individual clients by assessing clinically significant change. Given that the focus of the TAICBT treatment was on generalized anxiety symptoms, the GAD-7 was
used to assess clinical significance of the program. Following procedures outlined by Jacobson and Truax (1991), clinically significant change was defined as the extent to which therapy moves someone outside the range of the dysfunctional population or within the range of the functional population” (p. 12). The Jackson-Truax method is widely used and preferred by researchers, especially because it leads to similar results when compared to more statistically complex methods (Atkins, Bedics, McGlinchey, & Beauchaine, 2005).

Using a two-step process, their method first involves defining a cut-off point that divides the “functional” population from the “dysfunctional” population. Three different cut-offs were proposed for identifying clinically significant change, depending on whether normative data was available for the outcome measure. According to Jacobson and Truax (1991), the researcher can specify that the “functional” person’s post-treatment score: (a) falls outside the range of the sample’s pre-treatment mean by two standard deviations (in the functional direction), (b) falls within the range of the functional population within two standard deviations of the mean, which can be used when non-patient data is available, or (c) is closer to the mean of the functional population than it is to the mean of the dysfunctional population. Consistent with previous ICBT research (e.g., Berger, Hohl, & Caspar, 2009), option (a) was used to determine clinically significant change in the present study by determining whether the post-treatment score falls outside two standard deviations of the group’s pre-treatment mean of outcomes measures. The second step involved calculating a Reliability Change Index (RCI). The RCI equals the difference between a participant’s pre-treatment and post-treatment scores, divided by the standard error of measurement. Cut-off scores were determined
for classifying participants into one of four categories: recovered, improved, unchanged, or deteriorated.

The effect size of these analyses is presented as one way of determining the practical significance of the results. Within- and between-group effect sizes for the GAD-7, PHQ-9, PSWQ-A, GAI, GDS, and WHOQOL-BREF subscales were also determined using Cohen’s $d$ that is based on the pooled standard deviation, with small effect sizes being equal to .20 to .30, medium effect sizes being around .50, and large effect sizes being .80 or larger (J. Cohen, 1988).

**Hypothesis three.** Consistent with other TAICBT for GAD research (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009), remission rates and rates of recovery according to the GAD-7 are reported. To provide an index of remission, pre- and post-treatment GAD-7 scores for both groups will be compared to the optimum cut-off score ($\leq 10$) for a probable diagnosis of GAD (Spitzer et al., 2006). For remission rates, the percentage of participants in each group below the proposed GAD-7 cut-off at post-treatment will be reported. An estimate of recovery will be made by identifying the percentage of participants who show a significant reduction in their symptoms, defined as at least a 50% reduction of pre-treatment GAD-7 scores. Although these percentages will likely be a liberal assessment of the efficacy of *GAD Online for Older Adults*, it will enable comparison between our results and those reported in other online GAD interventions.

**Hypothesis four.** Hypothesis four predicted that all expected improvements across symptom measures would be maintained at the four-week follow-up measurement point. To test this hypothesis, longitudinal multilevel models were carried out with
follow-up data from the Treatment-Only, Converter, and WLC-Only participants on the GAD-7, PHQ-9, PSWQ, GAI, and GDS to compare rates of improvement or change between those who received treatment and those on the waitlist.

**Hypothesis five.** Descriptive data is provided on client engagement variables, including perceived credibility/success of TAICBT (CEQ), belief in ability to change (ACES), treatment satisfaction (TSQ), therapeutic alliance (TAQ), and patterns of website use for Treatment-Only and Converter participants. Pearson $r$ correlations were conducted to determine if there were any relationships observed between the CEQ, ACES, TSQ scales, TAQ, and website use variables and the post-treatment/follow-up measures (GAD-7 and PHQ-9).

To further explore the relationships between pre-treatment credibility/expectancy and anxiety change expectancy with symptoms of general anxiety and depression over time, longitudinal mixed models were computed with the CEQ-credibility, CEQ-expectancy, and ACES entered as explanatory variables as well as interaction terms with time. To further explore the relationship between treatment satisfaction and therapeutic alliance and general anxiety and depressive symptoms for all participants who underwent TAICBT, multiple linear regressions were carried out with several TSQ subscale scores and the TAQ score as explanatory variables and GAD-7 and PHQ-9 four-week follow-up scores as dependent variables. The pre-treatment GAD-7 and PHQ-9 scores were included as explanatory variables to examine change in symptoms from pre-treatment to four-week follow-up by controlling for the initial score. Finally, multiple linear regressions were carried out with website use variables (i.e., duration of program involvement, number of logins to program, number of modules completed, number of e-
mails sent to therapist from client, average number of characters in client e-mails, average number of characters in open-ended Check-In to therapist, and number of phone calls to clients after not logging onto program for seven days), and pre-treatment GAD-7 and PHQ-9 scores as explanatory variables and GAD-7 and PHQ-9 four-week follow-up scores as dependent variables.

2.9 Qualitative Data Analysis

TAICBT participants’ responses to the open-ended questions were analyzed using thematic analysis, which is a method for identifying, analyzing, and reporting patterns or themes within data (Braun & Clarke, 2006). As Braun and Clarke explain, its purpose is to efficiently organize and describe a data set in rich detail without being wed to any pre-existing theoretical framework. For the purpose of this study, a rich thematic description of the entire data set is provided (as opposed to a detailed account of one particular aspect of the data set), which is especially useful when investigating a topic in which participants’ views are not known (Braun & Clarke, 2006). Themes were identified using an inductive approach, by coding the data without trying to fit it into a pre-existing coding frame or the researcher’s preconceptions, as recommended when studying new topics or areas of research (Joffe & Yardley, 2004). The themes were coded at the semantic or explicit level, which implies the researchers were not looking for any meaning beyond what a participant has said or what has been written.

Working separately, two researchers (including S. Jones and a female graduate student independent of the research) carried out thematic analysis on the open-ended data. The process of thematic analysis as carried out in the present study will now be described. The reader should keep in mind that the analysis was not a linear process (i.e.,
where the researchers moved from one phase to the next), but rather a recursive process, where the researchers moved back and forth as needed.

The first step involved becoming familiarized with the data, which typically involves repeated reading of the data in an active way (Joffe & Yardley, 2004). This allows the researcher to become familiar with the full depth and breadth of the content while also beginning to search for meanings and patterns. At this step, note-taking was used to mark ideas for coding. The second step involved generating initial codes from the data. A code refers to “the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (Boyatzis, 1998, p. 63). Coding was done manually by both researchers, without the assistance of any qualitative coding software. As recommended by Braun and Clarke (2006), the researchers coded for as many potential themes as possible and coded individual units of data in as many different themes as they fit into. As coding continued, labels for sub-themes and themes often evolved to more accurately characterize the key concept represented and earlier codings were adjusted in light of seeing the full picture of the data. The third step involved sorting the different codes into potential sub-themes and higher-level themes as well as reflecting on how different codes may combine together to form an overarching theme. This involved creation of a diagram of all possible themes that allowed for organization and re-organization of sub-themes into higher-level themes and overarching themes.

After over-arching themes were identified, the two researchers came together to compare the codes, sub-themes, higher-level themes, and over-arching themes that were independently named and any discrepancies between the data sets were resolved. During
this process of reviewing and refining themes, several sub-themes from S. Jones’ data set were collapsed into one sub-theme, several new sub-themes emerged, and the descriptions for some higher-level themes were modified for clarity. For a sub-theme or theme to be labeled as such, more than one code needed to be identified within it. If only one code contributed to a sub-theme or theme, it was discarded from the dataset. The researchers also agreed upon themes that were not truly themes (i.e., there was not enough data to support them because only single comments were coded within that theme) and removed these from the analysis. The process of writing up the analysis also led to re-thinking and re-coding some parts of the data. When this was done, the second independent researcher was contacted and reviewed and agreed to any changes made. In the write-up of the qualitative analysis, examples from the data for each sub-theme and higher-level theme were identified and are presented.

3. RESULTS

3.1 Participant Flow

Participants were recruited between March 2012 and August 2013. During this time, 85 individuals contacted the Online Therapy Unit expressing interest in the study and in TAICBT (see Figure 1 for representation of participant flow). Of those 85 participants, four were not interested in participating in the study, or were excluded from participating either during the pre-screening or full-screening process ($n = 33$). Individuals who were excluded from the study were not eligible for the following reasons: too young ($n = 4$), did not have access to a computer or the Internet ($n = 3$), did not endorse having generalized anxiety as a presenting concern ($n = 8$), endorsed only minimal symptoms of generalized anxiety or $< 10$ on the GAD-7 ($n = 11$), or met
Figure 1. Flow of Participants through the Study.

85 individuals inquired about GAD Online for Older Adults

Screened out at or before pre-screen (n = 37)
- GAD-7 score < 10 (n = 11)
- Presenting problem not generalized anxiety (n = 8)
- Receiving other psychological services (n = 4)
- Too young (n = 4)
- Not interested in participating in study (n = 4)
- Symptoms too severe (n = 3)
- Did not have a computer and/or Internet (n = 3)

Completed full-screen telephone interview (n = 48)
- Referred to another program due to presenting problem being better suited to Panic or Depression Online (n = 2)

46 individuals met all inclusion criteria and were randomized into TAICBT

TAICBT Group (n = 24)
- Withdrew before completing pre-treatment questionnaires (n = 0)

WLC Group (n = 22)
- Withdrew before completing pre-treatment questionnaires (n = 1)
  - Due to medical reasons

Completed post-treatment measures (n = 22)

WLC participants who accepted TAICBT (n = 12)
- Completed post-treatment measures (n = 9)
  - Withdrew for medical reasons (n = 1)
  - Withdrew due to life circumstances (n = 1)
  - Loss of contact (n = 1)
- Completed 4 week follow-up measures (n = 9)
exclusion criteria (i.e., receiving other psychological services or current suicidal ideation) \((n = 6)\). Participants reported learning about the study from a story in the local newspaper \((n = 17)\), a seniors-focused newsletter \((n = 4)\), an e-mail announcement \((n = 5)\), a poster in the community \((n = 2)\), an online advertisement \((n = 5)\), a recommendation or referral from a psychiatrist or physician \((n = 8)\), a television advertisement \((n = 1)\), a print advertisement \((n = 1)\), a referral from the Online Therapy Unit intake office \((n = 1)\), and word-of-mouth \((n = 2)\). The success of media announcements (e.g., newspapers), professional referrals, and community resources for acquiring study inquiries and actual participants is consistent with published research on recruiting older adults with GAD and subthreshold GAD (Akkerman et al., 2001).

Forty-six community-dwelling older adult participants were randomly assigned to receive TAICBT \((n = 24)\) or to the WLC group \((n = 22)\). Of those randomly assigned, one WLC participant withdrew prior to completing pre-treatment measures due to needing to undergo extensive medical treatment. Two participants in the TAICBT group withdrew from the intervention prior to completing post-treatment outcome measures due to being too busy or the treatment not being a good fit. Both participants withdrew after completing module 1. One participant assigned to the WLC group passed away prior to being contacted to complete post-treatment outcome measures and a second WLC group participant could not be reached to complete post-treatment outcome measures. Twenty-two participants randomized to receive TAICBT and 19 participants randomized to the WLC group completed outcome measures at pre- and post-treatment.
Of the 19 WLC group participants who were offered TAICBT, 12 chose to participate in the intervention following the waiting period. Nine Converter participants completed outcome measures at post-treatment and at four-week follow-up.

3.2 Post-Hoc Power Analyses

Post-hoc power analyses were carried out to compute the achieved power. Post-hoc power analyses carried out on the imputed datasets (n = 46) determined that to detect a medium effect size using repeated measures within-between interaction ANOVAs for the main analyses of the study (i.e., efficacy of TAICBT) with a sample size of 46, using two groups, three measurement periods, and an average correlation of .34 among the three repeated measures of GAD-7, that the achieved power was 90%. The original dataset with complete participant measures from pre- to post-treatment on the GAD-7 and PHQ-9 included n = 41. Post-hoc repeated measures within-between interaction ANOVAS were carried out using the original and imputed datasets to obtain the observed power values as calculated by SPSS Repeated Measures ANOVA. For the original dataset, the observed power values were: Sphericity Assumed = .78, Greenhouse-Geisser = .71, and Huynh-Feldt = .73. For the five imputed datasets, the observed value ranges were: Sphericity Assumed = .85-88, Greenhouse-Geisser = .78-.80, and Huynh-Feldt = .80-.82. Together, this demonstrates that the imputed datasets have value by raising the power to above or approaching 80% with a medium effect size of f = .25.

Further post-hoc power analyses determined that to detect a medium effect size (0.25) on the linear multiple regressions for the secondary analyses of the study (i.e., client engagement and treatment outcomes), with a sample of 27, a one-tailed test, and seven or eight predictors, the achieved power was 80%. Further post-hoc power analyses
determined that to detect a large effect size (0.35) on the linear multiple regressions, the achieved power was 91%.

3.3 Preparation of Data for Analysis

Prior to conducting the analyses, the data set was cleaned and screened for accuracy. Missing data from individual scale items were imputed using the SPSS 21.0 function of multiple imputation (MI). The automatic method was selected wherein SPSS chooses an imputation method based on a scan of the data (i.e., either fully conditional specification or monotone). MI replaces missing data with a probable value based on other available information from the dataset. For the purposes of the present study, following past research (Lin, 2006), information from other items within a given scale was used to predict the missing values. The imputation process is repeated many times, producing multiple versions of the dataset each containing its own set of imputed values. When statistical analyses are carried out, the parameter estimates for all of the imputed datasets are pooled, providing estimates that are generally more accurate than they would be with only one imputation. Between five to ten imputed datasets are commonly used for data imputation (Rubin, 1987). In the current study, five datasets were produced and used for the statistical analyses. Because the results across the five imputed datasets were generally close, five datasets were considered sufficient. The pooled results are presented for all analyses unless otherwise indicated.

Assessment for outliers was conducted by examining the z-scores for each dependent and independent variable. Based on the recommended criteria that z-scores with magnitude greater than 3.29 \( (p < .001, \text{2-tailed}) \) should be considered outliers (Tabachnick & Fidell, 2012) and should be changed to one unit larger than the next most
extreme non-outlying score in the distribution, outliers were changed for the following website use variables for one participant: Number of weeks treated, Duration of program involvement, Number of website logins, and Number of e-mail messages sent to therapist. Standard modeling error diagnostic tests were performed in order to examine the data for possible influential abnormal cases for all longitudinal mixed models and multiple linear regressions, and all models were found to fit reasonably.

For most statistical tests, all $p$-values are for two-tailed tests unless otherwise indicated. In cases where indicated, one-tailed $p$-values are used (i.e., the $p$-values for the two-tailed tests are divided by two) because of a priori hypotheses that specify a direction of change for the scores. For example, if it was hypothesized that a score would decrease (not decrease or increase) over time and it did in fact do so, a one-tailed $p$-value was used to determine statistical significance.

### 3.4 Preliminary Analyses

Means and standard deviations for each dependent variable, at each time of measurement, for each group are reported in Table 5. According to recommendations by (George & Mallery, 2006) for interpreting Cronbach’s alpha, reliability analyses on the following pre-treatment measures showed good to excellent internal consistency: GAD-7 $\alpha = .83$; PHQ-9 $\alpha = .86$; PSWQ-A $\alpha = .91$; GAI $\alpha = .87$; GDS $\alpha = .90$; WHOQOL-Domain 2 $\alpha = .85$; ACES $\alpha = .95$; CEQ-credibility $\alpha = .83$; and CEQ-expectancy $\alpha = .91$. The following pre-treatment measures showed acceptable internal consistency: WHOQOL-Domain 1 $\alpha = .78$; WHOQOL-Domain 3 $\alpha = .70$; and WHOQOL-Domain 4 $\alpha = .78$. 
<table>
<thead>
<tr>
<th>Measure</th>
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<td>SD</td>
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Note. TAICBT = Therapist Assisted Internet delivered Cognitive Behaviour Therapy; WLC = Waiting List Control; GAD-7 = General Anxiety Disorder-7 item; PHQ-9 = Patient Health Questionnaire; PSWQ-A = Penn State Worry Questionnaire-Abbreviated; GAI = Geriatric Anxiety Inventory; GDS = Geriatric Depression Scale; WHO-QOL = World Health Organization Quality of Life-BREF; WHO-QOL-1 = Domain 1, Physical Health; WHO-QOL-2 = Domain 2, Psychological Health; WHO-QOL-3 = Domain 3, Social Relationships; WHO-QOL-4 = Domain 4, Environmental.
Correlations among measures at pre-treatment were conducted (see Table 6) and indicated that many of the questionnaires were significantly related to one another. Specifically, the GAD-7 strongly correlated with the PHQ-9, the PSWQ-A, the GAI, and the GDS, suggesting that those participants with elevated generalized anxiety symptoms were more likely to have elevated depression, worry, and other anxiety symptoms. The GAD-7 also correlated negatively with the four WHOQOL-BREF domain scores (physical health, psychological health, social relationships, and environment). This indicates that participants with greater general anxiety symptoms were more likely to have poorer quality of life across all domains. The GAD-7 correlated positively with the CEQ-credibility scale, suggesting that higher GAD-7 scores were associated with thinking that TAICBT treatment is more credible. Conversely, the GAD-7 did not correlate with CEQ-expectancy, indicating that the level of general anxiety symptoms was not associated with how credible participants felt TAICBT was.

Interestingly, neither the GAD-7 nor the PHQ-9 were correlated with the ACES, or one’s anticipation of being able to change anxiety; yet, the PSWQ-A, GAI, and GDS were all negatively correlated with the ACES and the WHOQOL subscales were positively correlated with the ACES. The strongest positive correlation was between the PSWQ-A and the ACES, indicating that the more a person reported having problems with worry, the less likely they anticipated being able to change anxiety.
Table 6. Correlations among Measures at Pre-Treatment Combined for TAICBT and WLC Group)

<table>
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<td>.75**</td>
<td>--</td>
<td>.61**</td>
<td>-.41**</td>
<td>-.50**</td>
<td>-.26**</td>
<td>-.17**</td>
<td>.17</td>
<td>.02</td>
<td>-.46**</td>
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</tr>
<tr>
<td>GAI</td>
<td>--</td>
<td>.80**</td>
<td>-.60**</td>
<td>--</td>
<td>-.72**</td>
<td>-.32**</td>
<td>-.21</td>
<td>.15</td>
<td>.11</td>
<td>-.37**</td>
<td></td>
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</tr>
<tr>
<td>GDS</td>
<td>--</td>
<td>.63**</td>
<td>-.88**</td>
<td>--</td>
<td>-.61**</td>
<td>-.38**</td>
<td>.15</td>
<td>.04</td>
<td>-.34**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WHO-D1</td>
<td>--</td>
<td>.63**</td>
<td>--</td>
<td>.33**</td>
<td>.36**</td>
<td>.10</td>
<td>.19*</td>
<td>.23*</td>
<td></td>
<td></td>
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<tr>
<td>WHO-D2</td>
<td>--</td>
<td>.58**</td>
<td>--</td>
<td>.40**</td>
<td>-.09</td>
<td>.02</td>
<td>.31**</td>
<td></td>
<td></td>
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<td>WHO-D3</td>
<td>--</td>
<td>.46**</td>
<td>--</td>
<td>.18</td>
<td>.16</td>
<td>.30**</td>
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<tr>
<td>WHO-D4</td>
<td>--</td>
<td>.02</td>
<td>--</td>
<td>.17</td>
<td>.06</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>CEQ-cred</td>
<td>--</td>
<td>.65**</td>
<td>--</td>
<td>.22*</td>
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<td></td>
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<tr>
<td>ACES</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. aCorrelations for these measures only include scores for TAICBT group due to these measures only being completed by this group at Pre-Treatment. GAD-7 = General Anxiety Disorder-7 item; PHQ-9 = Patient Health Questionnaire-9; PSWQ-A = Penn State Worry Questionnaire-Abbreviated; GAI = Geriatric Anxiety Inventory; GDS = Geriatric Depression Scale; WHO = World Health Organization Quality of Life-BREF; WHO-D1 = Domain 1, Physical Health; WHO-D2 = Domain 2, Psychological Health; WHO-D3 = Domain 3, Social Relationships; WHO-D4 = Domain 4, Environmental; CEQ-cred = Credibility/Expectancy Questionnaire Credibility Scale; CEQ-exp = Credibility/Expectancy Questionnaire Expectancy Scale; ACES = Anxiety Change Expectancy Scale. 
* p < .05, ** p < .01.
3.5 Descriptive Statistics

Demographic and clinical data divided by group are presented in Tables 7 and 8. The average age of participants across both groups was 65.13 years ($SD = 4.20$), with ages ranging from 60 to 80 years. The majority of participants identified themselves as Caucasian ($n = 44; 95.7\%$), with the remaining two participants identifying themselves as Aboriginal and Metis. Over half of the participants were currently married or common-law ($n = 26; 56.5\%$), with the remaining either dating, divorced, separated, single, or widowed. Most participants had a college certificate, some university, or at least one university degree. A majority of participants identified themselves as being retired or on disability, while about one-third of the participants reported being currently employed full- or part-time. All participants were community-dwelling. Most participants resided in an urban center, with a population of 10,000 people or greater; however, close to one-third of participants reported living in a town or village in Saskatchewan, with populations of 5000 people or less ($n = 13; 28.3\%$). Over half of the participants reported having at least one medical condition ($n = 27; 58.7\%$), including cardiovascular disease ($n = 14; 51.9\%$), diabetes or another endocrine disorder ($n = 6; 22.22\%$), respiratory illness ($n = 5; 18.52\%$), cancer ($n = 4; 14.81\%$), rheumatoid arthritis, osteoarthritis or some related disease ($n = 2; 7.41\%$), chronic pain ($n = 2; 7.41\%$), a neurological disorder ($n = 1; 3.70\%$), or other ($n = 5; 18.52\%$).

Regarding clinical characteristics, nearly two-thirds of participants met DSM-IV-TR criteria for GAD in both groups (see Table 8). A similar number of participants reported taking some sort of psychotropic medication for an average of 8.84 years ($SD = 9.91$). According to the M.I.N.I. and the M.I.N.I. Plus, approximately half of the
Table 7. Demographic Characteristics of TAICBT Group and WLC Group

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>TAICBT (N = 24)</th>
<th>WLC (N = 22)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>(SD)</td>
<td>M</td>
</tr>
<tr>
<td>Age</td>
<td>64.8</td>
<td>3.67</td>
<td>65.5</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>22</td>
<td>91.70</td>
<td>18</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>8.30</td>
<td>4</td>
</tr>
<tr>
<td>Marital Status</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Married / Common-law</td>
<td>14</td>
<td>58.33</td>
<td>12</td>
</tr>
<tr>
<td>Not married / Other</td>
<td>10</td>
<td>41.67</td>
<td>10</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>No university degree</td>
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<td>70.80</td>
<td>11</td>
</tr>
<tr>
<td>University degree</td>
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<td>29.20</td>
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<tr>
<td>Working Status</td>
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<tr>
<td>Retired / On disability</td>
<td>15</td>
<td>62.50</td>
<td>13</td>
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<tr>
<td>Employed full or part-time</td>
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<td>37.50</td>
<td>9</td>
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<td>Residence</td>
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<tr>
<td>Urban</td>
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<td>70.80</td>
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<tr>
<td>Yes</td>
<td>17</td>
<td>70.80</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>29.20</td>
<td>12</td>
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</tbody>
</table>

Notes. An independent samples t-test was conducted for the variable Age; all other p values are from independent samples Mann-Whitney U tests. TAICBT = Therapist-Assisted Internet Delivered CBT group; WLC = Waiting List Control group; Marital status: Not married/other = Dating, single, separated, or widowed; Urban = City with population of 10,000 or greater; Rural = Town or village.
<table>
<thead>
<tr>
<th>Clinical Characteristics</th>
<th>TAICBT (N = 24)</th>
<th>WLC (N = 22)</th>
<th>p</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
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<tr>
<td>Generalized Anxiety Disorder Diagnosis</td>
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<tr>
<td>DSM-IV-TR Criteria</td>
<td>16</td>
<td>66.7</td>
<td>13</td>
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<tr>
<td>Subclinical Criteria</td>
<td>8</td>
<td>33.3</td>
<td>9</td>
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<td>Psychotropic Medication</td>
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</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>62.5</td>
<td>14</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>37.5</td>
<td>8</td>
</tr>
<tr>
<td>Comorbid Current Psychological Diagnosis</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Major Depressive Disorder</td>
<td>7</td>
<td>29.2</td>
<td>7</td>
</tr>
<tr>
<td>Panic Disorder with Agoraphobia</td>
<td>2</td>
<td>8.3</td>
<td>-</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td>2</td>
<td>8.3</td>
<td>-</td>
</tr>
<tr>
<td>Social Anxiety Disorder</td>
<td>2</td>
<td>8.3</td>
<td>1</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>1</td>
<td>4.2</td>
<td>-</td>
</tr>
<tr>
<td>Specific Phobia</td>
<td>1</td>
<td>4.2</td>
<td>3</td>
</tr>
</tbody>
</table>

Notes. An independent samples t-test was conducted for the variable Psychotropic Medication; Independent samples Mann-Whitney U tests were conducted on all other variables; TAICBT = Therapist-Assisted Internet Delivered CBT group; WLC = Waiting List Control group.
participants met DSM-IV-TR criteria for another current psychological disorder. Rates of comorbid diagnoses were similar across groups, with major depressive disorder, social anxiety disorder, and specific phobia being the most common diagnoses.

**Group differences in baseline demographic and clinical characteristics.** Prior to hypothesis testing, the demographic and clinical characteristics for each group when measured at baseline were analyzed. Mean and frequency scores of characteristics of the sample were run to determine the composition of the groups (see Tables 7 and 8). An independent samples t-test was used to test any significant differences in age between the groups and Wilcoxon-Mann-Whitney tests were conducted to assess for group differences in the remaining baseline demographic (i.e., sex, marital status, education, working status, residence, and presence of a medical condition) and clinical characteristics (GAD-IV-TR diagnosis or subclinical criteria, psychotropic medication, and comorbid psychological diagnoses). This type of non-parametric test is used when we do not assume that the dependent variable is a normally distributed variable across categories. As displayed in Table 7, the groups did not differ significantly on age, sex, marital status, education level, working status, residence, and on the presence of a medical condition. As displayed in Table 8, the TAICBT and WLC groups did not differ significantly on any baseline clinical characteristics.

**3.6 Testing Hypothesis One**

Hypothesis one investigated whether participants who received TAICBT would demonstrate greater symptom improvement from pre- to post-treatment than the WLC group on all primary and secondary symptom measures. Given that the GAD-7 and PHQ-9 were administered at three time points across both groups (baseline, pre-
treatment, and post-treatment) and at four time points for the TAICBT group (with the addition of four-week follow-up), longitudinal mixed model analyses (Gelman & Hill, 2007; Singer & Willett, 2003) were computed on these two measures to determine the efficacy of TAICBT. Repeated measures one-way analysis of variances (ANOVA) were computed for all secondary measures (i.e., PSWQ-A, GAI, GDS, WHOQOL-BREF scales) as they were administered at two time points for both groups.

**Mixed model analyses for primary outcome measures comparing TAICBT to WLC.** Longitudinal mixed models (i.e., multilevel model) were fit for the trajectories of participants’ GAD-7 and PHQ-9 total scores over time, as measured in weeks. The covariance type was unstructured. The WLC group was coded 0 and the TAICBT group was coded 1. Time was coded 0 for baseline, 1 for pre-treatment, and 2 for post-treatment. The intercept is interpreted as the participant’s score on a given outcome measured at baseline (screening) and the slope represents the average rate of change in symptoms during the study. Models for each endpoint consisted of 3 effects: week (measurement occasion – baseline, pre-treatment, post-treatment), group (TAICBT or WLC), and the interaction effect of week and group. Of primary interest was the group by week interaction effect. This effect informs whether the intervention type had a different effect on the change over time in the two groups, thus answering the primary research hypothesis. Given that anxiety and depression tend to improve over time, regardless of treatment intervention, the week variable was hypothesized to have a negative coefficient and a one-tailed test was performed. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models.
As presented in Table 9, compared to the WLC group, those who received TAICBT exhibited significantly different trajectories or change over time as demonstrated by the significant negative coefficient for the Group by Week interaction term, \( z = -2.28, p = .011 \) for the GAD-7. There was also a significant main effect for Week on the GAD-7, \( z = -2.41, p = .016 \), indicating that participants’ scores on the GAD-7 changed significantly over time, regardless of group assignment. Over the 10 weeks, the model indicated that participants who received TAICBT tended to reduce in GAD-7 total score by 2.70 points compared to those in the WLC condition, based on a decrease of 0.270 points/week. The standard deviation for both groups at baseline was 2.96, indicating that TAICBT participants’ scores were reduced by close to one standard deviation over 10 weeks. Further, the mean score on the GAD-7 at baseline for both groups was 13.70. An average reduction of 2.70 points on the GAD-7 brings participants closer to having GAD-7 scores in the nonclinical range (i.e., \( \leq 10 \)).

In contrast, for the PHQ-9, there was a significant negative coefficient for the Group by Week interaction, \( z = -2.83, p = .003 \), but no significant main effects for Group or Week. On average, the model revealed that participants in the TAICBT group tended to reduce by 4.07 points on their PHQ-9 total score over the 10-week treatment period, based on a decrease of 0.407 points/week. Four points on this scale is approximately two-thirds of the baseline standard deviation (\( SD = 5.75 \)). The mean score on the PHQ-9 at baseline for both groups was 11.59; a reduction of 4.07 points would thus, on average, lowered scores from the moderate to mild symptom range. Lattice plots of each participant’s trajectory of scores on the GAD-7 and PHQ-9 over time are presented in Appendices W–Z. Collectively, the results suggest that symptoms of anxiety and
Table 9. Parameter Estimates for Multilevel Model of GAD-7 and PHQ-9 as a Function of Group and Week

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>b (SE)</th>
<th>z</th>
<th>p</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GAD-7</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept (level at week 0)</td>
<td>12.96 (.76)</td>
<td>17.04</td>
<td>.000</td>
<td>11.47</td>
<td>14.45</td>
</tr>
<tr>
<td>Group</td>
<td>-.28</td>
<td>-.27</td>
<td>.789</td>
<td>-2.33</td>
<td>1.77</td>
</tr>
<tr>
<td>Week</td>
<td>-.23</td>
<td>-2.41</td>
<td>.016</td>
<td>-.41</td>
<td>-.04</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-.27</td>
<td>-2.28</td>
<td>.011</td>
<td>-.50</td>
<td>-.04</td>
</tr>
<tr>
<td><strong>PHQ-9</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept (level at week 0)</td>
<td>12.61 (1.26)</td>
<td>10.00</td>
<td>.000</td>
<td>10.14</td>
<td>15.08</td>
</tr>
<tr>
<td>Group</td>
<td>-1.47 (1.74)</td>
<td>-.85</td>
<td>.397</td>
<td>-4.88</td>
<td>1.94</td>
</tr>
<tr>
<td>Week</td>
<td>-.02 (.11)</td>
<td>-.16</td>
<td>.870</td>
<td>-.24</td>
<td>.20</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-.41 (14)</td>
<td>-2.83</td>
<td>.002</td>
<td>-0.69</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

Note. N = 46. All p-values are two-tailed except in the case of the group by week interaction terms, where one-tailed p-values are used (because of the a priori hypotheses regarding the direction of change in scores). b is the estimate of the unstandardized coefficient. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models. Time is coded 0 = baseline, 1 = pre-treatment, 2 = post-treatment. Group is coded as 0 for Waiting List Control group and 1 for Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy group. Week = Time in weeks elapsed since baseline.
depression tended to decrease more quickly for those in the TAICBT group; however, participants’ scores on the GAD-7 also changed significantly over time, despite group assignment.

**ANOVA for secondary outcome measures.** One-way between-groups ANOVA analyses were conducted to examine differences between the TAICBT and WLC groups from pre-treatment to post-treatment on the PSWQ-A, GAI, GDS, and WHOQOL-BREF. One-tailed tests were used because of the a priori hypothesis that there would be an improvement in symptoms on measures in the TAICBT group as compared to the WLC group. As hypothesized, the ANOVA analyses revealed that the TAICBT group had lower scores than the WLC group at post-treatment on the PSWQ-A, \( z = -3.57, p = .001 \), the GAI, \( z = -3.64, p = .001 \), and the GDS, \( z = -3.85, p = .001 \). Additional ANOVA analyses found that those in the TAICBT group had higher quality of life scores than the WLC group at post-treatment on the WHOQOL-BREF Physical, \( z = 2.84, p = .002 \), Psychological, \( z = 4.14, p = .001 \), and Environment domain subscales, \( z = 2.27, p = .012 \); however, there were no significant differences between the groups on the WHOQOL-BREF Social, \( z = 1.07, p = .142 \) domain subscale from pre- to post-treatment. Together, the results indicate that, as compared to a WLC group, TAICBT was efficacious for lowering symptoms of worry, anxiety, depression, and for improving physical (e.g., activities of daily living, sleep, and mobility), psychological (e.g., positive and negative feelings, self-esteem), and environmental quality of life (e.g., financial resources, accessibility and quality of health care), but showed no difference on social aspects of quality of life (e.g., social support, personal relationships).
Multilevel mixed models comparing participants across all groups on primary outcome measures. Additional longitudinal multilevel models were carried out to include data gathered for those who originated in the WLC group but then opted to receive TAICBT (i.e., Converters). This additional approach of employing a quasi-experimental design allowed for a potentially more accurate analysis of the efficacy of TAICBT because a larger number of measurement occasions were included to examine the possible impact of participant engagement factors on improvement during TAICBT.

The concern is, of course, that conversion was determined by self-selection, not random selection. This concern is addressed by the use of the Converter indicator variable, discussed below, which allows a comparison of the treatment effect for Treatment-Only participants (a randomized treatment group) versus Converters (a self-selected subgroup of the original randomized WLC group). The Converters did not appear to have a significantly different profile compared to the WLC-Only participants on the following notable background characteristics: sex, urban vs. rural location, education background, marital status, use of anxiety medication, or presence of medical conditions. However, there was a statistically significant difference in age between the Converters ($M = 65.08$, $SD = 2.99$) and the WLC-Only ($M = 66.00$, $SD = 6.45$) participants, $t(20) = -44, p = .031$. While the overall difference in mean age is not substantial, the large standard deviation of the WLC-Only group implies that the Converter group did not vary as much in age, which may be suggestive of a younger age group overall who may be more inclined to do an online, computer-based treatment.

Moreover, the Converters displayed significantly higher scores on all anxiety and depression measures (i.e., GAD-7, PHQ-9, PSWQ-A, GAI, and GDS) at the end of the
waiting list period. While Converters and WLC-Only participants did not differ on the majority of demographic characteristics, higher scores at post-treatment for the Converter group may suggest that higher distress levels after the waiting list period may have predicted a stronger desire to accept TAICBT (which may imply a self-selection bias). Nonetheless, longitudinal mixed models are a more robust analysis of the efficacy of TAICBT than can be provided using one-way ANOVA analyses examining pre- to post-treatment scores. By including the Converters’ treatment outcome data, mixed models were conducted on the GAD-7, PHQ-9, PSWQ-A, GAI, and GDS, with up to five time points.

Multilevel mixed models were fit for the trajectories of participants’ GAD-7 and PHQ-9 total scores over time, as measured in weeks. We specified and estimated a linear growth model for anxiety and depression that allowed each participant to have their own initial level of anxiety and depression and rate of change in anxiety and depression. The intercept is interpreted as the participant’s score on a given outcome measured at baseline (screening) and the slope represents the average rate of change in symptoms during the study. The WLC group was coded 0 and the TAICBT group was coded 1. For these models, time was coded 0 for baseline, 1 for pre-treatment, 2 for post-treatment, 3 for Converters post-treatment, and 4 for four-week follow-up. A Treatment indicator variable was created that had for a given time period i) the value 0 for participants not in treatment or had not had treatment and ii) the value 1 if the participant was designated for/in treatment or had had treatment. The WLC-Only participants always had the Treatment variable equal to 0. The Treatment-Only participants always had the Treatment variable equal to 1. The Converters started the study with this variable equal to 0, but
then it changed to 1 at the time of conversion to treatment. A closely related Converter variable was created which was equal to 0 for all participants, except for Converters it changed to 1 at the time of conversion. The Treatment and Converter variables were employed in the model to fit splines that allowed the longitudinal trajectories of the Converters to hinge at the time of their conversion from one straight line segment (for the waiting list phase) to another straight line segment (for the treatment phase).

Because participants were randomized to TAICBT and the WLC groups, we hypothesized no group differences in average initial levels of anxiety and depression. We predicted that all participants would show a decrease in anxiety and depression over the course of the study; however, the key hypothesis was that those participants who received treatment would show a steeper rate of change in anxiety and depression compared to those who did not receive treatment. Similar to the above models, a one-tailed test was performed given that it was expected that participants who received TAICBT would improve with respect to anxiety and depression over time. It was hypothesized that the week variable would have a negative coefficient (i.e., that scores on the GAD-7 and PHQ-9 would decrease over time).

For the first model, a variable was added to control for and account for Converters being included in the model (see Figure 2 for conceptual diagram of expected trajectories when Converter variable is added). For the GAD-7, the Converter by Week interaction term was non-significant, $z = 1.71, p = .088$, indicating that Converter participants did not improve at a different rate than the TAICBT participants (see Table 10). The Group by Week interaction term was significant with a negative coefficient, $z = -2.57, p = .005$.

The second model did not control for the Converters being added to the model and
Figure 2. Expected Trajectories when Adding in Converter Variable

LEGEND

- = Expected change in scores for WLC-Only
- = Expected change in scores for Converters
- = Expected change in scores for Treatment-

Figure 2. Conceptual diagram of three expected trajectories when adding in converter variable to account for change in direction when converter participants begin TAICBT.
Table 10. Parameter Estimates for Multilevel Model of GAD-7 and PHQ-9 as a Function of Group and Week with and without Converter Variable

<table>
<thead>
<tr>
<th></th>
<th>With Converter Variable</th>
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<th>Without Converter Variable</th>
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<td></td>
<td>b (SE)</td>
<td>z</td>
<td>p</td>
<td>b (SE)</td>
<td>z</td>
<td>p</td>
</tr>
<tr>
<td>GAD-7</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Intercept (level at 0)</td>
<td>12.94 (.73)</td>
<td>17.04</td>
<td>.000</td>
<td>13.19 (.71)</td>
<td>18.55</td>
<td>.000</td>
</tr>
<tr>
<td>Group</td>
<td>-.28 (1.01)</td>
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<td>.784</td>
<td>-.83 (.95)</td>
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<td>.382</td>
</tr>
<tr>
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<td>-.13 (.13)</td>
<td>-.13</td>
<td>.310</td>
<td>-.15 (.13)</td>
<td>-1.12</td>
<td>.264</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-.37 (.14)</td>
<td>-2.28</td>
<td>.005</td>
<td>-.15 (.14)</td>
<td>-2.08</td>
<td>.019</td>
</tr>
<tr>
<td>Converter by Week</td>
<td>.15 (.09)</td>
<td>.09</td>
<td>.088</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PHQ-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept (level at 0)</td>
<td>12.95 (1.25)</td>
<td>10.37</td>
<td>.000</td>
<td>13.49 (1.19)</td>
<td>11.37</td>
<td>.000</td>
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<tr>
<td>Group</td>
<td>-1.82 (1.73)</td>
<td>-1.05</td>
<td>.293</td>
<td>-2.91 (1.54)</td>
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<td>.058</td>
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<td>.617</td>
<td>-.10 (.16)</td>
<td>-.65</td>
<td>.515</td>
</tr>
<tr>
<td>Group by Week</td>
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<td>-.25 (.16)</td>
<td>-1.53</td>
<td>.064</td>
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<tr>
<td>Converter by Week</td>
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<td>1.38</td>
<td>.168</td>
<td>--</td>
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</tr>
</tbody>
</table>

Note. N = 46. All p-values are two-tailed except in the case of the group by week interaction terms, where one-tailed p-values are used (because of the a priori hypotheses regarding the direction of change in scores). b is the estimate of the unstandardized coefficient. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models. Time is coded 0 = baseline, 1 = pre-treatment, 2 = post-treatment, 3 = Converters post-treatment, and 4 = four-week follow-up. Week = Time in weeks elapsed since baseline. Group was coded as Waiting List Control group = 0 and Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy group = 1. Converter = 0, except for Converters it changed to 1 at time 2 to account for change in trajectory when treatment began after waiting period.
instead examined the trajectories or change over time for all participants, regardless of when treatment was initiated. The model results indicate that those who received TAICBT at any point in the study exhibited significantly different trajectories or change over time on the GAD-7 as compared to WLC-Only participants, as demonstrated by the significant negative coefficient for the Group by Week interaction term, \( z = -2.08, p = .019 \). Unlike the previous RCT models that compared the TAICBT group to those in the WLC group, there were no significant main effects for Treatment or Week. This suggests that it is the combination of TAICBT over time that leads to reduced GAD-7 scores, rather than time or treatment alone. Over the active treatment period, the model indicated that participants who received TAICBT tended to reduce in GAD-7 total score by 2.82 points compared to those in the WLC-Only condition, based on a decrease of 0.282 points/week. Again, a 2.82 change in GAD-7 score is close to one full standard deviation change from the baseline score.

When examining the PHQ-9 and controlling for the Converter participants, there was a significant negative coefficient for the Week by Treatment interaction, \( z = -1.94, p = .026 \), and no significant main effects for Treatment or Week. There was also no significant interaction for Converter by Week interaction term, \( z = 1.38, p = .168 \), indicating that Converter participants did not improve at a different rate than the TAICBT participants. Nonetheless, when the Converter variable was removed from the model, the Week*Treatment interaction was close to but no longer significant, \( z = -1.53, p = .064 \). There was also a nearly significant main effect for group, \( z = -1.90, p = .058 \). Taken together, these findings suggest that, while there is a significant effect for treatment over time, the TAICBT participants appeared to have a stronger response to treatment than the
Converters with respect to depressive symptoms. As well, the nearly significant main effect for group implies that there were likely differences between the three groups (i.e., Treatment-Only, WLC-Only, and Converters) with respect to changes in PHQ-9 scores over time. Over the active treatment period (10 weeks), the model indicated that participants who received TAICBT tended to lower in their PHQ-9 score by 2.49 points compared to those in the WLC group (at any point in the study), based on a decrease of 0.249 points/week. A 2.49 point change in PHQ-9 score is less than half of the baseline standard deviation for all participants. Lattice plots of each participant’s trajectory of scores on the GAD-7 and PHQ-9 over time are presented in Appendices AA-DD.

Multilevel mixed models comparing participants across all groups for secondary outcome measures. Additional multilevel mixed models were conducted to examine rates of change in participants’ PSWQ-A, GAI, and GDS total scores over time, as measured in weeks. It was predicted that all participants who received TAICBT (i.e., TAICBT group, Converters) would show a steeper decrease in worry, anxiety symptoms, and depressive symptoms over time as compared to those in the WLC-Only group; thus, one-tailed tests were performed. The results of these models with and without controlling for the Converter participants are presented in Table 11. When controlling for the Converters, the models indicate that those who received TAICBT improved at a faster rate than those in the WLC-Only group, as demonstrated by the significant negative coefficient for the Week by Treatment interaction terms for the PSWQ-A, $z = -1.61, p = .054$, the GAI, $z = -1.98, p = .024$, and the GDS, $z = -2.34, p = .009$. However, when the Converter variable was removed from the models, the Week by Treatment interaction
Table 11. Parameter Estimates for Multilevel Model of PSWQ-A, GAI, and GDS as a Function of Group and Week with and without Converter Variable

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<tr>
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<th>With Converter Variable</th>
<th>Without Converter Variable</th>
</tr>
</thead>
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<td></td>
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<tr>
<td><strong>PSWQ-A</strong></td>
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<td></td>
</tr>
<tr>
<td>Intercept (level at week 0)</td>
<td>29.62 (1.69)</td>
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</tr>
<tr>
<td>Group</td>
<td>-0.43 (2.32)</td>
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<tr>
<td>Week</td>
<td>-0.12 (.23)</td>
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<tr>
<td>Group by Week</td>
<td>-0.41 (.25)</td>
<td>-1.61</td>
</tr>
<tr>
<td>Converter by Week</td>
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<td>1.24</td>
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<tr>
<td><strong>GAI</strong></td>
<td></td>
<td></td>
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<td>Intercept (level at week 0)</td>
<td>13.75 (1.08)</td>
<td>12.75</td>
</tr>
<tr>
<td>Group</td>
<td>-0.24 (1.48)</td>
<td>-0.16</td>
</tr>
<tr>
<td>Week</td>
<td>-0.04 (.16)</td>
<td>-0.24</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-0.34 (.17)</td>
<td>-1.98</td>
</tr>
<tr>
<td>Converter by Week</td>
<td>0.23 (.11)</td>
<td>2.14</td>
</tr>
<tr>
<td><strong>GDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept (level at week 0)</td>
<td>18.19 (1.70)</td>
<td>10.68</td>
</tr>
<tr>
<td>Group</td>
<td>-1.37 (2.34)</td>
<td>-0.59</td>
</tr>
<tr>
<td>Week</td>
<td>0.07 (.19)</td>
<td>0.35</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-0.49 (.21)</td>
<td>-2.34</td>
</tr>
<tr>
<td>Converter by Week</td>
<td>0.29 (.13)</td>
<td>2.19</td>
</tr>
</tbody>
</table>

Note. N = 46. All p-values are two-tailed except in the case of the group by week interaction terms, where one-tailed p-values are used. b is the estimate of the unstandardized coefficient. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models. Time is coded 0 = baseline, 1 = pre-treatment, 2 = post-treatment, 3 = Converters post-treatment, and 4 = four-week follow-up. Week = Time in weeks elapsed since baseline. Group was coded as Waiting List Control group = 0 and Treatment group = 1. Converter = 0, except for Converters it changed to 1 at time 2 to account for change in trajectory when treatment began after waiting period.
terms were close to but no longer significant across all three measures: PSWQ-A, $z = -1.21, p = .011$, GAI, $z = -1.32, p = .094$, and GDS, $z = -1.57, p = .058$.

Similar to the PHQ-9, this finding indicates that, while there is a significant effect for treatment over time, the participants in the TAICBT group appeared to have a stronger response to treatment than those in the Converter group with respect to worry, anxiety, and depressive symptoms. Over the course of treatment, the model results show that participants who received TAICBT tended to decrease on the PSWQ-A by 2.37 points (4.07 when points controlling for Converters), on the GAI by 2.17 points (3.38 points when controlling for Converters), and by 3.13 points on the GDS (4.87 points when controlling for Converters), as compared to those in the WLC-Only condition.

3.7 Testing Hypothesis Two

Hypothesis two aimed to further assess the efficacy of TAICBT by examining whether the changes in symptoms were clinically significant, which is “the extent to which therapy moves someone outside the range of the dysfunctional population or within the range of the functional population” (p. 12) (Jacobson & Truax, 1991). The two-step Jacobson and Truax method was computed. For the present study, Cutoff A was used to be consistent with previous ICBT research (e.g., Berger et al., 2009), which specifies that the “functional” population are those with post-therapy scores that are 2 $SD$’s or more from the pre-treatment mean (i.e., for those in TAICBT group, a score of 2.30 or less on the GAD-7 with a pre-treatment mean of 11.78 and $SD$ of 4.74, and for those in the WLC group, a score of 2.57 or less on the GAD-7 with a pre-treatment mean of 11.99 and $SD$ of 4.71). The second step involved calculating the Reliable Change Index (RCI) by comparing an individual’s change from pre- to post-treatment to the
standard error of measurement of the outcome (i.e., \( \pm 1.96 \text{SE} \)). For participants in the TAICBT group, 59.10% demonstrated reliable change in the direction of functionality while only 15.79% of participants in the WLC group demonstrated reliable change (i.e., change in pre- to post-treatment score was at least \(-1.96 \text{SE}\)).

Participants were classified into one of four categories, depending on whether they met Cut-off A and/or demonstrated reliable change. Participants were classified as recovered (individual passed Cut-off A and RCI in the positive direction), improved (passed RCI in the positive direction but not Cut-off A), unchanged (passed neither criterion), or deteriorated (passed RCI in the negative direction). As presented in Figure 3, 14 participants in the WLC group demonstrated no reliable change, two participants reliably deteriorated, three improved but were not recovered, and zero participants were considered recovered. In contrast, when considering the classification of change for the 22 participants in the TAICBT group, one participant had reliably deteriorated, seven participants were unchanged, eight had improved but not recovered, and six were considered reliably recovered.

Hypothesis two also postulated that medium effect sizes would be observed from pre- to post-treatment for the TAICBT group, as compared to the WLC group participants. Within- and between-group effect sizes were calculated according to Cohen’s \( d \) (see Table 12). When examining the within-group effects from pre- to post-treatment for the TAICBT participants, large (\( \geq 0.8 \)) effect sizes were observed for the GAD-7, PHQ-9, GAI, and WHOQOL-BREF Psychological and Physical domains. Medium (0.5 to 0.79) effect sizes were observed for the PSWQ-A and GDS. Similar results were observed when examining within-group effects from pre-treatment to follow-
Figure 3. Clinically Significant Change across Conditions

![Bar chart showing proportion of participants in each treatment condition who demonstrated different classifications of clinically significant change, according to Jacobson and Truax’s (1991) definition, on the GAD-7. TAICBT = Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy; WLC = Waiting List Control Group. Original in colour.]

*Figure 3.* Proportion of participants in each treatment condition who demonstrated different classifications of clinically significant change, according to Jacobson and Truax’s (1991) definition, on the GAD-7. TAICBT = Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy; WLC = Waiting List Control Group. Original in colour.
Table 12. Cohen’s d Between- and Within-Group Effect Sizes for TAICBT and WLC Conditions

<table>
<thead>
<tr>
<th></th>
<th>Between-group effects</th>
<th></th>
<th>Within-group effects</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TAICBT (pre- to post)</td>
<td>TAICBT</td>
<td>WLC</td>
<td></td>
</tr>
<tr>
<td>GAD-7</td>
<td>.85</td>
<td>.91</td>
<td>1.38</td>
<td>.38</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>1.17</td>
<td>.95</td>
<td>.90</td>
<td>.22</td>
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<td>PSWQ-A</td>
<td>.77</td>
<td>.72</td>
<td>.67</td>
<td>.13</td>
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<td>GAI</td>
<td>.82</td>
<td>1.04</td>
<td>.87</td>
<td>.36</td>
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<td>GDS</td>
<td>.78</td>
<td>.91</td>
<td>.71</td>
<td>-.06</td>
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<tr>
<td>WHO-D1</td>
<td>.64</td>
<td>.87</td>
<td>-</td>
<td>.33</td>
</tr>
<tr>
<td>WHO-D2</td>
<td>.97</td>
<td>.99</td>
<td>-</td>
<td>.07</td>
</tr>
<tr>
<td>WHO-D3</td>
<td>.26</td>
<td>.34</td>
<td>-</td>
<td>.11</td>
</tr>
<tr>
<td>WHO-D4</td>
<td>.46</td>
<td>.60</td>
<td>-</td>
<td>.10</td>
</tr>
</tbody>
</table>

*Note.* GAD-7 = General Anxiety Disorder-7; PHQ-9 = Patient Health Questionnaire-9; PSWQ-A = Penn State Worry Questionnaire-Abbreviated; GAI = Geriatric Anxiety Inventory; GDS = Geriatric Depression Scale; WHO = World Health Organization Quality of Life-BREF; WHO-D1 = Domain 1, Physical Health; WHO-D2 = Domain 2, Psychological Health; WHO-D3 = Domain 3, Social Relationships; WHO-D4 = Domain 4, Environmental; TAICBT = Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy Group; WLC = Waiting List Control Group.
up for the TAICBT participants. In contrast, when examining the within-group effects from pre- to post-treatment for the WLC participants, small effect sizes (0.2 to 0.3) were obtained for the GAD-7, GAI, PHQ-9, and WHOQOL-BREF Physical Domain and no effects were observed for the PSWQ-A, GDS, and WHOQOL-BREF Psychological, Social, and Environmental domains.

Between-group effect sizes comparing post-treatment scores revealed similar results. Specifically, large effects were observed for the GAD-7, PHQ-9, GAI and WHOQOL-BREF Psychological domain, and medium effect sizes were detected for the PSWQ-A, GDS, WHOQOL-BREF Physical domain. Small to medium effects were observed for the WHOQOL-BREF Social and Environmental domains. Overall, these results show that TAICBT was more efficacious than expected for reducing general anxiety, depression severity, and other anxiety/psychological symptoms, and was as efficacious as predicted for reducing worry and depression as measured by the GDS when compared to a WLC condition. The efficaciousness of TAICBT was also found to go beyond the reduction of anxiety symptoms, as small to medium effects were also detected for improvements on quality of life in the physical, environmental, and social domains.

3.8 Testing Hypothesis Three

To test hypothesis three and to be consistent with other TAICBT for GAD research (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009), remission rates and rates of recovery according to the GAD-7 are reported. To provide an index of remission, pre- and post- treatment GAD-7 scores for the TAICBT and WLC groups are presented and compared to the optimum cut-off score (≥ 10) for a probable diagnosis of
GAD (Spitzer et al., 2006). For remission rates, the percentage of participants in each group below and above the proposed GAD-7 cut-off at pre- and post-treatment are reported and displayed in Figure 4. Approximately 37.5% of the TAICBT group and 23.8% of the WLC group had scores below 10 on the GAD-7 at pre-treatment, whereas roughly 86% of the TAICBT group and 42% of the WLC group had scores below 10 at post-treatment on the GAD-7. This is consistent with the hypothesis that approximately 80% of TAICBT participants would report symptoms below the optimum cut-off score at post-treatment, when considering other studies that have used this as an index of remission (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009). While this is a liberal assessment of the efficacy of *GAD Online for Older Adults*, it suggests that TAICBT for older adults is more efficacious than being on a waiting list for reducing the number of cases with a probable diagnosis of GAD at post-treatment.

An estimate of recovery was also made by identifying the percentage of participants who showed a significant reduction in their symptoms, defined as at least a 50% reduction of pre-treatment GAD-7 scores. As displayed in Figure 5, it was found that just over half of the TAICBT group showed a reduction of at least 50% of their pre-treatment GAD-7 scores, as compared to about 11% of the WLC group showing such a reduction.

### 3.9 Testing Hypothesis Four

Hypothesis four predicted that all expected improvements across symptom measures would be maintained at the four-week follow-up measurement point. Longitudinal multilevel models were carried out with follow-up data from the Treatment-
Figure 4. Proportion of participants in each condition who had GAD-7 Scores below and/or above 10 at pre- and post-treatment. Lower scores are equal to fewer symptoms of generalized anxiety; GAD-7 = Generalized Anxiety Disorder-7 item; TAICBT = Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy Group; WLC = Waiting List Control Group.
Figure 5. Percentage of Participants with at Least 50% Reduction of Pre-Treatment GAD-7 Scores

Figure 5. Percentage of participants with at least 50% reduction of pre-treatment GAD-7 scores across conditions. GAD-7 = Generalized Anxiety Disorder-7 item; TAICBT = Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy Group; WLC = Waiting List Control Group.
Only, Converter, and WLC-Only participants on the GAD-7, PHQ-9, PSWQ, GAI, and GDS. For these models, a Follow-Up variable was created and included as an interaction term (Follow-Up by Week) to identify any significant change from the ongoing trend indicated by the Group by Week interaction term during this four-week period. The WLC-Only participants always had the Follow-Up variable equal to 0. The Treatment-Only and Converter participants started the study with this variable equal to 0, but then it changed to 1 at the time when the follow-up period began for each group.

As presented in Table 13, participants who received TAICBT continued to experience a downward trend in scores on the GAD-7 and GAI from post-treatment to the end of the follow-up period. That is, the downward trajectory in scores that was detected during the treatment phase was also observed during the follow-up period for these two measures. While the Week by Follow-Up interaction terms were not significant for these two measures, there were still negative changes in the scores over time, as indicated by the sum of the negative estimates of the unstandardized coefficients for the Group by Week and Follow-Up by Week variables. Also, the on-going downward trend during the treatment period and the follow-up period had been shown to be statistically significant in the models without the Follow-up by Week variable discussed earlier. This implies that participants continued to experience symptom improvement beyond the active treatment phase on the GAD-7 and GAI. Relative to the scores of those in the WLC-Only group, on average Treatment-Only and Converter participants’ scores tended to reduce by .29 (.24 + .05) points/week, or 1.15 points over the four weeks on the GAD-7, and tended to reduce by .24 (.12 + .12) points/week, or .97 points on the GAI over the four-week follow-up period.
Table 13. Parameter Estimates for Multilevel Model of GAD-7, PHQ-9, PSWQ-A, GAI, and GDS as a Function of Group and Week with Follow-Up Variable

<table>
<thead>
<tr>
<th>Fixed effects</th>
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<th>p</th>
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<tr>
<td>Intercept (level at week 0)</td>
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<td>.000</td>
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<td>.881</td>
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<td>-3.32</td>
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<td>Group by Week</td>
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<td>.003</td>
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<td>------</td>
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<td><strong>GAI</strong></td>
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<td>Follow-Up by Week</td>
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<td>.776</td>
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<tr>
<td>Follow-Up by Week</td>
<td>-.32 (.11)</td>
<td>-2.90</td>
<td>.002</td>
</tr>
</tbody>
</table>

*Note. N = 46. All p-values are two-tailed except in the case of the follow-up by week interaction terms, where one-tailed p-values are used. b is the estimate of the unstandardized coefficient. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models. Time is coded 0 = baseline, 1 = pre-treatment, 2 = post-treatment, 3 = Converters post-treatment, and 4 = four-week follow-up. Week = Time in weeks elapsed since baseline. Group was coded as Waiting List Control Group = 0 and Treatment group = 1. Follow-Up = 0, except for Treatment-Only and Converters it changed to 1 when the follow-up period began.*
In addition, the longitudinal multilevel models showed that participants not only maintained the treatment effects on the PHQ-9, PSWQ-A, and the GDS, but they experienced large and statistically significant improvements on these measures after the follow-up period, as demonstrated by their significant negative coefficients for the Follow-Up by Week interaction terms: PHQ-9: $z = -3.32, p = .0004$, PSWQ-A: $z = -2.74, p = .003$, and GDS: $z = -2.90, p = .002$. The significant interaction terms for these three measures indicate that the effect of TAICBT on depression symptoms and worry appears to be most pronounced for participants in the period following treatment, rather than immediately after the 10-week treatment period. Relative to the scores of those in the WLC-Only group, on average Treatment-Only and Converter participants’ scores tended to reduce by .29 (.32 + -.03) points/week, or 1.16 points over the four weeks on the PHQ-9, by .38 (.42 + -.04) points/week, or 1.52 points over the four weeks on the PSWQ-A, and by .38 (.32 + .06) points/week or 1.52 points over the four weeks on the GDS.

3.10 Testing Hypothesis Five

Hypothesis five predicted that higher client engagement with TAICBT would be associated with better treatment outcomes. Client engagement factors assessed prior to treatment included participants’ beliefs and feelings regarding the credibility and expectancy of treatment (via the CEQ) and participants’ beliefs regarding how controllable anxiety is and their expectations for being able to successfully manage anxiety in a broad sense (via the ACES). Client engagement factors assessed during and after treatment included participants’ ratings of treatment satisfaction (via the TSQ) and participants’ ratings of therapeutic alliance (via the TAQ), as well as website use data.
Correlations (see Table 14) and descriptive data are provided on each set of client engagement variables, prior to reporting mixed models and linear regressions examining the relationships between client engagement variables and change in anxiety and depressive symptoms.

**Descriptive statistics for CEQ and ACES.** Participants rated how credible they believed and felt *GAD Online for Older Adults* to be prior to initiating TAICBT according to the CEQ. On average, participants rated the credibility of the program, or how logical the therapy seems, how successful one thinks it will be, and how confident one would be in recommending it to a friend at 77.26% ($M = 20.86/27; SD = 3.99$), indicating that they held relatively positive attitudes towards the credibility of the treatment program. Participants rated their expectancy of the program, or how much they think and feel they will improve by the end of treatment and how much they feel therapy will reduce symptoms at 62.52% ($M = 18.13/29; SD = 4.34$). This finding indicates that following the completion of the treatment program, participants generally held only moderate expectations that symptom improvement would be achieved. Participants’ credibility ratings did not correlate significantly with scores on the GAD-7 or PHQ-9 at post-treatment or at four-week follow-up. Similar non-significant results were observed for participants’ expectancy ratings and the GAD-7 or PHQ-9 at post-treatment and the GAD-7 at four-week follow-up; however, a significant negative association was found between credibility ratings and PHQ-9 at four-week follow-up, $r(27) = -.34, p = .044$.

In addition to rating their expectations that therapy would help them, participants were also asked to rate their beliefs regarding how controllable anxiety is and their expectations for being able to successfully manage anxiety in a broad sense. According
### Table 14. Correlations between Client Engagement Variables and GAD-7 and PHQ-9

<table>
<thead>
<tr>
<th>Variable</th>
<th>Post-Treatment GAD-7</th>
<th>Post-Treatment PHQ-9</th>
<th>Four-Week Follow-up GAD-7</th>
<th>Four-Week Follow-up PHQ-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEQ-credibility&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-10</td>
<td>-14</td>
<td>.02</td>
<td>-.16</td>
</tr>
<tr>
<td>CEQ-expectancy&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.09</td>
<td>-.20</td>
<td>-.21</td>
<td>-.34&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>ACES&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.25</td>
<td>-.47**</td>
<td>-.48*</td>
<td>-.62***</td>
</tr>
<tr>
<td>TSQ-A Usefulness&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.23</td>
<td>-.32*</td>
<td>-.37*</td>
<td>-.55***</td>
</tr>
<tr>
<td>TSQ-B Liked&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.20</td>
<td>-.16</td>
<td>-.37*</td>
<td>-.50**</td>
</tr>
<tr>
<td>TSQ-C Anxiety Improvement&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.42**</td>
<td>-.41**</td>
<td>-.65***</td>
<td>-.68***</td>
</tr>
<tr>
<td>TSQ-D Lifestyle Improvement&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.19</td>
<td>-.64***</td>
<td>-.36*</td>
<td>-.54***</td>
</tr>
<tr>
<td>TSQ-E1 Overall Program&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.20</td>
<td>-.37*</td>
<td>-.38*</td>
<td>-.49**</td>
</tr>
<tr>
<td>TSQ-E2 Enjoyment Communicating&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.06</td>
<td>-.01</td>
<td>-.15</td>
<td>-.20</td>
</tr>
<tr>
<td>TSQ-E3 Overall Improvement&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.36*</td>
<td>-.31*</td>
<td>-.59***</td>
<td>-.58***</td>
</tr>
<tr>
<td>TAQ&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.03</td>
<td>.05</td>
<td>-.23</td>
<td>-.19</td>
</tr>
<tr>
<td>Modules completed</td>
<td>-.28</td>
<td>-.26</td>
<td>-.18</td>
<td>-.13</td>
</tr>
<tr>
<td>Logins</td>
<td>.16</td>
<td>.06</td>
<td>.13</td>
<td>.13</td>
</tr>
<tr>
<td>Duration</td>
<td>.02</td>
<td>.11</td>
<td>-.09</td>
<td>-.08</td>
</tr>
<tr>
<td>Check-In characters</td>
<td>-.24</td>
<td>-.13</td>
<td>-.31</td>
<td>-.13</td>
</tr>
<tr>
<td>Number of e-mails</td>
<td>-.26</td>
<td>.02</td>
<td>-.22</td>
<td>.05</td>
</tr>
<tr>
<td>E-mail characters</td>
<td>-.08</td>
<td>-.10</td>
<td>-.10</td>
<td>.04</td>
</tr>
<tr>
<td>Phone calls</td>
<td>.14</td>
<td>.16</td>
<td>.02</td>
<td>-.25</td>
</tr>
</tbody>
</table>

*Note. All p-values are one-tailed because of the a priori hypotheses regarding the direction of change in score, except when the sign of $r$ does not correspond to the expected direction of change (expected $r < 0$) where the test reverted to a two-tailed test (of $r$ not equal to 0). Correlations displayed are taken from the pooled imputed dataset. GAD-7 = General Anxiety Disorder-7 item; PHQ-9 = Patient Health Questionnaire; CEQ-credibility = Credibility/Expectancy Questionnaire - Credibility Scale; CEQ-expectancy = Credibility/Expectancy Questionnaire - Expectancy Scale; ACES = Anxiety Change Expectancy Scale, TSQ = Treatment Satisfaction Questionnaire-Modified; TSQ-A = Usefulness of modules; TSQ-B = Liked modules; TSQ-C = Perceived improvement of anxiety symptoms; TSQ-D = Perceived improvement on lifestyle factors; TSQ-E1 = Liked overall program; TSQ-E2 = Enjoyment communicating with therapist; TSQ-E3 = Overall perception of improvement; TAQ = Therapeutic Alliance Questionnaire; Modules completed = Total number of modules completed; Logins = Number of logins to website; Duration = Number of days of program involvement; Check-In characters = Average number of characters (without spaces) in weekly open-ended check-in to therapist; Number of e-mails = E-mails sent to therapist; E-mail characters = Average number of characters (without spaces) in e-mails sent to therapist; Phone calls = Number of phone calls to client after not logging onto program for seven or more days.

<sup>a</sup>Measured at pre-treatment, <sup>b</sup>Measured at post-treatment.

* $p < .05$. ** $p < .01$. *** $p < .001$. 

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to their responses on the ACES, participants scored 79.96 (SD = 13.28) on average, with possible scores ranging from 20 to 100. Higher scores indicate greater positive expectancy for changing anxiety. Anxiety change expectancy at pre-treatment correlated negatively with the PHQ-9 score at post-treatment, $r(30) = -.47, p = .004$, but was not associated with the GAD-7 post-treatment score. Anxiety change expectancy at pre-treatment was also significantly correlated with follow-up scores on the GAD-7, $r(27) = -.48, p = .005$, and PHQ-9, $r(27) = -.62, p = .0002$.

**Multilevel mixed models for CEQ and ACES.** To further explore the relationship between pre-treatment credibility/expectancy and anxiety change expectancy with symptoms of general anxiety and depression, longitudinal mixed models were computed. The models were fit for the trajectories of clients’ GAD-7 and PHQ-9 total scores over time (i.e., measured in weeks) with CEQ-credibility, CEQ-expectancy, and ACES entered as explanatory variables and interaction terms. One-tailed tests were performed because it was hypothesized that higher ratings of credibility/expectancy and anxiety change expectancy at pre-treatment would be associated with a reduction in general anxiety and depressive symptoms over time.

The GAD-7 longitudinal mixed model revealed that there were no significant main effects for CEQ-credibility, CEQ-expectancy, and ACES; however, as evidenced in Table 15, interaction effects were significant for CEQ-credibility by Week, $z = 3.24, p = .036$. This result indicates that participants who rated the credibility of the program higher at pre-treatment tended to decrease in general anxiety symptoms more quickly over the weeks. The interaction effects for CEQ-expectancy and Week and for ACES and Week were not statistically significant.
Table 15. Multilevel Models of GAD-7 and PHQ-9 as a Function of CEQ and ACES

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>GAD-7</th>
<th></th>
<th></th>
<th>PHQ-9</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>z</td>
<td>p</td>
<td>b (SE)</td>
<td>z</td>
<td>p</td>
</tr>
<tr>
<td>Intercept (level at week 0)</td>
<td>12.25 (4.11)</td>
<td>2.98</td>
<td>.003</td>
<td>17.19 (6.84)</td>
<td>2.51</td>
<td>.012</td>
</tr>
<tr>
<td>Group</td>
<td>-1.61 (1.12)</td>
<td>-1.43</td>
<td>.152</td>
<td>-3.72 (1.63)</td>
<td>-2.28</td>
<td>.023</td>
</tr>
<tr>
<td>Week</td>
<td>.59 (.92)</td>
<td>.63</td>
<td>.527</td>
<td>-.12 (1.11)</td>
<td>-.11</td>
<td>.916</td>
</tr>
<tr>
<td>ACES</td>
<td>-.01 (.05)</td>
<td>-.13</td>
<td>.445</td>
<td>-.12 (.08)</td>
<td>-1.49</td>
<td>.068</td>
</tr>
<tr>
<td>CEQ-Credibility</td>
<td>.20 (.19)</td>
<td>1.09</td>
<td>.274&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.20 (.31)</td>
<td>.64</td>
<td>.520</td>
</tr>
<tr>
<td>CEQ-Expectancy</td>
<td>-.12 (.18)</td>
<td>-.67</td>
<td>.251</td>
<td>.09 (.29)</td>
<td>.31</td>
<td>.759</td>
</tr>
<tr>
<td>ACES by Week</td>
<td>-.01 (.01)</td>
<td>-.40</td>
<td>.346</td>
<td>.01 (.01)</td>
<td>.32</td>
<td>.751</td>
</tr>
<tr>
<td>Credibility by Week</td>
<td>-.02 (.01)</td>
<td>-1.80</td>
<td>.036</td>
<td>-.02 (.02)</td>
<td>-.95</td>
<td>.108</td>
</tr>
<tr>
<td>Expectancy by Week</td>
<td>.01 (.01)</td>
<td>.66</td>
<td>.508&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.01 (.02)</td>
<td>-.65</td>
<td>.258</td>
</tr>
<tr>
<td>Group by Week</td>
<td>-.57 (.85)</td>
<td>-.67</td>
<td>.252</td>
<td>.31 (1.00)</td>
<td>.31</td>
<td>.755</td>
</tr>
</tbody>
</table>

Note. N = 46. All p-values are two-tailed except in the case of the ACES, CEQ-Credibility, CEQ-Expectancy main effect and interaction terms, where one-tailed p-values are used (because of the a priori hypotheses regarding the direction of change in scores). b is the estimate of the unstandardized coefficient. In the statistical computer package SPSS, z-tests are performed, not t-tests, for the pooled imputation results for Mixed Models. Time is coded 0 = baseline, 1 = pre-treatment, 2 = post-treatment. Group is coded as 0 for Waitlist group and 1 for Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy group. Week = Time in weeks elapsed since baseline. ACES = Anxiety Change Expectancy Scale; Credibility = Credibility/Expectancy Questionnaire-Credibility Scale; Expectancy = Credibility/Expectancy Questionnaire-Expectancy Scale.

<sup>a</sup>The sign of b does not correspond to the expected direction of change (expected b < 0) in the outcome, so the test reverted to a two-tailed test (of b not equal to 0).
The PHQ-9 longitudinal mixed model revealed that there were no significant main effects for CEQ-credibility or CEQ-expectancy. The ACES main effect approached statistical significance, \( z = 2.22 \) \( p = .068 \), suggesting that those participants who had higher ratings of anxiety change expectancy at pre-treatment were more likely to decrease in depressive symptoms. The interaction effects for CEQ-credibility and Week, CEQ-expectancy and Week, and ACES and Week were not statistically significant. Together, these results indicate that, although credibility of treatment ratings at pre-treatment predicted faster rates of decline in GAD-7 symptoms over time, overall client engagement variables at pre-treatment were not robust predictors of treatment outcome for TAICBT for GAD in older adults.

**Descriptive statistics for TSQ and TAQ.** The means and standard deviations for the Treatment Satisfaction Questionnaire-Modified (TSQ) are presented in Table 16. On average, participants reported good ratings regarding how useful they found the program modules (Part A: \( M = 56.10/77 = 72.86\% \)) and how much they liked the modules (Part B: \( M = 56.16/77 = 72.94\% \)). Ratings for perceived level of improvement on anxiety symptoms and perceived level of improvement on lifestyle factors were also good, with participants providing ratings, on average, of 69.43\% (Part C: \( M = 24.30/35 \)) and 54.12\% (Part D: \( M = 15.15/28 \)), respectively. Satisfaction with the overall program was excellent, with 81.57\% of the participants reporting that they liked the overall program (Question E1: \( M = 5.71/7 \)) while 89.56\% of participants reported enjoying communicating with their online therapist (Question E2: \( M = 6.27/7 \)). Ratings for participants’ overall perception of improvement was good, with an average rating of 67.30\% overall level of improvement believed to occur after completing the treatment.
Table 16. Pooled Means and Range of Standard Deviations for Treatment Satisfaction and Therapeutic Alliance Reported by all TAICBT Participants (n = 30)

<table>
<thead>
<tr>
<th>Measure</th>
<th>M (Range of SD)</th>
<th>T. Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSQ-A: Perceived usefulness of program</td>
<td>56.10 (14.45-14.88)</td>
<td>77</td>
</tr>
<tr>
<td>TSQ-B: Personally like the program</td>
<td>56.16 (14.40-15.17)</td>
<td>77</td>
</tr>
<tr>
<td>TSQ-C: Perceived improvement in anxiety</td>
<td>24.30 (8.69)</td>
<td>35</td>
</tr>
<tr>
<td>TSQ-D: Perceived life changes</td>
<td>15.15 (7.86-8.14)</td>
<td>28</td>
</tr>
<tr>
<td>TSQ-E1: Liked overall program</td>
<td>5.71 (1.15-1.17)</td>
<td>7</td>
</tr>
<tr>
<td>TSQ-E2: Enjoyment communicating with therapist</td>
<td>6.27 (1.14-1.17)</td>
<td>7</td>
</tr>
<tr>
<td>TSQ-E3: Overall perception of improvement</td>
<td>6.73 (2.21)</td>
<td>10</td>
</tr>
<tr>
<td>TAQ: Therapeutic alliance</td>
<td>95.21 (12.92-13.28)</td>
<td>102</td>
</tr>
</tbody>
</table>

*Note.* TSQ = Treatment Satisfaction Questionnaire-Modified; TAQ = Therapeutic Alliance Questionnaire; T. Max = Theoretical Maximum Score; Range of SD = Range of standard deviations from five imputed datasets.
program (Question E3: \( M = 6.73/10 \)). According to the TAQ, participants reported a high level of therapeutic alliance, giving a rating of 93.34\% \( (M = 95.21/102) \) on average.

**Multiple linear regressions for TAQ and TSQ.** Significant negative correlations were observed between many TSQ variables and GAD-7 and PHQ-9 post-treatment and follow-up scores (see Table 14). To further understand whether therapeutic alliance and treatment satisfaction were associated with change in anxiety and depressive symptoms, separate multiple linear regressions were carried out with several TSQ subscale scores, the TAQ score, and the pre-treatment GAD-7 and PHQ-9 scores as explanatory variables and the four-week follow-up GAD-7 and PHQ-9 scores as the dependent variables. By including the pre-treatment scores as an explanatory variable, we were able to examine change in symptoms from pre-treatment to four-week follow-up by controlling for the initial score. Contrary to using a simple change score (e.g., time 2 score subtracted from time 1 score), this method retains more information by using both the pre-treatment and follow-up variables in the model and does not force the b coefficient on the initial value to be 1.

The four-week follow-up scores were chosen as the dependent variable (as opposed to the post-treatment score) because this allowed for: (a) the examination of cause and effect relationships among explanatory variables (measured at pre- and post-treatment) and anxiety and depression (measured at four-week follow-up) after time elapsed; and (b) a longer period of time for the explanatory variables to have an effect on anxiety and depressive symptoms. The TSQ-B and TSQ-E3 scales were not included in the regressions due to the issue of multicollinearity (i.e., \( r \geq .80 \) with other scales). The correlated variables (TSQ-A and TSQ-C) that were selected to remain in the model were
chosen due to the conceptual preference of examining the effect of perceived usefulness of program modules and perceived improvement of anxiety symptoms on GAD-7 and PHQ-9 symptoms.

A stepwise linear regression was first carried out to select the most useful treatment satisfaction and therapeutic alliance variables in predicting change in GAD-7 four-week follow-up scores, while controlling for the GAD-7 pre-treatment score. The explanatory variables entered into the regression were the GAD-7 pre-treatment score, the TAQ total score, and the following TSQ subscale scores: TSQ-A, TSQ-C, TSQ-D, TSQ-E1, and TSQ-E2. The regression model was statistically significant, $R^2 = .50-52$, $F(1, 26) = 11.91-13.10^1$, $p = .001$, and explained a significant proportion of variance of GAD-7 follow-up scores (approximately 50-52%). The GAD-7 pre-treatment score, $b = .25$, $z = 2.09$, $p = .019$, and the TSQ-C scale (perceived improvement of anxiety symptoms), $b = -.25$, $z = -4.10$, $p = .00002$, were the only coefficients that remained in the model as significant predictors.

A second linear regression was carried out that forced all explanatory variables to remain in the equation to determine the importance of TSQ-C when controlling for the other treatment satisfaction and therapeutic alliance variables (see Table 17). Again, the regression model was statistically significant, $R^2 = .70-73$, $F(1, 26) = 6.38-7.29$, $p = .001$, and explained a significant proportion of variance of GAD-7 follow-up scores.

---

^1 A range of $R^2$ values, $F$ values, and $p$ values are provided due to the statistical computer package SPSS not providing an $R^2$, $F$, or $p$ value for the pooled imputation results. The ranges of $R^2$, $F$, and $p$ values are from the five imputed datasets.
(approximately 70-73%). The TSQ-C scale, $b = -0.48$, $z = -4.37$, $p = 0.000006$ and the TSQ-D, $b = 0.25$, $z = 2.47$, $p = 0.013$ scale were statistically significant predictors of the GAD-7 follow-up score, when GAD-7 pre-treatment score is taken into account. The GAD-7 pre-treatment score was also a statistically significant covariate, $b = 0.35$, $z = 3.05$, $p = 0.002$. The direction of the $b$ values indicates that greater perceived improvement on anxiety and lower perceived improvement on lifestyle factors at post-treatment predicted lower scores on GAD-7 at follow-up.

The unexpected direction of the relationship between perceived improvement on lifestyle factors and GAD-7 scores was investigated further. When TSQ-D was entered into a regression alone predicting GAD-7 follow-up scores, the relationship was opposite and as would be expected (i.e., higher perceived improvement on lifestyle factors predicted lower GAD-7 scores), $z = 4.26$, $p = .00001$. This suggests that, in the context of other closely related variables (e.g., TSQ-C), the TSQ-D provides less additional information in the prediction of GAD-7 at follow-up, and in fact, acts as a compensatory variable by changing the direction of its relationship. Overall, the regressions indicate that the higher participants rated their perceived improvement of anxiety symptoms at the end of treatment, the greater the change in scores from pre-treatment to follow-up.

A subsequent stepwise linear regression evaluated the importance of the TAQ total score and the TSQ subscale scores (TSQ-A, TSQ-C, TSQ-D, TSQ-E1, and TSQ-E2) in predicting PHQ-9 follow-up scores when controlling for PHQ-9 pre-treatment scores. The regression model was statistically significant, $R^2 = 0.54-0.55$, $F(1, 26) = 13.96-14.75$, $p = 0.001$, and explained a significant proportion of variance of PHQ-9 follow-up scores (approximately 54-55%). The TSQ-C scale (perceived improvement of anxiety
Table 17. Summary of Multiple Linear Regression Analysis for Treatment Satisfaction and Therapeutic Alliance Variables Predicting General Anxiety and Depression

<table>
<thead>
<tr>
<th>Variables</th>
<th>b(SE)</th>
<th>t</th>
<th>F</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAD-7</td>
<td></td>
<td></td>
<td>6.38-7.29***</td>
<td>.70-.73</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.87(8.05)</td>
<td>.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAD-7 pre-treatment</td>
<td>.35 (.11)</td>
<td>3.05**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAQ</td>
<td>-.02 (.12)</td>
<td>-.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-A</td>
<td>-.08 (.06)</td>
<td>-1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-C</td>
<td>-.48 (.11)</td>
<td>-4.37***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-D</td>
<td>.25 (.10)</td>
<td>2.47*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-E1</td>
<td>.62 (.84)</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-E2</td>
<td>1.15 (.70)</td>
<td>1.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHQ-9</td>
<td></td>
<td></td>
<td>4.86-5.67**</td>
<td>.64-.68</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.21 (10.15)</td>
<td>.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHQ-9 pre-treatment</td>
<td>.30 (.12)</td>
<td>2.51**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAQ</td>
<td>.07 (.15)</td>
<td>.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-A</td>
<td>-.07 (.07)</td>
<td>-1.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-C</td>
<td>-.44 (.14)</td>
<td>-3.03***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-D</td>
<td>.19 (.14)</td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-E1</td>
<td>-.42 (1.09)</td>
<td>-.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSQ-E2</td>
<td>1.08 (.92)</td>
<td>1.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 27; GAD-7 = General Anxiety Disorder-7 item; PHQ-9 = Patient Health Questionnaire-9; TAQ = Therapeutic Alliance Questionnaire; TSQ = Treatment Satisfaction Questionnaire-Modified; TSQ-A = Perceived usefulness of modules; TSQ-C = Perceived improvement of anxiety symptoms; TSQ-D = Perceived improvement of lifestyle factors; TSQ-E1 = Liked overall program; TSQ-E2 = Enjoyment communicating with therapist. *p < .05. **p < .01. ***p < .001.
symptoms), \( b = -.33, z = -4.57, p = .0000025 \) and the PHQ-9 pre-treatment score, \( b = .21, z = 2.03, p = .043 \), remained in the model as statistically significant predictors.

A second linear regression was carried out that forced all explanatory variables to remain in the equation to determine the importance of TSQ-C when controlling for the other treatment satisfaction and therapeutic alliance variables (see Table 17). Again, the regression model was statistically significant, \( R^2 = .64-.68, F (1, 26) = 4.86-5.67, p = .001-.003 \), and explained a significant proportion of variance of PHQ-9 follow-up scores (approximately 64-68%). The TSQ-C scale, \( b = -.44, z = -3.03, p = .001 \), and the PHQ-9 pre-treatment score, \( b = .30, z = 2.51, p = .012 \) were statistically significant predictors of the PHQ-9 follow-up score.

With respect to treatment satisfaction and therapeutic alliance, these results suggest that whether participants perceive their anxiety symptoms as improved after TAICBT is most important in predicting extent of change in anxiety and depressive symptoms four weeks following treatment. Initial GAD-7 and PHQ-9 scores also contributed substantially to the prediction of four-week follow-up scores, indicating that higher anxiety and depression at pre-treatment was predictive of greater change at four-week follow-up. These results were replicated when we considered individual predictors alone and when the TSQ-C was taken into context with the other predictor variables.

**Descriptive statistics on website use.** Online therapy program use by Treatment-Only and Converter participants are presented in Tables 18 and 19. On average, clients completed 5.67 of the seven modules; 41.3% of participants completed all seven modules, while 11.1% completed less than half of the modules by the 10-week post-treatment deadline. After the 10-week post-treatment deadline, 77.78%, or 28 of 36
Table 18. Program Use by all Treatment-Only and Converter Group Clients (n = 36)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of program involvement(^a)</td>
<td>75.50 (40.66)</td>
<td>9</td>
<td>215</td>
</tr>
<tr>
<td>Number of logins to program</td>
<td>38.39 (24.34)</td>
<td>3</td>
<td>139</td>
</tr>
<tr>
<td>Number of modules completed(^b)</td>
<td>5.67 (1.84)</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Number of e-mails sent from client</td>
<td>7.72 (6.20)</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Number of e-mails sent from therapist</td>
<td>12.08 (4.91)</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Average number of characters in client e-mails(^c)</td>
<td>536.13 (359.77)</td>
<td>0</td>
<td>1329</td>
</tr>
<tr>
<td>Average number of characters in check-in to therapist(^d)</td>
<td>626.16 (425.55)</td>
<td>0</td>
<td>1630</td>
</tr>
</tbody>
</table>

\(^a\)Duration of program involvement = number of days between first and last login prior to four-week follow-up period  
\(^b\)Number of modules completed (at 10-week post-treatment deadline)  
\(^c\)Average number of characters (not including spaces) in e-mails sent from clients to therapist  
\(^d\)Average number of characters (not including spaces) in weekly open-ended Check-In response submitted to therapist
Table 19. Program Use by Treatment-Only and Converter Group Clients (Excluding Drop-Outs) ($n = 31$)

<table>
<thead>
<tr>
<th>Measure</th>
<th>M ($SD$)</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of program involvement$^a$</td>
<td>82.81 (38.08)</td>
<td>42</td>
<td>215</td>
</tr>
<tr>
<td>Number of logins to program</td>
<td>42.87 (23.14)</td>
<td>13</td>
<td>139</td>
</tr>
<tr>
<td>Number of modules completed$^b$</td>
<td>6.32 (1.05)</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Number of e-mails sent from client</td>
<td>8.77 (6.04)</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>Number of e-mails sent from therapist</td>
<td>13.26 (4.03)</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Average number of characters in client e-mails$^c$</td>
<td>599.51 (345.24)</td>
<td>161</td>
<td>1329</td>
</tr>
<tr>
<td>Average number of characters in check-in to therapist$^d$</td>
<td>692.79 (424.20)</td>
<td>92</td>
<td>1630</td>
</tr>
</tbody>
</table>

$^a$Duration of program involvement = number of days between first and last login prior to four-week follow-up period

$^b$Number of modules completed (at 10-week post-treatment deadline)

$^c$Average number of characters (not including spaces) in e-mails sent from clients to therapist

$^d$Average number of characters (not including spaces) in weekly open-ended Check-In response submitted to therapist
participants who began TAICBT, ultimately went on to complete all 7 modules. The website was used considerably by clients as demonstrated by the mean number of logins to the program \((M = 38.39)\), emails sent by the client to the therapist \((M = 7.72)\), and emails received by the client from the therapist \((M = 12.08)\). On average, participants were active on the program for 76 days, or just over 10 weeks. Five participants withdrew from TAICBT for varying reasons; one participant withdrew prior to completing Module 1, two withdrew at the end of Module 1, one withdrew at Module 2 and a final participant withdrew at Module 5. Reasons provided for withdrawing from treatment included: being too busy \((n = 1)\), the form of treatment was not for them \((n = 2)\), timing for treatment was not suitable \((n = 1)\), and due to unexpected health problems that prevented use of a computer \((n = 1)\).

Website use variables did not correlate significantly with GAD-7 or PHQ-9 scores at post-treatment or four-week follow-up (see Table 14). To further understand whether patterns of website use were associated with change in anxiety and depressive symptoms, multiple linear regressions were carried out that entered the GAD-7 and PHQ-9 pre-treatment scores and website use variables as explanatory variables and the GAD-7 and PHQ-9 follow-up scores as the dependent variables. The website use variables included: the number of modules completed, the number of logins into the website, duration of program involvement (\# of days from first to last login), average number of characters in open-ended weekly Check-In responses, number of e-mails sent to therapist, average number of characters in e-mails sent to therapist, and number of phone calls to client after client did not log into the program for \(\geq\) seven days.
First, a backwards elimination linear regression analysis was carried out that entered all explanatory variables into the equation and then sequentially removed variables that improved the model the most by being deleted. This process was repeated until no further improvement was possible. Backwards linear regression analysis was carried out due to SPSS reporting an error with memory when stepwise regression was attempted. This may have been due to the large number of possible models that could be generated with the website variables. Nonetheless, backward linear regression is still informative in the context of additional manual checking of the regression models that was done. When entering the GAD-7 follow-up score as the dependent variable, the model was statistically significant, \( R^2 = .15-.19, F(1,26) = 4.32-5.75, p = .024-0.48 \), but the only predictor that remained in the model was the GAD-7 pre-treatment score, \( b = .33, z = 2.23, p = .013 \).

However, when a second linear regression model was carried out that forced all explanatory variables to remain in the equation, the regression model across all five imputed datasets was statistically significant, \( R^2 = .59-.62, F(1, 26) = 3.29-3.72, p = .010-0.17 \), and explained a significant proportion of the variance in GAD-7 follow-up scores (approximately 59-62%). The number of e-mails, \( b = -.387, z = -2.62, p = .004 \), e-mail characters, \( b = .008, z = 3.44, p = .001 \), Check-In characters, \( b = -.005, z = -2.47, p = .007 \), number of modules completed, \( b = -3.49, z = -2.36, p = .009 \), and duration of program involvement, \( b = .076, z = 2.24, p = .025 \), were statistically significant predictors (see Table 20). The GAD-7 pre-treatment score was also a statistically significant covariate, \( b = .378, z = 2.84, p = .005 \). As hypothesized, lower
Table 20. Summary of Multiple Linear Regression Analysis for Website Use Variables Predicting General Anxiety and Depressive Symptoms

<table>
<thead>
<tr>
<th>Variables</th>
<th>b(SE)</th>
<th>t</th>
<th>F</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAD-7</td>
<td></td>
<td></td>
<td>3.29-3.72*</td>
<td>.59-.62</td>
</tr>
<tr>
<td>Intercept</td>
<td>21.68 (9.18)</td>
<td>2.36*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAD-7 pre-treatment</td>
<td>.38 (.13)</td>
<td>2.84**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of modules</td>
<td>-3.49 (1.48)</td>
<td>-2.36**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logins</td>
<td>-.01 (.05)</td>
<td>-.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>.08 (.03)</td>
<td>2.24**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-In characters</td>
<td>-.01 (.01)</td>
<td>-2.47**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of e-mails</td>
<td>-.39 (.15)</td>
<td>-2.62**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail characters</td>
<td>.01 (.01)</td>
<td>2.65***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone calls</td>
<td>-1.77 (1.01)</td>
<td>-1.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHQ-9</td>
<td></td>
<td>1.37-1.59</td>
<td>.38-.41</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>27.88 (14.37)</td>
<td>1.94*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHQ-9 pre-treatment</td>
<td>.47 (.16)</td>
<td>2.85**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modules completed</td>
<td>-4.35 (2.32)</td>
<td>-1.87*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logins</td>
<td>-.01 (.07)</td>
<td>-.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>.08 (.05)</td>
<td>1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-In characters</td>
<td>-.01 (.01)</td>
<td>-1.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of e-mails</td>
<td>-.38 (.23)</td>
<td>-1.67*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail characters</td>
<td>.01 (.01)</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone calls</td>
<td>-2.08 (1.56)</td>
<td>-1.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. All p-values are one-tailed because of the a priori hypotheses regarding the direction of change in score, except when the sign of b does not correspond to the expected direction of change (expected b < 0) where the test reverted to a two-tailed test (of b not equal to 0). GAD-7 = General Anxiety Disorder-7 item; Modules completed = Total number of modules completed; Logins = Number of logins to website; Duration = Number of days of program involvement; Check-In characters = Average number of characters (without spaces) in weekly open-ended check-in to therapist; Number of e-mails = E-mails sent to therapist; E-mail characters = Average number of characters (without spaces) in e-mails sent to therapist; Phone calls = Number of phone calls to client after not logging onto program for seven or more days. *p < .05. **p < .01. ***p < .001.
GAD-7 follow-up scores relative to pre-treatment GAD-7 scores were associated with clients writing more e-mails to their therapist, writing lengthier Check-Ins, and completing more modules. In contrast, being in treatment longer and writing lengthier e-mails were associated with higher GAD-7 follow-up scores, relative to pre-treatment GAD-7 scores.

To further interpret these findings, the b coefficient of -.387 indicates that if a client writes one E-mail to their therapist, their GAD-7 score is expected to drop by .387 by four-week follow-up. If a client writes one e-mail for every week in treatment (~10 weeks), their GAD-7 score is expected to drop by 3.87 points. Similarly, the b coefficient of -.005 on Check-In characters indicates that if a client writes an average of 200 characters in the weekly Check-In to their therapist (~2 short sentences), their GAD-7 score will drop by 1 point (i.e., -.005 x 200) by four-week follow-up.

A backwards linear regression analysis was carried out for the PHQ-9 that entered the PHQ-9 pre-treatment score and all website use explanatory variables into the equation and then sequentially removed variables that improved the model the most by being deleted. Again, the model was statistically significant, $R^2 = .15, F(1,26) = 4.23-4.53, p = .043-.050$, but the only predictor that remained in the model was the PHQ-9 pre-treatment score, $b = .28, z = 2.08, p = .019$. A second multiple linear regression was carried out that forced all explanatory variables to remain in the equation (see Table 20). The same website use variables were entered into the regression model and the PHQ-9 pre-treatment score was entered as a covariate. Although the regression models across the five imputed datasets were not statistically significant, $R^2 = .38-41, F(1, 26) = 1.37-1.59, p = .198-.275$; the total number of modules completed, $b = -4.35, z = -1.87, p = .031$, and
number of e-mails sent to therapist, $b = -.38$, $z = -1.67$, $p = .047$, were statistically significant predictors of the PHQ-9 follow-up score. The $b$ coefficient of -.38 for number of E-mail messages indicates for every E-mail message sent, the PHQ-9 score is expected to drop by .38 points, or by 1.90 points for every five messages sent over the course of treatment. The $b$ coefficient of -4.35 for number of modules completed suggests that, for every module completed, a participants’ PHQ-9 score can be expected to drop by 4.35 points.

These findings indicate that when using a backwards regression approach, no website variables remained as statistically significant predictors in the model. However, when the variables are kept together in their full context, the results are considerably different, and a number of website variables contribute significantly to change in GAD-7 and PHQ-9 scores, even when controlling for pre-treatment scores.

3.11 Thematic Analysis

A final objective of this study was to conduct a thematic analysis regarding participants’ experiences with GAD Online for Older Adults by asking 10 open-ended questions to all participants who underwent TAICBT. Twenty-six of 27 participants who completed post-TAICBT questionnaires provided responses to the open-ended questions via the online survey. Six participants who withdrew from TAICBT and/or did not complete post-treatment measures did not provide responses to the questions.

Two researchers reviewed and coded all participant responses: (a) the principal investigator, S. Jones, and (b) a graduate student independent of the research study. Figure 6 demonstrates the organization of sub-themes, higher-order themes, and over-arching themes. Over-arching themes identified in relation to the questions asked...
included: (a) Positive experiences with online therapy, (b) Preference of program material versus therapeutic contact, (c) Challenges associated with online therapy, and (d) Suggestions for improving online therapy. Within each over-arching theme, higher-order themes and sub-themes emerged, as summarized in Figure 6.

**Positive experiences with online therapy.** The following seven higher-order themes emerged from this over-arching theme including: (a) Appreciation of program, (b) General value of online therapy, (c) Benefits of online therapy, (c) Value of online therapy content, (d) Effective procedures and layout of program, (e) Therapist support and communication, and (f) Impact beyond enrollment. Sub-themes within each higher-order theme are described below.

**Appreciation of program.** Participants expressed general appreciation of the program and of their ability to take part. One participant shared, “Thank you for the opportunity to do this program. I learned a lot, which I will keep practicing.” Another stated: “I just found the program was a life saver…” Some were grateful for being offered a program designed specifically for the older cohort: “Thank you for thinking of us older adults and making this GAD training available to us. I thought as we got older we got tougher but that doesn’t seem to be the case with a lot of us.”

**General value of online therapy.** Participants reported several ways in which they valued online therapy, as compared to face-to-face therapy. This included increased accessibility and convenience, ability to use materials from the program in the future, and experiencing reduced stigma in receiving mental health services.
Figure 6. Over-Arching Themes, Higher-Order Themes, and Subthemes

(a) Positive experiences with online therapy

1. Appreciation of program
2. General value of online therapy
3. Benefits of online therapy
4. Value of online therapy content
5. Effective procedures and layout of program
6. Therapist support and communication
7. Impact beyond enrollment

(b) Preference of program material versus therapeutic contact

1. E-mails from therapist and program material were equally useful
2. E-mails from therapist and program material were complementary
3. Preferred e-mails from therapist over program material

(c) Challenges associated with online therapy

1. Problems with content of online therapy
2. Difficulties with procedures and layout of program
3. Website technical difficulties
4. Availability of program
5. Effective procedures and layout of program

(d) Suggestions for improving online therapy

1. Modify content of online therapy
2. Alter procedures of online therapy program
3. Website specific suggestions
4. Availability of program

Experience with GAD Online for Older Adults

Accessibility and convenience
Ability to use materials in the future
Reduced stigma
Promoted insight
Met goals
Experienced improvement
Normalized experiences
Information helpful and educational
Matched experience or problems
Specific strategies/tools
Step-by-step approach
Easy-to-follow format
Weekly practice of skills
Use of printable worksheets
User-friendly website
Availability of therapist
Feedback from therapist
Communication to therapist
Intend to practice skills
Hope for continued improvement

Time of program completion too short
Excess of information
Program was time-consuming
Problems with documentation
Lack of face-to-face communication with therapist
Extend time frame of program
Reduce topics covered in each module
Increase amount of contact with therapist

1. Problems with one’s experience or problems
Specific strategies were unhelpful, not applicable, not liked, or hard to understand

1. Appreciation of program
2. General value of online therapy

Value of online therapy content
Information helpful and educational
Matched experience or problems
Specific strategies/tools

Benefits of online therapy
Promoted insight
Met goals
Experienced improvement
Normalized experiences

Appreciation of GAD Online for Older Adults
1. Difficulties with procedures and layout of program
2. Excess of information
3. Problems with content of online therapy
4. Effective procedures and layout of program
5. Therapist support and communication
6. Value of online therapy content
7. Impact beyond enrollment

Accessibility and convenience
Ability to use materials in the future
Reduced stigma
Promoted insight
Met goals
Experienced improvement
Normalized experiences
Information helpful and educational
Matched experience or problems
Specific strategies/tools
Step-by-step approach
Easy-to-follow format
Weekly practice of skills
Use of printable worksheets
User-friendly website
Availability of therapist
Feedback from therapist
Communication to therapist
Intend to practice skills
Hope for continued improvement

(a) Positive experiences with online therapy
(b) Preference of program material versus therapeutic contact
(c) Challenges associated with online therapy
(d) Suggestions for improving online therapy

Experience with GAD Online for Older Adults

Accessibility and convenience
Ability to use materials in the future
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Easy-to-follow format
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Use of printable worksheets
User-friendly website
Availability of therapist
Feedback from therapist
Communication to therapist
Intend to practice skills
Hope for continued improvement

1. Appreciation of program
2. General value of online therapy
3. Benefits of online therapy
4. Value of online therapy content
5. Effective procedures and layout of program
6. Therapist support and communication
7. Impact beyond enrollment

1. Problems with content of online therapy
Did not fully match one’s experience or problems
Specific strategies were unhelpful, not applicable, not liked, or hard to understand
1. Problems with one’s experience or problems
Specific strategies were unhelpful, not applicable, not liked, or hard to understand

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**Accessibility and convenience.** Analysis of the open-ended questions revealed that many participants appreciated being able to access the program when it fit their schedule and from home. One participant noted: “The convenience of doing it on your own time schedule was a positive advantage” whereas another expressed: “I liked that I could do this from home and didn’t have to go out. I do not own a car.” Other participants appreciated being able to participate in therapy “without the pressures of appointments and time pressures to finish.” It was evident that many valued the convenience of being able to work at their own pace through the program, and this ultimately facilitated their learning, as demonstrated by the following quote:

Having the program online and being able to access it when I felt the need was very useful. It enabled me to work the program at my own speed vs. an hour session with a therapist each week. It gave me more time to gather and digest information when I needed it.

Yet another participant liked the privacy that online therapy offered: “I liked the fact that I could work on it when I felt like it and in the privacy of my own home. I can sometimes express myself better in writing than in talking face to face.”

**Ability to use program materials in the future.** The convenience of being able to “print and save parts of information to go back to and to always have for future reference” was cited as an additional benefit. Participants liked having the “ability to download the relaxation audios, for future use” as well as being able to “print out the worksheets so can go back and practice more now [that] the course is over.” Having the
option to save and download materials relevant to each user was indeed a benefit of accessing therapy over the Internet for participants.

*Reduced stigma.* Another benefit of accessing services over the Internet for participants was feeling less embarrassed about talking about their anxiety: “Being able to express myself openly and not feel ‘funny’ about talking to someone about my problem.” As is clear by the following quote, an online format made it easier for them to be open with themselves about their thoughts and feelings: “The printable program sheets that allow you to write down your true feelings and concerns without having to share with any one thus eliminating the natural embarrassment which accompanies anxiety.”

**Benefits of online therapy.** Throughout the qualitative analysis, participants commonly reported how helpful and satisfying their experience was with online therapy more generally. One participant shared that the program “made a significant impact on my life, for the better”, while another remarked: “This experience was extremely fulfilling for me!” In particular, participants reported online therapy to promote insight and understanding about themselves, assist in meeting clients’ goals, and normalize clients’ experiences of anxiety and other concerns. Participants also reported experiencing improvement in many aspects of their lives as a result of online therapy.

*Promoted insight.* Analysis revealed that participants felt the program promoted greater self-awareness and understanding about their thoughts, behaviours, and feelings. One participant demonstrated this in the following: “It was a very rewarding experience because it allowed me to look at myself and identify some of the causes of my anxiety.” Several quotes especially emphasized how novel yet beneficial many of the concepts in
GAD Online for Older Adults were for participants. For example: “It was different than anything else I have ever done. It made you think about stuff you live with every day and don’t even think about.” Another participant wrote:

These last seven weeks have really opened my eyes to a lot of my attitudes that do cause me to worry and I have been able to find the answers to change the way I think about how I process the events and concerns of my life.

It was apparent that the newfound insight led to important cognitive and behavioural changes for some participants. The following participant described their experience with translating new awareness into action: “I was able to see that my chronic procrastination was both a product of my worry and an excuse to worry. I have had some fairly major successes recently in tackling tasks that formerly seemed impossible.”

Met goals. A benefit of online therapy that participants identified was that they were able to meet the goals they set to achieve in therapy. One participant shared his/her experience with goals: “I am well on my way to achieving my goals, one specific one in particular, because of the help that I received online, and mostly from my therapist!” The program’s ability to meet clients’ goals was poignantly stated in the following quote:

I’d just like to say here that this therapy was a complete success for me. While I knew most of the things in it already, it gave me the tools to apply what I knew, and really believe it. I would have to say the last week was when it all came together for me. All my goals were met and I am now looking forward to a future without excess worry and fear.

Experienced improvement. In their qualitative feedback, participants often remarked how online therapy improved their anxiety and general mental health by
providing “many useful techniques to help decrease anxiety.” Some participants expressed surprise at the improvements in anxiety they experienced: “I had thought that anxiety was an unchangeable aspect of me—that I would not be able to change. I have seen a remarkable change over the past 2-1/2 months.” Other participants reported being pleased by the improvements they observed in their “cognitive function, particularly memory and confidence in attacking problems”, level of spontaneity, relationships, assertiveness, and their ability to function day-to-day. The following quote highlights the significant impact that the program had on one participant:

I am in total amazement at the improvement in my overall mental health. I was a mess when I began the program, I was headed for a complete breakdown I am sure. I am now able to function and I have a goal and a direction. I have tools to use and I am sure I can continue to improve.

Normalized experiences. Another benefit of online therapy conveyed by participants was how the program normalized their concerns, which in turn made them feel less alone or different for having anxiety: “I liked that I found out I was not alone in my behaviours and thoughts.” One participant’s quote demonstrates the meaning this had for his/her life:

This program let me see that other people had the same problems that I was having. It also let me see that some of my problems were caused because of anxiety and depression. I have always thought that I was weird.

Value of online therapy content. Through the qualitative analysis, it was determined that participants valued many aspects of the content of the online therapy program. In particular, participants indicated the program contained information that was
helpful and educational, that it matched their experience or problems, and that it contained numerous CBT strategies or tools that they found to be effective.

*Information was helpful and educational.* Participants described finding the information contained in *GAD Online for Older Adults* to be “interesting, educational, and VERY BENEFICIAL.” They stated that they were “intrigued with information that [they] read in the program”, that it gave “a lot of information that is useful each day”, and that they “learned a lot from it.”

*Matched experience or problems.* In their responses, participants were grateful for how well-matched the program’s content was to their own experience or difficulties with anxiety. In reference to the examples used throughout the program, a participant shared: “I really appreciated others’ experience and stories that I could relate to.” This was particularly instrumental for one participant in helping him/her recognize a need to be more compassionate towards him/herself:

> It was amazing to me how so many of my questions were answered in the material that was presented!! So many things that were written applied to me specifically and made me realize that many times I am far too hard on myself because I haven’t used the proper coping methods.

*Specific strategies/tools.* Participants frequently commented on the helpfulness of the strategies and tools provided in *GAD Online for Older Adults*. More generally, a participant remarked:

> The tools provided are excellent and I trust them. Anxiety has been an affliction of mine all my life.... Whatever the reason, I have never had the tools I needed to deal with my worries and anxieties. Until now.
Oftentimes participants made note of specific cognitive-behavioural strategies that they found most beneficial, including thought-challenging, behavioural strategies, worry reduction, and relaxation.

Thought-challenging strategies. Participants reported that learning about cognitive distortions and how to identify and challenge unhelpful thoughts, beliefs, and assumptions was a particularly useful strategy in the online therapy program: “I had never really looked into cognitive therapy before and definitely think it helps to examine why I think the way I do and how I could perhaps learn to think differently.” They reported liking learning “various methods to try to work with catastrophizing, negative thinking and imagining the worst case scenario” and “identifying and challenging the automatic and destructive assumptions which led me to very worrisome outcomes.” The positive outcome of such cognitive work for one participant was: “that I was able to broaden my thinking about myself.” The following quote emphasizes how one participant valued the examples of thought-challenging included in the program:

I enjoyed challenging my negative beliefs and learning other ways to view my negative thoughts in a positive manner. The examples of how to accomplish turning negative thoughts into more realistic and in a positive manner was very helpful.

Behavioural strategies. Participants also discussed the benefits of several behavioural strategies, including “being given a gentle push to do things that brought me enjoyment”, addressing “worry behaviours” to overcome procrastination and avoidance, and practicing “deliberate exposure to… specific worries.” A common theme that emerged was how the program encouraged participants to take part in enjoyable activities
without feeling guilty or unproductive for doing so. One participant reported learning: “It’s important to do what I enjoy even though I used to feel guilty because I wasn’t accomplishing something.”

Worry-reduction strategies. Some participants indicated that a number of strategies aimed at challenging and reducing worry were most useful. One participant specified: “The worry journal [was] a good help. I still worry but now I can put it [on] hold and set time aside for worry.” Another participant describes his/her enlightening experience with another worry-reduction strategy:

I also had my eyes opened when we were to write our worries down and then see if what we worried about actually happened (which, in my case, nothing serious happened). I wasted what little energy I have on nothing. Since taking GAD [Online] I often catch myself starting to worry and thinking to myself ‘What did I learn in GAD [Online] about this?’

Relaxation strategies. The relaxation strategies, including deep breathing, progressive muscle relaxation, and guided imagery, were well-liked amongst participants. When asked what was most helpful about the program, many participants indicated: “The most useful tools for me were the breathing exercises and the tension reducing exercise.” The benefits of relaxation, as denoted by participants, included reducing physical tension, feeling more relaxed in anxiety-provoking situations, and improving one’s ability to think logically in moments of high anxiety. The following quotes demonstrate some of these benefits in participants’ own words:
The most helpful was the relaxation exercises. I started out with the program clenching my jaw and my hands. I still do it sometimes but not all of the time. It has made me aware of the clenching and unclenching of muscles.

The ‘relaxation’ section was extremely helpful in that after doing the little exercises, I found I was able to think more clearly and address issues in a more positive and constructive way.

**Effective procedures and layout of program.** The qualitative analysis revealed that many participants found the layout of the online therapy program to be effective, organized, and user-friendly. Specifically, they reported liking its step-by-step approach, easy-to-follow format, user-friendliness, weekly skills assignments, and worksheets/printable materials.

*Step-by-step approach.* Participant comments often reflected their appreciation of the step-by-step design of *GAD Online for Older Adults* that provided information and skills that built upon one another. One participant indicated that “the program is so well thought out. The sequence of information and exercises is excellent…” and another valued that “there were actual step by step things to do. If you do this.....you will achieve that.” The benefits of a gradual approach are underscored in the following quote: “Everything was so ‘step-by-step’, that is I was able to identify exactly what my problems/difficulties were and then challenge myself and search and find different ways to deal with them.”
**Easy-to-follow format.** Participants characterized the format of the program as well-structured, organized, and easy to use. One participant expressed how such a format promoted her self-confidence and ability to complete the tasks in the program:

The instructions were easy to grasp and when you are having anxiety it gave me a sense of pride that I was able to accomplish the tasks required. Part of this condition takes away your self-confidence and because the program was easy to follow I never felt nervous in completing the required exercises. You can always look back if you were uncertain, it was easily accessed.

**Website considered user-friendly.** When asked about their experience using the website, a number of participants indicated that they “found the website very user-friendly and easy to use.” One indicated: “I especially liked that it would take me to the spot where I had left off but would still give me the option of going back to re-read some parts.” Participants also indicated that the way the information on the website “is presented is very easy to read and understand.” Some noted they felt more comfortable using the program after working with it for a period of time, while others wondered if other seniors’ would find the website as user-friendly if they did not have “basic knowledge of computers and the Internet.”

**Weekly practice of skills.** The program emphasizes the weekly practice of CBT skills so that participants can effectively apply what they learn to their daily life to better manage anxiety. Many participants reported this aspect of the program to be useful to their skill development. As indicated by one participant: “The weekly work… It worked well for me to schedule a certain time each week to read through the next module, print out the helpful pages, and get myself organized to practice and record over the next
week.” Having “actual assignments and a time frame to have them done by” and “being forced to do the exercises and to write things out and submit to my therapist before moving on” encouraged participants to practice and complete the exercises.

*Use of printable worksheets.* To learn and practice the skills, some participants reported liking the use of worksheets in the program to “keep record of moods, worry/anxiety [and] challenge beliefs”. One participant noted: “Using the various sheets to write things down — I found after writing things down I had more insight and felt better.” Being able to “print out the worksheets” and organize their thoughts using a worksheet was also seen as a benefit of the online program.

*Therapist support and communication.* In speaking to positive experiences with online therapy, participants frequently commented on the importance of having therapist support and communication throughout the program. In particular, sub-themes that emerged focused on the availability of having a therapist, the feedback received from the therapist, and the ability to communicate with the therapist.

*Availability of therapist.* Knowing that their therapist is available to contact was often cited as a benefit of online therapy: “The most helpful to me was the ability to contact my therapist and trust that she will be available to assist me when needed, as well as, keeping in contact with me on a regular basis.” Simply “knowing that a therapist would be guiding” clients through the information and exercises was particularly reassuring to some participants.

*Feedback from therapist.* A number of participants spoke favourably about the feedback they received from their therapist. In particular, they indicated the feedback was “empathetic”, “helpful”, “encouraging”, and “specific and relevant” to their
concerns. Participants expressed that receiving feedback from the therapist “made me want to continue on because I was feeling successful” and “really made me feel that I could conquer my anxiety and reach my goals.” Participants reported feeling like the therapist “seemed genuinely to care about my progress.” Others spoke of the “detail and thought [the therapist] went into in providing answers”, as well as the insight of the therapist: “I found my therapist astoundingly insightful; her feedback in turn gave me so much more insight into my behaviours and thoughts.”

Communication with therapist. Not only did participants enjoy receiving feedback from the therapist, they expressed liking the reciprocal nature of the relationship in that they could communicate and disclose about their experience with program but also about any personal issues. Participants enjoyed “conversing with the therapist through e-mail” and valued “the opportunity to write to [the] therapist”, where they could “write what [they were] feeling, thinking, worrying about, without any form.”

Impact on participants beyond enrollment. Throughout the feedback, participants spoke of the impact that the online therapy program may have on them beyond their enrollment in the study/service, such as planning to keep practicing the skills and having hope for continued improvement or change.

Intend to practice skills. Participants indicated that after completing the program that they planned to refer to the material often and would rely on it to help them through difficult periods in their life:

I intend going back over the notes again in my own time and working on some of the areas I had difficulty with ... e.g. worry behaviour. I have obviously learned a way of coping which is not too helpful in the long term.
Another participant summarizes their intention to apply the skills and information after the program:

I know that I will continue to use the material that was provided in the future, although having worked through the exercises I find that I think about them all the time when I start to worry—in other words, using the exercises has become part of what I do and I don’t anticipate forgetting these skills. It is nice to know, though, that I can go back and review.

*Hope for continued improvement.* Other participants described feeling hopeful that they will continue to improve by practicing what they were taught even when they finished the program:

I think as time goes on, if I practice what I learned in the program, I will become less of a perfectionist and less of a workaholic and will enjoy life more. I am already experiencing some of those benefits.

Another participant shared:

If I can commit to working the program (sounds like AA) I am confident that my worries and anxieties will be greatly improved in the way I am able to deal with them. The tools provided are excellent and I trust them.

**Preference of program material versus therapeutic contact.** An over-arching theme that emerged from the qualitative analysis focused on participants’ preferences for the online therapy program content/material as compared to the therapeutic contact. The following three higher-order themes emerged from this over-arching theme including: (a) E-mails from therapist and program material were equally useful, (b) E-mails from
therapist and program material were complementary, and (c) Preferred e-mails from therapist over program material.

**E-mails from therapist and program material were equally useful.** Several participants expressed that they found the therapist e-mails and program material equally useful. A participant conveyed: “Both were pillars of the program, appreciated and used both” while another stated: “I don’t think I had a preference of one over the other. Both were good.”

**E-mails from therapist and program material were complementary.** A number of participant comments reflected that they found the therapist e-mails and program material to be complementary. In particular, participants noted that while the website covered topics more generally, e-mails were more personal and specific to their individual situation: “The information on the website was informative but the therapist answered my individual questions.” A participant spoke to how the e-mails and program content worked together for him/her: “While I think my therapist’s insights helped me a great deal, it was putting them to use within the on-line modules that helped me the most; one would not have been as effective without the other.” E-mails from the therapist were also valuable for directing clients to specific modules that were relevant to their concerns:

… there were times when I was reading something and then trying to apply it to my issues and I was unable to do this. But [my therapist]… would refer to certain sections of the Modules and how I should apply them.

The following quote articulates the benefit of having therapist contact combined with the information from the program:
I think they are both important and that the feedback I get from my therapist compliments the information I’ve received and tried to incorporate into my life. I really value that feedback and honestly it’s what keeps me moving forward in the program. She not only comments on what I’ve done, but also on what is coming up in the next modules and that’s very motivating.

**Preferred e-mails from therapist over program material.** Another group of participants remarked that they liked their “therapists comments and encouraging words” and “preferred [the therapist] to the website.” Two participants eloquently wrote of why they valued the therapist e-mails:

The information on the website was good, but the emails from my therapist were EXCELLENT — her insight into me was very important to me, and she just seemed to know what I needed from her.

I really enjoyed the e-mails from my therapist—she has a great sense of humour and is so insightful. The e-mails are very important as I knew that someone was keeping track of my progress, reading what I wrote, and was interested in my situation.

Another participant expressed that the therapist e-mails were a positive experience as compared to other reactions he/she had received by a health care provider regarding his/her anxiety: “I found the e-mails from [my therapist] to be very useful, & was often relieved when she didn’t say what my doctor has said ‘Oh, just stop worrying!!’”

The personalized aspect of therapist e-mails was cited as being of utmost benefit by some participants. The following quote demonstrates this in a participant’s own words:
The website information was very good but having the therapist's encouragement and answers to my questions and suggestions was so valuable. I really felt that the fact that I could get information from my therapist that pertained to the exact feelings I was having was so helpful. I believe that without the therapist there to contact, the written information alone would not have been nearly as helpful...

So I preferred having the therapist's assistance for sure.

**Challenges associated with online therapy.** While many participants expressed having overall positive experiences with online therapy and could not identify any ways in which the program was unhelpful, others reported on a number of challenges associated with the online therapy experience. The following three higher-level themes emerged from this over-arching theme including: (a) Problems with content of online therapy, (b) Difficulties with organization and layout of program, and (c) Website technical difficulties. Where relevant, sub-themes within each higher-order theme will be described below.

**Problems with content of online therapy.** Some participants identified problems with the content of the online therapy program; namely, that the content did not fully match their experience or difficulties and that some strategies/concepts were considered unhelpful, not applicable, or hard to understand.

*Did not fully match experience or difficulties.* Select participants reported finding it difficult “to relate to the material” and “had to translate the material into terms that were relevant” to themselves. A participant commented on a challenge with the program being generic with respect to his/her situation:
Understanding that the programs generic for use by all requiring support it did fall short with examples that related to my situation. The subject of health concerns were glossed over in the examples. I believe that many people who develop serious health issues especially at a younger age, will make up a large sector of your work group.

In speaking to the program being in a “rigid format,” it was noted by one participant that “there are inherent difficulties in making something like this effective for a broad spectrum of people. It fits a certain ‘type’; if one isn’t that type, it’s awkward and unsatisfying.” Another participant commented specifically on the video content of the program:

A few of the modules had a video about people having trouble with their job. I am retired and I think that most of the seniors that would be participating in GAD [Online] would be retired as well. The videos were therefore not as pertinent to us as they would have been for a younger set of people.

Specific strategies were unhelpful, not applicable, not liked, or hard to understand. Participants occasionally gave feedback about certain strategies that they did not find helpful, such as “the breathing and relaxing exercising” or worry exposure exercise. Others commented on content that was not applicable to their situation, such as “problem solving or sleep difficulties” and “worry about worry”, but “appreciate[d] that a lot of older people with anxiety might” need help in these areas. Yet others described specific exercises that they did not like completing but still found to be helpful: “The section where I had to delve into my worries was the most difficult--but it made me deal with my worries so in the long run it was most helpful.” Other participants described
having difficulty understanding the “tolerating uncertainty exercise” and “the way to approach and differentiate between thoughts, beliefs and assumptions.” The latter participant wrote: “I had to keep going back to reread the difference, especially between beliefs and assumptions,” which suggests a need for added clarity in this section.

**Difficulties with procedures and layout of program.** A number of sub-themes emerged about difficulties that participants had with the layout and organization of the program, including feeling the timeline to complete the program was too brief, that it contained too much information, that the program was time-consuming, that there were problems with documentation (i.e., worksheets), and that there was a lack of face-to-face communication with the therapist.

**Timeline of program completion too short.** Many participants gave feedback that they felt “rushed with the suggested time frame of 1 week per module.” They voiced that “the work required to complete the modules within the expected time frame seemed to[o] short.” One participant indicated:

I tried to do each module within a week but 2 weeks may [have] been better given the amount of time I had and the amount of time suggested. I felt I should have repeated the exercises more often and taken more time to review each module.

Of particular concern to some participants was feeling like they had not yet mastered the skills within the timeframe the program was offered to them. This was evident in the following quote:

The program is to[o] short. I just began to develop skills and reduce my anxiety and the program is over. It would have been very beneficial if I could continue
with a program like this for at least 6 months. I have a lot of work to do and am concerned about relapse with no further program.

**Excess of information.** Some participants experienced the program as “information overload” and that reading through so much information in a short time period made it “difficult to absorb and remember it all.” It was suggested that more time was needed to “assimilate the information before moving on” with the program.

**Program was time-consuming.** Related to the above sub-themes, some participants expressed dissatisfaction with how time-consuming the program was. One participant remarked: “The first six weeks that I did the five modules took up a lot of my time. I had to dedicate my time to that. Fortunately I don’t have a job or family to look after.”

**Problems with documentation.** Another challenge noted by participants were problems associated with documentation (i.e., completing CBT worksheets, exercises). While some participants enjoyed this aspect of the program, others did not like the fact that it was a requirement. One participant wrote: “I was not keen on keeping worry records etc. as I felt it kept bringing my mind back to whether I was feeling anxious or panicky but I do realise this is necessary on a program like this one.” Others commented on the excess of exercises and documentation in the latter modules of the program and how “it became quite burdensome to try to complete the tasks.” As one participant conveyed:

> When I reach modules 5 & 6 I felt there were so many worksheets that there just wasn’t time to do them all justice. The concepts were good but to fill in all the worksheets seemed to require more time than I could give…
While not a common problem, some participants lacked access to a printer and reported this as being a problem for completing some of the worksheets: “I did not like to see that I would have to ‘print’ some of the forms and information. I do not have a printer and it annoyed me a few times.”

*Lack of face-to-face communication with therapist.* Another challenge with online therapy for several participants was the lack of in-person contact with a therapist: “Sometimes I just wanted to talk to the therapist.” One participant felt that he/she “personally would rather talk one on one with a councillor.” This person indicated that he/she was “not fast on a computer” and that was a barrier to him/her trying to communicate with the therapist exclusively over e-mail.

*Website technical difficulties.* Although a number of participants indicated that they found the online therapy program website to be user-friendly, others provided feedback on specific technical aspects of the website that they had difficulty with. More generally, one participant wrote: “I found the technical stuff very frustrating at times, had to call in a technician twice — who was very helpful — but having to wait was often frustrating.” Specific areas of concern included having problems using the text emphasis feature in e-mails (e.g., bolding, underlining, adding colours) and having problems with downloading external programs that were needed to access features of the website (e.g., Adobe Acrobat). Another technical frustration was how there are limits set on the number of characters that can be included in e-mails. One participant expressed:

The only problem I found was that I had written a lengthy e-mail reply to [the therapist] and I wasn’t able to send it because I guess there was only a certain
number of characters the computer would accept – [therapist’s] mail and mine were combined. So my e-mail was lost and I had to re-do it in shorter form.

The ‘Check-In’ pages at the beginning of every new module were another aspect of the website that several participants had problems with. Specifically, participants were frustrated in having to press a ‘Submit to Therapist’ button after every separate question on this page. After submitting responses, participants were also bothered that they were unable to edit or change their responses. One participant comments on his/her difficulties with the Check-In page:

It was okay, except for having to press the submit bar after every question [on the Check-In pages]. Quite often I would do the whole exercise, and then remember I didn’t press the bar every time, so I’d go back, press the first bar, and everything I wrote after that would disappear. You should have the option of filling out the whole exercise, then pressing the submit bars without having to do it all again. That really bugged me sometimes.

A final aspect of the website that participants had difficulty with was the time-out feature. As an added means of protecting confidentiality and privacy of clients, the website logs clients out automatically after 60 minutes of inactivity. Although participants were advised of this in an introductory e-mail, this point may have been missed by some, as one participant wrote,

…when writing a paragraph, then leaving the computer and coming back to continue, only to find all my writing was GONE!! That happened twice, and I was quite discouraged, as I am not a learned typer, so it is slow going for me.
**Suggestions for improving online therapy.** Numerous participants stated that they liked the online therapy program, that they could not “see much that needs improving or modifying”, and they felt “the modules [were] very well written and well thought out by people who understand the needs of older [people].” Other participants provided detailed suggestions for improving the program. The following higher-order themes emerged from this over-arching theme and often corresponded with the challenges participants experienced while completing the program: (a) Modify content of online therapy, (b) Alter procedures of online therapy. (c) Website specific suggestions, and (d) Availability of program. Where relevant, sub-themes within each higher-order theme will be described below.

**Modify content of online therapy.** Participants had suggestions to improve or modify the content of the online therapy modules, especially to make them more relevant to older adults. Some felt that some examples used to demonstrate the skills taught were irrelevant to the needs of older adults. For example, one participant recommended altering the video content:

I would redo the Aussie or New Zealand videos with counsellors talking to clients. Felt they were hard to relate to and could have been done better. The points they tried to make were not strong, but rather weak, clarity could have been improved.

Given the high rates of comorbidity between GAD and depression, several participants advocated for additional content on depression: “Maybe bring some help with depression into it, as I feel a lot of my age group feel low self-worth, and this tends to be depression.” Another participant recommended adding “a sense of humour, older people
find laughter to be a great relaxant.” Other suggestions included adding content on memory loss, stress, physiology and aging, how health behaviours may affect anxiety, and on the role of fear in anxiety. The latter suggestion is illustrated below:

As an older woman that is alone, with very few emotional or financial resources I think that fear is a big problem that contributes to anxiety. Fear of fear, fear of physical safety, fear of financial disaster, fear of ill health, fear of facing old age while totally alone. I think a section on how to build resources and deal with fear would be helpful.

Yet another participant expressed that the role of past life events in contributing to anxiety was underemphasized in *GAD Online for Older Adults* and would have liked more attention given to this topic:

I feel my past life has a lot to do with how I feel now. Nothing helped me to cope with abuse in the past. Some of my anxiety is linked to being ‘put down’ by my Alcoholic husband, and there was no place to talk about that. A lot of anxiety for me comes from a feeling of being inadequate, not good enough, I would be better if I was like ‘someone’ else, etc.

*Alter procedures of online therapy program.* Several sub-themes emerged regarding altering the procedures of online therapy, including extending the time frame of the program, reducing the number of topics covered in each module, and increasing the amount of contact with the therapist.

*Extend time frame of program.* It was often recommended by participants that the 10-week time frame for completing the program be extended: “Offer a longer period to complete the program. One week is too short to collect data for some of the exercises.
Make each module last two weeks at least.” It was highlighted that the latter modules of the program were especially lengthy and required more time than the study design allowed for:

I would like to suggest that the program could be a little longer. As I said I think there is too much to do in modules 5 and 6 in two weeks time, unless one can devote more time than I have. Even if Modules 5 and 6 could be broken up into three modules I think it would make it less overwhelming (people like me worry about getting everything done 😊)

Reduce topics covered in each module. Similar to the theme above, participants suggested that the number of topics covered in each module could be reduced: “Some of the modules were a bit intense. I don’t say they should be watered down, maybe deal with fewer topics in some modules.”

Increase amount of contact with therapist. Several participants felt that the “lack of human contact” was problematic and were in favour of increasing the amount of contact they had with the therapist: “I would have liked more interaction with my therapist, an e-mail once a week did not seem a lot.”

Website specific suggestions. Participants offered a number of suggestions to improve the user-friendliness and clarity of the website, including adding more detailed instructions for various technical aspects of the website, improving technical difficulties experienced with the website, and adding page numbers to the web pages for better organization when printing: “It would have been helpful to me if the pages were numbered consecutively—I printed each page so that I could highlight and write in the margins.” Others recommended enhancing the printer-friendliness of the website pages.
as these were found to be “awkward.” One participant noted: “I spent a lot of time downloading pages to read them in print. I would prefer more of the pages to be designed for printing out.” For better organization, another participant suggested adding a summary chart for tracking the tasks to be practicing each week:

One thing that might be very helpful is to provide a chart at the beginning that summarizes the main point of each module plus the tasks that will be completed. In module 3, I realized that I was losing track of the organization of the program. There is a task list at the end of each module, but I was still losing track. So I made myself such a chart so that I could keep track of what I was supposed to be doing each week to make sure that I didn’t miss doing any of the exercises.

Another recommendation was to make clear “at the beginning that not all of the exercises will pertain to” every client. This would alleviate pressure to complete all tasks, especially when they are not all necessarily applicable to each person’s situation.

**Availability of program.** A number of participants vouched for making the program widely available to other seniors in need and for a longer period of time for participants who have already taken part in the program (as opposed to only one month after completing the program). One participant endorsed:

I believe it should be made available to anyone that needs it and I believe it should be free. It will save money in the long run. If I could have accessed this program 2 years ago when I began to have emotional problems I would not have had to go through so much trauma. It did make me physically [ill] and that was a cost to the health care system and to me.
Overall, the thematic analysis determined that TAICBT participants perceived many benefits of online therapy (e.g., promoting insight, improved symptoms, feeling supported by a therapist); however, participants also identified numerous challenges associated with online therapy (e.g., content did not always match experiences, website technical difficulties, and rigid timelines). Together, the participants’ feedback provides recommendations for how to upgrade existing TAICBT services for older adults and possible considerations for development of new TAICBT programs for this age group.

4. DISCUSSION

GAD and subsyndromal anxiety symptoms are both highly prevalent and disabling in older adults (Mackenzie et al., 2011). Group, and to a lesser extent, individual CBT have been established as an efficacious psychotherapy for the treatment of GAD in the older age group (Mohlman et al., 2003; Stanley, Hopko, et al., 2003). Yet, older adults with anxiety disorders often go undertreated (Scott et al., 2010). In recent years, innovative methods for providing access to psychotherapy have been developed, including TAICBT. Although the efficacy of TAICBT in the treatment of GAD has only been demonstrated in a handful of studies, this modality shows promise for treating this disorder (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009). To date, no known researchers have purposefully investigated whether TAICBT is efficacious in treating older adults with GAD or subsyndromal general anxiety. Both the older adult cohort (Crabb et al., 2012) and treatment of GAD using CBT and TAICBT have been habitually understudied, as compared to depression (e.g., de Graaf, Hollon, & Huibers, 2010) and other anxiety disorders (e.g., Ruwaard et al., 2010). A second area lacking in
research is the study of how client engagement with TAICBT may be associated with treatment outcomes.

The present research added to the growing literature by establishing the efficacy of using TAICBT to treat GAD and subclinical GAD by (a) uniquely studying older adults and (b) achieving a better understanding of how client engagement factors, such as website use, are associated with change in anxiety and depressive symptoms. A final component of this study was to obtain client feedback on participants’ experiences in using TAICBT, given that older adults may have distinct needs that are not currently addressed in the *GAD Online for Older Adults* program.

### 4.1 Efficacy of TAICBT for Older Adults with GAD

The primary objective of this study was to determine whether TAICBT would result in greater symptom improvement over time as compared to a WLC group. Through longitudinal mixed models analyses and repeated measures ANOVAs, it was determined that TAICBT is indeed efficacious for reducing general anxiety, worry, and depressive symptoms and for improving physical, psychological, and environmental quality of life over time in the older adult age group. Compared to the WLC group, TAICBT participants experienced statistically significant improvements on all outcome measures after 10 weeks of treatment except on a measure of social quality of life. Mixed models analyses also revealed that participants who received TAICBT tended to reduce in GAD-7 and PHQ-9 total scores by about half a standard deviation over the course of treatment, resulting in most participants moving into the non-clinical range (i.e., ≤ to 10) on the GAD-7 and to the mild symptom range on the PHQ-9. Such changes in scores are both statistically significant and clinically meaningful.
Overall, the results of the current RCT are consistent with that identified by other researchers comparing TAICBT to a WLC group for treatment of GAD in the general adult population (Paxling et al., 2011; Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009) and to that examining the effectiveness of TAICBT for older adults with anxiety disorders and depression (Dear et al., 2013; Zou et al., 2012). This study provides evidence that, when compared to a WLC group, TAICBT can successfully reduce symptoms and problems related to GAD in adults aged 60 years and older. The finding that an aspect of quality of life (i.e., social) did not improve as a result of TAICBT was similarly observed by Paxling et al. (2011), which showed an inferior response to a measure of quality of life. Given that treatment did not focus directly on improving social relationships or the social environment, but instead on anxiety and depression, any changes in quality of life are viewed as secondary effects.

When examining the current study’s GAD-7 findings more closely, it was noted that the mixed models analyses revealed that symptoms of anxiety tended to decrease more quickly for those in the TAICBT group than those in the WLC group; however, participants’ scores on the GAD-7 also changed significantly over time, despite group assignment. This indicates that, even without treatment, older adults with GAD may experience improvement over time on general anxiety symptoms. Yet, when more participants and more measurement occasions were included in the longitudinal mixed models by adding in treatment data from those who converted from the waiting list to treatment, there was no longer a significant main effect for time. This suggests that it is the combination of TAICBT over time that lead to reduced general anxiety, rather than time or treatment alone. This finding raises the importance of the RCT design and of
having a comparison group to determine whether improvement in TAICBT results exclusively from the treatment alone or due to the passage of time.

An interesting finding emerged when examining the PHQ-9, PSWQ-A, GAI, and GDS while combining data from the Treatment-Only, Converter, and WLC-Only participants. Although the findings revealed that those who received TAICBT at any point in the study improved more rapidly on all four measures than those on the waiting list, the participants in the Treatment-Only group appeared to have a stronger response to treatment than those in the Converter group with respect to the above four outcome measures. It is possible that the slower response to treatment for Converter participants may show a negative impact of waiting for treatment. Perhaps if these participants had been randomly assigned to receive TAICBT at the outset, they may have had better outcomes.

Literature examining response to treatment of participants formerly on a waiting list could not be identified. Nonetheless, it was recently discovered through a meta-analysis that participants assigned to a waiting list compared to CBT tended to produce larger effect sizes than a no treatment condition (i.e., participants received no active treatment during a study and did not expect to receive such after the study was over) compared to CBT (Furukawa et al., 2014). The authors speculated that a waiting list may introduce a ‘nocebo effect’, or negative psychological expectations of “waiting for the desired active treatment” (pp. 9). Such an effect may lead participants to be motivated to remain symptomatic so that they can receive the originally desired therapy after the study period is over. Because WLC participants who opted to receive TAICBT after the waiting list (i.e., Converters) had significantly worse symptoms on all outcome measures
than those who did not opt to receive TAICBT (i.e., WLC-Only), it is plausible that the 10-week waiting list may have either set up Converter participants to have negative expectations about getting better and/or caused them to lose the initial motivation for treatment they had after signing up for the study. The differential response to treatment for Treatment-Only versus Converter participants is intriguing and warrants attention by researchers using WLC conditions in future psychotherapy and Internet-delivered CBT research.

**Clinically significant change.** To further assess the efficacy of TAICBT on general anxiety symptoms, the extent to which treatment had a meaningful impact was presented by assessing clinically significant change. Based on the criteria for reliable clinical change (Jacobson & Truax, 1991), 27% of the TAICBT group was classified as having achieved reliable change (6/22) at post-treatment on the GAD-7, whereas none of the WLC group participants were considered reliably recovered. Such findings are similar to but to some extent lower than the rates reported by Robinson et al. (2010) in the treatment of GAD in the general adult population (i.e., 47-48% reliably improved in the treatment groups and 6% reliably improved in the control group). The PSWQ rather than the GAD-7 was used as a measure of reliable change by Robinson et al., which may contribute to disparate results.

**Effect sizes.** Analyses determined that medium- to large between- and within-group effect sizes were observed from pre- to post-treatment for the majority of measures in the current study. The largest between-group effects were detected for the GAD-7, PHQ-9, GAI, and WHO-QOL-BREF Psychological domain scores, whereas medium effects were found for the PSWQ-A, GDS, and WHOQOL-BREF Physical domain.
Overall, these results showed that TAICBT was more efficacious than expected for reducing general anxiety, depression severity, and other anxiety/psychological symptoms, and was as efficacious as predicted for reducing worry and depression when compared to a WLC condition. The efficaciousness of TAICBT was also found to go beyond the reduction of anxiety symptoms, as small to medium effects were also detected for improvements on quality of life in the physical, environmental, and social domains.

The between-group effect sizes observed in the current study on older adults were somewhat lower for the GAD-7 (.85) and PSWQ-A (.77) as compared to those observed in TAICBT programs for GAD in adults aged 18-65 (i.e., GAD-7: 1.06 to 1.24; PSWQ: .96 to 1.25) (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009). Interestingly, the current study’s between-group effect size of 1.17 on the PHQ-9 was higher than that observed in other TAICBT for GAD studies (.86 to 1.02) (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009).

Similar results were detected when comparing within-group effect sizes for the treatment groups from pre- to post-treatment and from pre-treatment to follow-up. Although all of the current study’s pre- to post-treatment effect sizes on the GAD-7, PHQ-9, PSWQ-A, GDS, and GAI were medium to large (ranging from 0.72 to 1.04), effect sizes observed on similar or the same measures in studies of TAICBT programs for GAD in adults aged 18-65 tended to have higher effect sizes (.86 to 1.73) (Paxling et al., 2011; Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009). When comparing our within-group effect sizes to those from an effectiveness trial of older adults with a range of anxiety disorders, it was discerned that again our pre- to post-treatment effect sizes on the GAD-7 (.91) and PHQ-9 (.95) were noticeably smaller than that of Zou et
al.’s (2012) study (i.e., 1.65 and 1.22 respectively); although, the current study’s effect size on the GAD-7 from pre-treatment to follow-up approached a similar effect size (1.38).

It is unclear why the current study had somewhat smaller effects as compared to existing studies on TAICBT in the treatment of GAD. In general, lower effect sizes are observed for trials of CBT for late-life GAD than that for the general adult population (Westen & Morrison, 2001), which may explain differences between our study and that of Titov, Andrews, Robinson, et al. (2009) and Robinson et al. (2010). A meta-analysis of psychotherapy treatments for late-life anxiety found a mean effect size of .33 for CBT plus relaxation therapy on anxiety measures (Thorp et al., 2009).

Nonetheless, this does not explain why Zou et al.’s (2012) study of older adults with anxiety disorders also observed higher effect sizes than the current study. It is conceivable that differences between TAICBT programs and procedures and symptom severity may account for discrepancies in effect sizes. For example, participants in Zou et al.’s (2012) study were provided five lessons over eight weeks (vs. seven modules over 10 weeks) and supplementary materials that have been streamlined and made to be more concise. Their more simplified content is consistent with feedback received by the current study’s participants. Zou et al.’s (2012) study also included a moderated discussion forum and a combination of weekly telephone and e-mail support, as compared to only weekly e-mail support in the current study. Furthermore, the current study’s sample may have been more disabled by GAD symptoms prior to entering the study because they had to meet a cut-off score of ≥ 10 on the GAD-7 to participate, whereas Zou et al.’s participants had to have a score of ≥ 8 on the GAD-7. Future
research should explore whether symptom severity and/or TAICBT programs/procedures can explain differences in effect sizes. Even so, the effect sizes observed in the current study are highly encouraging and provide support for Internet-delivered CBT for older adults with GAD.

**Remission and rates of recovery.** It was hypothesized that approximately 80% of TAICBT participants would report symptoms below the optimum cut-off score (≤ 10) for a probable diagnosis at post-treatment. Analyses revealed that, at post-treatment, 86% of the TAICBT group and 42% of the WLC group met criteria for remission as defined by a post-treatment score of < 10 on the GAD-7. Such remission rates are comparable to that reported by previous TAICBT for GAD research when studying the general adult population (i.e., 79-84% of Treatment groups met remission criteria) (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009), and were higher than that observed in a sample of older adults with mixed anxiety disorders (72% met remission criteria) when a score of < 8 on the GAD-7 was used as criteria for remission (Zou et al., 2012). With respect to recovery (i.e., reductions > 50% of pre-treatment GAD-7 scores), 50% of the TAICBT group participants and 11% of WLC group participants showed such a reduction in scores. Again, such findings were similar albeit slightly lower than recovery rates reported in other TAICBT for GAD studies, which had between 56-78% of Treatment-group participants reducing in GAD-7 pre-treatment scores by 50% (Robinson et al., 2010; Titov, Andrews, Robinson, et al., 2009; Zou et al., 2012). Although we observed somewhat lower rates than others, the proportions of participants identified as having made clinically significant remission and recovery are comparable to prior research and hold promise for this modality of treatment.
Four-week follow-up. It was predicted that, for participants who received TAICBT, that all expected improvements across symptom measures would be maintained at the four-week follow-up measurement point. Mixed models analyses revealed that participants continued to experience a downward trend in scores on the GAD-7 and GAI from post-treatment to the end of the follow-up period, whereas participants experienced large and statistically significant improvements on the PHQ-9, PSWQ-A, and the GDS during the follow-up period. These results indicate that, not only were improvements maintained at the follow-up measurement for symptoms of general anxiety, the effect of TAICBT on depression symptoms and worry appears to be most pronounced for participants in the period following treatment, rather than immediately after the 10-week treatment period. Other researchers have found that symptom improvement is maintained at follow-up periods of up to five years post-treatment, with some noting continued improvements during this time frame as well (Carlbring, Nordgren, Furmark, & Andersson, 2009; Hedman et al., 2011).

4.2 Client Engagement and TAICBT

Credibility and expectancy of improvement or change. Client engagement was operationalized in numerous ways and these variables were assessed at several measurement points in the current study. At pre-treatment, all TAICBT participants completed the CEQ and ACES to assess credibility and expectancy of change and improvement. Using a longitudinal mixed models approach, it was identified that higher credibility of treatment ratings prior to initiating treatment predicted faster rates of decline in general anxiety symptoms over time. That is, participants who rated TAICBT as more believable, convincing, and logical prior to starting treatment, tended to
experience greater general anxiety symptom improvements over time. In addition, a higher rating on the ACES at pre-treatment (i.e., greater anticipation of being able to change anxiety) was predictive of faster improvements in depressive symptoms over time, although this effect only approached statistical significance. Contrary to our hypothesis, expectancy of improvement as measured by the CEQ was not associated with change in general anxiety and depression scores, and the ACES did not predict greater change in general anxiety scores over time. Overall, these results suggest that, although credibility ratings are important for predicting change in anxiety, most pre-treatment client engagement variables are not robust predictors of treatment outcome for TAICBT for GAD in older adults.

The mixed findings on the associations among credibility, expectancy, and change in anxiety/depressive symptoms are consistent with earlier research. Some authors have reported no significant relationships between credibility and expectancy and change in anxiety and depressive symptoms (Carlbring et al., 2003; Titov, Andrews, Choi, et al., 2009; Titov, Andrews, Robinson, et al., 2009), whereas others have observed an association between expectancy ratings and treatment outcomes (Hedman et al., 2012; Titov, Andrews, Choi, Schwencke, & Mahoney, 2008). It was observed in one recent study that participants with higher expectations (as measured by a CEQ total score) showed more adherence to treatment and better outcomes in self-guided ICBT for social anxiety (Boettcher, Renneberg, & Berger, 2013).

Possibly contributing to such mixed findings may be that those studies reporting data on credibility and expectancy differ regarding the time of the assessment. While the author of the present study followed what has been commonly done in TAICBT research
by measuring the CEQ and ACES prior to initiating treatment (e.g., Titov, Andrews, Choi, et al., 2008), others have reported assessing such variables one to two weeks into treatment (e.g., Boettcher et al., 2013). It is expected that participants’ perceived credibility of treatment and expectancy of improvement would be changeable over time as participants obtain more information regarding the treatment rationale and are introduced to strategies to be learned. Consequently, measuring the CEQ and ACES prior to initiating treatment when participants have heard only succinctly about TAICBT via introduction to the study and the consent form may limit our understanding of how credibility and expectancy may be associated with treatment outcome. Future research should examine these variables longitudinally to determine whether (1) credibility and expectancy change over the course of treatment, and (2) change in credibility and expectancy over time is associated with improvement in symptoms over time.

**Therapeutic alliance.** Contrary to our hypothesis, it was found that high therapeutic alliance ratings as measured by the TAQ were not predictive of change in anxiety or depressive symptoms over the course of treatment, when treatment satisfaction and pre-treatment anxiety/depressive symptoms were taken into account. Therapeutic alliance ratings in our study were high, at 95.21/102 or 93%. Authors who have previously used the same measure with other patient groups in TAICBT have reported lower scores in a panic disorder (83.13/102 or 81.5%) (Kiropoulos et al., 2008) and a PTSD population (89.2/102 or 87.5%) (Klein et al., 2010).

Therapeutic alliance is often regarded as an essential component of psychotherapy across all theoretical orientations (Lambert & Barley, 2001). While it has been demonstrated that therapist involvement or guidance is associated with better outcomes
for ICBT than self-guided ICBT (G. Andersson & Cuijpers, 2009; Spek, Nyklícek, et al., 2007), the role of the therapeutic alliance in TAICBT is not entirely clear. In a larger scale study of therapeutic alliance and TAICBT outcomes for depression, GAD, and social anxiety, it was identified that correlations between change scores on all primary outcome measures were small and not statistically significant (G. Andersson et al., 2012). These authors concluded that, even if alliance ratings in TAICBT are high and comparable to face-to-face treatment studies, therapeutic alliance is probably less important in ICBT than in regular face-to-face psychotherapy. A recent review also indicates that therapist guidance may not be necessary for ICBT to be effective for immediate symptom change, but it may be more important in maximizing patient adherence to treatment and for longer-term maintenance of symptom improvement (Mewton, Smith, Rossouw, & Andrews, 2014). Consistent with research in other populations, therapeutic alliance was not an important predictor of symptom change for older adults with GAD. Nonetheless, it is unclear whether high ratings of therapeutic alliance have an influence beyond immediate symptom improvement for the current study participants.

**Treatment satisfaction.** It was hypothesized that higher satisfaction with treatment, as measured multi-dimensionally by the TSQ, would be associated with greater anxiety and depressive symptom improvement at follow-up. Multiple regression analyses revealed that whether participants’ found the program modules useful, whether they enjoyed communicating with the therapist, or whether they liked the overall program were not important in predicting symptom change. Instead, the only robust treatment satisfaction predictor of symptom change at follow-up was whether participants
perceived improvements in their anxiety symptoms at post-treatment. That is, if a participant perceived high improvement in their anxiety symptoms at post-treatment, they were more likely to experience greater change in anxiety and depressive symptoms at the follow-up measurement point.

Modest ratings of treatment satisfaction by participants have been reported in previous TAICBT research that has used the TSQ. Overall, the current study’s participants reported higher ratings across nearly all treatment satisfaction scales than has been described by those with panic disorder (Kiropoulos et al., 2008) and PTSD (Klein et al., 2010). Neither of these earlier studies analyzed relationships among the treatment satisfaction scales and treatment outcomes. Later studies have now simplified their measurement of treatment satisfaction to one or two questions on Likert-type scales (e.g., How satisfied are you with the online treatment program that you undertook? and How much did you like the online program?) (Klein et al., 2011). While the use of multiple scales may have strength in being able to assess the multifaceted aspects of treatment satisfaction, high correlations across these scales in the current study indicates they are interrelated and may be better captured in a simplified format. Determining the best approach for assessing treatment satisfaction with online therapy is a worthy topic for future research.

**Website use variables.** Client engagement was further assessed by measuring patterns of website use by TAICBT participants. It was hypothesized that higher engagement with the TAICBT website (e.g., more logins to the website, sending more and longer e-mails to the therapist, etc.) would be associated with better treatment outcomes. Using backwards elimination regression analysis, it was identified that, on
their own, website use variables were not strong predictors of change in anxiety and depressive symptoms when pre-treatment anxiety and depressive scores were taken into account. However, when the variables were kept together in their full context, the results were considerably different. Specifically, lower anxiety scores at follow-up were associated with completing more modules and with clients writing more e-mails and lengthier Check-Ins to their therapist. However, taking longer to complete the program and writing lengthier e-mails to the therapist were associated with higher anxiety scores at follow-up. Although fewer website use variables were important in predicting change in depressive symptoms, higher number of e-mail messages and number of modules completed were also important predictors of lower depression scores at follow-up.

Overall, the results suggest that more interaction with the therapist and completing more program modules is rather important in contributing to symptom change – but only under certain conditions. The findings indicate that we must distinguish between the number of e-mails sent to the therapist vs. the average length of such e-mails. Specifically, sending more e-mails to one’s therapist over the course of treatment is likely to lead to more change in anxiety and depression, but sending lengthier e-mails is likely to predict less change or worsening of symptoms. In contrast, sending lengthier Check-In messages to one’s therapist is predictive of greater symptom improvement.

What may be different about length of e-mails vs. length of weekly Check-Ins? The open-ended weekly Check-In provides TAICBT participants an opportunity to comment on their experiences’ with the program that week, what they liked or found helpful, and any difficulties they had with implementing strategies. Specifically, in the Check-In, participants are likely to be commenting on their completion of homework.
Although participants could write about whatever they wanted and were not restricted to these topics, questions were provided to stimulate reflection and thinking about the program. E-mails, on the other hand, are more unrestricted in terms of content and require a participant to either respond to the therapist’s weekly e-mail or initiate sending one on their own accord. Participants’ may be motivated to write lengthier e-mails for many possible reasons. For example, participants who write longer e-mails may be more isolated and be seeking extra social support by sharing more with the therapist, they may be experiencing more distress and attempting to reach out for additional therapeutic support or advice, or they may be having difficulty understanding the program or how to apply the skills to their own situation. Such reasons are purely speculative at this point. Nonetheless, the findings that symptom improvement was associated with communicating at greater lengths with the therapist in one modality (i.e., Check-Ins) on the website versus another (i.e., e-mails) is quite remarkable and warrants further attention.

Existing TAICBT literature has lagged on understanding how website use may be associated with treatment outcome. Some authors exclusively report descriptive data on website engagement and use, including frequency of logins to the website and duration of treatment completion (e.g., Beatty, Koczwara, & Wade, 2011). One study examined website use patterns on a diabetes self-management website and observed a positive association between number of days entering self-monitoring data on the website and improvements in healthy eating and reduction in dietary fat (Glasgow et al., 2011). On the other hand, the authors of a recent TAICBT for health anxiety study identified that the number of modules completed and participant computer skills were not significant
predictors of change in health anxiety symptoms (Hedman et al., 2013). Rather, only baseline health anxiety and depressive symptoms were predictors of clinically significant improvement. No other studies could be located that investigated the association between website use/engagement and treatment outcome for TAICBT and anxiety or depression. Evidently, the examination of website use in this study is not only unique but it also provides valuable information on how, when the variables are considered together in context, website use contributes significantly to anxiety and depressive symptom improvement for older adults with GAD.

4.3 Narrative Feedback

Thematic analysis of 26 participants’ responses to 10 open-ended questions revealed that older adults with generalized anxiety typically reported having positive experiences with TAICBT but also identified several challenges with TAICBT. There was variability in participants’ preferences for the program material versus contact with the online therapist. Practical suggestions for improving the *GAD Online for Older Adults* program and TAICBT in general often corresponded with the challenges participants experienced while completing the program.

**Positive experiences with online therapy.** Consistent with what has been suggested about the value of online therapy for clients (G. Andersson, 2009), participants appreciated being able to access evidence-based online CBT at their convenience, without needing to travel or visit a therapist’s office. Not only could they use online therapy when it worked for their schedule, they could save materials for future use and reported feeling less stigmatized by accessing therapy using this modality. These findings demonstrate that TAICBT has the ability to address several face-to-face
treatment barriers for older adults with generalized anxiety that have been acknowledged by other researchers, including living in rural areas with a lack of access to providers (Wang et al., 2005), mobility difficulties (Stanley, Hopko, et al., 2003) and stigma associated with having mental health disorders (Sirey et al., 2001).

In addition to the convenience of online therapy, participants readily shared that they felt satisfied with online therapy and identified specific benefits they experienced, including promoting insight, meeting personal goals, normalizing their experience of having anxiety, and experiencing improvement in their mental and physical health, as well as their cognitive and social functioning. Gaining insight and self-awareness of thoughts and emotions through self-monitoring and experiencing a normalization of one’s problems through psychoeducation are foundational aspects of face-to-face CBT for GAD (Borkovec, Newman, & Castonguay, 2003) and have recently been described as helpful features of computerized CBT by college students (Richards & Timulak, 2012).

Such findings also echo the quantitative findings showing that anxiety and depressive symptoms were reduced at a faster rate for those who underwent TAICBT as compared to the WLC-Only participants. While the efficacy of TAICBT for reducing disorder-specific symptoms is habitually reported, it would be interesting for future research to consider other possible far-reaching benefits of online therapy for older adults, including the improvement in cognitive functioning reported by some participants in this sample.

The content of online therapy was valued by participants, with many describing the program as helpful and educational, indicating that they learned much about CBT and anxiety by taking part. Moreover, participants often felt the content matched their experience and that it provided examples that were relatable. Such findings correspond
with feedback from clients who underwent an online therapy program for depression, who reported valuing the program for being able to acquire relevant and new knowledge and by presenting issues that were pertinent to clients with depression (Lillevoll et al., 2013). There was variability in what specific content (i.e., information or exercises) were most liked or helpful to participants’, with some preferring the relaxation and thought-challenging exercises over the behavioural or worry-reduction strategies, and vice versa. Such variability in preferences is similar to qualitative responses of other participants of online therapy (Richards & Timulak, 2013). In general, these results speak to the need to include many different types of tools and strategies in a program such as this, while also clarifying that not every strategy or exercise will apply to all clients. Ensuring a program is comprehensive enough to meet a broad spectrum of patients’ needs and preferences has been recommended by experts in online therapy (G. Andersson et al., 2009).

In line with feedback from other users of online CBT programs (Lillevoll et al., 2013; Richards & Timulak, 2013), the step-by-step and structured approach that is inherent in CBT was favoured by participants in this study. They felt that the format was easy to follow and they liked that it encouraged the weekly practice of skills using materials on and offline to help with the application of what they were learning. Many participants considered the website user-friendly, especially if they had prior experience with computers and the Internet.

A number of participants expressed an intention to practice the skills learned through online therapy following completion of the program and conveyed hope that their anxiety will continue to improve with such practice. Research supports that many participants maintain or continue to experience symptom improvement at three-month
follow-up after TAICBT for GAD (e.g., Titov, Andrews, Robinson et al., 2009). While longer-term follow-up studies have yet to be carried out on TAICBT for GAD, maintenance and/or continued improvements have been observed in participants for as long as three and five years after TAICBT for panic disorder (Ruwaard et al., 2010) and social phobia (Hedman et al., 2011) respectively.

Having therapist support and communication with a therapist was commonly cited as a positive and essential aspect of the online therapy experience. Patients valued not only having a therapist available to seek guidance from, but their responses often focused on the nature of the feedback – that it was encouraging, empathetic, supportive, and relevant to each participant’s individual needs. Being able to self-disclose and communicate personal thoughts and feelings beyond the program’s topics was seen as important to many participants. Prior research suggests that the reciprocity of the therapeutic relationship is appreciated by other online therapy participants and seems to contribute to the outcome of therapy either directly or indirectly (Lillevoll et al., 2013).

The quantitative findings on the satisfaction with therapeutic alliance reaffirm the qualitative feedback participants provided on this aspect of GAD Online for Older Adults; specifically, that older adults with generalized anxiety liked and valued having contact with a therapist.

The thematic analysis also revealed variability in clients’ preferences for the program material as compared to the weekly e-mails from the therapist. In particular, some felt both were equally useful, others felt the program material and e-mails from the therapist were complementary to one another, while many preferred the therapist e-mails over the program content. Although there were differences in precisely what clients
favoured and why, therapeutic contact was seen as a fundamental aspect of TAICBT by most participants, suggesting that this should continue to be emphasized in future online therapy programs with older adults. Since the form and frequency of interaction with a therapist can vary immensely across TAICBT programs, future research on TAICBT and older adults should clarify whether the form (e.g., telephone calls versus e-mail versus both) and frequency of therapist contact impacts therapeutic outcomes and satisfaction with TAICBT in this age group. For example, reducing contact from twice to once weekly had no impact on outcomes for TAICBT for OCD (Wootton, Dear, Johnston, Terides, & Titov, 2013) and three e-mails versus one e-mail per week resulted in no significant differences in symptoms and therapeutic alliance in treatment of panic disorder (Klein et al., 2009). Future research should clarify whether these results hold with older adults.

**Challenges associated with and suggestions to improve online therapy.** Some participants found online therapy unhelpful when the content of the program did not fully match their experience or difficulties. Oftentimes participants referenced having specific worries (i.e., related to health) or depression that were under-addressed in the program, which made it difficult for them to relate to the content or exercises for their precise problem. While all participants met DSM-IV-TR or subclinical criteria for GAD, it may be that for some participants, there was a mismatch between the program’s focus (generalized anxiety) and what they perceived as their most pressing concern. Consequently, another program that focused on their principal concern may have been more fitting. While Andersson and colleagues (2009) recommend that a proper diagnosis be made before treatment starts for online therapy to be successful (as was done in this
study), the qualitative feedback indicates that client preferences for treatment program or content may also need to be considered. Preliminary research on tailoring Internet treatment to clients’ preferences (G. Andersson, Estling, Jakobsson, Cuijpers, & Carlbring, 2011) or patient profile (e.g., anxiety comorbid with depression) have been promising, and may lead to better effects than standardized treatment (Johansson et al., 2012).

Another concern with the content of online therapy for some participants was that some strategies or materials were considered unhelpful or not applicable to their concerns. Typically, clients are more satisfied with online CBT when the self-help material is experienced as relevant to the user (Lillevoll et al., 2013). Due to the need to provide a comprehensive program that covers a range of topics relevant to many people, it is not surprising that every topic or strategy would not be applicable or helpful to every participant. Likewise, it would be expected that a specific topic of interest for some participants would not necessarily be included in a program (e.g., the association between health behaviours and anxiety). A possible solution to reduce the burden of a broad program is to make certain materials supplementary to the main content of the program. That is, the program may still include core content for treatment of GAD, but may refer clients to extra handouts on specific topics such as sleep hygiene or problem-solving, if these are of concern to a client. Furthermore, there has been a movement in support of transdiagnostic programs that address emotional problems more generally so as to be applicable to persons with anxiety and/or depression (e.g., Titov et al., 2011). Preliminary findings of such programs being used with older adults have encouraging
results so far and suggest that clients are satisfied with such broader-focused programs (Dear et al., 2013; Zou et al., 2012).

An important theme that emerged from the qualitative analysis was difficulties participants had with the short timeline to complete the program and the large volume of information and exercises contained in the program. In general, participants found the 10-week timeframe of the program to be too short to read all of the materials and complete the exercises asked of them. The short timeframe, fast pace, and number of tasks online therapy demands of participants have been identified as potential barriers to Internet treatment by other online therapy participants (Richards & Timulak, 2012). Participants in Richards and Timulak’s (2012) study suggested that a more flexible schedule would be appropriate, whereas some participants in the current study suggested the program completion time be extended so that they may spend up to two weeks on each module.

While it has been acknowledged that having no set deadlines for completing online therapy has disadvantages (G. Andersson et al., 2009) and extending deadlines has been associated with worse outcomes (Paxling et al., 2013), the optimal time, pace, and volume of content in the delivery of online treatments has yet to be agreed upon by the online therapy community. Many studies suggest clients complete one treatment module per week (Klein et al., 2011) whereas other researchers have extended their 6-week program to 10-weeks as a result of feedback from study participants who perceived the program as too condensed (Carlbring et al., 2005). Participants’ feedback in the current study suggests that less content and more time to assimilate information may be of benefit. Future research should evaluate varying formats of online therapy for older
adults to verify if meeting participant preferences leads to viable outcomes. Moreover, in clinical practice, mental health clinicians are not typically as rigid with therapy completion timeframes unless treatment is being provided in a group context or a program is restricted to providing a set number of sessions. It is uncertain whether the rigid timelines often proposed in ICBT studies are to the benefit of clients or for the convenience of the research study; as such, this topic warrants further consideration.

Although a number of participants asserted that the website design was straightforward and easy to use, others expressed concern with some technical aspects of the website and offered suggestions to make the website more user-friendly. Common problems with the website included losing content typed into forms or e-mails that were to be submitted to the therapist, having difficulty with using text emphasis in e-mail, and the lack of printer-friendly pages. While no comparisons were made in the current study between younger versus older adults’ experiences with website difficulties, previous research has found that older adults tend to require more guidance and precise instructions when using an online treatment program as compared to younger adults (Crabb et al., 2012). In addition to instructions provided by telephone, e-mail, and via the website as was done in the current study, perhaps a consideration for implementing online therapy with older adults is to have technical support readily available to users. While web design may not be the most central element of online therapy, such technical problems and challenges with submitting typed content to the therapist would understandably frustrate clients (Richards & Timulak, 2012) and could affect adherence to and satisfaction with treatment (G. Andersson et al., 2009). As such, simplifying the
website layout even further is also likely to be beneficial for all age groups and may preclude the need for round-the-clock technical support.

Though the majority of participants reported being satisfied with the therapeutic relationship, several participants indicated that they missed face-to-face contact with the therapist or would have liked more contact with the therapist. For some, this was due to being inexperienced with typing or using e-mail to communicate, which made it more challenging to communicate with their therapist in a timely and accurate fashion. Others specifically stated that their preference would have been to talk with a therapist in person. Studies examining therapeutic alliance in TAICBT as compared to face-to-face therapy have yielded mixed findings. Research has found no difference in therapeutic alliance ratings, treatment satisfaction, and ratings of contact between the therapist and clients as 'personal' between TAICBT and face-to-face treatment when participants were provided equivalent treatment modules and treatment length (Wagner, Horn, & Maercker, 2013). Others have revealed an advantage for face-to-face treatment on ratings of enjoyment in communicating with their therapist (e.g., Kiropoulos et al., 2008). While such research has yet to look specifically at ratings of therapeutic alliance and satisfaction with therapeutic contact for older adults and TAICBT, this study suggests that most, but not all clients are satisfied with therapeutic contact over e-mail.

4.4 Limitations

The results of this study need to be considered within the context of several limitations. First, the sample size of 46 participants for this study may be considered relatively small for an RCT research design. The sample size is justified with power analyses conducted prior to and post hoc data collection, which demonstrated that 46
participants allowed for detecting a medium effect size with a power at 90% using repeated-measures ANOVA. Furthermore, because this was the first RCT of its kind (i.e., examining TAICBT for GAD in older adults), this study may be treated more as a smaller scale pilot study that may be improved upon before implementing a much larger full-scale RCT with older adults. A smaller sample size is considered more acceptable because, in addition to investigating the efficacy of TAICBT for GAD, it also contributed uniquely to the literature by exploring the association of client engagement and treatment outcomes and gathered and analyzed narrative feedback of participants. The smaller sample size also speaks to the difficulties in recruiting older adults with GAD as reported in earlier research (Wetherell & Gatz, 2001). Recruitment for the current study was further complicated by the fact it required older adults with general anxiety to be able to use and have access to a computer and the Internet and also have an interest in receiving psychological services via the Internet. In addition, the sample may have been increased if recruitment was not limited to the province of Saskatchewan and to a small budget to advertise. The encouraging results of the current study underscores a need for replication with a larger sample, while perhaps also taking into account narrative feedback presented in this study and improving upon the existing treatment program.

Although there was a four-week follow-up period for all participants who received TAICBT, the follow-up period could have been longer (e.g., three months) and/or could have involved a comparison to those assigned to the WLC group. Given the available resources to recruit and provide TAICBT and for ethical reasons, it was decided that treatment would be offered to the WLC group immediately after waiting 10-weeks, which precluded any comparisons of follow-up data. Although it is acknowledged that
such data would be informative, this study provided other unique and interesting information related to client engagement and experiences that are of similar value. Four-week follow-up data for all those who participated in TAICBT allowed at least for some follow-up and worked for time constraints and resource limitations for a dissertation. Future RCT’s of this nature should attempt to collect longer-term follow-up data to ascertain the effects of TAICBT three months or one year following the conclusion of treatment.

Following existing TAICBT research (Titov, Andrews, Robinson, et al., 2009), a GAD-7 score of <10 was used as a sign of remission in the current study. The research literature on the GAD-7 supports a cut-off score of 10 to indicate a probable diagnosis of GAD (Löwe et al., 2008). A possible limitation is that this study did not carry out a second diagnostic interview at post-treatment or follow-up to clarify whether participants continued to meet diagnostic criteria for GAD or subthreshold GAD. This choice was made due to wanting to limit the significant time burden on participants and researchers. Furthermore, even if participants reported having substantial improvement in worry and anxiety symptoms, diagnostic criteria for GAD encompasses the previous six months and the study period would not have allowed enough time to no longer meet full criteria.

Because of its design, this study excluded a large proportion of older adults who may experience general anxiety due to the requirement of participants needing a computer, access to the Internet, and comfort and familiarity with both. Although these exclusion criteria were necessary for the purposes of studying an Internet-based treatment, the study’s sample is expected to be better educated and have a higher socioeconomic status than the average adult over age 60 with generalized anxiety, given
that Internet users in Canada tend to be better educated (Statistics Canada, 2010b) and have higher personal incomes (Statistics Canada, 2012) than non-users. With that said, statistical data also demonstrate that older Canadian adults are increasingly using the Internet, with 84% of adults aged 45 to 64 and 47.4% of adults aged 65 and older reportedly using the Internet in 2012 (Statistics Canada, 2013). Furthermore, of those users, 65-70% log onto the Internet at least once a day (Statistics Canada, 2010a). As Canada’s population ages, it can be expected that more and more adults will have experience using the Internet and will be open to using the Internet to access health-related services, such as TAICBT.

The association between client engagement factors and treatment outcomes in TAICBT research is in its infancy. As such, the author of this study adapted methods for examining client engagement from existing face-to-face research (Dearing et al., 2005; Dozois & Westra, 2005; Greenberg et al., 2006; Lambert & Barley, 2001) and from one study that considered website use as a measure of engagement with an Internet-based treatment (Van Voorhees et al., 2009). Although investigating such factors is unique and can be considered a strength of this study, some variables of client engagement may not have precisely measured how clients used or were engaged with TAICBT. Anecdotally, some clients reported printing off most of the program materials and reviewing these multiple times away from the computer and only logging on to complete Check-In responses or respond to e-mails. Consequently, variables such as ‘number of logins’ would not accurately represent engagement with the program for these participants. Similarly, the number of telephone calls to clients due to inactivity on the program for seven or more days may not have always been an indicator of how engaged (or
unengaged) a client was; rather, inactivity on the program was occasionally the result of a broken computer, problems with the Internet, or due to being out of town. Variability in duration of program completion was also unavoidable due to some clients taking holidays or breaks during the program or others having crises that disrupted their ability to complete the program in a timely fashion. While such factors are also a reality of face-to-face therapy, such variability needs to be taken into account when considering duration of program involvement as a measure of client engagement.

A possible limitation of the thematic analysis is that a number of clients provided informal feedback via e-mail throughout treatment or on the final Check-In pages about what they liked or had difficulties with in the program. Regrettably, this feedback was not always reflected in their open-ended responses to the client feedback questions. Of all the participants who completed the post-treatment measures, only one participant elected not to respond to the client feedback questions; however, we did not obtain feedback from those clients who chose to withdraw from treatment (i.e., non-completers) or whom completed TAICBT, but did not complete post-treatment measures. It is plausible that completers and non-completers have divergent views regarding the helpfulness of the treatment. With that said, the client feedback questions specifically queried about both positive and negative experiences with TAICBT and many participants provided candid feedback about problems they had with the service. Nevertheless, information about the experience of non-completers or those who chose not to provide feedback would be valuable to obtain in the future to help better cater the program to meet the needs of such clients in the future.
4.5 Strengths

A considerable strength of the present study is its robust methodological and research design and choice of study population. This is the first study to date that has carried out an RCT for the treatment of older adults with GAD using TAICBT. While this study was being carried out, two feasibility and effectiveness trials emerged that focused exclusively on adults aged 60 years and older with anxiety disorders (Zou et al., 2012) or depression (Dear et al., 2013); however, neither included a WLC group or other comparison condition. The current study adds to this rapidly growing literature by demonstrating that change in symptoms can be attributed to TAICBT, rather than the passage of time alone. Inclusion of a WLC group was especially important for this study, given that the efficacy of TAICBT for older adults with any clinical problem had not yet been established.

In addition to the RCT design used to study the efficacy of TAICBT, this study also uniquely incorporated a quasi-experimental design by gathering and analyzing treatment data from those who converted from the waiting list to treatment. By doing so, we were able to increase the sample of those who received treatment as well as examine a larger number of measurement occasions, while still making comparisons to participants on the waiting list. This component of the study added to the evidence that TAICBT is efficacious for treating GAD in older adults as compared to participants on the waiting list. It also showcased that participants assigned to a 10-week waiting list may have a slower response to TAICBT. This finding has not yet been reported in the clinical literature and points to the need for other researchers to unearth explanations for this phenomenon.
A further strength of this study was the use of rigorous assessment methods, including the use of outcome measures that have established psychometric properties in older adults. In addition, carrying out a telephone-based diagnostic interview of all participants prior to random assignment ensured that participants experienced symptoms consistent with GAD or subthreshold GAD, as opposed to another anxiety disorder, and allowed for collection of information with respect to comorbidity rates.

The external validity of this study was enhanced by allowing participants to take part even while stable on medication. The reality of clinical work is that many clients can be expected to be taking some form of psychotropic medication, especially if their symptoms are chronic as is often observed in an older adult anxiety disorder sample. This study showed that, even persons receiving psychotropic medication for anxiety and/or depressive symptoms can benefit from TAICBT.

The inclusion of individuals with subthreshold general anxiety symptoms may be considered a potential strength of the study design. It is recognized that many older adults experience subthreshold symptoms that cause significant disability (de Beurs et al., 1999; Scott et al., 2010) and researchers have previously indicated a need to include individuals with such symptoms in psychotherapy outcome research to determine if these individuals respond to current treatments (Wetherell & Gatz, 2001). By including individuals with subthreshold symptoms, this study is more consistent with how GAD Online was provided to the general population with the Online Therapy Unit. Furthermore, Internet-delivered CBT programs are often viewed as an appropriate stepped-care approach to mental health delivery that can be provided to persons with mild-to-moderate symptoms before offering more intensive/specialist services (Høifødt et
al., 2013). For these reasons, the decision was made to include individuals who did not meet full criteria for GAD, but who endorsed enough symptoms that they were likely to benefit from treatment.

A significant strength of the current study was its use of the rigorous statistical analytic approach of longitudinal mixed models to analyze the efficacy of TAICBT. All TAICBT for GAD research has employed repeated-measures ANOVA except for that by Paxling et al. (2011), which also used a mixed models approach. Repeated-measures ANOVA has been criticized because it is vulnerable to significant biases when data in the final measurement point is missing due to attrition or drop-out. Typically, Internet-delivered CBT researchers compensate for missing data by using the LOCF approach (e.g., Mackinnon et al., 2008), which usually leads to biased treatment estimates (Salim et al., 2008; Streiner, 2008). The assumption that missing final values would be equivalent to the last recorded value is often questionable, given that dropping out of a treatment trial is very likely to be linked to the participant’s response to treatment, such as failure to respond to treatment or because of adverse effects related to treatment (Altman, 2009). A further disadvantage of repeated-measures ANOVA is that observations on all individuals need to be made at the same time points. Longitudinal mixed models, on the other hand, have been found to be minimize bias as compared to LOCF (Lane, 2008). Mixed models effortlessly handles unequally spaced observations over time, it uses all available data on each subject, and it manages missing data by predicting missing values by means of multiple regression using other variables in the data set as independent variables (Gueorguieva & Krystal, 2004). While this study employed repeated-measures ANOVA for a small set of outcome measures, the overall statistical approach of this
study improves upon past research by incorporating a more robust and less biased analytical method.

A unique and substantial component of this study was the investigation of the association between client engagement and treatment outcomes in TAICBT. Although some researchers have examined the correlations among therapeutic alliance and credibility and expectancy ratings and change scores, this study extended such analyses by incorporating additional client engagement variables (e.g., treatment satisfaction) and by directly examining their relationship to treatment outcome using mixed models and linear regression analyses. Moreover, until now, TAICBT researchers have overlooked how engagement with the treatment website itself may be related to improvement in anxiety and depressive symptoms. By taking such variables into account, it was discovered that certain types of interaction with the therapist and with the website was associated with better treatment outcomes for older adults with GAD.

A final strength of this study was the inclusion of a qualitative component to obtain valuable feedback on the experience of older adult clients using TAICBT. Given that this age group has been often neglected in Internet-delivered therapy research (Crabb et al., 2012), such information proves invaluable for better understanding what components were helpful, what policies and procedures may need to be re-examined, and whether improvements can be made to the user-friendliness of the website. Even if such information is not applied to the current treatment program, it will be useful for other researchers and clinicians designing and implementing Internet-delivered therapy programs for older adults in the future.
4.6 Clinical Implications

This results of this RCT demonstrated that TAICBT is a feasible and efficacious way of reaching and providing mental health services to older adults in Saskatchewan. The findings of this study are relevant not only to the province in which it was carried out, but may also have far-reaching applications to mental health delivery to adults across Canada and beyond. By showcasing that older adults do, in fact, have an interest in TAICBT services and that they are responsive to this modality of service suggests that further attention should be given to the possibility of integrating TAICBT more broadly into mental health services. This results of this study provide evidence that TAICBT and other forms of Internet-delivered interventions can successfully overcome distances and gaps in treatment access, particularly for older adults living in rural settings, who have mobility difficulties, or who may not otherwise access services due to stigma.

Many researchers and clinicians in this area have made recommendations that Internet-delivered interventions be made widely available in support of a stepped-care approach to mental health care (G. Andersson, 2009). Stepped-care is a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first (Davison, 2000). Stepped-care is recommended in the United Kingdom’s National Institute for Heath and Clinical Excellence (NICE) guidelines (NICE, 2009) as a method by which scarce resources should be most efficiently delivered to provide accessible and effective treatments. Stepped-care approaches are beginning to receive attention in Canada by physicians (Anderson, 2003) and frameworks are being developed in some provinces to bolster self-management support, offer shared mental health care teams that combine psychological
support with physician appointments, while also continuing to include access to specialty mental health clinics (Health Council of Canada, 2012).

It is argued that, the burden on outpatient and specialist mental health clinics can be alleviated if alternative services can first be made available to those with less severe symptoms, before providing more intensive treatment to those who do not improve at the first step. Not only can Internet-delivered interventions reduce the time spent by the therapist providing service (e.g., 130 minutes total per client; Titov, Andrews, Robinson, et al., 2009), it is also a convenient way for many clients to access evidence-based support. The results of this study indicate that older persons with GAD and/or subthreshold general anxiety symptoms may benefit from such a stepped-care approach. Although the cost-savings of such a service in Canada may be difficult to estimate, the time saved by clinicians, client travel time, and the ability to provide services to many clients at once across rural distances speaks to the necessity of lobbying to important stakeholders (e.g., provincial and national policy or decision makers) about the encouraging findings of this and other Internet-based CBT studies. Accordingly, an implication of this study is that it provides convincing evidence that such services or stepped-care approaches should be given consideration. Wider scale implementation has the potential to increase access to mental health services for older adults and the general population in Saskatchewan and Canada.

The results of the current study uniquely enhanced our knowledge of the relative importance of website use behaviours during TAICBT. Such findings may inform policies and procedures of existing and future TAICBT programs, particularly those involving adults aged 60 years and older. For example, the finding that communicating
at greater length during the weekly Check-In with therapists was associated with greater symptom improvement may lead program policies to encourage clients to interact with their therapist more so in this manner. In particular, interaction with the therapist that is focused on the content of the program, application of skills, and homework assignments may be encouraged as opposed to generic e-mail exchange. Similarly, policies may recommend completing the program in a timely fashion, as longer completion times were associated with worse symptom improvement.

The qualitative feedback obtained in this study has many practical implications for the design and development of TAICBT programs for older adults, specifically with respect to content, timeline to completing the program, and therapeutic contact. Specifically, there was significant variability in what specific program content was most helpful to participants (e.g., relaxation training versus cognitive restructuring). This feedback reiterates the need to balance making a program that is comprehensive enough to meet a broad spectrum of patients’ needs and preferences but that does not overburden participants with excessive content.

Related to this is that a majority of participants suggested that the time to complete the program be extended and/or that some of the content be reduced, as 10 weeks to complete seven modules was often burdensome on participants and did not allow much time to assimilate the information. Although some studies have recommended participants complete one module per week (Klein et al., 2011), more recent trials have decreased the number of modules and have given several extra weeks to complete more challenging modules, resulting in five modules completed over eight
weeks (Dear et al., 2013). The current study’s feedback indicated that three extra weeks provided for flexibility to complete the program was still too rigid for participants.

Although this study did not clarify what made it more challenging to complete the program in the 10-week timeframe, it may be that there was too much content, that older adults may take longer to read and practice the skills, and/or that older adults require additional time to familiarize themselves with the website and procedures of the program. The time to complete the program may need to take into account any learning curve for those less experienced with using the Internet, which may be more foreseeable in this age group. Likewise, outside stressors affecting the client (e.g., death of a family member) may contribute to difficulties with completion time. Clinically speaking, if program policies are inflexible in how much time is given to clients to complete a program or expects too much of clients, this may have a negative impact on motivation or adherence to the program. At the same time, if clients are provided with unlimited flexibility in program completion time, this may too have disadvantages for clients (i.e., worse outcomes) and for those providing the service (G. Andersson et al., 2009; Paxling et al., 2013). The results of this study point to a need for further investigation of the optimal time, pace, and volume of content in TAICBT programs for older adults.

Therapeutic contact was viewed as fundamental aspect of the TAICBT experience by many participants in the current study, implying that it should continue to be emphasized in future online therapy programs with older adults. Participants’ responses highlighted their preference for frequent contact with the therapist and for receiving e-mails tailored to their individual situation. With the movement towards automating more of the TAICBT experience, such as through the use of automated e-mail messages in
some research trials (e.g., Dear et al., 2013), researchers may need to clarify what, if any, impact this has on older adults and their satisfaction with and adherence to the treatment programs.

### 4.7 Future Directions

Until recently, the majority of TAICBT programs have been designed to be disorder-specific. A limitation of such interventions is the high prevalence of comorbidity of other psychological conditions (e.g., another anxiety disorder or a co-occurring mood disorder) in the samples. In the current study’s sample, for example, 14 participants were diagnosed via the M.I.N.I. and M.I.N.I. Plus as meeting criteria for a current major depressive episode. To address such problems, other researchers have developed transdiagnostic programs that apply the same underlying treatment principles across a range of psychological conditions, without tailoring the content of the program to specific diagnoses. Benefits of such programs over disorder-specific programs, such as *GAD Online for Older Adults*, is that patients see relevance in learning about a range of symptoms and strategies, it is time- and resource-saving for both the patient and the therapist, and they may lead to reduced relapse rates given that strategies are applied across emotional problems (G. Andersson & Titov, 2014). To ensure relevant information is not missed, supplemental materials can be provided to target a specific disorder (Titov et al., 2011). Transdiagnostic approaches have begun to be tested with older adult populations with a range of anxiety disorders, with results suggesting that such programs are likely to be effective and received well by this age group (Zou et al., 2012). Additional efficacy research with older adults is necessary to conclude that
transdiagnostic programs are the appropriate direction for TAICBT with GAD and comorbid conditions.

Given that this is the first study to thoroughly examine the association between website use and symptom improvement, such conclusions warrant replication with other Internet-delivered interventions, clinical problems, as well as diverse age groups. For example, do the findings of the current study apply to those in the adolescent or general adult population or do other website use variables matter more? Moreover, as researchers begin to automate more of the therapist-client interaction via automated e-mails (Titov et al., 2013), it will be beneficial to understand what, if any, impact this has on client engagement. If the nature of therapist-client interactions changes, will other website use variables matter more or less? Does engagement or interaction on the online forums made available on some programs contribute to treatment outcomes? Given that the formats and ways in which Internet interventions are delivered are constantly changing, such research would be valuable to determine what website use factors should be encouraged or emphasized in programs and what factors appear to be less important to symptom improvement and can be removed or de-emphasized.

Although we informally assessed comfort with and use of Internet and computers in the assessment via the following Yes/No questions (e.g., Do you feel comfortable using the Internet? Do you feel comfortable writing e-mails? Do you feel comfortable downloading software, such as new Internet browsers?), it may be worthwhile to formally assess computer use and comfort with the Internet when studying TAICBT in the older adult population. TAICBT researchers have recently asked participants the their weekly hours of Internet use (as broken down by 0-10 per week or 11+ per week), and
confidence with computers/Internet on a Likert type scale (very confident to not confident) (Titov et al., 2011). Asking such questions or using a computer or Internet self-efficacy questionnaire may prove useful in determining suitability for an Internet-delivered intervention with older adults. By doing so, clinicians and researchers may be able to better predict who thrives more readily using TAICBT and who may require additional technical support or referral to an alternative service.

The current study did not include an active treatment comparison group (e.g., face-to-face therapy, a web-based placebo intervention). Despite a number of studies demonstrating that face-to-face and Internet-based interventions often have comparable results (e.g., Kiropoulos et al., 2008), a future study should determine whether these findings hold in the older adult age group. Moreover, several studies have found promising effects for telephone-CBT for late-life anxiety disorders in successfully reducing general anxiety, worry, anxiety sensitivity, and insomnia (Brenes, Ingram, & Danhauer, 2012; Brenes, Miller, et al., 2012). It would be helpful to understand whether older adults have a preference for type of distance technology used (e.g., telephone or Internet) and whether both modalities lead to similar effects. Telephone-CBT may have practical benefits of Internet-delivered CBT given that telephones are widely available and more older adults are likely to have comfort in using the telephone for communication. Conversely, an Internet-based approach may have alternative benefits, such as allowing for ongoing access to text-based information, an ability to print off materials for future use, and being able to access and use the service at a time that is convenient for the patient.
Further study is needed to determine how best to implement TAICBT in routine clinical practice. For example, should TAICBT be provided from within typical outpatient mental health settings, from a provincial or national e-therapy clinic, or out of a university research-based clinic? Do such settings vary in terms of their clinical effectiveness? Additional research may need to clarify the ideal setting for providing such a service and whether the promising results of RCT research are also observed when the same service is provided in routine practice. A systematic review identified that RCT results may not be representative of the effects observed in routine practice given that RCT’s often involve self-selected samples recruited through the media, which may differ from typical clinical populations (Coull & Morris, 2011). Such research may shed light on whether TAICBT proves most effective when integrated within an existing health care setting or whether it should remain delivered as an adjunct, standalone service as it has been in most research studies.

Just as face-to-face CBT for late-life anxiety has been studied in primary care settings as a complement psychiatric care (Stanley et al., 2009; Stanley, Hopko, et al., 2003), it may be appropriate to explore whether TAICBT for older adults should also be implemented within this setting. Given that primary care is often a first point of access to mental health support in Canada (Vasiliadis, Lesage, Adair, & Boyer, 2005), future research may clarify whether it is appropriate for TAICBT to be implemented by primary care team members. Authors of a recent study identified that a self-guided ICBT program used in combination with brief in-person therapist support was effective for treating depression in a primary care setting (Høifødt et al., 2013). Significant reductions in depressive symptoms and distress using TAICBT with minimal contact with a general
practitioner or clinician in primary care was observed in another study; however, program adherence and attrition were lower than that observed in previous RCT studies (Williams & Andrews, 2013). Determining the optimal delivery format of TAICBT to increase adherence (e.g., combining face-to-face support vs. using it as a standalone intervention) within primary care warrants investigation.

The discussion of implementation of TAICBT raises questions of the cost-effectiveness of TAICBT services. Although evidence is growing that TAICBT is efficacious and has potential to markedly increase access to mental health services, how much does it cost to implement TAICBT widely and in a sustainable way? Are the implementation costs up front (e.g., development and design of programs and therapy website, website maintenance, training of therapists, personnel costs, etc.) worth the eventual cost-savings? How will decisions about implementation be dependent on the ability to secure ongoing funding for TAICBT? Is it cost-effective to have tailored programs for older adults or are generic programs designed for the general population sufficient? While researchers face inherent difficulties in this line of research due to countries and provinces varying widely in their health care operations and policies, such questions need to be considered before widespread implementation is possible.

4.8 Summary and Conclusions

The author of the present study established the efficacy of a TAICBT program adapted to meet the needs of older adults in treating GAD and subclinical GAD. Specifically, it was identified that, as compared to a waiting list, participants who received TAICBT improved at a faster rate on measures of general anxiety, worry, and depressive symptoms over 10 weeks, and continued to experience improvements in the
four-week follow-up period. This results of this study enhanced our clinical understanding of how client engagement factors, such as interaction with the therapist via the website and program completion time, is associated with change in anxiety and depressive symptoms. Finally, the participants’ feedback on their experiences enriches our knowledge of what participants like and enjoy about TAICBT and how we may better address older adults’ needs in revisions of *GAD Online for Older Adults* or in the design of future therapy programs for this age group.
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Appendix A: U of R Research Ethics Approval

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DATE:  January 10, 2012

TO:  Shannon Jones and Dr. Heather Hadjistavropoulos  Psychology

FROM:  Dr. Bruce Plouffe  
Chair, Research Ethics Board

Re:  An Efficacy Trial of Therapist-Assisted Internet Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety (File # 30S1112)

Please be advised that the University of Regina Research Ethics Board has reviewed your proposal and found it to be:

☐ 1. APPROVED AS SUBMITTED. Only applicants with this designation have ethical approval to proceed with their research as described in their applications. For research lasting more than one year (Section 1F), ETHICAL APPROVAL MUST BE RENEWED BY SUBMITTING A BRIEF STATUS REPORT EVERY TWELVE MONTHS. Approval will be revoked unless a satisfactory status report is received. Any substantive changes in methodology or instrumentation must also be approved prior to their implementation.

☐ 2. ACCEPTABLE SUBJECT TO MINOR CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB.** Do not submit a new application. Once changes are deemed acceptable, ethical approval will be granted.

☐ 3. ACCEPTABLE SUBJECT TO CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB.** Do not submit a new application. Once changes are deemed acceptable, ethical approval will be granted.

☐ 4. UNACCEPTABLE AS SUBMITTED. The proposal requires substantial additions or redesign. Please contact the Chair of the REB for advice on how the project proposal might be revised.

Dr. Bruce Plouffe

cc:  Dr. Heather Hadjistavropoulos - Psychology

** supplementary memo should be forwarded to the Chair of the Research Ethics Board at the Office of Research Services (Research and Innovation Centre, Room 523) or by e-mail to research.ethics@uregina.ca

Phone: (306) 585-4775  Fax: (306) 585-4893
www.uregina.ca/research

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Appendix B: U of S Research Ethics Approval

UNIVERSITY OF SASKATCHEWAN

Behavioural Research Ethics Board (Beh-REB)
Certificate of Approval

PRINCIPAL INVESTIGATOR
Heather Hadjistavropoulos

DEPARTMENT
Off-campus

BEH# 12-13

INSTITUTION(S) WHERE RESEARCH WILL BE CONDUCTED
University of Saskatchewan

STUDENT RESEARCHER(S)
Shannon Jones

SUNDER(S)
CANADIAN INSTITUTES OF HEALTH RESEARCH (CIHR)

TITLE
An Efficacy Trial of Therapist-Assisted Internet Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety

ORIGINAL REVIEW DATE
09-Feb-2012

APPROVAL ON
07-Mar-2012

APPROVAL OF:
Application for Approval of Research Procedures

EXPIRY DATE
06-Mar-2013

Full Board Meeting ☑ Date of Full Board Meeting: 09-Feb-2012
Delegated Review ☐

CERTIFICATION
The University of Saskatchewan Behavioural Research Ethics Board has reviewed the above-named research project. The proposal was found to be acceptable on ethical grounds. The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review. This Certificate of Approval is valid for the above time period provided there is no change in experimental protocol or consent process or documents.

Any significant changes in your proposed method, or your consent and recruitment procedures should be reported to the Chair for Research Ethics Board consideration in advance of its implementation.

ONGOING REVIEW REQUIREMENTS
In order to receive annual renewal, a status report must be submitted to the REB Chair for Board consideration within one month of the current expiry date each year the study remains open, and upon study completion. Please refer to the following website for further instructions: http://www.usask.ca/researchethics-review/

John Rigby, Chair
University of Saskatchewan
Behavioural Research Ethics Board

Please send all correspondence to:
Research Ethics Office
University of Saskatchewan
Box 0003 RPO University, 1062-110 Gymnasium Place
Saskatoon SK S7N 4S8
Telephone: (306) 966-2973 Fax: (306) 966-2059

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Appendix C: RQHR Research Ethics Approval

Certificate of Approval
Research Ethics Board

PRINCIPAL INVESTIGATOR: Dr. H. Hadjistavropoulos

APPROVAL DATE: March 1, 2012

RQHR PROJECT #: REB-12-02

TITLE: An Efficacy Trial of Therapist-Assisted Internet Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety

CERTIFICATION

The protocol and consent form for the above named project have been reviewed by the Chair of the Regina Qu’Appelle Health Region Research Ethics Board and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects.

The Regina Qu’Appelle Health Region Research Ethics Board meets the standards outlined by Canada’s Tri-Council Policy Statement for Ethical Conduct for Research Involving Humans.

The Regina Qu’Appelle Health Region Research Ethics Board has met the criteria for purposes of Section 29 of the Health Information Protection Act.

Please note that all future correspondence regarding this project must include the RQHR project number.

Best wishes in your continuing research endeavours.

Dr. Michelle McCarron, Acting Chair
Regina Qu’Appelle Health Region
Research Ethics Board

This Certificate of Approval is valid provided there is no change in the experimental procedures. Any significant changes to the protocol must be reported to the Chair for the Board’s consideration, in advance of implementation of such changes. You are required to provide a status report on an annual basis.
Are you 60 years or older?
Are you anxious, tense, or have worries about the future?

- You may be eligible to receive free online therapy adapted for older adults.
- Older adults in Saskatchewan can receive online cognitive behaviour therapy (CBT) for anxiety with guidance of a therapist.
- Online-CBT lasts approximately 7 weeks and is currently provided at NO COST.
- This service is being evaluated by University of Regina Clinical Psychology doctoral student, Shannon Jones.

For more information, contact Shannon at:

shannon.jones@uregina.ca or (306) 585-5369
www.onlinetherapyuser.ca/gadoa/

This study has received Research Ethics Board approval from the University of Regina, the University of Saskatchewan, and the Regina Qu’Appelle Health Region.
Appendix E: Telephone Screening Script

Client’s Name: _____________________________________________

Client’s Telephone Number: __________________________________

Date of Telephone Screening: _________________________________

Thanks for your interest in Online Therapy for Older Adults. Before we begin, is this a good time to talk?

Great, can I ask how you heard about this project?

☐ Referral from physician, social worker, nurse, other healthcare provider (not currently an online therapist)
☐ Referral from Intake (Health Region) ______________________________
☐ Referral from health care provider who is currently an online therapist

Name of e-therapist __________________________  Agency: __________________________

☐ Referral from an e-client
☐ Online advertisement: Which one? ______________________________
☐ Newsletter: Which one? ______________________________
☐ Newspaper: Which one? ______________________________
☐ Poster/brochure advertisement in community: Whereabouts? ______________________________
☐ Found Online Therapy USER website on own
☐ Other; Please describe: ______________________________

Describe Online Therapy USER program to client, including the process of participant randomization involved in the study.

1. Before I ask you too many questions, I will first provide you with some background to online therapy and this research project.

2. **Cognitive Behaviour Therapy** is a structured psychological therapy that has been found to be effective for treating anxiety, depression, and other mental health concerns.

3. Online CBT gives the same information that you would receive in **in-person therapy** but is modified to be provided in an **online format**.

4. It is **flexible**, in that you can review the material at a time that works for you without having to make an appointment with your therapist.

5. Online CBT is **Therapist Assisted**, in that a therapist checks in with you **once a week** on a set day to give feedback through email over our website.

6. We are offering one particular program for **older adults with anxiety**. In this program, there are 7 **modules** that include information about generalized anxiety, how to monitor anxiety and worry, relaxation techniques, how to monitor thoughts and challenge them, how to reduce and control worry, and other coping strategies. Typically, clients **complete one module per week** – so that the program lasts 7 weeks.

7. This particular therapy program has never been tested with adults aged 60 years and older. To see if it is effective, I am studying this therapy for my dissertation research. Persons who are interested and eligible in participating will be randomly assigned to either receive **online therapy right away** or will be placed on a **10-week waitlist** and be offered treatment at that time. We will randomly assign you after you complete a telephone pre-screening and assessment that will determine if you’re eligible to take part.

8. Both groups will complete **questionnaires** before and after 10 weeks to see if the therapy helps to improve how they’re feeling. We’re also interested in understanding participants’ experiences with the therapy, so at the end there will some questions that you can respond to that will help us to improve this service for other seniors who use this therapy in the future.
Does this type of therapy and research study sound like something you would be interested in?
☐ Yes (Obtain verbal consent to conduct pre-screening interview)
☐ No... Why?__________________________________________________________

*IF SCREENED OUT REFER TO APPROPRIATE RESOURCES

Limits of Confidentiality
Before we begin our pre-screening interview, I have to inform you that although the interview will be confidential, there are certain limits to confidentiality including: If you pose an immediate threat to your life, or another individual’s life, and if you disclose information suggesting that any child is at risk of abuse, confidentiality will be broken.

☐ Client understands limits of confidentiality

Inclusion and Exclusion Questions

Appropriate | Not Appropriate
-------------|-----------------

1. Are you a Saskatchewan resident? ☐ Yes ☐ No

2. How old are you? ________ years ☐ Over 60 ☐ Under 60

3. Is your main concern for contacting the Online Therapy Unit for worry and/or anxiety? ☐ Yes ☐ No

Give the GAD-7 and PHQ-9 to client. If symptoms are minimal to none, refer to a non-therapist-assisted online program and suggest contacting the unit if symptoms increase in severity.

4. What is the client’s GAD-7 score? ☐ ≥ 10 ☐ < 10

5. Is the PHQ-9 score in severe range or is person suicidal? ☐ ≥ 23 ☐ < 2 item 9 Symptoms too severe or suicidal

6. Do you have access to a computer and printer at home? ☐ Yes ☐ No

7. Do you have access to the Internet at home? ☐ Yes ☐ No

8. Do you feel comfortable using the Internet? ☐ Yes ☐ No

What do you use the internet for primarily?
_________________________________________________________
_________________________________________________________

9. Do you feel comfortable writing e-mails? ☐ Yes ☐ No

Are you comfortable using websites that require you to have a username and password to log on to? ☐ Yes ☐ No

Do you feel comfortable downloading software, such as new internet browsers (Internet Explorer/Mozilla Firefox)? ☐ Yes ☐ No
10. Would you be willing to have your physician, a medical clinic, or an emergency hospital be notified of your participation in this program?  □ Yes  □ No

Give Six-Item Screener to assess for cognitive impairment.

11. What is the client’s SIS score?  □ ≤ 2  □ ≥ 3

12. Are you currently receiving any other psychological services?  □ No

13. Do you have any thoughts about suicide?  □ No
Do you have a suicide plan (how, when, where)? Do you have any intention to commit suicide?  □ No

14. Have you ever experienced mania or hypomania symptoms? This includes episodes lasting a period of several days or weeks where one needs much less sleep, talks really quickly, is very hyper/high or irritable, takes risky behaviours...  □ No

15. Are you dependant on alcohol or drugs?  □ No
Do you abuse alcohol or drugs?  □ No

16. Have you ever experienced psychotic symptoms, such as delusions or hallucinations?  □ No

17. In the last month did you start a new psychological medication? When was your last change in dosage?  □ No

18. Do you have any of the following health problems?  □ No

- Untreated thyroid disorder
- Endocrine disorder
- Parkinson’s disease
- Recent stroke
- Acute cardiac disease

Based on the client’s responses, indicate whether they are likely to be eligible for GAD Online for Older Adults. Schedule M.I.N.I. Assessment at the client’s convenience.

Are you interested in participating in the assessment interview to see if you are eligible to participate in this program?  □ Yes  □ No
Appendix F: Generalized Anxiety Disorder-7 item (GAD-7)

<table>
<thead>
<tr>
<th>Over the last 2 weeks, how often have you been bothered by the following problems?</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling nervous, anxious or on edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Not being able to stop or control worrying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Worrying too much about different things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Trouble relaxing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Being so restless that it is hard to sit still</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Becoming easily annoyed or irritable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Feeling afraid as if something awful might happen.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all
- Somewhat difficult
- Very difficult
- Extremely difficult

☐  ☐  ☐  ☐
Appendix G: Patient Health Questionnaire-9 (PHQ-9)

1. Over the last 2 weeks, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th></th>
<th>Not at all (0)</th>
<th>Several days (1)</th>
<th>More than half the days (2)</th>
<th>Nearly every day (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Little interest or pleasure in doing things.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>b. Feeling down, depressed, or hopeless.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>c. Trouble falling, or staying asleep, or sleeping too much.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>d. Feeling tired or having little energy.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>e. Poor appetite or overeating.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>f. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>g. Trouble concentrating on things, such as reading the newspaper or watching TV.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>h. Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around more than usual.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>i. Thoughts that you would be better off dead or of hurting yourself in some way.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

<table>
<thead>
<tr>
<th>Not difficult at all</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Extremely difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
Appendix H: Six-Item Screener (SIS)

I would like to ask you some questions that ask you to use your memory. I am going to name three objects. Please wait until I say all three words, then repeat them. Remember what they are because I am going to ask you to name them again in a few minutes. Please repeat these words for me: APPLE—TABLE—PENNY.

(Interviewer may repeat names 3 times if necessary but repetition not scored.)

Did patient correctly repeat all three words?  

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Correct</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. What year is this?

2. What month is this?

3. What is the day of the week?

What were the three objects I asked you to remember?

4. Apple =

5. Table =

6. Penny =

Total Score: __________
Appendix I: Pre-M.I.N.I. Questions

ID # ______

### Demographic Data

<table>
<thead>
<tr>
<th>Client Name:</th>
<th>DOB: (DD/MM/YYYY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Appt #:</td>
</tr>
</tbody>
</table>

| City: | Postal Code: |

| Phone No.: (home) | Sex: [ ] Male [ ] Female |
| (cell) | Can we contact you by: (Y or N) |
| (other) | Phone ______ |

| Phone No. during the day: | Letter ______ |
|                            | Leave Message ______ |
|                            | Email ______ |

| Health Card No.: | |

| E-mail address: | |

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**Family physician to contact in the event of an emergency:**

**Doctor’s Name:** ____________________________________________

**Medical Clinic:** ____________________________________________

**Telephone Number:** _________________________________________

**Next of Kin:** ____________________________________________

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**How far did you go in school?**

- [ ] Less than Grade 6
- [ ] Less than Grade 9
- [ ] Less than Grade 12
- [ ] High school diploma or GED
- [ ] College/technical certificate; some university
- [ ] University undergraduate degree(s)
- [ ] University graduate degree(s)

**How comfortable would you say you are with writing out your thoughts and describing your feelings in words?** Would you say you are…

- [ ] Not very comfortable
- [ ] A little comfortable
- [ ] Somewhat comfortable
- [ ] Fairly comfortable
- [ ] Very comfortable

<table>
<thead>
<tr>
<th>Not very comfortable</th>
<th>A little comfortable</th>
<th>Somewhat comfortable</th>
<th>Fairly comfortable</th>
<th>Very comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Do you have any concerns about your ability to read or write?** ____________________________
How motivated do you feel you are at this time to work on this program? __________________
_____________________________________________________________________________
Are there any factors that you feel would interfere with you completing the program?
_____________________________________________________________________________
_____________________________________________________________________________
As you know, this is a new program and we are seeking to offer this service to clients who feel they would be able to complete the 7 modules. This means that clients should work on the program every week for 7-10 weeks without taking a break. This is important in order for us to be able to evaluate the effectiveness of the program we are delivering.

At a minimum, this program would require that you log on once a week and review materials with the expectation that you would finish this program in 7-10 weeks. Is this something you feel you would be able to do?  

☐ Yes ☐ No

What you could potentially find when you start the program is that some weeks the information is more valuable to you than others? Do you think you would still continue even if you came across a week that was not as relevant to you?

☐ Yes ☐ No

Just to let you know, if you do not sign onto the website for a week, we typically follow up with a phone call just to make sure that everything is okay. After four weeks of no contact, we would call to see if you would prefer to discontinue this program.

Are you interested in participating in the screening interview to see if you are eligible to participate in this program?  

☐ Yes ☐ No

TIME INTERVIEW STARTED: __________  
TIME INTERVIEW FINISHED: __________  
TOTAL INTERVIEW TIME: __________
Appendix J: Mini International Neuropsychiatric Interview (M.I.N.I.)

The M.I.N.I. Suite is available for purchase to students for a one-time fee of $19.95 from Medical Outcome Systems, Inc. This product is Copyrighted and will not be included in this Appendix.
Appendix K: Post-M.I.N.I. Questions

We’re near the end of the interview and now I have a few additional questions for you.

Of all of the problems that I asked you about today, which problem troubles you the most?

☐ Depression  ☐ Mania  ☐ Dysthymia
☐ Panic  ☐ Suicidality  ☐ OCD
☐ Agoraphobia  ☐ Alcohol Dependence/Abuse  ☐ PTSD
☐ Generalized Anxiety  ☐ Substance Dependence/Abuse  ☐ Social Phobia
☐ Psychosis  ☐ Specific Phobia

Are you currently on any medication for any of the problems that I asked you about today?
☐ Yes (List medications) _____________________________________________________
__________________________________________________________________________

If ‘YES’: For how long have you been taking the medication? ______________________
When did you last have a change in the dosage? _________________________________

☐ No Medication

Will you inform us if your medication changes or if you begin a new medication? ☐ Yes ☐ No

Will you tell us if you begin psychological treatment for any of the problems that I asked you about today?
☐ Yes ☐ No

Have you previously been in treatment for any of the problems that I asked about today? ☐ Yes ☐ No

If ‘Yes’, when?

What kind of therapy was it?
__________________________________________________________________________

Do you have any illnesses or medical conditions? (List below)
__________________________________________________________________________

__________________________________________________________________________

Is there a possibility that this/these could interfere with your ability to participate in therapy? ☐ Yes ☐ No

Personal History:

Ethnicity: ☐ Caucasian/White  ☐ Aboriginal/First Nation  ☐ Metis  ☐ Southeast Asian  ☐ Middle Eastern/Indian  ☐ Spanish  ☐ African-Canadian/Black

How far did you go in school?
☐ Less than Grade 6  ☐ College/technical certificate; some university
☐ Less than Grade 9  ☐ University undergraduate degree(s)
☐ Less than Grade 12  ☐ University graduate degree(s)
☐ High school diploma or GED

Employment status: ☐ Retired  ☐ Employed Part-Time  ☐ Employed Full-Time  ☐ On Disability
□ Unemployed

Occupation: ________________________ How long have you done this type of work? ______________

Marital Status: □ Married □ Common-law □ Dating □ Single □ Widowed □ Other ______________

Length of relationship? ______________ Will your partner know that you are participating? □ Yes □ No

Children: (names and ages)

________________________________________  ____________________________

________________________________________  ____________________________

Who do you turn to for support? _________________________________________________

Living Arrangement: □ Alone □ With Family □ With Friends □ Other: ____________________________

Are you facing any current legal difficulties right now?: ____________________________

Medical History:

Prescription Drugs other than Psychiatric: ___________________________________________

________________________________________  ____________________________

Non-Prescription Drugs: ________________________________________________________

Thank-you for answering these questions. That takes us to the end of the interview.

Do you have any questions for me?
Appendix L: Information Page / Consent Form for Waiting List Participants

Please take the time to carefully read the following information. If any of the presented information is unclear please e-mail or phone the researcher of this project, Shannon Jones, at Shannon.Jones@uregina.ca or (306) 585-5369. If you understand and accept the terms and conditions of this research project, your informed consent will be required before you can participate. The consent form is located at the end of this document.

**Project Title:** An Efficacy Trial of Therapist-Assisted Internet Delivered Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety

**Researcher:** Shannon Jones, M.A. Ph.D. Candidate in Clinical Psychology
Department of Psychology, University of Regina
Office: (306) 585-5369
E-mail: Shannon.Jones@uregina.ca

**Supervisor:** Heather Hadjistavropoulos, Ph.D., R. Psych.
Department of Psychology, University of Regina
Office: (306) 585-5133
E-mail: Heather.Hadjistavropoulos@uregina.ca

**Funded By:** Shannon Jones received funding for this project from the Canadian Institutes of Health Research. Dr. Heather Hadjistavropoulos and the Online Therapy Unit are also funded by the Canadian Institutes of Health Research and the Saskatchewan Health Research Foundation.

**Background:** Previous research has shown that therapist-guided Online Cognitive Behaviour Therapy (Online-CBT) can be used to effectively treat depression and anxiety in young and middle-aged adults. Limited research has specifically studied the use of Online-CBT by older adults. Shannon Jones, a doctoral student in Clinical Psychology, has since adapted an Online-CBT program to be suitable for treating adults aged 60 years and older with difficulties with anxiety or worry. This study will test how effective it is in helping older adults deal with their general anxiety.

**Procedure:** To test the effectiveness of this program, participants will be randomly assigned to one of two groups: Online-CBT or Waitlist. You have been randomly assigned to the **Waitlist group**. Participants assigned to the waitlist will wait 10 weeks before beginning Online-CBT.

- **Questionnaires:** You will be asked to complete six questionnaires about your levels of anxiety, mood, and quality of life on two different occasions: once when the study begins and then again 10-weeks later. These questionnaires are linked to this website and will take approximately 15-30 minutes to complete. After you finish reading this information page and provide consent to participate, you will be taken to the first set of questionnaires.
• **Time 2 Questionnaires**: After you complete the first set of questionnaires, your responses will be submitted to the researcher. After ten weeks have passed by, the researcher will e-mail you to ask you to complete the online questionnaires for a second time. These will take another 15-30 minutes to complete. This will help us to assess how you are feeling and whether anything has changed over this 10-week period.

• **Online-CBT**: After you complete the second set of questionnaires, you will be offered the opportunity to receive Online-CBT, which is designed to take 7-10 weeks. At this time, you will be assigned a therapist and provided with a username and password for the onlinetherapyuser.ca website if you so choose.

**Possible Benefits and Risks**: There are no anticipated risks associated with this online battery of questionnaires. The only cost to you will be the time required to complete the questionnaires and the mini-assessment by phone at the end of the study. This research may help participants to deal with their general anxiety more effectively in a variety of ways. Further, if the treatment program is found to be effective, it may help other older adults who experience anxiety.

**Confidentiality**: Only the researchers will know that you are participating in this study. Your responses to the questionnaires along with the responses of other participants will be accessed only by the primary researcher, Shannon Jones. Your name and other identifying information will not be associated with any of your responses, so the researcher will not be aware of your identity when examining information from the questionnaires. Scores from any questionnaires you respond to will be summarized across all participants, so that individual responses will not be linked to a specific person in any publication of our results.

It is important for you to know that “Survey Monkey”, a web-survey company that is located in the USA, is the host of this online research. This company is subject to U.S. laws; in particular, the U.S. Patriot Act that allows authorities access to the records of Internet service providers. Survey Monkey’s servers record incoming Internet addresses – including that of the computer that you use to access the survey. However, no connection is made between your data and your computer’s Internet address. If you choose to participate in the survey, you understand that your responses to the survey questions will be stored and accessed in the USA.

**Confidentiality and Internet Surveys**: There is a very small chance that your privacy may not be guaranteed by participating in this online study. Descriptions of the risks are listed below:

1. When submitting your survey answers via the Internet, there is a small possibility your information will be intercepted by unauthorized third parties using sophisticated tools. It should be noted that this rarely occurs and is a risk that can occur at anytime, not just with online surveys, but when using any computer connected to the Internet.
2. Any computer connected to the Internet will store information about visited websites on the Internet browser’s history. Your responses to questionnaires, however, are only temporarily stored until you close your Internet browser. You may also manually delete your browser history.

3. After you complete the survey, the information will be sent directly to the survey software website. All responses will be downloaded at the end of the study and then kept in a secure location by the researcher. The information will not be linked to your Internet address.

**Storage of Research Information:** A paper file that consists of information collected from you in the screening interview (e.g., background information, questions about anxiety) has been created and will be stored in a locked cabinet for the duration of this study. Responses to questionnaires will be kept in a computer file. This file will not contain any identifying information. This file will only be available to the research team. All information collected for this study will be kept in a locked office at the University of Regina and held for a minimum of 7 years. After 7 years, the paper records will be destroyed through shredding and the computer file containing the questionnaires will be securely deleted and destroyed.

**Right to Withdraw:** Participation in this study is voluntary and you can answer only those questions that you are comfortable with. You may withdraw from the research project for any reason, at any time without explanation or penalty of any sort. Should you choose to withdraw from the study at any time after starting, you may do so without any consequences to your present or future health care. Your right to withdraw data from the study will apply until the data has been entered into a database for analysis.

**Access to Study Results:** A summary of this study’s results will be posted on the treatment study website [www.onlinetherapyuser.ca](http://www.onlinetherapyuser.ca) after all data have been collected and analyzed. This will likely take over a year.

**Questions or Concerns:** Please feel free to contact any of the researchers if you have any additional questions about the procedures or purpose of this research using the contact information provided earlier in the consent form.

**Ethics Approval:** This research project has been approved on ethical grounds by the University of Regina, the University of Saskatchewan, and the Regina Qu’Appelle Health Region Research Ethics Boards. Any questions regarding your rights as a participant may be addressed to that committee through the University of Regina Research Ethics Board at (306) 585-4775 or research.ethics@uregina.ca. Out of town participants may call collect. You may also contact the REB at RQHR at (306) 766-5451.
Consent Form for Waiting List Participants

Project Title: An Efficacy Trial of Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy for Older Adults with Generalized Anxiety

1. I am 18 years of age or older  **Yes  No**

2. I have read the Information Page and have had any questions answered to my satisfaction. **Yes  No**

3. I am aware that I can contact the researcher, Shannon Jones, at Shannon.Jones@uregina.ca or call (306) 585-5369. **Yes  No**

4. This research project has been approved on ethical grounds by the Research Ethics Boards (REBs) of the University of Regina, the University of Saskatchewan, the Regina Qu'Appelle Health Region (RQHR), the Cypress Health Region, the Five Hills Health Region, the Sun Country Health Region, and the Sunrise Health Region. I am aware that any questions regarding my rights as a participant may be addressed to that committee through the University of Regina Ethics Board at (306) 585-4775 or email: research.ethics@uregina.ca. Out of town participants may call collect. **Yes  No**

5. I understand that my participation is voluntary and that I am free to withdraw at any time.

   **Yes  No**

6. Do you freely and voluntarily consent to take part in this research study?

   **Yes  No**
Appendix M: Information Page / Consent Form for TAICBT participants

Please take the time to carefully read the following information. If any of the presented information is unclear please e-mail or phone the researcher of this project, Shannon Jones, at Shannon.Jones@uregina.ca or (306) 585-5369. If you understand and accept the terms and conditions of this research project, your informed consent will be required before you can participate. The consent form is located at the end of this document.

**Project Title:** An Efficacy Trial of Therapist-Assisted Internet Delivered Cognitive-Behaviour Therapy for Older Adults with Generalized Anxiety

**Researcher:** Shannon Jones, M.A. Ph.D. Candidate in Clinical Psychology Department of Psychology, University of Regina Office: (306) 585-5369 E-mail: Shannon.Jones@uregina.ca

**Supervisor:** Heather Hadjistavropoulos, Ph.D., R. Psych. Department of Psychology, University of Regina Office: (306) 585-5133 E-mail: Heather.Hadjistavropoulos@uregina.ca

**Funded By:** Shannon Jones received funding for this project from the Canadian Institutes of Health Research. Dr. Heather Hadjistavropoulos is also funded by the Canadian Institutes of Health Research and the Saskatchewan Health Research Foundation.

**Background:** Previous research has shown that therapist-guided Online Cognitive Behaviour Therapy (Online-CBT) can be used to effectively treat depression and anxiety in young and middle-aged adults. Limited research has specifically studied the use of Online-CBT by older adults. Shannon Jones, a doctoral student in Clinical Psychology, has since adapted an Online-CBT program to be suitable for treating adults aged 60 years and older with difficulties with anxiety or worry. This study will test how effective it is in helping older adults deal with their general anxiety. Because this service is newly available, this study will also look at how clients’ engagement with the treatment program and their therapists are related to effectiveness and will collect feedback about clients’ experiences to help improve the service for future seniors.

**Procedure:** To test how effective Online-CBT is, participants will be randomly assigned to one of two groups: Online-CBT or Waitlist. **You have been randomly assigned to the Online-CBT group.** Participants assigned to the Online-CBT group are asked to provide their informed consent to participate in the Online-CBT program and research project. If you provide consent, you will be asked to complete some initial questionnaires. Afterwards, you will be contacted by the researcher and provided with a Username and Password to the treatment website. You can then begin the first module of *GAD Online for Older Adults.*
Your involvement in Online-CBT and this research project involves two major components: **1. Treatment** and **2. Outcome Assessments.** These will now be described in more detail.

**1. Treatment:** *GAD Online for Older Adults* is composed of **7 modules.** Modules consist of CBT materials that are accessed and read online, materials for you to print and use when not online, as well as activities that will help you apply the skills you are learning in daily life. **It is recommended that you spend about 1 week on each module.** Online-CBT is a short-term support program and you should be able to complete therapy in 7 weeks. **You should not take any longer than 10 weeks to complete therapy.**

*GAD Online for Older Adults* covers the following topics:

- Module 1: Introduction to the purpose and content of GAD Online; education about the nature of GAD; learning to monitor anxiety and worry symptoms
- Module 2: Education about relaxation; learning relaxation techniques; practicing relaxation exercises
- Modules 3 & 4: Learning how to identify and challenge problematic thoughts, assumptions, and beliefs
- Module 5: Education about worry; learning how to reduce/control worry
- Modules 6: Education about avoidance; learning how to confront and overcome avoidance; worry exposure; education about the nature and prevention of behaviours associated with worry
- Module 7: Education about problem-solving and sleep hygiene; summary of main messages; preparing to end program; planning for after treatment; relapse prevention

**Treatment Information:** The Online-CBT program is **therapist-assisted.** When you receive your login information to the treatment website, you will be assigned a therapist. Your therapist is a Clinical Psychology graduate student at the University of Regina. All student providers receive clinical supervision by Dr. Heather Hadjistavropoulos, a registered clinical psychologist.

**Communicating with Your Therapist**

- You will be asked to **submit examples from the weekly exercises** to your therapist prior to beginning a new module on a check-in page.
- You can also **e-mail your therapist at any time** to receive guidance and assistance with the modules and exercises.
• Your therapist will respond to your messages and check-in page once a week through the website’s e-mail system over the course of treatment. When your therapist logs into the website, s/he will be able to review all of the messages or weekly exercises you’ve sent over the website and can see the pages you have reviewed. By reviewing this information, your therapist is able to provide you with feedback, support, and suggestions and also answer any questions you may have. Due to the therapist’s limited amount of time, you may not receive an immediate e-mail response or a response to every e-mail that you send.

• Student therapists are under supervision and will discuss their cases with their supervisor. By using this program, you are accepting and consenting to the discussions of your case between your therapist and supervisor.

**Termination of Therapy:**

• You may withdraw from participation in the treatment at any time. Otherwise, therapy will be complete when you have finished all 7 modules.
• If you do not log onto the treatment website for 4 weeks and you do not notify your therapist or Shannon Jones of your absence, your participation in treatment will be discontinued.
• When you have completed therapy, you will still have access to the treatment website and the therapist-client email system for four more weeks. If you would like to refer to any of the online information after these four weeks, you may do so by printing off the desired materials.

2. **Outcome Assessments:** To track your progress and for the purposes of the research study, we will be monitoring your anxiety, depression, and other areas of functioning. In order to do this, you will be asked to fill out online questionnaires via surveymonkey.com at three time points:

1. **Prior to starting treatment (eight questionnaires)**
   o These questionnaires will be specific to your presenting concerns (e.g., anxiety, depression) as well as your expectations for treatment.

2. **10 weeks after you begin treatment (ten questionnaires and open-ended questions)**
   o These questionnaires will include those that you completed prior to starting treatment as well as questions that will help us understand your experience with your therapist and the Online-CBT program.
   o Open-ended questions are added to allow you to provide more general feedback about your experience with the Online-CBT program.

3. **One month after you end treatment (five questionnaires)**
   o These questionnaires will only ask about your current levels of anxiety and depression.
• Answering the questionnaires will take approximately 15 to 45 minutes to complete, as the number of questionnaires will vary each time (see above). You will be asked many questions, some which may seem repetitive. This is to ensure we are getting an accurate picture of your functioning. You are not obliged to answer any question that you find objectionable or which makes you uncomfortable.
• We would like to emphasize that it is very important that you **complete the questionnaires after treatment** so that we can understand whether this service is effective and should be made available more broadly to older adults in Saskatchewan.
• All participants’ responses to the questionnaires will be examined by the primary researcher to understand the effectiveness of GAD Online for Older Adults. Your name and other identifying information will not be associated with any of your responses, so the researcher will not be aware of your identity when examining information from the questionnaires.

**Possible Benefits & Challenges of Online-CBT:** There are potential benefits and challenges associated with therapy delivered online.

**Potential Benefits**

- You do not need to schedule an appointment with Online-CBT.
- You avoid having to visit an office if things like transportation, stigma, or your own availability are a concern.
- You can have more control over the pace of therapy.
- You can access the online material from the location of your choice at your convenience for up to four weeks after the end of therapy.
- You can e-mail your therapist at any time through our secure website.
- You may feel more comfortable disclosing personal information online than in person.
- This service is provided **free of charge**.

**Potential Challenges**

- Assessment and diagnosis may be more difficult when visual cues are not present.
- Online-CBT may require more self-motivation than other forms of therapy.
- Without non-verbal cues, there is a greater potential for misinterpretation of e-mail messages between you and your therapist.
- There is a risk for breaches of confidentiality (see below)
- There is potential for technology failures that may result in messages not being received by either you or your therapist.
- Online-CBT is a newer form of treatment, so there has been less research conducted when compared to other, more-established forms of treatment.
- Online-CBT is not meant to be a long-term form of therapy.
- Online-CBT is not meant for use in the event of an emergency.
**Right to Withdraw:** Participation in online therapy and this research study is voluntary. Should you choose not to participate, or if you wish to withdraw from the study at any time after starting, you may do so without any consequences to your present or future health care. If you do decide to discontinue online therapy, please inform the therapist who has been assigned to you.

**Additional Therapist Information:**

- **Multiple Therapist Roles:** It is the responsibility of the therapist to avoid holding multiple roles with clients (e.g., friend, business partner). The therapist is expected to establish and maintain a primarily professional relationship with their client. The client is expected to respect this obligation. The therapist will also be unable to meet requests through social networking websites (e.g., Facebook).

- **Potential Therapist Unavailability:** In the event that your therapist is unable to access their e-mail messages due to unforeseeable circumstances (e.g., sickness, injury), the primary researcher/supervisor of this project will be in contact with you. If your therapist has a planned temporary absence (e.g., holiday or work-related absence), you will be informed in advance by your therapist.

- **Therapist Communications:** As a client, you agree not to share your therapist’s communications with anyone else unless your therapist’s written and informed consent is first obtained. You also agree not to give advice based on the therapist’s communications, or show therapist communications to others, out of context.

**Limits of Confidentiality:** Although these circumstances are rare, there are certain limits to confidentiality that every participant must be aware of:

- If you pose an immediate threat to your life, or another individual’s life, confidentiality may be broken in order to prevent harm.
- If you disclose information suggesting that any child is at risk of abuse, the Ministry of Social Services will have to be notified.
- If you become involved in a legal case, the judge has the right to subpoena any information relevant to the legal problem.
- If you are concerned about your therapist’s professional conduct (or his/her supervisor’s), it may be necessary to release information from your file to evaluate and address this concern.
- If you request that information be released to another provider or your insurer, this request will be carried through.

**For Your Safety:**

1. We send a Physician Notification Form to your family physician or medical clinic so that your physician is aware of your participation in the Online-CBT program.
2. In the event of suicide risk, we will contact your family physician or medical clinic.
3. Please inform us of any changes in your physical or mental health status that may have an impact on your ability to participate in the Online-CBT program.

**Emergency Situations:** In the event that your therapist suspects you are at risk to harming yourself or others, they will contact you either by e-mail or telephone. The telephone call will be used to gain additional information about your situation. If your therapist determines that you are at high risk, then confidentiality will need to be broken. The therapist will have to contact either: your family physician, a family member, or 911 depending on the situation.

**Storage of Clinical Information:** A client file is created for you when you participate in this treatment. This consists of both a paper file and an online file. The paper file consists of information collected from you in the screening interview (e.g., personal information, questions about anxiety) and will be retained by the Online Therapy Unit. The online file consists of e-mails, any notes your therapists takes related to your case, and the forms you complete online.

All information (paper or online) is kept securely for a period of **seven years**, which is consistent with standards of professional practice for psychologists in the province of Saskatchewan.

**Access to Client Files:** You have the right to access your client file. You may request to review or obtain your file either through verbal (by current clients) or written form (by clients no longer receiving services). Written communications are to be directed to Shannon Jones. If you disagree with information in the file, you can make a request in writing to add a note to your file.

**Storage of Research Information:** Responses to questionnaires will be kept in a computer file. This file will not contain any identifying information. All information collected for this study will be kept in a locked office at the University of Regina and held for a minimum of 7 years. After 7 years, the paper records will be destroyed through shredding and the e-mail correspondence will be downloaded and saved to a hard drive and then securely deleted.

**Confidentiality:** Only your therapist and the researchers will know that you are participating in this study. Your responses to the questionnaires will be accessed only by the primary researcher. Your name and other identifying information will not be associated with any of your responses, so the researcher will not be aware of your identity when examining the questionnaires.

It is important for you to know that “Survey Monkey”, a web-survey company that is located in the USA, is the host of this online research. This company is subject to U.S. laws; in particular, the US Patriot Act that allows authorities access to the records of Internet service providers. Survey Monkey’s servers record incoming IP addresses – including that of the computer that you use to access the survey. However, no connection
Confidentiality and Internet Research: As an Internet-based study/treatment, there are unique risks that may compromise your privacy that exist with any Internet-based service. A description of these risks follows:

1. When submitting information to your therapist through the Internet (e.g., e-mail messages), there is a possibility your information will be intercepted by unauthorized third parties using sophisticated tools. It should be noted that this rarely occurs, although it is a risk about which you should be advised. To limit this risk, the GAD Online for Older Adults website encrypts the messages sent between you and your therapist. Only you and your assigned therapist and their supervisor can contact you, see your responses to exercises, and see your progress throughout therapy.

2. Any computer connected to the Internet will store information about visited websites on the Internet browser’s history. Your responses to questionnaires, however, are only temporarily stored until you close your Internet browser. You may also manually delete your browser history.

Methods Used to Protect Your Information: In order to protect the privacy of your information while you use the Online-CBT program we have several precautions in place, however, you should be aware that it is not possible to safeguard against every possible risk. The precautions we use are as follows:

1. Your personal identifying information is not collected over the Internet (e.g., name, birth date, address), and this information is not linked to your Online-CBT account.
2. Your login user name and password are specific to you.
3. Messages exchanged within the Online-CBT program and are encrypted. This reduces the likelihood of unauthorized access to your communications.
4. The University of Regina, which hosts the GAD Online for Older Adults website, has firewall protection to protect from outside threats.
5. Access to the GAD Online for Older Adults server is strictly controlled. The server is housed in a secure environment within the University of Regina. This means that limits are in place for who has access to the server - only the server administrators, and the service administrator.

There are also various things that you can do to protect your information:

1. Use your home computer instead of a computer in a shared space, such as a library.
2. Make sure the computer you are sending emails from is secure.
3. Do not share your login information with anyone and do not use a password that is easily guessed by others.

4. Since your Internet browser stores information in its memory, you can clean the history after you use the computer. Certain Internet browsers have "Privacy" modes that can be turned on. When in "Privacy" mode, your online activity is not saved in the computer’s memory. The Firefox browser has this feature and is highly recommended when you use GAD Online for Older Adults.

5. Turn on firewall software to protect your computer and information from outside attacks and threats. Firewall software may come with your computer (e.g., Windows firewall) or you may install software from the Internet, such as ZoneAlarm.

6. Use anti-virus software to prevent and recover from viruses. You may purchase this software or download free software options. Be careful to ensure that any free software is legitimate before downloading.

7. Malware-detection software (such as Spybot: Search and Destroy) can be used to scan your computer for software and files that may be leaking your personal information to third parties.

**Technical Questions:** If you have any technical difficulty with *GAD Online for Older Adults*, contact Shannon Jones at (306) 585-5369 or the Online Therapy USER coordinator, Marcie Nugent, at (306) 337-3331.

**Access to Study Results:** A summary of this study’s results will be posted on this website ([www.onlinetherapyuser.ca](http://www.onlinetherapyuser.ca)) once all data have been collected and analyzed. This will likely take over a year.

**Ethics Approval:** This research project has been approved on ethical grounds by the Research Ethics Boards (REBs) of the University of Regina, the University of Saskatchewan, and the Regina Qu'Appelle Health Region (RQHR). Any questions regarding your rights as a participant may be addressed to the committee through the University of Regina Ethics Board at (306) 585-4775 or email: research.ethics@uregina.ca. Out of town participants may call collect. You may also contact the REB at RQHR at (306) 766-5451.

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Consent Form

Project Title: A Randomized Controlled Trial of Therapist-Assisted Internet Delivered Cognitive Behaviour Therapy for Older Adults with Generalized Anxiety

1. I am 18 years of age or older  Yes  No

2. I have read the Information Page and have had any questions answered to my satisfaction. Yes  No

3. I am aware that I can contact the researcher, Shannon Jones, at Shannon.Jones@uregina.ca or call (306) 585-5369. Yes  No

4. This research project has been approved on ethical grounds by the Research Ethics Boards (REBs) of the University of Regina, the University of Saskatchewan, and the Regina Qu'Appelle Health Region (RQHR). I am aware that any questions regarding my rights as a participant may be addressed to the committee through the University of Regina Ethics Board at (306) 585-4775 or email: research.ethics@uregina.ca. Out of town participants may call collect. Yes  No

5. I understand that my participation is voluntary and that I am free to withdraw at any time.

Yes  No

6. Do you freely and voluntarily consent to take part in this research study? That is, do you consent to receive Online-CBT and complete online questionnaires before beginning treatment and again 10 weeks later?

Yes  No
Appendix N: Geriatric Anxiety Inventory (GAI)

Please answer the items according to how you’ve felt in the last week.

Tick the column under Agree if you mostly agree that the item describes you; tick the column under Disagree if you mostly disagree that the item describes you.

<table>
<thead>
<tr>
<th>Item</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I worry a lot of the time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it difficult to make a decision.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel jumpy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it hard to relax.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often cannot enjoy things because of my worries.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Little things bother me a lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel like I have butterflies in my stomach.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think of myself as a worrier.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can’t help worrying about even trivial things.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel nervous.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My own thoughts often make me anxious.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get an upset stomach due to my worrying.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think of myself as a nervous person.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I always anticipate the worst will happen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel shaky inside.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that my worries interfere with my life.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My worries often overwhelm me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I sometimes feel a great knot in my stomach.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I miss out on things because I worry too much.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often feel upset.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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Appendix O: Penn State Worry Questionnaire-Abbreviated (PSWQ-A)

Instructions: Rate each of the following statements on a scale of 1 (“not at all typical of me”) to 5 (“very typical of me”). Please do not leave any items blank.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all typical of me</th>
<th>Very typical of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>My worries overwhelm me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Many situations make me worry.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I know I should not worry about things, but I just cannot help it.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>When I am under pressure, I worry a lot.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I am always worrying about something.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>As soon as I finish one task, I start to worry about everything else I must do.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I have been a worrier all my life.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I have been worrying about things.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
Appendix P: Geriatric Depression Scale (GDS)

**Instructions:** Choose the best answer for how you have felt over the past week:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Are you basically satisfied with your life?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Have you dropped many of your activities and interests?</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Do you feel that your life is empty?</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Do you often get bored?</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Are you hopeful about the future?</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Are you bothered by thoughts you can’t get out of your head?</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Are you in good spirits most of the time?</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Are you afraid that something bad is going to happen to you?</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>Do you feel happy most of the time?</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Do you often feel helpless?</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Do you often get restless and fidgety?</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>Do you prefer to stay at home, rather than going out and doing new things?</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Do you frequently worry about the future?</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Do you feel you have more problems with memory than most?</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Do you think it is wonderful to be alive now?</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>Do you often feel downhearted and blue?</td>
<td>Yes</td>
</tr>
<tr>
<td>17</td>
<td>Do you feel pretty worthless the way you are now?</td>
<td>Yes</td>
</tr>
<tr>
<td>18</td>
<td>Do you worry a lot about the past?</td>
<td>Yes</td>
</tr>
<tr>
<td>19</td>
<td>Do you find life very exciting?</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>Is it hard for you to get started on new projects?</td>
<td>Yes</td>
</tr>
<tr>
<td>21</td>
<td>Do you feel full of energy?</td>
<td>Yes</td>
</tr>
<tr>
<td>22</td>
<td>Do you feel that your situation is hopeless?</td>
<td>Yes</td>
</tr>
<tr>
<td>23</td>
<td>Do you think that most people are better off than you are?</td>
<td>Yes</td>
</tr>
<tr>
<td>24</td>
<td>Do you frequently get upset over little things?</td>
<td>Yes</td>
</tr>
<tr>
<td>25</td>
<td>Do you frequently feel like crying?</td>
<td>Yes</td>
</tr>
<tr>
<td>26</td>
<td>Do you have trouble concentrating?</td>
<td>Yes</td>
</tr>
<tr>
<td>27</td>
<td>Do you enjoy getting up in the morning?</td>
<td>Yes</td>
</tr>
<tr>
<td>28</td>
<td>Do you prefer to avoid social gatherings?</td>
<td>Yes</td>
</tr>
<tr>
<td>29</td>
<td>Is it easy for you to make decisions?</td>
<td>Yes</td>
</tr>
<tr>
<td>30</td>
<td>Is your mind as clear as it used to be?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Appendix Q: World Health Organization Quality of Life-BREF (WHOQOL-BREF)

The following questions ask how you feel about your quality of life, health, or other areas of your life. Please choose the answer that appears most appropriate. If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last **four weeks**.

<table>
<thead>
<tr>
<th></th>
<th>Very poor</th>
<th>Poor</th>
<th>Neither poor nor good</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How would you rate your quality of life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Very dissatisfied</th>
<th>Dissatisfied nor dissatisfied</th>
<th>Satisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>How satisfied are you with your health?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

The following questions ask about how much you have experienced certain things in the last **four weeks**.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>A moderate amount</th>
<th>Very much</th>
<th>An extreme amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>To what extent do you feel that physical pain prevents you from doing what you need to do?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>How much do you need any medical treatment to function in your daily life?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>How much do you enjoy life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>To what extent do you feel your life to be meaningful?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>A moderate amount</th>
<th>Very much</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>How well are you able to concentrate?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>How safe do you feel in your daily life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>How healthy is your physical environment?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
The following questions ask about how completely you experience or were able to do certain things in the last **four weeks**.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Mostly</th>
<th>Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Do you have enough energy for everyday life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>Are you able to accept your bodily appearance?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>Have you enough money to meet your needs?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>How available to you is the information that you need in your day-to-day life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14.</td>
<td>To what extent do you have the opportunity for leisure activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Very poor</th>
<th>Poor</th>
<th>Neither poor nor good</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>How well are you able to get around?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Very dissatisfied</th>
<th>Dissatisfied</th>
<th>Neither satisfied nor dissatisfied</th>
<th>Satisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>How satisfied are you with your sleep?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>How satisfied are you with your ability to perform your daily living activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>How satisfied are you with your capacity for work?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>How satisfied are you with yourself?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>How satisfied are you with your personal relationships?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>How satisfied are you with your sex life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>22.</td>
<td>How satisfied are you with the support you get from your friends?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>How satisfied are you with the conditions of your living place?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>How satisfied are you with your access to health services?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>How satisfied are you with your transport?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

The following question refers to how often you have felt or experienced certain things in the last **four weeks**.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Seldom</th>
<th>Quite often</th>
<th>Very often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td>How often do you have negative feelings such as blue mood, despair, anxiety, depression?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Appendix R: Credibility/Expectancy Questionnaire (CEQ)

We would like you to indicate below how much you believe, right now, that the therapy you are receiving will help to reduce your anxiety. Belief usually has two aspects to it: (1) what one thinks will happen and (2) what one feels will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you think. In the second set answer in terms of what you really and truly feel. Your therapist will not see these ratings.

Set I
1. At this point, how logical does the therapy offered to you seem?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all logical</td>
<td>somewhat logical</td>
<td>very logical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. At this point, how successfully do you think this treatment will be in reducing your anxiety symptoms?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all useful</td>
<td>somewhat useful</td>
<td>very useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. How confident would you be in recommending this treatment to a friend who experiences similar problems?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all confident</td>
<td>somewhat confident</td>
<td>very confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. By the end of the therapy period, how much improvement in your anxiety symptoms do you think will occur?

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
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</tbody>
</table>

Set II
For this set, close your eyes for a few moments, and try to identify what you really feel about the therapy and its likely success. Then answer the following questions.

1. At this point, how much do you really feel that therapy will help you to reduce your anxiety symptoms?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all</td>
<td>somewhat</td>
<td>very much</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. By the end of the therapy period, how much improvement in your anxiety symptoms do you really feel will occur?

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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<tr>
<td></td>
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<td>10%</td>
<td>20%</td>
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<td>70%</td>
<td>80%</td>
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</tr>
</tbody>
</table>
Appendix S: Anxiety Change Expectancy Scale (ACES)

Listed below are a number of statements concerning beliefs about change. Please read each item carefully, and circle one of the five options that best reflect how you feel about the statement right now.

1 = strongly disagree
2 = disagree
3 = undecided
4 = agree
5 = strongly agree

1. I feel pessimistic that my anxiety problems could ever change for the better.
2. Even though I try, nothing seems to help with my anxiety.
3. It would be extremely difficult or impossible to solve my problems with anxiety.
4. I have had some positive experiences with being able to control my anxiety through talking positively to myself.
5. My problems with anxiety are too severe to benefit from treatment.
6. Self-help methods may help others control their anxiety but they won’t work for me.
7. I don’t believe I will ever feel truly relaxed and not worried.
8. Facing my fears has never helped me to reduce my anxiety.
9. When I force myself to do something that scares me, often it’s not as bad as I thought.
10. I have had some success in reducing my anxiety.
11. There is very little anyone could do to help me solve my anxiety problems.
12. Even when I try to talk positively to myself, it doesn’t help my anxiety.
13. Positive thinking is helpful to me in managing my anxiety.
14. There is no solution to my anxiety problems.
15. I am optimistic that my anxiety can change for the better.
16. I have found that I can reduce my anxiety by telling myself to relax or by using relaxation exercises.
17. I’ll never be able to control my anxiety and worry.
18. I believe it’s quite possible for me to feel less worried and more relaxed.
19. If I work hard, I can have a positive impact on my problems with anxiety.
20. There are factors contributing to my anxiety that I can learn to control.
Appendix T: Treatment Satisfaction Questionnaire (TSQ)

PART A:
Instructions: Using the scale shown in the box below, please rate ‘how useful’ you found the various treatment components to be.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A little</td>
<td>Somewhat</td>
<td>Quite A lot</td>
<td>Very much so</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating (0-7)

1. How useful did you find the information on generalized anxiety disorder?

2. How useful did you find monitoring your thoughts, feelings and behaviors?

3. How useful did you find engaging in enjoyable activities?

4. How useful did you find the relaxation exercises (e.g., breathing exercises, progressive muscle relaxation)?

5. How useful did you find identifying and challenging your negative automatic thoughts?

6. How useful did you find the worry control strategies that were provided? (These included tracking whether situations you were worried about occurred, tolerating uncertainty, coming up with best- and worst-case scenarios for worried about situations, addressing indecisiveness, setting aside time to worry, and the clearing the mind of worry technique.)

7. How useful did you find exposing yourself to your worries?

8. How useful did you find preventing your worry behaviours?

9. How useful was looking back over what you have achieved at the end of the program?

PART B:
Instructions: Using the scale shown in the box below, please rate ‘how much you personally liked’ the various treatment components.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A little</td>
<td>Somewhat</td>
<td>Quite A lot</td>
<td>Very much so</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating (0-7)
1. How much did you personally like the information on generalized anxiety disorder? __________

2. How much did you personally like monitoring your thoughts, feelings and behaviors? __________

3. How much did you personally like engaging in enjoyable activities? __________

4. How much did you personally like the relaxation exercises (e.g., breathing exercises, progressive muscle relaxation)? __________

5. How much did you personally like identifying and challenging your negative automatic thoughts? __________

6. How much did you personally like the worry control strategies that were provided? __________

7. How much did you personally like exposing yourself to your worries? __________

8. How much did you personally like preventing your worry behaviours? __________

9. How much did you personally like looking back over what you have achieved at the end of the program? __________

**Part C:**

**Instructions:** Using the scale shown in the box below, please rate ‘how much you think you improved’ with respect to your generalized anxiety symptoms.

<table>
<thead>
<tr>
<th>Rating (0-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
</tbody>
</table>

1. How much do you think you improved with respect to worry behaviours? __________

2. How much do you think you improved with respect to the frequency of your worries? __________

3. How much do you think you improved with respect to the severity of your worries? __________

4. How much do you think you improved with respect to your level of general anxiety? __________

270
5. How much do you think you improved with respect to your overall mood? 

**Part D:**
**Instructions:** Using the scale shown in the box below, please rate how ‘your life has changed’ in the various areas described below.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A little</td>
<td>Somewhat</td>
<td>Quite A lot</td>
<td>Very much so</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating (0-7)

1. How do you think your life has improved with respect to your participation in leisure activities? 

   

2. How do you think your life has improved with respect to your participation in family activities? 

   

3. How do you think your life has improved with respect to your participation in social activities? 

   

4. How do you think your life has improved with respect to your ability to be alone? 

   

**Part E:**
**Instructions:** Using the scale provided, please rate the following treatment evaluation questions.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>A little</td>
<td>Somewhat</td>
<td>Quite A lot</td>
<td>Very much so</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating (0-7)

1. How much did you like the treatment program? 

   

2. How much did you enjoy communicating with your therapist? 

   

3. Overall, how much improvement do you believe occurred, after completing the treatment program? (Please Circle)

   

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Improvement at All</td>
<td>Most Improvement Possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix U: Therapeutic Alliance Questionnaire (TAQ)

There are ways that a person may feel or react in relation to another person. Consider carefully your relationship with your therapist, and then place a score in the rating column (based on the scale below), according to how strongly you agree or disagree. Please score every one.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating (0-6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I found I was able to rely on my therapist.</td>
<td></td>
</tr>
<tr>
<td>2 I felt my therapist understood those concerns that were important to me.</td>
<td></td>
</tr>
<tr>
<td>3 I felt my therapist was helping me to achieve my goals.</td>
<td></td>
</tr>
<tr>
<td>4 My therapist and I worked well together throughout the treatment program.</td>
<td></td>
</tr>
<tr>
<td>5 I believe that my therapist and I viewed my concerns in a similar way.</td>
<td></td>
</tr>
<tr>
<td>6 I felt comfortable with my therapist’s ability to guide me through the program.</td>
<td></td>
</tr>
<tr>
<td>7 I believe that the techniques used in the program were beneficial.</td>
<td></td>
</tr>
<tr>
<td>8 I developed a respect for my therapist.</td>
<td></td>
</tr>
<tr>
<td>9 I felt that my therapist and I were able to communicate effectively.</td>
<td></td>
</tr>
<tr>
<td>10 Our communications seemed to slow my treatment progress.</td>
<td></td>
</tr>
<tr>
<td>11 I regarded my therapist’s view about me.</td>
<td></td>
</tr>
<tr>
<td>12 I felt that I developed a good relationship with my therapist.</td>
<td></td>
</tr>
<tr>
<td>13 My therapist appeared to be competent in helping people.</td>
<td></td>
</tr>
<tr>
<td>14 I had meaningful communications with my therapist.</td>
<td></td>
</tr>
<tr>
<td>15 At times, I had fruitless exchanges with my therapist.</td>
<td></td>
</tr>
<tr>
<td>16 I believed the therapist respected me.</td>
<td></td>
</tr>
<tr>
<td>17 At times, I felt that my therapist appeared distant.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix V: Open-Ended Client Feedback Questions

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What was your experience of using GAD Online for Older Adults?</td>
</tr>
<tr>
<td>2</td>
<td>What was most helpful about this program?</td>
</tr>
<tr>
<td>3</td>
<td>What aspect of the program did you like the most?</td>
</tr>
<tr>
<td>4</td>
<td>What was unhelpful about this program?</td>
</tr>
<tr>
<td>5</td>
<td>What aspect of the program did you like the least?</td>
</tr>
<tr>
<td>6</td>
<td>What do you think was lacking in this program that was relevant to your</td>
</tr>
<tr>
<td></td>
<td>experience as an older adult?</td>
</tr>
<tr>
<td>7</td>
<td>To what extent did you think that the program and website was user-</td>
</tr>
<tr>
<td></td>
<td>friendly or easy to use?</td>
</tr>
<tr>
<td>8</td>
<td>How much did you prefer the information provided on the website as</td>
</tr>
<tr>
<td></td>
<td>compared to the e-mails from your therapist?</td>
</tr>
<tr>
<td>9</td>
<td>How might this program be improved or modified for older adults who use</td>
</tr>
<tr>
<td></td>
<td>this program in the future?</td>
</tr>
<tr>
<td>10</td>
<td>Do you have anything else you would like to share that we haven't</td>
</tr>
<tr>
<td></td>
<td>already asked you about?</td>
</tr>
</tbody>
</table>
Appendix W: Lattice Plot of GAD-7 by Weeks Elapsed ordered by TAICBT and Waitlist Groups and ID

Legend:

i) Colour of points:

TAICBT = purple
Waitlist = blue
Appendix X: Lattice Plot of PHQ-9 by Weeks Elapsed ordered by TAICBT and Waitlist Groups and ID

Legend:

i) Colour of points:
- TAICBT = purple
- Waitlist = blue
Appendix Y: Lattice Plot of GAD-7 by Weeks Elapsed ordered by RCT Groups and ID – Simple Linear Regression Line Fits

Legend:

i) Colour of points:
TAICBT = purple
Waitlist = blue

ii) “using pack ere TRUE” appears where a line cannot be fit
Appendix Z: Lattice Plot of PHQ-9 by Weeks Elapsed ordered by RCT Groups and ID – Simple Linear Regression Line Fits

Legend:

i) Colour of points:
   TAICBT = purple
   Waitlist = blue

ii) “using pack ere TRUE” appears where a line cannot be fit
Appendix AA: Lattice Plot of GAD-7 by Weeks Elapsed ordered by Three Groups and ID

Legend:

i) Colour of points:
- Treatment-Only = green
- Converters = purple
- WLC-Only = blue
Appendix BB: Lattice Plot of PHQ-9 by Weeks Elapsed ordered by Three Groups and ID

Legend:

i) Colour of points:
- Treatment-Only = green
- Converters = purple
- WLC-Only = blue
Appendix CC: Lattice Plot of GAD-7 by Weeks Elapsed ordered by Three Groups and ID - Simple Linear Regression Line Fits

Legend:

i) Colour of points:
   - Treatment-Only = green
   - Converters = purple
   - WLC-Only = blue

ii) “using pack ere TRUE” appears where a line cannot be fit
Appendix DD: Lattice Plot of PHQ-9 by Weeks Elapsed ordered by Three Groups and ID - Simple Linear Regression Line Fits

Legend:

i) Colour of points:
- Treatment-Only = green
- Converters = purple
- WLC-Only = blue

ii) “using pack ere TRUE” appears where a line cannot be fit