PERCEPTIONS OF AND PREFERENCE FOR INTERNET-DELIVERED COGNITIVE BEHAVIOUR THERAPY AMONG POST-SECONDARY STUDENTS

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Vanessa Angelica Peynenburg, candidate for the degree of Master of Arts in Clinical Psychology, has presented a thesis titled, *Perceptions of and Preference for Internet-Delivered Cognitive Behaviour Therapy Among Post-Secondary Students*, in an oral examination held on April 29, 2019. 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

Background: Post-secondary students experience elevated rates of mental health concerns, including anxiety and depression. These mental health concerns often contribute to the stress experienced by students, and interfere with social and academic functioning. Most colleges and universities have some form of mental health support for students, often in the form of campus counselling centers. However, these services often offer a limited number of sessions per student and are reported to have difficulties meeting the mental health demands of students. Students face several barriers when seeking psychological help, including stigma, lack of time, financial constraints, and perceptions that their mental health concern will resolve on its own or does not warrant psychotherapy. Internet-delivered cognitive behaviour therapy (ICBT) is an effective alternative to face-to-face therapy that addresses these barriers in adult populations with some evidence showing ICBT can also be effective with students. The use of ICBT, however, is not yet readily available to students in Canada. More research is needed on student perceptions and preferences for ICBT in order to assist with future attempts to implement ICBT to address the gap between students’ needs and service utilization.

Objectives: The present study aimed to explore post-secondary students’ perceptions of ICBT and to identify demographic and clinical variables that predict their ratings of the acceptability and credibility of ICBT. A further objective of this study was to identify student preferences for the content of an ICBT course, as well as their preferred method and frequency of contact with a therapist. Method: Canadian post-secondary students (N = 314) were recruited using Qualtrics, an online survey platform. They completed a battery of questionnaires, including measures of their demographics, depression, anxiety,
alcohol and drug use, and medical service utilization. Students also rated the acceptability and credibility of ICBT, face-to-face therapy, and the use of medication as treatments for mental health concerns. Students were provided with a list of possible content for an ICBT course, and different options for the method (e.g., email, telephone, face-to-face) and frequency (e.g., daily, weekly) of contact with a therapist. They were asked to rate how helpful they perceive each of the above options to be in an ICBT course. **Analysis and results:** Students perceived face-to-face CBT, medication, and ICBT as moderately acceptable and credible treatments for anxiety and depression. ICBT was rated as the least preferable of the treatment options, but was more preferable when face-to-face services could not be received immediately. Less severe depression severity and female gender were identified as predictors of higher acceptability rates of ICBT. Students who expressed more willingness to seek help for mental health concerns viewed ICBT as more credible than those who were less willing to seek help. Participants identified several advantages of ICBT, including convenience, accessibility, and general personal benefits. Disadvantages included the perception that ICBT is too impersonal, has a lack of accountability, and is too time-consuming. **Potential implications:** Findings from this research study will help inform implementation efforts and future trials of ICBT for post-secondary students with anxiety and depression.
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Introduction

1.1 Overview

Anxiety and depression are highly prevalent and disabling conditions among post-secondary students. These mental health concerns are associated with high levels of distress, lower levels of educational attainment, and higher rates of unemployment (Andrews & Wilding, 2004). Post-secondary students experience several barriers when accessing services, resulting in a large gap between the number of students dealing with mental health concerns and the number of students who receive psychological support (Eisenberg, Golberstein, & Gollust, 2007). Internet-delivered cognitive behaviour therapy (ICBT) is a promising intervention that may overcome some of these access barriers. Considerable evidence supports the use of ICBT as an efficacious and acceptable alternative to face-to-face cognitive behaviour therapy (CBT) for adults with anxiety and depression (Andersson, 2016). ICBT has been utilized as a resource for post-secondary students with a variety of different health concerns (Farrer et al., 2013). However, this area of research is still relatively new and several questions remain to be answered. Previous studies on ICBT have found that attrition rates are elevated in student populations (Davies, Morris, & Glazebrook, 2014), but there are no consistent findings on why this population is more likely to drop out than adults in the general population. One possibility is that students do not perceive ICBT as an acceptable alternative to face-to-face services and prefer more traditional forms of psychotherapy. An alternative explanation is that existing ICBT programs for students are not addressing the unique service needs and preferences of this population. For example, few studies have identified students’ preferences for the content of ICBT, the duration of the
program, and the method and frequency of therapist contact. This study seeks to examine student perceptions and preferences for an ICBT program to address mental health concerns. The following literature review summarizes the prevalence and impact of mental health concerns in post-secondary populations, students’ help-seeking behaviours and barriers to accessing treatment, as well as the use of ICBT as an alternative to face-to-face ICBT. Literature on existing ICBT programs for post-secondary students will also be reviewed.

1.2 Mental Health of Post-Secondary Students

Post-secondary students are at an elevated risk of developing mental health concerns compared to the general population. The combined stress of starting college or university, moving away from the family home, increased academic expectations, financial strains, and an increase in personal responsibility all contribute to making this population vulnerable to developing mental health concerns (Kessler, Berglund, Demler, Merikangas, & Walters, 2005). Furthermore, the average age of post-secondary students (i.e. 18-25 years old) is consistent with the age of onset for common mental disorders including depression and anxiety (Kadison, 2004).

Mental health concerns are associated with a high risk of burden and disability among post-secondary students. Several epidemiological studies have found that students with mental health concerns are more likely to drop out of post-secondary studies (Auerbach et al., 2016; Eisenberg, Golberstein, & Hunt, 2009; Hunt, Eisenberg, & Kilbourne, 2010). Auerbach and colleagues (2016) investigated psychiatric differences between students and ‘attriters’ who had dropped out of college. They found that individuals who had two or more pre-matriculation mental disorders had significantly
lower odds of being a student than attriter (OR 0.8, 95%, CI 0.6-1.0). Among males in the sample, pre-matriculation alcohol and drug abuse predicted attrition (ORs 0.2-0.4). Major depressive disorder (MDD), alcohol abuse, and drug dependence were significant predictors of college attrition among females.

**Prevalence.** In the World Health Organization’s (WHO) most recent report on mental health in college students across countries, it was reported that one-fifth of students met the criteria for a mental disorder in the previous 12 months (Auerbach et al., 2016). The four most common classes of disorders were anxiety disorders (11.7-14.7%), mood disorders (6.0-9.9%), substance use disorders (4.5-6.7%), and behavioural disorders (2.8-5.3%). The two most common diagnoses were phobias and major depressive disorder (MDD). Over 80% of students with a mental disorder reported an onset prior to their enrollment in post-secondary studies (i.e., pre-matriculation). Two exceptions to this were panic disorder and alcohol abuse-dependence, which both had higher rates of post-matriculation onset. Of those students who had a mental disorder, only 16.4% received ‘minimally adequate’ treatment, which was determined by students’ self-reports on the number of treatment sessions they had attended over the past year. These results suggest that the vast majority of students’ mental health needs are not currently being met.

Results from the National Epidemiologic Study on Alcohol and Related Conditions (NESARC) have been used to compare the mental health of college students and their non-college attending peers (Blanco et al., 2008). The final sample included 43 093 participants from the United States, ranging in age from 18 to 24 years old. In contrast to the reports by the WHO, the most common disorders in college students were
alcohol use disorders (20.37%), followed by personality disorders (17.68%).

Epidemiological studies of adults in the United States have reported elevated rates of alcohol use disorders compared to other countries (Hasin, Stinson, Ogburn, & Grant, 2007), which may explain the different prevalence rates in the WHO and NESARC reports. Individuals in the NESARC study who were male, had numerous stressful life events in the past 12 months, experienced the end of a romantic relationship, were U.S. born, or living away from their parents were all more likely to meet the criteria for at least one mental disorder.

The National College Health Assessment II (NCHA II) is used in the United States and Canada as a survey of students’ habits, behaviours, and perceptions related to a variety of physical and mental health topics. The most recent executive summary of the NCHA II in Canada included survey responses from 43,780 post-secondary students. Students were asked to report what factors affected their academic performance over the past 12 months. The four most common factors leading to a disruption in academic performance were stress (42.2%), anxiety (32.5%), sleep difficulties (28.4%), and depression (20.9%). The report states that 18.4% of students were ‘diagnosed or treated’ with anxiety in the past 12 months, and 14.7% were diagnosed or treated with depression.

Based on these statistics, it is difficult to ascertain what proportion of students actually sought out or received help for their anxiety and/or depression. However, the disparity between the percentage of students reporting difficulties with anxiety and depression, and those who report being diagnosed or treated, suggests that a significant number of students are not seeking help.
Eisenberg and colleagues (2007) identified several predictors and correlates of depression, anxiety, and suicidality in a sample of 2,843 university students. In both undergraduate and graduate student populations, females were more likely to have an anxiety disorder. Several demographic characteristics were identified as predictors of current mental health concerns. Female students, students who reported being “other race”, students who self-identified as bisexual, and students who reported current financial struggles were the most likely to have a positive screen for a depressive or anxiety disorder. Nearly 1 in 5 students reported missing academic obligations in the past 4 weeks because of mental health problems. Furthermore, 44.3% of undergraduates and 41.2% of graduate students reported that emotional difficulties interfered with their academic performance in the previous 4 weeks. These findings highlight both the high prevalence, and high rates of disability, associated with mental health concerns in university students.

Studies that focus on the natural course of anxiety and depression are important for identifying what proportion of individuals need psychological treatment for their concerns. Data from primary care settings suggests that while some individuals experience a remission of symptoms in the medium-term, many have persistent symptoms. In one study of 79 individuals with a diagnosis of major depressive disorder (MDD) at baseline, 25% continued to have a full diagnosis at 18 months, and 49% had residual symptoms or ongoing occurrences of depressive episodes (Vuorilehto, Melartin, & Isometsa, 2009). These findings suggest that approximately one-quarter of individuals with MDD experience a clinically significant reduction of symptoms in the absence of psychological treatment. Symptom improvement rates appear to be higher in long-term
studies, with up to 43% of individuals being in remission 39 months after diagnosis (Stegenga, Kamphuis, King, Nazareth, & Geerlings, 2010). It is promising that a large proportion of individuals in the adult population experience remission without treatment, but it is important to acknowledge that students should still receive timely access to care. Individuals who have a higher perceived need for care and the presence of a comorbid anxiety or depressive disorder experience poorer clinical outcomes at one year follow-up (van Beljouw, Verhaak, Cuijpers, van Marwijk, & Penninx, 2010).

1.3 Help-seeking

Rates of help-seeking for physical health conditions in the Canadian general population are high, with approximately 80% of Canadians visiting a medical doctor within the previous year (Statistics Canada, n.d.). Mental health help-seeking is considerably lower in the Canadian population at less than 10% of the general population (Statistics Canada, n.d.). Help-seeking has been noted as a key problem-solving strategy when individuals are enduring psychosocial distress (Fallon & Bowes, 1999). In circumstances where mental health resources are readily available, there may be additional factors that contribute to an individual’s likelihood of seeking psychological help. Previous research has identified a positive relationship between awareness of subjective need and actual help-seeking behaviour. Furthermore, those with more severe symptoms tend to have more positive attitudes towards seeking help from formal sources, such as psychologists or other mental health professionals (Cepeda-Benito & Short, 1998).

An important paradox exists between depressive symptoms and help-seeking intentions, such that high levels of depressive symptoms are associated with lower levels
of help-seeking (Nagai 2010, 2012). The majority of research thus far has focused on help-seeking intentions rather than actual help-seeking behaviours. This is problematic, given that help-seeking intentions do not always correlate well with help-seeking behaviours. For example, while depressive symptoms are negatively correlated with help-seeking intentions, some research suggests that depressive symptoms are positively correlated with actual help-seeking behaviours (Grella, Kamo, Warda, Moore, & Niv, 2009).

**Predictors of help-seeking.** Nagai (2015) used a longitudinal design to identify predictors of help-seeking behaviours. A series of questionnaires was administered to 488 university students from Japan at two time points, with four weeks in between the two data collection sessions. The study included measures of help-seeking intentions, subjective needs, social support, depressive symptoms, and help-seeking behaviour. The results of a multiple regression analysis found that subjective needs and social support were significant positive predictors of help-seeking intentions, and that depressive symptoms were negatively associated with help-seeking intentions. Based on the results of a hierarchical regression analysis, it was also found that help-seeking intentions, subjective needs, social support, and depressive symptoms all predicted actual help-seeking behaviours. Gender was not a significant predictor of either help-seeking intentions or behaviours.

Help-seeking behaviours are relatively infrequent in post-secondary students, despite the high prevalence of mental health concerns (Furr et al., 2001; Hyun et al., 2006). Researchers examined the correlates of anxiety and depression in a survey of 2785 students at a large, nationally representative university in the United States
In the total sample, 30% of students perceived a need to seek out help for their emotional problems in the previous 12 months. When examining those students with a depressive disorder, anxiety disorder, or combination of disorders, the perceived need for help was much higher. Nearly 90% of individuals who screened positive for both a depressive disorder and anxiety disorder reported a perceived need to seek help in the previous 12 months. Similarly, a larger proportion of those who screened positive for depression and anxiety (47%), major depression and no anxiety (28%), other depression and no anxiety (11%), or anxiety and no depression (38%) reported having at least one therapy or counseling visit over the past 12 months, compared to those without depression or anxiety. There were no significant differences between the groups in rates of insurance coverage, so this was ruled out as a potential factor contributing to their likelihood of service use.

Several predictors of perceiving a need for mental health services, and utilizing services in the past year, were identified in the study by Eisenberg and colleagues (2007). Females, older students, individuals identifying as bisexual or gay/lesbian, and individuals with financial difficulties all had a higher perceived need for mental health services, as well as higher service utilization in the previous year. Being an international student or being in a relationship were both predictors of having a lower perceived need for help. Previous research on help-seeking behaviours in young people has found that intentions to seek help are negatively related to depression severity (Sawyer et al., 2012). Furthermore, young people with more severe depressive symptoms often have more negative attitudes towards seeking help for their symptoms (Chang, 2007; Chang, 2013). To ensure that those individuals with the most severe symptoms are more readily
accessing services, it is important to identify what variables mediate and moderate the relationship between symptom severity and help-seeking behaviours. A large-scale national study of youth mental health investigated the help-seeking intentions of 8121 college students between the ages of 17 and 25 (Kenny, Dooley, & Fitzgerald, 2016). Measures of depressive symptoms, perceived social support, optimism, and self-esteem were included as potential predictors of help-seeking intentions. Consistent with previous research, this study found that higher levels of depressive symptoms predicted a lower likelihood of seeking help, even when the influence of gender was controlled for. Social support was a significant moderator of this relationship. There was a negative relationship between depressive symptoms and help-seeking in individuals who reported low or moderate levels of social support, and no relationship between the variables in individuals who reported high levels of social support. Both optimism and self-esteem partially mediated the relationship between the intensity of depressive symptoms and help-seeking intentions.

Understanding help-seeking intentions and behaviours is critical to addressing the gap between students’ needs and usage of mental health services. A meta-analysis of 18 studies identified the psychosocial correlates of help-seeking intentions in post-secondary students (Li, Dorstyn, & Denson, 2014). The two factors that were most highly correlated with help-seeking intentions were attitudes toward seeking professional psychological help ($r = .46$, 95% CI [0.41, 0.51], $p < .001$), and anticipated utility ($r = .42$, 95% CI [0.33, 0.50], $p < .001$). Factors such as social support, self-concealment, psychological distress, and self-disclosure all had negligible associations with help-seeking intentions. One implication of these findings is that efforts should be made to
improve students’ attitudes towards mental health services, as well as their perceived utility. This may be accomplished by identifying student perceptions of existing mental health resources, understanding student preferences for the method and frequency of contact with mental health professionals, and educating students about the benefits of psychotherapy.

1.4 Barriers to accessing mental health services

Economic barriers. Within Canada, post-secondary students often have extended health insurance through their post-secondary institution. In a survey of 210 post-secondary institutions across Canada, it was found that 68% of universities and 41% of colleges provide private extended health coverage (Nunes et al., 2014). More than 70% of the coverage plans had a maximum of at least $3,000 annually for medications, with 28% having no maximum. The authors estimated that the annual treatment of anxiety or depressive disorders in one individual using medications would cost between $360 and $2,400 based on per-unit costs from the Ontario drug formulary. Based on these estimates, students with coverage would typically be able to cover the costs of their medication for anxiety or depression. In contrast, coverage for psychotherapy was offered by 69% of universities and 28% of colleges, with the most common annual maximum for psychotherapy being $300. While recommended rates for psychotherapy services per hour vary across the country, the authors note how at best, this $300 maximum might cover two to three sessions. This is problematic, given that the guidelines for treating major depressive disorder recommend 16-20 sessions for individuals with persistent subthreshold depressive symptoms, mild to moderate
depression with inadequate response to initial treatment, or moderate to severe depression (National Institute for Health and Care Excellence, 2009).

Recently, the NCHA has been used to assess the health of post-secondary students in Canada as well. Forty-one Canadian post-secondary institutions self-selected to take part in the NCHA in 2016, with a total of 43,780 students completing surveys. The report based on the survey’s findings did not identify the percentage of students who have sought help from campus mental health services (American College Health Association, 2016). A nation-wide survey on current service utilization is necessary to identify perceived barriers to service access, as well as to gauge the need for additional mental health resources.

**Perceived barriers.** Post-secondary students face several barriers at both the personal and institutional level when seeking help for mental health concerns. In a study on help-seeking behaviours in university students, 568 students were asked what their perceived barriers were to using mental health services (Li, Denson, & Dorstyn, 2017). The three most common themes in the answers were: cost (39%), stigma (31%), and time (13.9%). Based on this finding, interventions that are more affordable, private, and flexible should be explored for addressing mental health concerns in post-secondary students. Internet-delivered cognitive behaviour therapy (ICBT) has been proposed as an alternative to face-to-face counselling services.

Other research suggests that financial concerns and accessibility are not the only barriers to service utilization in post-secondary students. Eisenberg and colleagues (2007) explored the reasons for not seeking help in students who screened positive for depressive or anxiety disorders. The three most commonly identified reasons for not
utilizing services were the beliefs that “stress is normal in college/graduate school” (51%), “[I] have not had any need” (45%), and “The problem will get better by itself” (37%). Based on these findings, initiatives should be taken to improve student attitudes towards therapy and to increase awareness about the severity of symptoms and resources available.

1.5 Internet-Delivered Cognitive Behaviour Therapy (ICBT)

In recent years, ICBT has emerged as an effective treatment for a variety of mental health disorders. ICBT programs consist of online content that utilizes the main principles of face-to-face CBT. Clients have access to online content for several months and often complete homework assignments associated with each online lesson or module. Most programs are paired with secure therapist assistance in the form of weekly emails or telephone calls. ICBT differs from face-to-face CBT in at least four important ways (Andersson, 2016). Concerns about memory and comprehension have arisen in face-to-face therapy, as progress depends on the client being able to recall the session’s content. In contrast, ICBT relies primarily on online materials, allowing users to revisit content after they have completed a session or module. Another difference relates to flexibility in the treatment form - whereas face-to-face therapy allows for flexibility, the web material most often remains fixed in ICBT, although recently there have been attempts to tailor materials to client needs (Schroder et al., 2018). While this may be perceived as a disadvantage for ICBT, it does ensure that content is not omitted due to therapist error or drift. For individuals with difficult work or family schedules, ICBT is advantageous because the modules can be completed in a time and space that fits their schedule, as long as they have an Internet connection. Finally, Andersson (2016) notes how ICBT reduces
the likelihood of stigma for receiving treatment, and how completion of ICBT can foster self-efficacy.

An important question to ask is whether therapist guidance is necessary in ICBT, or if unguided treatment is sufficient. A recent meta-analysis on guidance in ICBT found that guided interventions resulted in greater symptom change than unguided interventions for depression and social phobia (Baumeister, Reichler, Munzinger, & Lin, 2014). Additionally, Baumeister et al. (2014) reviewed the qualification levels of e-coaches, to see if greater qualifications were associated with better treatment outcomes. Importantly, in all four of the papers reviewed, the standardized mean difference in symptom severity did not differ based on the qualifications of the e-coach (Andersson et al., 2012; Titov et al., 2010; Johnston et al., 2011; Robinson et al., 2010). Of note, while guided ICBT as a rule appears to better than unguided ICBT, there are exceptions to this in the literature (Titov et al., 2014). Several studies suggest that when automated reminders to clients are used, completion rates in self-guided ICBT improve (Christensen, Griffiths, Korten, Brittiffe, & Groves, 2004).

**Overview of disorder-specific ICBT.** Much of the research has focused on disorder-specific programs, with contents and modules adapted to the individual’s primary diagnosis. For example, disorder-specific programs have been used in the treatment of depression, generalized anxiety, social anxiety, and panic disorders (see Andersson, Carlbring, Ljótsson, & Hedman, 2013 for a review). Despite the variety in treatment programs, most ICBT programs follow a similar structure. The modules are structured in a way that mirrors face-to-face CBT, with clients first receiving psycho-educational material, followed by materials for skills development, and finally working
on relapse prevention in the last module (Andersson et al., 2013). Clients work through between 6-15 modules, depending on the program. In some programs, each client receives the same content, but in others, the content might be tailored to the clients’ needs (e.g., Twomney, O’Reilly, & Meyer, 2017). The extent of therapist assistance can vary as well, ranging from no guidance (i.e., self-directed), to weekly emails, or weekly phone calls. In either method of guided ICBT, the therapist or guide typically dedicates approximately 15-20 minutes per week to each client. While the therapist’s time commitment is less exhaustive in ICBT than in face-to-face therapy, it is important to note that the client’s workload is approximately the same (Andersson et al., 2013). In addition to reading the modules, clients are encouraged to engage with any audiovisual content included in the treatment, as well as complete weekly homework assignments. This approach has the advantage of decreasing therapist burden, without affecting the client’s outcome.

**Efficacy of ICBT.** Despite the high prevalence of mental disorders in North America, many individuals are not receiving treatment. This highlights the need for alternative interventions, such as ICBT, to bridge the gap in access to services. While ICBT is more accessible than face-to-face therapy, we must consider whether it is equally efficacious. A meta-analysis of 13 studies comparing ICBT to face-to-face therapy found that ICBT resulted in equivalent treatment effects in social anxiety disorder, panic disorder, depression, body dissatisfaction, tinnitus, male sexual dysfunction, and spider phobia (Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014). Additional RCTs comparing ICBT to face-to-face therapies have replicated these findings, suggesting that guided ICBT is equally effective as face-to-face treatments (Lappaleinen et al., 2014;
Moreover, the reviewed articles did not indicate any incidents of client deterioration during the course of the trials. This affirms the idea that ICBT is not only efficacious, but safe, for clients too.

Longitudinal studies are required to assess the clinical and cost-effectiveness of ICBT in the long-term. While there is evidence that ICBT is efficacious in the short-term, it is important to consider whether ICBT remains superior to face-to-face CBT at follow-up. Păsărelu et al. (2017) reviewed 19 randomized controlled trials of ICBT programs for anxiety and depression. Eighteen of the trials included follow-up data, ranging from 3- to 24-months post-treatment; one of the studies did not include follow-up data. Large effect sizes were found for anxiety, depression, and quality of life outcomes from pre-test to follow-up, which provides evidence for treatment effects being maintained up to two years after completing the intervention. Other studies have assessed the maintenance of treatment effects for longer periods of time. For example, a study on SAD compared ICBT to group CBT (Hedman et al., 2014). Participants were randomly assigned to either ICBT \( (n = 64) \) or group CBT \( (n = 62) \), with both groups receiving 15 weeks of treatment. The researchers assessed the clinical effectiveness of the programs based on measures of social anxiety, depressive symptoms, general anxiety, anxiety sensitivity, and quality of life at 4-year follow-up. ICBT was at least as effective as group CBT in creating and maintaining decreases in social anxiety symptoms. Furthermore, ICBT and group CBT resulted in equivalent reductions to societal costs. Taken together, these findings suggest that ICBT is both a clinical- and cost-effective alternative to group CBT.

Acceptability of ICBT.
Given that ICBT has been established as an effective alternative to face-to-face CBT, it is important to evaluate whether or not clients view it as acceptable too. A common concern about ICBT is that reduced therapist contact will be viewed as less acceptable to clients than the time they would receive in face-to-face therapy. In one study, researchers surveyed the opinions of laypeople and health professionals about internet-based treatment for anxiety and depression (Gun, Titov, & Andrews, 2011). On a scale of 1 (definitely not) to 5 (definitely yes), participants were asked to rate whether internet-based treatment should be provided for those with anxiety and depression. Acceptability was fairly high for the treatment of mild and moderate anxiety and depression. Laypeople were significantly more likely to report they would seek Internet-based treatment in the future, compared to the likelihood of health professionals finding ICBT acceptable for their clients with anxiety or depression.

Several studies have examined client perspectives of ICBT in comparison to more traditional treatment methods with mixed findings. A recent study compared treatment acceptability of ICBT, CBT, and medication for severe health anxiety in primary care patients (Soucy & Hadjistavropoulos, 2017). There was no significant difference in acceptability among the treatment types. All three treatments were rated as relatively credible, with CBT being perceived as more credible than ICBT. Finally, patients were asked to rank their preference for receiving CBT, ICBT, and medication. Although CBT and medication use were ranked as more preferred than ICBT, one of the reasons provided was the lack of familiarity with ICBT. Other surveys of treatment-seeking clients have yielded similar results, with clients having a preference for face-to-face therapy over ICBT (Berle et al., 2015). These results suggest that further education may
be necessary to increase patients’ preference for ICBT (Mitchell & Gordon, 2007), potentially through the use of educational videos about the advantages and disadvantages of ICBT. In one study, participants were presented with a description of ICBT, and then completed the Credibility and Expectations Questionnaire (CEQ) to assess the perceived credibility of the intervention (Soucy, Owens, Hadjistavropoulos, Dirkse, & Dear, 2016). Participants were then randomly assigned to watch one of two videos containing either client testimonials \( n = 32 \) or statistical information about outcomes of clients \( n = 39 \) who participated in ICBT. Following the video, participants were re-administered the CEQ. A statistically significant main effect for time was found when examining credibility scores \( \eta^2 = 0.211 \) and expectancy scores \( \eta^2 = 0.134 \), with scores on both indices being higher after participants watched the video than before.

In earlier studies, clients expressed more negative views towards the use of ICBT for treating mental health concerns (Carpenter, McHugh, & Barlow, 2013). Fifty five treatment seeking clients completed the Perceptions of Computerized Therapy Questionnaire - Patient Version (PCTQ-P). The PCTQ-P includes subscales on perceptions of relative advantage, compatibility, complexity, observability, trialability, and future use intentions. Observability refers to the frequency with which clients see a treatment being utilized by others, and was the most negatively rated characteristic out of the above subscales for ICBT. This finding is problematic, as it likely affects clients’ ratings of other subscales, especially their future intentions to use ICBT. Overall, clients reported neutral to somewhat negative perceptions of computer-based therapies. The two most preferred forms of computer-based therapies were webcam-based CBT (36.4%) and
reduced therapist support ICBT (23.6%). ICBT programs that were purely ‘self-help’
were rated as the least preferred program by 60% of clients.

Other studies have identified attitudes in the general populations towards
computerized interventions. A sample of 490 participants was recruited to identify
dimensions that influence decision-making when contemplating different forms of
psychological treatment (Musiat, Goldstone, & Tarrier, 2014). Participants were
provided with brief descriptions about face-to-face treatment, bibliotherapy (i.e. the use
of books to assist treatment), web-based interventions, and mental health applications for
smartphones, and asked to rate the likeliness of each treatment meeting their expectations
and the likelihood of them using that treatment in the future. Based on participants’
ratings, the four most important aspects of a mental health treatment include the
perceived helpfulness of the intervention, the ability to motivate users, credibility of the
intervention, and immediate access to the intervention. Face-to-face interventions
received the highest ratings on all domains and participants reported that this method of
treatment would meet their expectations to a medium or high extent. Web-based
interventions received high ratings for accessibility, decreased waiting time for treatment,
and anonymity, but only received moderate ratings for helpfulness, credibility, appeal,
feedback, and learning style. Participants reported a low likelihood of utilizing web-
based interventions in the future. Musiat et al. (2014) concluded that the general public
holds several negative views towards web-based interventions, which may present a
barrier to their uptake in the treatment of mental health conditions. Future research
should address service users’ perceptions of web-based interventions and focus on
increasing their perceived helpfulness as an alternative to face-to-face treatment.
The literature on patient attitudes and perceptions of ICBT is limited in several ways. Most studies examine the perspectives of patients who are already seeking ICBT or are enrolled in an ICBT program. These patients likely have a positive bias towards ICBT, which may help explain the discrepancy between high rates of acceptability of ICBT and low rates of uptake in the literature (Christensen, Griffiths, & Farrer, 2009). One of the aims of the proposed study is to assess perceptions of ICBT in students who are not currently seeking ICBT, as this will help identify potential barriers to uptake in a student population. Another limitation is that perceptions are often only assessed after individuals have completed ICBT. Patients might develop more positive attitudes towards ICBT as they become increasingly familiar with the treatment modality or after they derive benefit from ICBT. It would be beneficial to know what patient perceptions are before receiving ICBT to understand how these perceptions mediate treatment outcomes, and the extent to which attitudes change as a result of completing ICBT.

The relationship between patient attitudes towards an ICBT program and the program’s efficacy was recently investigated in a large, multi-centre randomized controlled trial (RCT; Schroder et al., 2018). Adults with mild to moderate depression symptoms (N = 1,004) were randomly assigned to receive either the ICBT program deprexis (n = 503) or treatment-as-usual (TAU; n = 501). Participants in the TAU condition were able to use any form of treatment (e.g., psychotherapy, medication). The deprexis intervention consists of 10 core modules based on CBT principles. In this study, participants with mild depression scores on the Patient Health Questionnaire (PHQ-9; 5-9 points) received a self-guided version of the program, and participants with moderate depression scores (10-14 points on the PHQ-9) received a therapist-guided version. The
Attitudes toward Psychological Online Interventions Questionnaire (APOI; Schroder et al., 2015) was used as a measure of attitudes towards internet interventions pre- and post-treatment on the following dimensions: Skepticism and Perception of Risk, Confidence in Effectiveness, Technologization Threat, and Anonymity Benefits. Initial attitudes toward Internet interventions significantly moderated treatment success. The authors did not find evidence for program usage (in hours) mediating the relationship between initial attitudes and changes in depression symptoms. Finally, the authors identified a trend whereby attitudes toward internet interventions improved after utilizing the interventions, with the group effect on attitude change qualified by symptom reduction during the intervention. The results of this study suggest that a client’s initial perceptions towards ICBT may play an important role in their response to therapy and the extent of their symptom change.

**Transdiagnostic approach to ICBT.** The majority of studies have focused on disorder-specific ICBT, such as ICBT specifically developed for depression. However, given the significant overlap in maladaptive cognitions and behaviours between disorders, it is worthwhile to test whether transdiagnostic approaches can be utilized instead. This is especially true in anxiety and depression, which have a high rate of comorbidity, and have both been shown to benefit from both face-to-face CBT and ICBT (Titov et al., 2011). Because individuals with depression and anxiety often share traits of negative affect and neuroticism, it is highly likely that they would benefit from an approach that addresses these traits. The use of transdiagnostic ICBT confers benefits for both the client and the clinician. For example, it enables a client with depression and comorbid anxiety to learn skills to cope with both disorders. Rather than just addressing one disorder in the 8-15 weeks of treatment, clients can address cognitive and
behavioural mechanisms that may be maintaining two or more disorders. From a clinician’s perspective, transdiagnostic approaches to ICBT are valuable because they reduce the need for specialized training in each disorder.

One of the earliest trials of transdiagnostic ICBT was in Australia, using the Anxiety program (Titov et al., 2010). The goal of this study was to test whether a transdiagnostic approach could be used to treat GAD, social phobia, and panic disorder. Titov et al. (2010) randomly assigned 40 participants to the treatment group (Anxiety program), and 38 to a wait-list control group. The Anxiety program consisted of 6 online modules, with a homework assignment for each module, an online discussion, and instant messaging. Completion rates of the program were relatively high, with 75% of the treatment group completing the 6 modules in 8 weeks. Between-group effect sizes from pre- to post-treatment were within the moderate to small range ($d = 0.78$ for GAD, $d = 0.43$ for social phobia, and $d = 0.43$ for panic disorder). Levels of worry did not differ between groups at post-treatment. A much larger proportion of individuals in the treatment group met the criteria for remission at post-treatment, compared to controls (40% vs. 8%), as well as for recovery (40% vs. 11%). Overall, these findings suggest that a transdiagnostic approach to ICBT for anxiety can lead to clinically significant reductions in symptoms.

To follow-up on the promising results of the Anxiety program (Titov et al., 2010), the same group of researchers developed the Wellbeing Course (Titov et al, 2011). In addition to GAD, social phobia, and panic disorder, the Wellbeing Course was developed for use in clients with depression too, either with depression symptoms alone or with comorbid depression. The first version of the Wellbeing Course included 8 modules with
a design very similar to that described above in Titov et al. (2010). In this study, 77 participants were randomly assigned to either the Wellbeing Course, or to a wait-list control group. The findings were similar to those in Titov et al. (2010), with moderate between-group effect sizes on measures of depression, panic, and GAD, and small between-group effect sizes for worry, distress, and disability. The Wellbeing Course has since been modified and now consists of 5 modules to be completed over the span of 8 weeks. More recently, Dear et al. (2015) compared transdiagnostic versus disorder-specific and clinician-guided versus self-guided ICBT for GAD and comorbid disorders. In all of the conditions, there were large effect sizes for the reduction in symptoms of GAD, depression, social anxiety, and panic disorder. There were no significant differences between the conditions, suggesting that transdiagnostic and self-guided ICBT can be cost-effective alternatives to disorder-specific and therapist-guided ICBT. Subsequent research on depression (Titov et al., 2015b), social anxiety (Dear et al., 2016), and panic disorder (Fogliati et al., 2016) has yielded similar findings, with no difference in outcomes for transdiagnostic versus disorder-specific and clinician-guided versus self-guided ICBT.

The efficacy of transdiagnostic ICBT for anxiety and depression was addressed in a recent systematic review and analysis (Păsărelu, Andersson, Bergman Nordgren, & Dorbean, 2017). A total of 19 RCTs were reviewed, containing a total of 2952 participants. Ten of the studies compared transdiagnostic ICBT groups with a waiting list, two compared them with active control groups, six were compared with disorder-specific ICBT, and one compared transdiagnostic ICBT with treatment as usual. The results suggested that transdiagnostic ICBT produces significant decreases in the severity of
anxiety and depressive symptoms. Transdiagnostic ICBT was significantly better than disorder-specific treatments for depression ($n = 6, g = .22, 95% CI: 0.6-0.38$) and quality of life outcomes ($n = 5, g = .12, 95% CI: .00-.24$). Disorder-specific and transdiagnostic treatments for anxiety were similar, and neither treatment was favoured over the other ($n = 6, g = .06, 95% CI: -0.06-0.19$).

**Limitations of ICBT.** Andersson and Titov (2014) reviewed some of the limitations of ICBT in participant recruitment, assessment and diagnosis, the role of therapists, managing comorbidity, and dissemination into clinical settings. They noted that clients who self-refer online may have different characteristics than those seeking help from community services. Individuals who self-refer may have a greater motivation to change, which could contribute to the substantial treatment effects seen in ICBT. One disadvantage of ICBT is its reliance on online self-report questionnaires, which may not provide the same level of detail as a clinical interview. The authors suggest that this limitation can be addressed by having clinicians or researchers follow-up by telephone to clarify any important details. From a public health perspective, researchers and clinicians must weigh the costs and benefits of completing an in-person assessment or diagnosis for ICBT. While an in-person assessment may allow for more accurate diagnoses, the face-to-face time required by the therapist takes away from the cost-effectiveness of ICBT.

Andersson and Titov (2014) note that one of the largest hurdles to disseminating ICBT is the negative attitudes that clinicians and clients hold about ICBT. Other research has suggested that characteristics of the ‘inner setting’ of treatment clinics are the largest barrier to implementing ICBT (Hadjistavropoulos, Nugent, Dirkse, & Pugh, 2017). For example, therapists often give higher priority to face-to-face clients, and may find it
difficult to balance their caseload with face-to-face and ICBT clients. Given the evidence of its efficacy, it is likely that both clinicians and potential clients would benefit from education about ICBT to bolster acceptance. Altogether, there is considerable evidence that internet-delivered therapies warrant additional use and dissemination.

1.6 Internet interventions in post-secondary students

Barlow and colleagues (2005) suggest that internet-delivered interventions could be useful in post-secondary students as part of a ‘staged’ approach. Students with milder symptoms of anxiety and depression could be referred to internet-delivered interventions as a first stage of care. This would reduce the caseload faced by student counselling centres, as only the more severe cases would receive face-to-face services. Systematic reviews and meta-analyses have offered promising results for the effectiveness of internet interventions for post-secondary students. Farrer and colleagues (2013) reviewed 27 studies of technology-based interventions, which included a total of 51 interventions. These interventions targeted several mental health concerns in post-secondary students, including depression and anxiety symptoms (n = 7), anxiety symptoms (n = 4), exam anxiety, (n = 4), specific phobias (n = 3), stress (n = 2), other anxiety disorders (n = 4), and other mental health problems (n = 3). Approximately half of the technology-based interventions had at least one positive outcome compared to a control group at post-intervention. Effect sizes were unable to be calculated for 14 of the 27 studies. Interventions that targeted anxiety and depression had a median effect size of 0.54 (depression = 0.48; anxiety = 0.77). For the interventions that targeted anxiety symptoms and related disorders, effect sizes ranged from 0.07 to 2.66 (median = 0.84). There was a high degree of heterogeneity across the studies, with intervention length ranging from 15
minutes to 10 weeks, and considerable variation in the method and amount of therapist contact. Additionally, it was unclear whether the interventions were developed specifically for post-secondary students, or if these students were used as a convenience sample.

More recently, a meta-analysis of 14 studies found stronger support for internet interventions to improve depression, anxiety, and psychological well-being in university students (Davies, Morriss, & Glazebrook, 2014). Only one of the studies reviewed investigated post-intervention diagnosis of mental disorders (Botella et al., 2010). Thirteen of the studies were based on CBT interventions. The intervention content ranged from three to 13 modules and the median length of the interventions was six weeks. The level of therapist guidance varied significantly across trials, ranging from self-guided interventions to weekly telephone or email contact with a therapist. Internet interventions were significantly favoured over inactive control for depression (pooled SMD -0.67) and stress (pooled SMD -0.73), but not for anxiety or psychological distress. The active control conditions included computer-based information about depression and anxiety. Sensitivity analyses did not support either condition when comparing internet interventions to active controls. A limitation of this finding is that only three of the seven trials that included an active control had data on the relevant mental health outcome.

Finally, in an analysis of internet interventions and comparison interventions, neither intervention was favoured for depression, anxiety, stress, or psychological distress. No differences in attrition were reported between the internet and comparison interventions.

A potential benefit of offering internet interventions to post-secondary students is that it might facilitate help-seeking behaviours in a portion of the population that is not
currently accessing services. A meta-analysis of 18 studies reviewed the use of online mental health services in individuals ages 14-25 (Kauer, Mangan, & Sanci, 2014). Of these studies, only four (two RCTs and two cross-sectional) included help-seeking behaviour or service utilization as the primary outcome. In one study, participants in the intervention group were given ‘eHealth cards’ that provided web-based information about depression, and those in the attention-control group received eHealth cards with non-depression information (Costin et al., 2009). There was no difference in the likelihood of participants seeking psychological help in either condition. Collin and colleagues (2011) examined how an online mental health service facilitated help-seeking behaviours, finding that 35.2% of users believed that the service helped them ask for professional help. In all the studies included in this review, there was not a significant increase in help-seeking or service utilization in the intervention groups. However, several limitations were noted in these studies, including small sample sizes, the use of an active control group, and the mild severity of the mental health concerns in the participants. An active control group, such as one including psychoeducation, may be a limitation because it increases participants’ attention to their concern.

**Student perceptions of internet interventions**

The research on post-secondary students’ perceptions of internet interventions has yielded mixed results, and studies often have small sample sizes. In one study, a total of 19 university students took part in four small focus groups (Chan, Farrer, Gulliver, Bennet, & Griffiths, 2016). These students were asked to discuss some of the perceived benefits and concerns of using online interventions for mental health concerns. The focus groups were recorded and thematic analysis was used to identify common themes in the
students’ responses. Perceived benefits of online interventions included anonymity, avoidance of stigma, and accessibility. Some common concerns that students shared were communication difficulties, resource quality, privacy, and confidentiality when utilizing online interventions. The mental health status of these students was not evaluated, so it is unclear whether the students had a current or previous mental health concern, which may impact their preferences for treatment modality and perceptions of online interventions. Another limitation of this study is the broad definition the researchers used for “Web-based mental health resources”. Participants were provided with numerous examples, including informational websites, self-help therapy programs, and online discussion forums. Future research is required to survey students on the acceptability, perceived efficacy, and likelihood of participating in interventions, such as ICBT, which have the greatest evidence base as described above.

Richards and Timulak (2013) examined two different modes of an ICBT program (Beating the Blues) designed to treat mild and moderate depression. Eighty college students were randomly assigned to receive either eight sessions of self-guided ICBT ($n = 43$) or eight sessions of therapist-delivered email CBT ($n = 37$). The participants were asked to complete a measure of their satisfaction (Satisfaction with Online Treatment, SAT) with the treatment at post-treatment. Of the 80 participants, only 25 completed the satisfaction measure. Those who responded to the satisfaction measure completed more sessions and were older than participants who did not respond to the satisfaction measure. The majority of participants found that the treatment was helpful in both the self-guided (87%) and email (90%) conditions. There were no significant differences between the two conditions on ratings of how much they agreed with using the internet for treatment,
the ease of the internet intervention, their beliefs about whether the treatment would have lasting effects, and the likelihood of them recommending the treatment to a friend. Whereas 87% of participants in the self-guided condition agreed with the statement “I found the online treatment easy to use”, only half of participants in the email condition agreed with it. The low response rate resulted in this difference not being significant, but it is possible that a difference would emerge in larger sample sizes. Future research should explore whether email guidance alone is enough to elicit change in depressive symptoms.

The majority of studies on internet interventions in post-secondary students have focused on undergraduate students. It is important to study internet mental health interventions in graduate students as well, as previous research suggests that older individuals are more likely to seek help (Eisenberg et al., 2007), and have a better treatment response to ICBT programs (Hadjistavropoulos et al., 2016). One study utilized an online program for stress management and resiliency training in a population of solely graduate students (Rose et al., 2013). Participants were randomized to receive either the SMART-OP intervention (n = 34) or an attention control (n = 32). The SMART-OP program included six weekly, self-guided online sessions, with each session having an activity focusing on either thoughts, feelings, or actions (e.g. Biofeedback activity, Guided Muscle Relaxation, etc.). Participants in the SMART-OP condition received weekly homework assignments, and were encouraged to practice the skills throughout the week. In contrast, participants in the attention control watched video content, or read articles, relating to stress and stress management. They did not receive instructions to practice any skills in between sessions. Results from a series of repeated
measures ANOVAs found that there was a significant Condition x Time interaction for measures of stress (n² = .14) and perception of control (n² = .07), with the SMART-OP program resulting in larger decreases on both measures. Furthermore, the SMART-OP program was rated as significantly more useful than the attention control (d = 1.42).

A limited number of trials have included measures on participants’ perceptions of the usability and helpfulness of internet interventions. Five of the studies included in the meta-analysis by Davies and colleagues (2014) reported this information, and the intervention was perceived to be moderately-to-highly useful and helpful in these studies. In their study on an online stress management intervention for post-secondary students (MyStudentBody-Stress), Chiauzzi and colleagues (2008) included five questions as a measure of participant satisfaction with the intervention. Participants agreed that the intervention was effective at addressing college-related stress (92%), that the intervention made them think about their own behaviours and attitudes related to personal health (83%), that they learned a lot about stress (75%), that the intervention should be integrated into college health curriculum (74%), and that they would utilize the site if it was offered by their college (65%). Further studies have identified that students perceive internet interventions to be fairly credible (Kenardy, McCafferty, & Rosa, 2003).

The majority of internet interventions for post-secondary students have been based on CBT principles. However, some research has explored the feasibility and efficacy of mindfulness-based internet interventions in this population as well. Cavanagh and colleagues (2013) trialed a two-week self-guided, online mindfulness intervention. One hundred and four post-secondary students were randomized to either receive the intervention immediately, or to a wait-list control. The mindfulness intervention included
five different sections, along with a 10-minute audio recording of a guided mindfulness meditation that students were encouraged to listen to daily. The primary outcomes in this study included measures of mindfulness, perceived stress, and severity of symptoms of anxiety and depression. Students who received the mindfulness intervention had a significant increase in mindfulness skills ($d = 0.27$), and a significant decrease in perceived stress ($d = 0.37$) and anxiety/depression ($d = 0.24$). Of the students who completed the mindfulness intervention, 87% thought that the program was of at least some benefit to them. Follow-up data was not provided in this study, so it is unclear whether the treatment effects were maintained. However, this study provides preliminary evidence for the efficacy of short-term mindfulness-based internet interventions in post-secondary populations.

The UniWellbeing Course (Mullin et al., 2015) is an example of an ICBT program that was tailored for a student population based on an existing ICBT program (i.e. the Wellbeing Course). Its content was adapted to be more suitable for university students by including case vignettes about stress surrounding exams or assignments, and including images of younger clients. The UniWellbeing Course consists of five core lessons to be delivered over the span of five weeks, with clients having weekly contact with a therapist either by phone or secured email (5-10 minutes per week). In the first RCT of the UniWellbeing Course, 53 undergraduate students were randomly allocated to either receive the online intervention ($n = 30$) or to a wait-list control group ($n = 23$). Based on pairwise comparisons, it was revealed that the students receiving the UniWellbeing Course reported a significant improvement on measures of depression (PHQ-9), anxiety (GAD-7), and disability (SDS). Further improvements were found on
all three measures from post-treatment to 3-month follow-up. In contrast, there was no improvement in symptoms for those in the wait-list control group between time points. More than 85% of students who were in the UniWellbeing Course reported being either ‘satisfied’ or ‘very satisfied’ with the treatment, suggesting high rates of acceptability. However, one of the limitations of this study was that only 43% of students completed the entire course within 6 weeks. This is significantly lower than the completion rates observed in similar studies on ICBT with adult populations (Dear et al., 2011).

**Role of therapist guidance**

Within the broader literature on ICBT, it has generally been found that some degree of therapist-guidance is beneficial for client outcomes (Baumeister et al., 2014). The extent of therapist guidance to be provided in a post-secondary setting is an important consideration, as the goal of internet interventions would be to increase access to mental health services with minimal therapist burden. In the study by Mullin and colleagues (2015), students in the intervention group interacted with a therapist an average of 19.21 minutes across the duration of the intervention. The minimal amount of therapist guidance needed to create change in symptoms suggests that internet interventions are a cost-effective alternative to traditional student counselling services.

There is some evidence that the type of therapist guidance may influence participant retention in ICBT programs for post-secondary students. A prospective cohort study of post-secondary students ($N = 65$) examined predictors of participant retention, including age, symptom severity, type of coaching (i.e., email vs phone), and measures to assess attitudes and behaviours (Mojtowicz, Day, & McGrath, 2013). Participants who received phone-based coaching completed significantly more modules...
in the guided self-help program than students who received email-based coaching (Mann-Whitney’s $U = 137; p = .004$). In this study, participants were given the choice of what method of guidance they would receive from a therapist. A possible explanation for the results is that participants who chose phone coaching were more motivated to participate actively in the program, and therefore were more likely to stay in the program. Further research is necessary to identify the effects of different types of therapist guidance on retention and outcomes in post-secondary populations.

1.7 Purpose and Objectives of Present Study

Approximately one in five post-secondary students experiences a mental health concern (Auerbach et al., 2016). The two most common classes of disorders in this population are anxiety disorders and mood disorders, both of which are associated with distress and reduced quality of life (Andrews & Wilding, 2004). Despite the high prevalence of mental health concerns, many students are not seeking help from campus counselling services or other mental health professionals (Furr et al., 2001; Hyun et al., 2006). Auerbach and colleagues (2016) estimated that only 16.4% of students with mental health concerns were receiving adequate treatment in the previous 12 months. Financial burden, stigma, and time constraints are common barriers that prevent adult populations from seeking help (Andersson et al, 2014), and these are likely relevant to student populations as well. Additionally, students may not perceive a need for help, may normalize their experiences of stress, or may believe that their problems will resolve over time without help from a professional (Gulliver, Griffiths, & Christensen, 2010).

Internet interventions - especially ICBT- show promise as an alternative to face-to-face services for student populations. ICBT is not without its limitations, however, and
further research is necessary to ensure that students’ needs are being met in ICBT programs. Implementation of effective interventions continues to be a challenge in health services research (Damschroder et al., 2009). Effective interventions contain an ‘adaptable periphery’ in addition to ‘core components’ to ensure that the intervention is a ‘good fit’ and customized to the specific population or setting. In the case of the Wellbeing Course, the ‘core components’ include the broad modules on psychoeducation and skills acquisition. The ‘adaptable periphery’ is content (e.g. case scenarios, videos, etc.) that can be modified based on experiences that are unique to students, such as academic-related stress. Understanding students’ attitudes and preferences related to ICBT could assist with the implementation of ICBT in post-secondary settings, which to date does not appear to be systematically offered. Including students’ perspectives in the development of ICBT programs is in line with patient-oriented care, and has the potential to increase completion rates and treatment gains.

There is limited research on post-secondary students’ attitudes and perceptions of internet interventions for mental health concerns. Thus far, research in the area has focused on students’ satisfaction with programs and perceptions of their efficacy after they have completed an intervention (Richards & Timulak, 2013; Rose et al., 2013). Attitudes towards psychological interventions have been identified as significant predictors of actual mental health service use, even after accounting for the presence of a mental health diagnosis and previous service use (ten Have et al., 2009). The theory of planned behaviour posits that an individual’s attitudes, subjective normative beliefs, and perceptions of behavioural control impact their likelihood of engaging in a specific behaviour (Ajzen, 1985), such as completing an ICBT course for anxiety or depression.
Therefore, when developing an ICBT program for post-secondary students, it is important to examine their attitudes and perceptions of these treatment modalities to ensure that there is a high likelihood of students utilizing the service. Furthermore, some research findings suggest that a combination of demographic variables and variables relating to the theory of planned behaviour predict attrition rates and the number of modules completed in an online intervention. Age has frequently been identified as a predictor of program completion for a variety of mental health concerns, with older participants completing more modules (Lange et al., 2007, Nicholas et al., 2010, and Postel et al., 2011). In one study, the combination of age and perceived behavioural control predicted program completion, with older participants who had higher perceived control being more likely to complete the program (Wojtowicz et al., 2013).

The present study was designed to help identify students’ perspectives on the use of Internet interventions, and to determine whether specific factors predict perceptions of Internet interventions. Specifically, it is important to understand differences between those who are and those who are not seeking help. Treatment seekers often have more positive views about how effective mental health treatments are. In a large survey study of university students, Eisenberg and colleagues (2007) found that 63% of treatment seekers believed therapy is ‘quite helpful’ or ‘very helpful’ compared to only 47% in nontreatment seekers. Understanding the perceptions of both groups helps identify attitudinal barriers to treatment seeking. Additionally, one of the objectives of this study was to assess the needs and preferences that students have regarding specific content and contact with a professional. Having this information will benefit implementation efforts.

To date, although ICBT is found to be effective in research trials, there is limited
evidence that this treatment is being consistently implemented and also if when it is implemented that it is being used. This study addressed the following 7 research questions:

1. What are student attitudes and perceptions towards the use of ICBT, face-to-face services, and medication for depression and anxiety, and how do students rank these three choices?

2. How do attitudes and perceptions of ICBT differ between students who are currently seeking services and those who are not?

3. What are student preferences regarding:
   a. Method of contact with mental health professional (i.e. email or face-to-face)?
   b. Frequency of contact with mental health professional (i.e. daily, 2-3 times per week, weekly, monthly, etc.)?
   c. Choice of contact with mental health professional (i.e. optional or required).

   and do these preferences vary between students currently seeking services and those who are not?

4. What are the concurrent demographic (i.e. age and gender) and clinical (i.e. scores on the PHQ-9, GAD-7, AUDIT, and GHSQ) predictors of initial perceptions of ICBT?

5. What preferences do students have for the types of content to be included in an ICBT intervention for symptoms of depression and anxiety?
6. What are students’ perceived advantages and disadvantages of using ICBT to treat anxiety and depression?

7. At what treatment time delay does ICBT become more desirable than face-to-face CBT?

Based on attitudes towards ICBT in the general population, it was hypothesized that students would perceive ICBT as moderately acceptable and credible. It was predicted that individuals currently seeking mental health services would have a preference for face-to-face contact, but there was no specific hypothesis for the preferred frequency of contact with a mental health professional.

Treatment seekers tend to have more positive views towards psychological interventions in general (ten Have et al., 2009), so it was also predicted that they would have more positive views towards ICBT than non-treatment seekers, even if they had not participated in ICBT personally. Previous studies have identified age as a predictor of drop-out, with younger individuals being less likely to complete ICBT programs (Hadjistavropoulos et al., 2016). Based on these findings, it was expected that younger students would view ICBT as less acceptable and credible than older students. In general, females report more positive attitudes towards psychological interventions (Eisenberg et al., 2007), so it was hypothesized that females would have more positive attitudes towards ICBT than males. Crisp and Griffiths (2014) found that individuals with higher levels of anxiety and depression are more likely to seek online interventions, so it was hypothesized that symptom severity would be a predictor of attitudes and perceptions. Based on the results from the NCHA 2016 Executive Summary (ACHA, 2016), it was predicted that students would view content relating to stress, anxiety, depression, and
sleep problems as the most useful, given that these four factors were rated as interfering the most with students’ academic performance.

**Method**

**2.1 Participants**

Participants were recruited using Qualtrics, an online company used for gathering survey data. To be eligible for the proposed study, participants had to be at least 18 years old and currently attending a post-secondary institution as an undergraduate or graduate student in Canada. Power analysis was conducted for the most complex statistical analysis (i.e. multiple regression), using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007). The recommended sample size was 153 participants if a medium effect size ($f^2 = 0.15$) were to be detected with 6 predictors, an alpha value of .05, and a power level of 0.90.

To ensure that the sample was representative of post-secondary students across Canada, 314 participants were recruited. A report from the Canadian census states that 2,034,957 students were enrolled in post-secondary studies during 2015-2016 (Statistics Canada, n.d.). The data was further divided by province, and the following percentages of students from each province were calculated: British Columbia: 13.4%; Alberta: 9.1%; Saskatchewan: 2.8%; Manitoba: 3.1%; Ontario: 39.4%; Quebec: 26.2%; New Brunswick: 1.4%; Nova Scotia: 2.7%; Prince Edward Island: 0.3%; Newfoundland and Labrador: 1.3%; and Territories: 0.2%). The country was divided into four regions, namely the West Coast (British Columbia: 13.4%), the Prairie Provinces (Alberta, Saskatchewan, and Manitoba: 15%), Central Canada (Ontario and Quebec: 65.6%), and the Atlantic Provinces (New Brunswick, Nova Scotia, Prince Edward Island, and Newfound and...
Labrador: 5.7%). Participants from the three territories were not included in this survey, as they represent only 0.2% of the Canadian student population. The number of students surveyed in each region in the current study is equal to the proportion of students that region has from the national average multiplied by 314.

**Creation of groups.** All participants in the sample visited at least one health professional in the previous 12 months. The total sample was divided into two groups based on whether or not they sought help from a mental health professional, specifically. Treatment seekers \((n = 196)\) were defined as participants who had received help from one of the following mental health professionals: campus counselling services, off-campus mental health professionals (e.g., psychologist, therapist, counsellor, social worker), or a psychiatrist. Non-treatment seekers \((n = 118)\) did not visit a mental health professional in the previous 12 months.

**2.2 Measures**

**Demographic information.** Participants completed an online questionnaire to assess their age, gender, marital status, education, employment status, ethnicity, size of their community, province, use of psychotropic medications, and history of mental health conditions.

**The Patient Health Questionnaire 9-Item (PHQ-9; Kroenke, Spitzer, & Williams, 2001).** The PHQ-9 is a 9-item self-report measure of depression severity. For each item, participants are asked how often they have been bothered by one of the problems over the last two weeks (e.g. “*Feeling down, depressed, or hopeless*”). Responses vary from 0 ("not at all") to 3 ("nearly every day"). In clinical samples, researchers have found that a PHQ-9 score \(\geq 10\) is associated with a sensitivity of 88%
and a specificity of 88% for major depression (Kroenke et al., 2001). Cronbach’s alpha in this study was 0.905.

**The Generalized Anxiety Disorder Scale 7-Item (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006).** The GAD-7 is a brief self-report of anxiety symptoms. Participants are asked to report how often they have been bothered by an anxiety-related problem (e.g. “Feeling nervous, anxious, or on edge”) in the last 2 weeks, with scores ranging from 0 (“not at all”) to 3 (“nearly every day”). Spitzer et al. (2006) identified that a cut-off point of 10 or greater on the GAD-7 can identify individuals with anxiety with 89% sensitivity and 82% specificity. The GAD-7 had high internal consistency in this study (Cronbach’s alpha: 0.927).

**Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993).** The AUDIT is a 10-item self-report questionnaire for alcohol consumption, drinking behaviour, and alcohol-related problems. Each item receives a score between 0 and 4, for a maximum score of 40 on the entire questionnaire. A cut-off score of 8 is often used to distinguish between those who have harmful alcohol use (score ≥ 8) and those who do not (score < 8). Cronbach’s alpha in this study was 0.922.

**General Help-Seeking Questionnaire (GHSQ; Wilson, Deane, Ciarrochi, & Rickwood, 2005).** The GHSQ follows a matrix format, which enables it to be adapted to specific study requirements. The following standard probe is used: “If you were having [problem-type], how likely is it that you would seek help from the following people?” to assess an individual’s intention to seek formal and informal sources of help. In the proposed study, post-secondary students were asked to report their help-seeking
intentions from 11 help sources (campus counselling services, off-campus mental health professionals, ICBT, Doctor/GP, intimate partner, friend, other relative/family member, phone helpline, minister or religious leader, or the option to not seek help from anyone) for “anxiety” and “depression” separately. Participants rate their help-seeking intentions on a 7-point scale ranging from 1 (“extremely unlikely”) to 7 (“extremely likely”) for each of the 11 options. The GHSQ had high internal consistency in this study (Cronbach’s alpha: 0.869).

Treatment Acceptability and Adherence Scale (TAAS; Milosevic, Levy, Alcolado, & Radomsky, 2015). The TAAS is a 10-item self-report questionnaire that requires participants to rate each item on a 7-point scale (1 = “Strongly disagree” and 7 = “Agree strongly”). Sample items include “If I participated in this treatment, I would be able to adhere to its requirements” and “I would recommend this treatment to a friend with a similar problem.” A previous study on anxiety found that the TAAS has good internal consistency (α = 0.88; Milosevic & Radomsky, 2013). Participants completed the TAAS for their perceptions of ICBT, face-to-face services, and medication.

Credibility and Expectations Questionnaire (CEQ; Devilly & Borkovec, 2000). The CEQ is a 6-item self-report questionnaire that assesses the perceived credibility and expectations of a given treatment. Participants rate four items (e.g., “At this point, how logical does the treatment seem to you?”) on a 9-point scale (1 = “not at all logical” and 9 = “very logical”). The other two items require the participant to rate the percentage of improvement that they believe they would experience in their symptoms, ranging from 0 % to 100%. Previous research on credibility and expectations of ICBT has used the CEQ (Titov et al., 2010). Devilly and Borkovec (2000) reported
that the CEQ has good internal consistency on each of the two factors (\(\alpha = 0.81\) for credibility; \(\alpha = 0.79\) for expectancy). Participants completed the CEQ for their perceptions of ICBT, face-to-face therapy, and medication.

**ICBT Preferences and Perceptions Questionnaire.** This questionnaire includes 5 items to address preferences for the method and frequency of contact with a mental health professional, as well as preferences for what content should be included in an internet intervention. Item 3 addresses student perceptions about what would be helpful to include in an ICBT program. This item was adapted from the National College Health Assessment (NCHA; American College Health Association, 2015). The last two items were open-ended and asked participants to describe the perceived benefits and problems of using ICBT to address mental health concerns in post-secondary students. This questionnaire was developed for the purpose of the proposed study.

### 2.3 Procedure

Participants were recruited using the survey hosting website, Qualtrics (www.qualtrics.com). When participants joined the Qualtrics survey panel, they completed an entry questionnaire verifying they wished to participate in market research and provided demographic information. This allowed Qualtrics to match researcher screening criteria to the Qualtrics participant database. Qualtrics then sent targeted survey invitations to the group of individuals who met inclusion criteria. Potential participants were invited to complete a survey on “Attitudes towards different treatment options for anxiety and depression”. The response rate was 68.3% and only complete responses were recorded and analyzed.
In the first part of the survey, participants completed a series of questionnaires relating to their demographic information, their symptoms of depression (PHQ-9) and anxiety (GAD-7), their alcohol use (AUDIT), and general help-seeking intentions for anxiety/depression (GHSQ). Participants were then presented with a series of vignettes describing face-to-face therapy, medications, and ICBT for the treatment of anxiety and depression. Each vignette included a description of the intervention, as well as some potential advantages and disadvantages of each intervention option. The three vignettes were used previously in a study on the perceptions of ICBT among primary care patients with health anxiety (Soucy & Hadjistavropoulos, 2017). The vignettes were modified for the present study so that they described the use of ICBT in anxiety and depression. Three graduate students reviewed the modified vignettes to ensure they were clear and easy to understand. The vignettes were counterbalanced to control for order effects and to ensure that the first vignette seen was different for different participants. Participants completed the TAAS and CEQ following each of the three vignettes. They also completed the ICBT Perceptions Questionnaire following the vignette on ICBT and completed open-ended questions on the perceived advantages and disadvantages of ICBT. Participants were asked to identify which of the three treatment options they would choose to receive if they had access to that treatment right now.

2.4 Analyses

Preliminary analyses. Descriptive statistics were calculated for each of the demographic variables, as well as scores on the PHQ-9, GAD-7, AUDIT, GHSQ, TAAS, and CEQ. All data was analyzed for outliers by converting scores on the above measures into z-scores. Z-scores that were greater than 3.29 were considered outliers, and these
values were changed to either one unit higher or one unit lower than the next non-extreme score (Tabachnick & Fidell, 2013). Finally, skewness and kurtosis were calculated as an indicator of normality.

**Primary analyses.** To answer the first research question (*How do attitudes and perceptions of internet-based mental health interventions differ between students who are currently seeking services and those who are not?*), a two-way repeated measures ANOVA was performed to test for an interaction between treatment seeking and ratings on each of the three vignettes. Following this, two separate analyses of variance (ANOVAs) were performed for each of the three service options (i.e. ICBT, face-to-face services, and medication), with current service utilization as the independent variable, and scores on the TAAS and CEQ as the dependent variables. One-way ANOVAs were used instead of multiple t-tests to reduce the likelihood of a Type I error. The second research question (*What are student preferences for therapy regarding the method and frequency of contact?*) was answered by calculating frequency scores for the preferred dosage of treatment, method of contact, and frequency of contact for the sample as a whole, as well as the preferences divided by group based on mental health treatment seeking. A Chi-square analysis was used to assess whether the proportion of each treatment preference was significantly different, with a Bonferroni correction to account for multiple comparisons. To answer the third research question, two separate stepwise multiple regression analyses using forward entry were performed. In one of the analyses, TAAS scores were the dependent variable and the predictors were: age, gender, and scores on the PHQ-9, GAD-7, AUDIT, and GHSQ. The other multiple regression analysis had scores on the CEQ as the dependent variable and age, gender, and scores on
the PHQ-9, GAD-7, AUDIT, and GHSQ as the predictors. The demographic and clinical variables were entered into a stepwise multiple regression with forward entry, and each variable that was greater than the required \( F \)-statistic was included in the final equation. A stepwise regression was chosen because it helps control for potential cases of multicollinearity between independent variables, especially when there are a large number of independent variables entered into a regression equation. Preferences for the types of ICBT content were assessed by calculating the mean score for perceived utility on each of the 16 types of content and identifying their rank order. An additional analysis was conducted to identify at what treatment time delay ICBT becomes more desirable than face-to-face CBT using a Chi-square analysis for equal proportions.

**Qualitative analyses**

Answers to the open-ended questions about the perceived strengths and weaknesses of ICBT were analyzed using thematic analysis. Braun and Clarke’s (2006) recommendations were followed for the six steps to complete when conducting a thematic analysis in psychology. First, the text from all responses was compiled and the primary investigator (PI) familiarized themselves with the data. The PI made notes of meanings or patterns initially identified in the text. Next, initial codes were generated that helped organize the data in a simple, meaningful way. The third step involved collating the codes identified in the second step, and looking for overarching themes and sub-themes. The PI reviewed themes in the fourth step and refined them into a thematic map. Once a thematic map had been formed, step 5 involved the defining and naming of themes, with each theme contributing to the ‘story’ of the data. Finally, the researcher produced a report based on the full set of themes.
At the end of the survey, participants were provided with two open-ended questions, one regarding the perceived advantages and one regarding disadvantages to using ICBT as a treatment for anxiety and depression. Responses from all 314 participants to the two questions were entered into NVivo. The PI created 25 codes in total which were reviewed by the PI’s thesis supervisor, Dr. Heather Hadjistavropoulos. A second coder from the Online Therapy Unit at the University of Regina reviewed the coding of all the responses. Any disputes were resolved by Dr. Hadjistavropoulos.

Results

3.1 Data preparation

**Outliers.** All independent variables (i.e. age, scores on the PHQ-9, GAD-7, AUDIT, and GHSQ) and dependent variables (i.e. scores on the TAAS and CEQ) were converted to z-scores and reviewed for potential outliers. Tabachnik and Fidell (2013) established a criterion of $\pm 3.29$ ($p < .001$) for identifying outliers. No extreme scores were identified for participants’ age, scores on the PHQ-9, GAD-7, GHSQ, TAAS, or CEQ. Two participants were identified as outliers on the AUDIT (i.e. AUDIT = 37, z-score = 3.46; AUDIT = 40, z-score = 3.82). The two outlier values were changed according to Tabachnik and Fidell’s (2013) suggestion, with scores changed to one unit higher than the next non-extreme value (i.e. AUDIT = 31, z-score = 3.10).

**Skewness and kurtosis.** The normality of the sample was reviewed by calculating skewness and kurtosis values for all independent and dependent variables, and converting these values to z-scores. West and colleagues (1996) suggest that data is normally distributed if skewness values are $\pm 2$ and kurtosis values are $\pm 7$. The skewness and kurtosis values were within the acceptable range for all variables, except
for scores on the AUDIT for non-treatment seekers (i.e., 2.05). Because this value was 
very close to the established cut-off, a transformation was not carried out on the AUDIT 
data.

**Order effects.** The order of the three vignettes was randomized to reduce the 
likelihood of order effects. Of the 314 participants, 33.44% (n = 105) received the face-
to-face vignette first, 33.12% (n = 104) received the medication vignette first, and 
33.44% (n = 105) received the ICBT vignette first.

### 3.2 Descriptive analyses.

**Demographic variables.**

The total sample consisted of 314 participants enrolled in post-secondary 
institutions across Canada. Participants ranged in age from 18 to 61, with an average age 
of 27.40 (SD = 8.86). Table 1 includes a full description of the demographic 
characteristics of the sample. An independent samples t-test was conducted to compare 
the ages of participants who were treatment seekers and non-treatment seekers. The 
difference in means was not statistically significant (t = -1.90, p = 0.059), although 
treatment seekers (mean age: 26.82, SD = 8.45) were slightly younger than non-treatment 
seekers (mean age: 28.73, SD = 8.97). There was an approximately equivalent number of 
females (n = 157; 49.8%) and males (n = 156; 49.5%), with one participant selecting 
‘Prefer not to answer’. The majority of participants identified as single (n = 217; 68.9%), 
Caucasian (n = 163; 51.7%), and attending a post-secondary institution in Central Canada 
(n = 206; 65.4%), and either living in other off-campus housing (n = 129, 41.0%) or with 
parents or guardians (n = 101; 32.1%). Approximately one-third of participants indicated
Table 1
Descriptive Statistics for Demographic Variables Separated by Treatment Seeking in Previous 12 Months

<table>
<thead>
<tr>
<th></th>
<th>Total sample (N = 314)</th>
<th>Treatment seekers (n = 196)</th>
<th>Non-treatment seekers (n = 118)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (%)</td>
<td>M (%)</td>
<td>M (%)</td>
</tr>
<tr>
<td>Age</td>
<td>27.4 (SD: 8.86)</td>
<td>26.82 (SD: 8.45)</td>
<td>28.73 (SD: 8.97)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>157 (49.8)</td>
<td>99 (50.5)</td>
<td>58 (49.2)</td>
</tr>
<tr>
<td>Male</td>
<td>156 (49.5)</td>
<td>96 (49.0)</td>
<td>60 (50.8)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian (e.g. Chinese, Japanese)</td>
<td>60 (19.0)</td>
<td>35 (17.9)</td>
<td>25 (21.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12 (3.8)</td>
<td>11 (5.6)</td>
<td>1 (0.8)</td>
</tr>
<tr>
<td>First Nations/Metis</td>
<td>13 (4.1)</td>
<td>8 (4.1)</td>
<td>5 (4.2)</td>
</tr>
<tr>
<td>African</td>
<td>16 (5.1)</td>
<td>5 (2.6)</td>
<td>11 (9.3)</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>10 (3.2)</td>
<td>6 (3.1)</td>
<td>4 (3.4)</td>
</tr>
<tr>
<td>Caucasian/European</td>
<td>163 (51.7)</td>
<td>102 (52)</td>
<td>61 (51.7)</td>
</tr>
<tr>
<td>South Asian</td>
<td>22 (7.0)</td>
<td>16 (8.2)</td>
<td>6 (5.1)</td>
</tr>
<tr>
<td>Other</td>
<td>18 (5.7)</td>
<td>13 (6.6)</td>
<td>5 (4.2)</td>
</tr>
<tr>
<td>Relationship status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>217 (68.9)</td>
<td>143 (73.0)</td>
<td>74 (62.7)</td>
</tr>
<tr>
<td>Married/partnered</td>
<td>83 (26.3)</td>
<td>43 (21.9)</td>
<td>40 (33.9)</td>
</tr>
<tr>
<td>Separated/divorced</td>
<td>5 (1.6)</td>
<td>3 (1.5)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (2.9)</td>
<td>7 (3.6)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>Living situation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus residence hall</td>
<td>56 (17.8)</td>
<td>49 (25.0)</td>
<td>7 (5.9)</td>
</tr>
<tr>
<td>Fraternity or sorority house</td>
<td>16 (5.1)</td>
<td>11 (5.6)</td>
<td>5 (4.2)</td>
</tr>
<tr>
<td>Other university housing</td>
<td>12 (3.8)</td>
<td>10 (5.1)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>Parent/guardian home</td>
<td>101 (32.1)</td>
<td>58 (29.6)</td>
<td>43 (36.4)</td>
</tr>
<tr>
<td>Other off-campus housing</td>
<td>129 (41.0)</td>
<td>68 (34.7)</td>
<td>61 (51.7)</td>
</tr>
<tr>
<td>Current student status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year undergraduate</td>
<td>61 (19.4)</td>
<td>37 (18.9)</td>
<td>24 (20.3)</td>
</tr>
<tr>
<td>2nd year undergraduate</td>
<td>60 (19.0)</td>
<td>46 (23.5)</td>
<td>14 (11.9)</td>
</tr>
<tr>
<td>3rd year undergraduate</td>
<td>39 (12.4)</td>
<td>22 (11.2)</td>
<td>17 (14.4)</td>
</tr>
<tr>
<td>4th year undergraduate</td>
<td>55 (17.5)</td>
<td>34 (17.3)</td>
<td>21 (17.8)</td>
</tr>
<tr>
<td>5th or more year undergraduate</td>
<td>21 (6.7)</td>
<td>12 (6.1)</td>
<td>9 (7.6)</td>
</tr>
<tr>
<td>Graduate student</td>
<td>59 (18.8)</td>
<td>33 (16.8)</td>
<td>26 (22.0)</td>
</tr>
<tr>
<td>Professional student</td>
<td>19 (6.0)</td>
<td>12 (6.1)</td>
<td>7 (5.9)</td>
</tr>
<tr>
<td>Location of post-secondary institution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Coast</td>
<td>41 (13.0)</td>
<td>25 (12.8)</td>
<td>16 (13.6)</td>
</tr>
<tr>
<td>Prairie Provinces</td>
<td>48 (15.2)</td>
<td>32 (16.3)</td>
<td>16 (13.6)</td>
</tr>
<tr>
<td>Region</td>
<td>&lt;2,500 students</td>
<td>2,500 – 4,999 students</td>
<td>5,000 – 9,999 students</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------</td>
<td>------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Central Canada</td>
<td>53 (16.8)</td>
<td>66 (21.0)</td>
<td>62 (19.7)</td>
</tr>
<tr>
<td>Atlantic Provinces</td>
<td>38 (19.4)</td>
<td>44 (22.4)</td>
<td>40 (20.4)</td>
</tr>
<tr>
<td></td>
<td>15 (12.7)</td>
<td>22 (18.6)</td>
<td>22 (18.6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of post-secondary institution</th>
<th>Central Canada</th>
<th>Atlantic Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2,500 students</td>
<td>53 (16.8)</td>
<td>38 (19.4)</td>
</tr>
<tr>
<td>2,500 – 4,999 students</td>
<td>66 (21.0)</td>
<td>44 (22.4)</td>
</tr>
<tr>
<td>5,000 – 9,999 students</td>
<td>62 (19.7)</td>
<td>40 (20.4)</td>
</tr>
<tr>
<td>10,000 -19,999 students</td>
<td>60 (19.0)</td>
<td>33 (16.8)</td>
</tr>
<tr>
<td>20,000 or more students</td>
<td>73 (23.2)</td>
<td>41 (20.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professionals visited in previous 12 months</th>
<th>Central Canada</th>
<th>Atlantic Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus counselling services</td>
<td>137 (43.6)</td>
<td>137 (69.9)</td>
</tr>
<tr>
<td>Physician/GP/Family Doctor</td>
<td>197 (62.7)</td>
<td>80 (40.8)</td>
</tr>
<tr>
<td>Off-campus mental health</td>
<td>91 (29.0)</td>
<td>90 (45.9)</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>23 (7.3)</td>
<td>23 (11.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication use for anxiety/ depression in previous 12 months</th>
<th>Central Canada</th>
<th>Atlantic Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>122 (38.9%)</td>
<td>97 (49.5)</td>
</tr>
<tr>
<td>No</td>
<td>192 (61.1%)</td>
<td>99 (50.5)</td>
</tr>
</tbody>
</table>
that they had taken medication for anxiety or depression in the previous 12 months \((n = 122; 38.9\%)\). Demographic information is presented in Table 1 separated by group (i.e. treatment seekers and non-seekers).

**Clinical variables.**

Average scores on the PHQ-9 were high \((M = 9.93, SD = 0.38)\) and were close to the level of clinically significant depressive symptoms (i.e. PHQ-9 > 10). Participants who sought help from mental health professionals in the previous 12 months had higher PHQ-9 scores \((M = 11.30, SD = 6.57)\) than those who did not seek help \((M = 7.65, SD = 6.51)\), which was a statistically significant difference, \(t(312) = 4.79, p < .001, d = 0.56\). 56.6% of participants in the treatment-seeking group scored above 10 on the PHQ-9 whereas 29.7% in the non-treatment seeking group scored above 10 on the PHQ-9; this difference was significant \(\chi^2 = 20.54, p < .001\).

Treatment seekers also had significantly higher scores on the GAD-7 \((t(312) = 5.21, p < .001, d = 0.61)\), AUDIT \((t(312) = 3.79, p < .001, d = 0.16)\), and GHSQ \(t(312) = 3.85, p < .001, d = 0.45\) than non-treatment seekers in the previous 12 months. 42.3% in the treatment group scored above 10 on the GAD-7 whereas 19.5% in the non-treatment group scored above 10 on the GAD-7; this difference was significant \(\chi^2 = 17.21, p < .001\). 45.9% in the treatment group scored above 8 on the AUDIT whereas 22.8% in the non-treatment group scored above 8 on the AUDIT; this difference was significant \(\chi^2 = 16.72, p < .001\). See Table 2 for descriptive details of the clinical variables and Table 3 for skewness and kurtosis values.
Table 2
**Descriptive Statistics for Clinical Variables by Treatment Seeking in Previous 12 Months**

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Treatment seekers (n = 196)</th>
<th>Non-treatment seekers (n = 118)</th>
<th>t-value (df=312)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHQ-9</strong></td>
<td>9.93 (6.78)</td>
<td>11.30 (6.57)</td>
<td>7.65 (6.51)</td>
<td>4.79</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td><strong>GAD-7</strong></td>
<td>7.84 (5.93)</td>
<td>9.14 (5.84)</td>
<td>5.68 (5.47)</td>
<td>5.21</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td><strong>AUDIT</strong></td>
<td>8.12 (8.49)</td>
<td>9.48 (9.04)</td>
<td>5.87 (6.93)</td>
<td>3.79</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td><strong>GHSQ</strong></td>
<td>75.64 (24.31)</td>
<td>79.65 (24.80)</td>
<td>68.98 (22.15)</td>
<td>3.85</td>
<td>&lt;.001*</td>
</tr>
</tbody>
</table>

*p < .05
**GHSQ sum for anxiety and depression

Note. PHQ-9 = Patient Health Questionnaire 9-item; GAD-7 = Generalized Anxiety Disorder 7-item; AUDIT = Alcohol Use Disorders Identification Test; GHSQ = General Help-Seeking Questionnaire.
Table 3
Skewness and Kurtosis Values for Clinical Variables Separated by Treatment Seeking in Previous 12 Months

<table>
<thead>
<tr>
<th></th>
<th>Skewness value</th>
<th>Std. error of skewness</th>
<th>Z-score of skewness</th>
<th>Kurtosis value</th>
<th>Std. error of kurtosis</th>
<th>Z-score of kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHQ-9</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 314)</td>
<td>0.404</td>
<td>0.138</td>
<td>2.928</td>
<td>-0.560</td>
<td>0.274</td>
<td>-2.044</td>
</tr>
<tr>
<td>Treatment seekers (n = 196)</td>
<td>0.216</td>
<td>0.174</td>
<td>1.241</td>
<td>-0.560</td>
<td>0.346</td>
<td>-1.618</td>
</tr>
<tr>
<td>Non-treatment seekers (n = 118)</td>
<td>0.854</td>
<td>0.223</td>
<td>3.830</td>
<td>0.162</td>
<td>0.442</td>
<td>0.367</td>
</tr>
<tr>
<td><strong>GAD-7</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 314)</td>
<td>0.401</td>
<td>0.138</td>
<td>2.906</td>
<td>-0.815</td>
<td>0.274</td>
<td>-2.974</td>
</tr>
<tr>
<td>Treatment seekers (n = 196)</td>
<td>0.174</td>
<td>0.174</td>
<td>1.000</td>
<td>-0.851</td>
<td>0.346</td>
<td>-2.460</td>
</tr>
<tr>
<td>Non-treatment seekers (n = 118)</td>
<td>0.877</td>
<td>0.223</td>
<td>3.933</td>
<td>-0.074</td>
<td>0.442</td>
<td>0.167</td>
</tr>
<tr>
<td><strong>AUDIT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 314)</td>
<td>1.198</td>
<td>0.138</td>
<td>8.681*</td>
<td>0.875</td>
<td>0.275</td>
<td>3.182</td>
</tr>
<tr>
<td>Treatment seekers (n = 196)</td>
<td>0.861</td>
<td>0.174</td>
<td>4.948*</td>
<td>-0.008</td>
<td>0.346</td>
<td>0.023</td>
</tr>
<tr>
<td>Non-treatment seekers (n = 118)</td>
<td>2.057</td>
<td>0.223</td>
<td>9.224*</td>
<td>4.923</td>
<td>0.442</td>
<td>11.138*</td>
</tr>
<tr>
<td><strong>GHSQ</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 314)</td>
<td>0.008</td>
<td>0.138</td>
<td>0.058</td>
<td>0.400</td>
<td>0.274</td>
<td>1.460</td>
</tr>
<tr>
<td>Treatment seekers (n = 196)</td>
<td>0.019</td>
<td>0.174</td>
<td>0.109</td>
<td>0.273</td>
<td>0.346</td>
<td>0.789</td>
</tr>
<tr>
<td>Non-treatment seekers (n = 118)</td>
<td>-0.216</td>
<td>0.223</td>
<td>-0.969</td>
<td>0.591</td>
<td>0.442</td>
<td>1.337</td>
</tr>
</tbody>
</table>

*Exceeds cut-off score of ± 3.29 (Field, 2013)
3.3 Primary analyses

**Mixed Model ANOVA.** A mixed-model ANOVA was carried out to compare the mean differences in TAAS scores for each of the three treatment vignettes based on treatment seeking in the previous 12 months. The interaction between treatment vignette and treatment seeking was not significant, $F_{(1,313)} = 0.444, p = .506$, meaning that there was not a significant difference in how acceptable each vignette was rated based on treatment-seeking. There was no main effect for treatment vignette or treatment group. A second mixed-model ANOVA was carried out to assess for an interaction between treatment vignettes and treatment-seeking for scores on the CEQ; the interaction was non-significant, $F_{(1,313)} = 1.736, p = .189$, meaning treatment-seeking did not have a significant effect on how credible each vignette was rated. The main effects for treatment vignette and treatment group were not significant. See Table 5 for skewness and kurtosis values for the TAAS and CEQ.

**One-way ANOVAS**

**ICBT.** A series of one-way ANOVAs were carried out to assess how attitudes and perceptions of ICBT differed between treatment seekers and non-treatment seekers. In the first ANOVA treatment seekers and non-treatment seekers (independent variable) were compared on TAAS scores. There was not a significant difference in scores on the TAAS between the two groups, $F_{(1,313)} = 0.042, p = .837, d = 0.02$, meaning treatment seekers and non-treatment seekers perceived ICBT as equally acceptable. In the second ANOVA, treatment seekers and non-treatment seekers were compared on the CEQ. A statistically significant difference was found, with treatment seekers having higher scores.
on the CEQ than non-treatment seekers, $F_{(1,313)} = 8.147, p = .005, d = 0.33$, meaning treatment seekers perceived ICBT as more credible than non-treatment seekers.

**Face-to-face services.** A one-way ANOVA was conducted, to compare treatment seekers and non-treatment seekers on the TAAS for the face-to-face services vignette. The difference in scores between the two groups was not statistically significant, $F(1, 313) = 0.022, p = .883, d = 0.01$. An additional ANOVA was conducted to compare CEQ scores for the face-to-face vignette based on treatment-seeking; there was a statistically significant difference in scores on the CEQ ($F_{(1,313)} = 4.084, p = .044, d = 0.24$), meaning treatment seekers perceived face-to-face services as more credible than non-treatment seekers.

**Medication.** The results of a one-way ANOVA with scores on the TAAS for the medication vignette indicated that there was not a statistically significant difference between treatment seekers and non-treatment seekers, $F(1, 313) = .002, p = .961, d = 0.01$. In a one-way ANOVA with CEQ scores, there was a significant difference between groups, $F(1,313) = 4.357, p = .038, d = 0.24$, with treatment seekers perceiving medication as significantly more credible than non-treatment seekers.

**Preferences for ICBT.** Students were asked to choose which treatment option they would prefer for anxiety or depression, and expressed a preference for face-to-face services (44.6%), followed by medication (31.9%), and finally ICBT (23.5%). Several items in the survey assessed participants’ preferences for frequency of contact with a trained professional. Participants were asked how often they would like to email a trained provider if they were to use ICBT. The most common response was weekly ($n = 108, 34.39%$), followed by once every 2-3 days ($n = 72, 22.93%$), daily ($n = 42, 13.38%$), and
monthly \((n = 41, \ 13.08\%)\). A portion of the sample \((n = 51, \ 16.24\%)\) reported that they
would never want to email a trained provider. Additionally, participants were asked to

Table 4
*Descriptive Statistics for TAAS and CEQ Separated by Treatment Seeking in Previous 12 Months*

<table>
<thead>
<tr>
<th></th>
<th>Total sample ((N = 314))</th>
<th>Treatment seekers ((n = 196))</th>
<th>Non-treatment seekers ((n = 118))</th>
<th>Independent samples (t)-test</th>
<th>Two-way repeated measures ANOVA for interaction**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>(t)-value ((df = 312))</td>
<td>(p)-value</td>
</tr>
<tr>
<td><strong>TAAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICBT</td>
<td>40.95 (7.72)</td>
<td>40.88 (7.81)</td>
<td>41.07 (7.59)</td>
<td>-0.21</td>
<td>0.837</td>
</tr>
<tr>
<td>Face-to-face CBT</td>
<td>41.73 (7.64)</td>
<td>41.78 (7.59)</td>
<td>41.64 (7.75)</td>
<td>0.15</td>
<td>0.883</td>
</tr>
<tr>
<td>Medication</td>
<td>40.94 (7.72)</td>
<td>40.95 (7.85)</td>
<td>40.92 (7.52)</td>
<td>0.05</td>
<td>0.961</td>
</tr>
<tr>
<td><strong>CEQ</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICBT</td>
<td>32.79 (10.95)</td>
<td>34.16 (11.01)</td>
<td>30.55 (10.53)</td>
<td>2.85</td>
<td>.005*</td>
</tr>
<tr>
<td>Face-to-face CBT</td>
<td>33.47 (10.37)</td>
<td>34.39 (10.34)</td>
<td>31.96 (10.29)</td>
<td>2.02</td>
<td>.044*</td>
</tr>
<tr>
<td>Medication</td>
<td>33.84 (10.71)</td>
<td>34.81 (10.85)</td>
<td>32.22 (10.31)</td>
<td>2.09</td>
<td>.038*</td>
</tr>
</tbody>
</table>

\(*p < .05\)

**Test for interaction between treatment seeking and treatment vignette

Note. TAAS = Treatment Acceptability and Adherence Scale; CEQ = Credibility and Expectancy Questionnaire; ICBT = Internet-delivered cognitive behaviour therapy; CBT = cognitive behaviour therapy
Table 5
Skewness and Kurtosis for TAAS and CEQ Separated by Treatment Seeking in Previous 12 Months

<table>
<thead>
<tr>
<th></th>
<th>Skewness value</th>
<th>Std. error of skewness</th>
<th>Z-score of skewness</th>
<th>Kurtosis value</th>
<th>Std. error of kurtosis</th>
<th>Z-score of kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAAS (ICBT)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 314)</td>
<td>0.545</td>
<td>0.138</td>
<td>3.949</td>
<td>2.555</td>
<td>0.274</td>
<td>9.325</td>
</tr>
<tr>
<td>Treatment seekers (n = 196)</td>
<td>0.638</td>
<td>0.174</td>
<td>3.667</td>
<td>2.935</td>
<td>0.346</td>
<td>8.483</td>
</tr>
<tr>
<td>No treatment sought (n = 118)</td>
<td>0.385</td>
<td>0.223</td>
<td>1.726</td>
<td>2.006</td>
<td>0.442</td>
<td>4.538</td>
</tr>
<tr>
<td><strong>CEQ (ICBT)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 312)</td>
<td>-0.235</td>
<td>0.138</td>
<td>1.703</td>
<td>0.270</td>
<td>0.275</td>
<td>0.982</td>
</tr>
<tr>
<td>Treatment seekers (n = 194)</td>
<td>-0.209</td>
<td>0.175</td>
<td>1.194</td>
<td>0.298</td>
<td>0.347</td>
<td>0.859</td>
</tr>
<tr>
<td>No treatment sought (n = 118)</td>
<td>-0.372</td>
<td>0.223</td>
<td>1.668</td>
<td>0.202</td>
<td>0.442</td>
<td>0.457</td>
</tr>
</tbody>
</table>

Note. TAAS = Treatment Acceptability and Adherence Scale; CEQ = Credibility and Expectancy Questionnaire; ICBT = Internet-delivered cognitive behaviour therapy.
choose how often they would like a trained provider to check in on them. The results were similar to the previous question, with the largest proportion of participants having a preference for weekly emails \((n = 102, 32.48\%)\), followed by once every 2-3 days \((n = 85, 27.07\%)\), never \((n = 49, 16.61\%)\), and daily \((n = 44, 14.01\%)\). The least preferred option was to receive a monthly email \((n = 34, 10.83\%)\).

**Time delay treatment preferences.** Participants reported their preferences for receiving face-to-face services or ICBT based on a time delay for treatment. A Chi-square test was conducted for each of the four comparisons to compare the proportions for each preference, and a Bonferroni correction was included to account for multiple comparisons. When asked about their preference for receiving face-to-face services in one week or ICBT today, 63.9\% of the total sample reported a preference for face-to-face services in one week; the difference in proportions was significant, \(\chi^2 = 48.31, p < .001\). For the remaining three comparisons, there was a statistically significant preference for receiving ICBT today over face-to-face services in two weeks (55.6\%; \(\chi^2 = 7.81, p = .005\)), face-to-face services in one month (56.9\%; \(\chi^2 = 11.80, p < .001\)), and face-to-face services in six months (56.4\%; \(\chi^2 = 10.32, p < .001\)). Additionally, a two proportions z-test was conducted to assess for differences in time delay treatment preferences based on treatment seeking in the previous 12 months. A Bonferroni correction was applied to account for the four comparisons, such that the adjusted alpha level was .0125. Only one of the four comparisons neared significance \((z\text{-score} = -2.45, p = .014)\); this result suggested that a larger proportion of non-treatment seekers than treatment seekers would
prefer to receive face-to-face treatment in two weeks instead of ICBT today. The remaining three comparisons were non-significant, with approximately the same

Table 6

<table>
<thead>
<tr>
<th>Time Delay (Discounting) Treatment Preferences</th>
<th>Frequency (%)</th>
<th>Difference (%)</th>
<th>95% CI</th>
<th>Chi-squared</th>
<th>Significance (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face in one week</td>
<td>200 (63.9)</td>
<td>27.8</td>
<td>20.1-35.0</td>
<td>48.3</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>ICBT today</td>
<td>113 (36.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face-to-face in two weeks</td>
<td>139 (44.4)</td>
<td>11.2</td>
<td>3.4-18.8</td>
<td>7.8</td>
<td>.0051*</td>
</tr>
<tr>
<td>ICBT today</td>
<td>174 (55.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face-to-face in one month</td>
<td>134 (43.1)</td>
<td>13.8</td>
<td>5.9-21.4</td>
<td>11.8</td>
<td>.0006*</td>
</tr>
<tr>
<td>ICBT today</td>
<td>177 (56.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face-to-face in 6 months</td>
<td>136 (43.6)</td>
<td>12.8</td>
<td>5.0-20.4</td>
<td>10.2</td>
<td>.0014*</td>
</tr>
<tr>
<td>ICBT today</td>
<td>176 (56.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

Note. Face-to-face = face-to-face cognitive behaviour therapy; ICBT = Internet-delivered cognitive behaviour therapy.
Table 7
Time Delay Z-test for Two Proportions based on Treatment Seeking in Previous 12 Months

<table>
<thead>
<tr>
<th></th>
<th>Treatment seekers (%)</th>
<th>Non-treatment seekers (%)</th>
<th>z-score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face in one week</td>
<td>119 (61.0)</td>
<td>80 (67.8)</td>
<td>-1.21</td>
<td>.23</td>
</tr>
<tr>
<td>ICBT today**</td>
<td>120 (61.2)</td>
<td>55 (47.0)</td>
<td>-2.45</td>
<td>.01*</td>
</tr>
<tr>
<td>ICBT today ***</td>
<td>109 (55.9)</td>
<td>70 (59.3)</td>
<td>0.59</td>
<td>.56</td>
</tr>
<tr>
<td>ICBT today ****</td>
<td>105 (53.8)</td>
<td>72 (61.0)</td>
<td>1.24</td>
<td>.21</td>
</tr>
</tbody>
</table>

Note. Bonferroni correction applied to account for multiple comparisons

*p = 0.014

** Preference for ICBT today over face-to-face in two weeks

*** Preference for ICBT today over face-to-face in one month

**** Preference for ICBT today over face-to-face in 6 months

Note. Face-to-face = face-to-face cognitive behaviour therapy; ICBT = Internet-delivered cognitive behaviour therapy.
proportion of treatment seekers and non-treatment seekers expressing a preference for face-to-face services in one week rather than ICBT today (z-score = -1.21, \( p = .23 \)); a preference for ICBT today rather than face-to-face in one month (z-score = 0.59, \( p = .56 \)); and a preference for ICBT today rather than face-to-face in six months (z-score = 1.24, \( p = .21 \)).

**Multiple regression analyses.** Two stepwise multiple regression analyses were employed to identify demographic (i.e. age and gender) and clinical (i.e. scores on the PHQ-9, GAD-7, AUDIT, and GHSQ) predictors of students’ initial perceptions and attitudes towards ICBT. Prior to completing the multiple regression analyses, several assumptions were examined. To assess for multicollinearity, a correlation matrix was created with all of the independent variables. All potential correlations between variables were below the critical value (i.e. \( r < .90 \)) established by Field (2013) as suggesting multicollinearity. Furthermore, the range for the variance inflation factor (VIF) was acceptable (VIF < 10), and the tolerance statistic was within the range outlined by Field (i.e. tolerance > 0.2).

In the first stepwise multiple regression analysis, the demographic and clinical predictors were entered, with scores on the TAAS as the dependent variable. Scores on the PHQ-9 and gender were identified as significant predictors of scores on the TAAS (see Table 8). The regression model was statistically significant (\( F(2,310) = 12.51, p < .001 \)) and accounted for 7.5% of the variation in the participants’ TAAS scores (\( R^2 = \)
Participants with higher levels of depression on the PHQ-9 had more negative perceptions of their acceptance and adherence to ICBT. Being a female was associated with higher levels of ICBT acceptability and adherence. The second multiple regression

Table 8.

**Stepwise Multiple Regression Models using Forward Entry to Predict Differences in TAAS Scores for ICBT**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>SE</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>43.71</td>
<td>0.75</td>
<td>58.06</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>-0.28</td>
<td>0.06</td>
<td>-4.41</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>46.753</td>
<td>1.515</td>
<td>30.86</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>-0.29</td>
<td>0.06</td>
<td>-4.65</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Gender</td>
<td>-1.929</td>
<td>0.836</td>
<td>-2.31</td>
<td>.022</td>
</tr>
</tbody>
</table>

Note. TAAS = Treatment Acceptability and Adherence Scale; ICBT = Internet-delivered cognitive behaviour therapy; PHQ-9 = Patient Health Questionnaire (9 item); Model 1 = PHQ-9 as a predictor Model 2 = PHQ-9 and gender as predictors
Table 9.

*Stepwise Multiple Regression Model using Forward Entry to Predict Differences in CEQ Scores for ICBT*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$</th>
<th>SE</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>17.68</td>
<td>1.827</td>
<td>9.67</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>GHSQ</td>
<td>0.20</td>
<td>0.02</td>
<td>8.69</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note: CEQ = Credibility and Expectancy Questionnaire; ICBT = Internet-delivered cognitive behaviour therapy; GHSQ = General Help-Seeking Questionnaire; Model 1 = General Help-Seeking Questionnaire is the only significant predictor.
analysis had the same independent variables, but this time, scores on the CEQ were the dependent variable. Out of the 6 independent variables, participants’ scores on the GHSQ were the only significant predictor of scores on the CEQ. The regression model was statistically significant \((F(1, 310) = 75.51, p < .001)\) and accounted for 19.6% of the variation in the participants’ CEQ \((R^2 = .196)\). The findings suggested that high levels of help-seeking predicted higher perceived credibility of ICBT. Table 9 includes additional information on the regression model.

**Preferences for content of ICBT course.** Participants rated how useful different types of content would be if included in an ICBT course. For each of the 16 types of content, participants reported their scores on a Likert scale ranging from 1 (“not at all useful”) to 7 (“extremely useful”). There was little variation in scores among the 16 topics, with scores ranging from 4.12 to 5.07. The three topics with the highest perceived utility were ‘Anxiety’ \((M = 5.01; SD = 1.57)\), ‘Stress Reduction’ \((M = 4.77; SD = 1.68)\), and ‘Depression’ \((M = 4.73; SD = 1.71)\). Tobacco use was rated to have the lowest perceived utility out of the 16 topics \((M = 4.12; SD = 1.68)\).

**3.4 Qualitative analyses.**

**Thematic analysis.** The PI identified 25 codes in total (13 for advantages and 12 for disadvantages). Table 10 includes a description of each of the codes created, examples from the data set, and descriptive statistics about their frequency. There was a high level of agreement (98.6%) between the two coders.
**Advantages.** Of the responses from 314 participants, there were 332 codable phrases; 297 (89.46%) of these were valid. Several responses were coded as ‘Invalid’ (e.g. “Cool aid”) or blank. Rather than including a perceived advantage in their responses

Table 10.  
*Coding Guide for Perceived Advantages of ICBT Including Coding Categories, Frequencies, Descriptions, and Examples*

<table>
<thead>
<tr>
<th>Category (% of valid responses)</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Accessibility (10.10%)          | Comments about ease of access or reduced barriers compared to face-to-face services (e.g. cost, location, etc.) | “Cheaper”  
“Easier access” |
| Anonymity (7.07%)               | Comments about ICBT assisting with privacy and confidentiality; absence of face-to-face therapist helps with stigma; increased willingness to share | “People can give their concern anonymously”  
“We tend to be more comfortable when talking through a screen” |
| Convenience (12.79%)            | Comments about flexibility in scheduling; working at own pace; ability to work from any location | “It can be done at the comfort of your own home.”  
“It can be done on your own time. You don’t have to try and change your schedule around appointments.” |
| Depression or anxiety symptom reduction (6.73%) | Comments about mood improvements, decrease in hopelessness/suicidal thoughts/worry, etc. | “Open honest discussions leading to reduction in anxiety and depression levels”  
“Reduce anxiety” |
| Efficacy (2.36%)                | Comments about ICBT creating meaningful/positive change | “ICBT is effective and efficient to help others cope with issues”  
“Efficient and calming way for the patient and therapist to coordinate on building a relationship and working towards solutions” |
| Generic positive response (12.79%) | Vague comments about ICBT being helpful/useful/good | “It would help”  
“Has potential” |
| Invalid *(0%)                   | Responses that do not fit meaningfully into any other category; letter strings; irrelevant words | “ICBT”  
“Fui” |
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative response (4.71%)</td>
<td>Responses that do not identify an advantage to ICBT</td>
<td>“Not worth it”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Nothing”</td>
</tr>
<tr>
<td>Neutral response (14.14%)</td>
<td>Neither a positive nor negative comment</td>
<td>“I don’t know”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“No comment”</td>
</tr>
<tr>
<td>Other personal benefits (14.81%)</td>
<td>Comments about ICBT contributing to other areas of personal wellness, such as health, personal strengths, etc.</td>
<td>“Self-confidence building”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Communication safety net”</td>
</tr>
<tr>
<td>Personalized (2.36%)</td>
<td>Positive comments about receiving therapist support; advantages over self-help</td>
<td>“More individual contact, tracking”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Personal treatment without face-to-face contact”</td>
</tr>
<tr>
<td>Psychoeducation (2.69%)</td>
<td>Comments about ICBT providing information about prevalence, symptom, or causes of anxiety or depression; increasing general awareness about mental health</td>
<td>“Students have more knowledge about anxiety and how to prevent”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Better mental health awareness”</td>
</tr>
<tr>
<td>Stress relief (9.43%)</td>
<td>General comments about stress reduction that do not better fit into “Depression or anxiety symptom reduction”</td>
<td>“To give students coping skills”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Helping them reduce their problems or stress”</td>
</tr>
</tbody>
</table>

*Invalid responses (n = 35) were not included in the frequency counts in this table.*
Table 11.
Coding Guide for Perceived Disadvantages of ICBT Including Coding Categories, Frequencies, Descriptions, and Examples

<table>
<thead>
<tr>
<th>Category (% of valid responses)</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility (1.67%)</td>
<td>Not everyone has ongoing access to a computer or reliable internet source</td>
<td>“Some students don’t have regular internet access so can’t complete the treatment” “Access to internet or computer”</td>
</tr>
<tr>
<td>Avoidance of other options (1.00%)</td>
<td>Users may only try ICBT and not seek out face-to-face treatment or other options</td>
<td>“Avoid seeking a specialist” “Not experiencing the face-to-face”</td>
</tr>
<tr>
<td>Generic negative response (10.63%)</td>
<td>Generic comment that does not fit into the other categories</td>
<td>“Online” “Communication”</td>
</tr>
<tr>
<td>Impersonal (12.29%)</td>
<td>Concerns about feeling disconnected from therapist because of lack of face-to-face contact</td>
<td>“It’s very impersonal. There is no room to see facial expressions or body language. Things can also be misinterpreted online.” “No physical interactions might lead to less success.”</td>
</tr>
<tr>
<td>Increase in symptoms (8.97%)</td>
<td>Concerns that focusing on symptoms may lead to an increase in symptoms</td>
<td>“Could drive them deeper into depression” “Seeking treatment can make it seem as if your life is being taken over by mental illness”</td>
</tr>
<tr>
<td>Ineffective (4.65%)</td>
<td>Beliefs that ICBT is not as effective as other treatment options</td>
<td>“No real intervention” “It could prove ineffective if there is not an immediate response in certain cases”</td>
</tr>
<tr>
<td>Invalid response (0%)</td>
<td>Responses that do not fit meaningfully into any other category; letter strings; irrelevant words</td>
<td>“TWO” “Hhhh”</td>
</tr>
<tr>
<td>Lack of accountability (10.63%)</td>
<td>Concerns about motivation to continue through course; worry that there is not enough follow-up from therapists</td>
<td>“Potential lack of follow through from either side” “Hard to commit to”</td>
</tr>
<tr>
<td>Concern</td>
<td>Description</td>
<td>Examples</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Neutral response (27.91%)</td>
<td>Neither a positive nor negative comment</td>
<td>“I don’t know” “Unsure”</td>
</tr>
<tr>
<td>Privacy concerns (3.32%)</td>
<td>Concerns about personal information being accessed by others</td>
<td>“Privacy and wait period” “Privacy”</td>
</tr>
<tr>
<td>Technology issues (1.66%)</td>
<td>Concerns about malfunctions with the site, reliance on technology, etc.</td>
<td>“Power outages and technology glitches” “There may be a lot of traffic on the site”</td>
</tr>
<tr>
<td>Too much work (10.63%)</td>
<td>Concerns that ICBT course will be too time-consuming; additional stress for students who already have other coursework</td>
<td>“The students will be too busy” “Too time consuming”</td>
</tr>
</tbody>
</table>
several participants included ‘Neutral’ \((n = 42, 14.14\%\) or ‘Negative’ \((n = 14, 4.71\%\) sentiments about ICBT. The most common advantage identified was ‘Other personal benefits’ \((n = 44, \text{e.g. } “Self-confidence building”\)) which included generic personal benefits that did not fit the criteria for the other codes in the advantages section. The next most common advantages were ‘Convenience’ \((n = 38, \text{e.g. } “It can be done on your own time.”\)) and ‘Accessibility’ \((n = 30, \text{e.g. } “Easier access”\)).

**Disadvantages.** There were 328 codable phrases based on participants’ responses to perceived disadvantages of ICBT. Of these phrases, 301 were valid \((91.77\%)\) and 27 were invalid \((8.23\%)\). A large proportion of the valid responses were coded as ‘Neutral’ \((n = 82, 27.24\%)\) and included comments such as, “I don’t know” or “Unsure”. The three most common perceived disadvantages were that ICBT is ‘Impersonal’ \((n = 37, 12.29\%, \text{e.g. } “No physical interactions might lead to less success”\)), a ‘Lack of accountability’ \((n = 32; 10.63\%, \text{e.g. } “Potential lack of follow through from either side”\)), and ‘Too much work’ \((n = 32; 10.63\%, \text{e.g. } “Students are too busy”\)).

**Discussion**

Depression and anxiety are highly prevalent and debilitating mental health concerns faced by post-secondary students (American College Health Association, 2018). Students who seek help are met with several financial, social, and logistic barriers (Eisenberg et al., 2007). While the majority of post-secondary institutions in Canada have some form of free counselling services, there are long wait-lists that prevent students
from receiving timely care (Gulliver et al., 2010). Student healthcare plans offer limited coverage for sessions with a psychologist which may be insufficient for more severe cases of depression or anxiety. Furthermore, students’ busy academic schedules make it challenging to schedule appointments with mental health professionals. Internet-delivered mental health interventions such as ICBT offer a promising alternative to face-to-face therapies for student populations. There is a growing body of evidence for the efficacy of ICBT in community populations with anxiety and depression (Andersson et al., 2014), but more research is needed to examine the use of ICBT for post-secondary students.

Research to understand attitudes is critical especially when it comes to implementation of ICBT within routine care. For example, the Consolidated Framework for Implementation Research (Damschroder et al., 2009) has identified that attitudes of users can be a barrier to implementation. Similarly, the theory of planned behaviour (Ajzen, 1985) acknowledges that attitudes can be related to behaviour change. Better understanding of patient attitudes has potential to facilitate implementation of ICBT among students.

The primary goal of this study was to examine students’ attitudes and perceptions of ICBT compared to more commonly used interventions, such as face-to-face CBT or medication. Results from this study were separated based on mental health treatment seeking in the previous 12 months. Demographic (e.g. age and gender) and clinical (e.g. PHQ-9, GAD-7, AUDIT, and GHSQ) variables were analyzed as predictors of treatment adherence, acceptance, and credibility for ICBT, face-to-face CBT, and medication. Another aim of this study was to analyze students’ preferences for the frequency and method of contact with a mental health professional. There is limited research on
students’ perceptions of ICBT, so qualitative data on the perceived advantages and disadvantages of ICBT was also analyzed.

The results of a meta-analysis indicate that there is a 3:1 preference for psychotherapy over medication in clients with anxiety and depression (McHugh, Whitton, Peckham, Welge, & Otto, 2013), so increasing the diversity of effective psychotherapies is important to meet client preferences. ICBT is a potential alternative to face-to-face services and medication, however, attitudes and perceptions towards ICBT remain mixed (Soucy & Hadjistavropoulos, 2017). In the present study, students were asked to choose which treatment option they would prefer for anxiety or depression, and expressed a preference for face-to-face services (44.6%), followed by medication (31.9%), and finally ICBT (23.5%). However, when scores on the TAAS and CEQ were examined in the overall sample, there was no difference in perceptions of likely treatment adherence, acceptability, and credibility between the three treatment options. This suggests that when given the choice, face-to-face services and medication are more desirable than ICBT; however, given the time delay in receiving face-to-face treatment, these results suggest that individuals may be willing to try ICBT, as it is perceived to be moderately easy to adhere to and will lead to a reduction in symptoms.

Students in the current study expressed moderately positive attitudes towards the use of face-to-face CBT, medication, and ICBT for the treatment of anxiety and depression. Attitudes towards ICBT were considerably more positive in this study than in previous studies of post-secondary students. Mitchell and Gordon (2007) examined students’ attitudes towards ICBT before and after viewing a demonstration on the content and format of an ICBT course. Pre-demonstration attitudes towards ICBT were poor and
participants had moderately low (34.7%) expectancy-for-improvement scores for ICBT. After watching a demonstration on ICBT, participants’ mean expectancy rates increased to 60%. However, only 9.8% identified ICBT as their preferred choice of treatment. This is in contrast to the 23.8% of students in the current study who expressed a preference for ICBT over medication or face-to-face CBT. Adolescents’ preference for ICBT is even higher, with a third of adolescents indicating they would choose online therapy over face-to-face services (Sweeney, Donovan, March, & Forbes, 2019). The mean age of adolescents in the Sweeney and colleagues (2019) study was 16.98 (SD = 1.32), which was more than 10 years younger than the mean age of participants in the current study (Mean = 27.40, SD = 8.86). A possible conclusion that can be drawn from the results of these three studies is that younger populations are more receptive to internet interventions than older populations.

Perceived treatment adherence, acceptability, and credibility scores were compared between treatment seekers and non-treatment seekers in this study. Treatment seekers were defined as individuals who had sought out treatment from a mental health professional (e.g. campus counselling services, social worker, psychologist, counsellor, or psychiatrist) in the previous 12 months. There was not a significant difference in perceptions of treatment adherence and acceptability on all three vignettes (i.e. face-to-face CBT, medication, and ICBT) between treatment seekers and non-treatment seekers. However, when perceptions of credibility were examined, it was found that treatment seekers rated all three treatment options as more credible than non-treatment seekers. One possible explanation for this is that treatment seekers have first-hand experience with at least one of the treatment modalities, and therefore regard it as more credible on the
CEQ. Items on the CEQ include ratings of how logical and effective a treatment is, as well as whether or not they would recommend the treatment to a friend.

4.1 Help-seeking

Rates of mental health help-seeking in this study were considerably higher than expected, with 62.4% of students seeking help from counselling services, an off-campus mental health professional (e.g. psychologist, social worker, therapist, etc.), or a psychiatrist in the previous 12 months. In particular, campus counselling services were visited by 43.6% of the sample. An earlier study of a Canadian university found that while a majority of students were aware of counselling services (74%; \( n = 296 \)), only 8% \( (n = 29) \) reported utilizing the services in the past (Robinson et al., 2016). One significant difference between the two studies is that whereas the current study included a representative sample of students across Canada, participants from Robinson’s study were all from a single university in Western Canada. It is possible that participants in the Robinson study sought help from off-campus services, as general mental health treatment seeking was not reported.

Another possible explanation for the high rates of help-seeking in the current study is the timing of the sampling period. Data was collected at the end of September and beginning of October, when students may still be transitioning into their educational programs and the increase in workload or getting used to life in a new city if they moved to attend their post-secondary institution. Students were asked about their treatment seeking in the previous 12 months, which should have controlled for the fluctuations in treatment-seeking that may occur across an academic year. However, students may have experienced the recency effect, a cognitive bias that increased their levels of reporting
treatment seeking because they had sought out treatment recently and memory of this information was more readily accessible than at a different point in the year.

4.2 Attitudes and perceptions based on treatment-seeking

Results from the current study suggest that some attitudes and perceptions of ICBT differ between treatment seekers and non-treatment seekers. In the present study, participants in the treatment seeking group had higher scores on the PHQ-9 ($M = 11.30$) than non-treatment seekers ($M = 7.65$), with nearly double the proportion of treatment seekers ($56.6\%$) than non-treatment seekers ($29.7\%$) exceeding the clinical cut-off of a score greater than 10 on the PHQ-9. The difference in attitudes based on treatment seeking may be explained by levels of symptom severity. Previous studies have found a connection between distress levels and help-seeking intentions (Ryan, Shochet, & Stallman, 2014). In their study of 254 university students, help-seeking intentions for internet interventions were $39.1\%$, $49.4\%$, and $57.7\%$ in low, moderate, and severely distressed students, respectively. Therefore, it is possible that non-treatment seekers in the present study had less positive views towards ICBT because they did not perceive a need for it based on their low symptom severity.

Students expressed a preference for having weekly contact with a mental health professional over email if they were to take part in an ICBT intervention. A large majority of students ($83.6\%$) preferred some form of required therapist support over optional support. However, a sub-group of students ($16.4\%$) reported a desire for no contact with a mental health professional during the course of ICBT, which would result in a self-guided approach. In Ryan and colleagues’ (2014) study, on students’ attitudes towards ICBT $73.9\%$ stated a preference for receiving some face-to-face support in
addition to ICBT and 26.1% having a preference for completely self-guided ICBT.

Overall, the results suggest that students’ preferences for the frequency of contact with a professional do not differ substantially from the protocols of many existing ICBT programs targeted at the general adult population that include some element of therapist support (Andersson et al., 2013). This finding is promising, as it suggests that existing ICBT programs may not require any adaptations to the frequency of therapist contact for student populations.

Gender and depression severity were identified as significant predictors of the acceptability of ICBT. Females perceived ICBT to be more acceptable and easier to adhere to than males. This finding is in contrast to several previous studies on predictors of attitudes towards ICBT that found that gender is not a significant predictor (Soucy & Hadjistavropoulos, 2017; Apolinario-Hagen et al., 2018). Higher scores on the PHQ-9 were associated with more negative attitudes towards ICBT. Individuals with more severe or complex depression may have more negative attitudes because ICBT may be perceived as not intense enough or too brief for their symptoms. This is one of the limitations of ICBT, as it is only intended for individuals with mild to moderate depression. A face-to-face therapist is likely required in more severe cases where the client would benefit from more regular contact with a professional.

A recent study on individuals with mild to moderate depression found that age, gender, frequency of internet usage, and severity of depression symptoms on the PHQ-9 were not significant predictors of attitudes towards internet interventions (Schröder et al., 2017). This finding is in contrast to the current study, which found that both age and PHQ-9 scores were significant predictors of treatment acceptability and adherence.
Schröder and colleagues (2017) also reported that individuals recruited from a clinical setting expressed more negative attitudes than those from a non-clinical setting, especially on the subscale that focuses on the anonymity benefits of internet interventions. A possible explanation for this is that participants who are recruited from a clinical setting are used to receiving face-to-face treatment, and may favour the strength of an in-person relationship over the potential benefit of anonymity in an internet-based intervention. The perceived benefits of anonymity were not compared between treatment seekers and non-treatment seekers in the current study, so it is unknown whether non-treatment seekers have more favourable views about anonymity than treatment seekers in our sample.

The findings of this study are unique because they focus on post-secondary students’ attitudes towards ICBT in individuals who have never been enrolled in an ICBT intervention. Previous research has relied on post-intervention measures, such as completion rates to assess acceptability. For example, Palacios and colleagues (2018) found that post-secondary students completed approximately 50% of the course content in three ICBT courses targeting anxiety, depression, and stress (*Space from Anxiety*, *Space from Depression*, and *Space from Stress*, respectively). One of the benefits of measuring acceptability in students who have never accessed ICBT is to identify potential barriers to ICBT service utilization, therefore helping with future implementation efforts in student populations.

In the current study, general help-seeking behaviours (specifically intent to seek help) were the only significant predictor of perceptions of the credibility of ICBT. Students with higher help-seeking intentions perceived ICBT as more credible than those with low
help-seeking intentions. When answering the GHSQ, students rated the likelihood of themselves seeking help from a list of 14 different sources, including ICBT. To receive a high score on the GHSQ, individuals would have to report a high likelihood of receiving several different forms of treatment or support, so the GHSQ may be more of a measure of openness to treatment options than to actual help-seeking intentions.

4.3 Preferences for content

This study also examined student preferences for types of content to be included in an ICBT intervention. Some ICBT programs for anxiety and depression include supplementary materials for related physical and mental health topics, such as sleep hygiene, stress reduction, and managing alcohol intake. Supplementary materials are optional content that can be accessed by ICBT users throughout the course of the program, and can often be downloaded as PDFs for the user to save for a later time (Titov et al., 2010). In this study, the five topics with the highest perceived utility were ‘Anxiety’, ‘Stress reduction’, ‘Depression’, ‘Suicide prevention’, and ‘How to help others in distress’. The report from the NCHAII Canadian comparison group (American College Health Association, 2016) identified several similar areas of concern for post-secondary students. In the previous 12 months, the most common factors affecting their academic performance were stress (42.2%), anxiety (32.5%), sleep difficulties (28.4%), and depression (20.9%). The overlap in topics identified from the NCHA II report and the current study suggest that anxiety, depression, sleep difficulties, and stress are all topics that should be included in an ICBT program for post-secondary students. While other topics of concern are raised by students (e.g. alcohol use, attention difficulties, chronic pain, grief), the inclusion of all of these topics in a single ICBT course may be
cumbersome. Face-to-face services may be more appropriate for students facing these additional mental and physical health concerns, though ICBT programs are being trialed for alcohol use (Frohlich et al., 2018) and chronic health conditions (see Mehta, Peynenburg, and Hadjistavropoulos, 2018 for a review) in the general adult population.

4.4 Treatment Time Delay

This study appears to be the first one to date to assess the effect of time delays on treatment preferences in a post-secondary student population. A treatment time delay approach was taken to identify at what point ICBT became more favourable than face-to-face CBT. When given the option between receiving face-to-face CBT in a week and ICBT today, there was a preference for waiting a week to receive face-to-face services. Once the treatment time delay for face-to-face CBT was increased to two weeks, there was a preference for receiving ICBT immediately. The two-week time delay represents a significant cut-off where the immediacy of receiving treatment became more important than the preference for treatment modality. Wait-lists are an ongoing barrier to accessing care for students with anxiety and depression, especially at university counselling centres and the public healthcare system. In regions where ICBT is accessible, students would benefit from receiving ICBT with less of a waiting time than it would take for face-to-face services.

4.5 Qualitative results

Few qualitative studies have examined post-secondary students’ perceptions of ICBT for the treatment of anxiety and depression, and those that have are limited by small sample sizes. One study included 19 students in a focus group to gain an understanding of perceptions of a virtual mental health clinic (Chan et al., 2016). Using
thematic analysis, the authors identified two predominant benefits of internet interventions including anonymity/avoidance of stigma and accessibility. In the present study, ‘Accessibility’ was also perceived as an important advantage of ICBT, accounting for nearly 10% of students’ responses. The most common disadvantages of ICBT reported were that it is ‘Impersonal’ (12.29%), there is a ‘Lack of accountability’ (10.63%), and it is ‘Too much work’ (10.63%). The most prominent concern in the Chan and colleagues (2016) study was about privacy and confidentiality. Differences in findings between the two studies may be explained by the nature of the interventions described to participants. The ICBT vignette in the current study describes the UniWellbeing Course, which is 5 weeks long and may be seen as a burden to students who are already in full-time studies; in contrast, the virtual mental health clinic in Chan et al. may have been perceived as a resource that can be utilized at any time, without a specific time commitment. Additionally, the proposed virtual mental health clinic included an element of peer-to-peer support, which may address some of the accountability concerns reported by participants in the current study. It has been reported elsewhere (Ellis et al., 2013) that more than half of post-secondary students use online forums to connect to other students with similar problems.

While the majority of participants were able to identify clear advantages and disadvantages to ICBT, there was a significant sub-group who provided neutral or mixed responses. Responses such as “I don’t know” or “I’m not sure” may reflect participant apathy or fatigue, as the open-ended questions were placed at the end of the survey. Alternatively, the participants’ may not have had a deep enough understanding of ICBT to offer an opinion on the questions. This might reflect a weakness of the vignettes
provided, as the vignettes were the sole source of information that participants had about ICBT. In future studies, the vignettes should be piloted on a larger sample to ensure their clarity and comprehensiveness.

4.6 Limitations and Future Directions

There were several limitations to this study that should be considered when drawing conclusions about the study’s results. One potential limitation is that students may have had negative attitudes towards ICBT simply because the treatment modality is unfamiliar to them. To address this, treatment vignettes were provided for each of the treatment modalities, along with the strengths and weaknesses of each treatment. Similar vignettes have been utilized in previous studies to educate participants about ICBT (Soucy & Hadjistavropoulos, 2017). The use of vignettes may be a limitation in general, as it is likely that many respondents will not have received any of the three forms of treatment (ie. face-to-face, medication, or ICBT), so their judgments are based solely on the descriptions provided in the vignette. Furthermore, each vignette contained potential advantages and disadvantages of each treatment for participants to consider. The rationale for including these details was to provide a balanced representation of each treatment option. However, it is possible that participants copied the examples from the vignettes when answering the open-ended questions, rather than identifying what they personally perceived to be an advantage of disadvantage.

The diversity of this study’s sample can be interpreted as both a limitation and a strength. Only 51% of participants identified as being ‘Caucasian/European’, which is considerably lower than the demographics in larger cross-country samples, such as the NCHA II Canadian reference sample in 2016 (65.6% Caucasian). The difference in
proportion of ethnicities may be a limitation in the current study, as it suggests that the sample was not completely representative of the ethnic distribution of students across Canada. Nearly 20% of students in the current study identified as ‘Asian’ (e.g. Chinese, Japanese), which is approximately double the proportion of Asian students in NCHA sample. A consistent finding is that individuals of an Asian background have more negative views towards help-seeking for mental health concerns and have lower rates of mental health service utilization (Fung & Wong, 2007). Specifically, individuals who subscribe more towards supernatural or religious beliefs have a more negative attitude towards seeking professional help, and individuals who adopt a Western stress model of illness have more positive attitudes. Despite this potential limitation, the diversity of the current sample is also a strength, as it contributes to the literature on attitudes and perceptions of ICBT in minority ethnic groups.

Participants in this study were recruited through Qualtrics, which compensates participants for each survey they complete. The sample may have an over-representation of students who are under financial strain, and therefore turn to survey sites such as Qualtrics to ease their financial burden. Future studies on ICBT should assess the financial status of students to see if it is a predictor of attitudes and perceptions of ICBT. Out of the three treatment options examined in this study (i.e. medication, face-to-face CBT, and ICBT), students experiencing financial stress may have more of a preference towards ICBT because it could be the only cost-free option out of the three, depending on their level of health insurance coverage.

A further limitation of this study was that the qualitative data were not coded independently. Optimally, the second coder should have coded the responses to the open-
ended questions separately, rather than reviewing the first coders’ codes and identifying any discrepancies. An additional limitation of this study was that it did not assess actual use of ICBT. Students reported their likelihood of using the intervention based on its acceptability, credibility, and their ability to adhere to it. These questions were directed at help-seeking intentions, rather than actual help-seeking behaviours in the future. In future research, help-seeking behaviours could be assessed by including a link to a free ICBT program at the end of the study, and analyzing how many clicks result in actual registration in the ICBT program.

Despite these limitations, this study provides valuable information about students’ help-seeking behaviours, attitudes and perceptions of ICBT, and preferences for ICBT content. One of the strengths of this study is that it includes the attitudes and perceptions of a large national sample of post-secondary students, in comparison to previous studies that focused on the perspectives of students from a single university. Furthermore, approximately one in five of the participants in this study were graduate students – a population that is often understudied, despite high indicators of high levels of stress, anxiety, and depression in these more senior students. The inclusion of qualitative data on students’ perceptions of ICBT contributes to the existing literature on the advantages and disadvantages of ICBT. The findings from this study will be useful in improving implementation efforts to increase ICBT service utilization in post-secondary populations. Several barriers to ICBT uptake were identified and these would need to be addressed in future research, such as trials of the *UniWellbeing Course*. For example, a large proportion of students expressed a concern that ICBT would be too time-consuming and difficult to manage while completing a full course load at university. In its current
form, the *UniWellbeing Course* includes five modules over the course of 8 weeks. One solution to this would be to spread the content of the *UniWellbeing Course* over the span of more than 8 weeks, so that the weekly homework load is less intense and students are more likely to adhere to the course requirements.

The findings from this study bring several opportunities for future research directions. For example, the results suggested that individuals with higher levels of depression and those who identified as male had more negative attitudes towards ICBT. Future research could focus on the development of educational materials about ICBT that show evidence for ICBT being effective for males and those with mild to moderate levels of depression. Future research should also address students’ preferences for the frequency of contact with a professional. In this study, we found that the most preferred frequency of contact was once a week. However, this only accounted for approximately one-third of students, so it is possible that a large proportion of students would benefit from either more or less contact with a therapist. Future trials could give students the option to select how frequently they have contact with a therapist (e.g. every two weeks, once a week, twice a week, etc.) and assess the impact that different levels of therapist contact have on changes in symptoms of anxiety and depression.

An additional research direction that could be explored is the inclusion of materials on suicide awareness and prevention in an ICBT program. Currently, the screening process for programs such as the *Wellbeing Course* excludes individuals who have a high risk for suicide or who have been hospitalized in the previous 12 months for a mental health concern. The rationale for this is that ICBT courses are not intended to replace face-to-face services in clients that have severe mental health concerns.
Additionally, ICBT is typically a ‘low-intensity’ treatment option, as contact with a therapist is often asynchronous and may only occur once per week. However, based on the findings of the current study, there appears to be a high demand for materials addressing suicide in an ICBT course.

4.7 Conclusion

This study provides important insight into the role that treatment seeking plays in post-secondary attitudes and perceptions of ICBT. It aimed to identify and address barriers that prevent students from seeking and/or receiving help for their mental health concerns. Given that post-secondary students are familiar with online systems and digital technologies, it is likely that web-based alternatives to face-to-face care could be well-received by this population. This study explored students’ perceptions and attitudes towards ICBT as an alternative to face-to-face therapy. Overall, students endorsed moderately positive attitudes towards ICBT. Despite this, there was a preference for face-to-face services or medication over ICBT for the treatment of anxiety or depression. ICBT became more preferable than face-to-face CBT when students were given the choice between receiving ICBT today or face-to-face services in two weeks, suggesting that ICBT is preferable in situations where there would be a delay in receiving traditional services. Gender and depression symptom severity were significant predictors of the perceived acceptability of ICBT, with females and individuals with less severe depression symptoms perceiving ICBT as more acceptable than males or those with more severe depression symptoms. The only significant predictor of the credibility of ICBT was help-seeking, with more positive attitudes towards help-seeking being associated with greater perceived credibility of ICBT. Participants identified several advantages (e.g.
convenience, accessibility, stress relief) and disadvantages (e.g. impersonal, lack of accountability, too much work) to using ICBT for the treatment of anxiety and depression, which were similar to those outlined in the existing ICBT literature.

Individuals may have negative attitudes towards ICBT for a variety of reasons, and understanding why participants show lower interest in ICBT could help reduce attrition rates in the future. For example, if the content of the ICBT program is not sufficiently engaging or appealing to the service user, then they may drop-out from the program (Kenardy et al., 2003). The results of this study can assist researchers in designing an ICBT program for students that meets both their perceived needs (e.g., anxiety, stress, depression, suicide risk), and the recommendations made in the existing literature.

Recently, the Canadian Institutes of Health Research (CIHR) highlighted the importance of patient-oriented research through the SPOR initiative (Canada’s Strategy for Patient-Oriented Research, 2017). This study took a patient-oriented approach by consulting with potential service users about their preferences for treatment content and modality, and frequency and modality of contact with a mental health professional. The results of this study can help inform trials of ICBT in post-secondary populations, such as the UniWellbeing Course at the University of Regina. By taking a patient-oriented approach, it is likely that future service users will perceive ICBT as an acceptable alternative to face-to-face services, which could contribute to higher rates of uptake, lower rates of drop-out, and more positive treatment outcomes in post-secondary student populations.
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Statistics Canada (n.d.). Table 13-10-0587-01. Contact with health professionals about mental health, by age, group, and sex, household population aged 12 and over, Canada, provinces, territories, health regions (January 2000 boundaries), and peer groups.

Statistics Canada (n.d.). Table 37-10-0011-01. Postsecondary enrolments, by program type, credential type, classification of instructional programs, primary grouping (CIP_PG), registration status, and sex.


Appendix A: Demographics Questionnaire

What is your age?
18-20 years
21-24 years
25-29 years
30+ years

What is your sex?
Female
Male
Other, please specify: ___________

Can you read, write, and communicate fluently in English?
Yes  No

What province or territory are you currently attending school in? _____________

What post-secondary institution (i.e. university, college, etc.) do you attend? __________

How would you describe the size of the post-secondary institution you attend?
< 2,500 students
2,500 – 4,999 students
5,000 – 9,999 students
10,000 – 19,999 students
20,000 students or more

How would you describe the size of the city that your post-secondary institution is located in?
Small town (population 2,500 – 9,999)
Small city (population 50,000 – 249,999)
Large city (population 250,000 – 499,999)
Very large city (population over 500,000)

What is your current living situation? (check primary category)
Campus residence hall
Fraternity or sorority house
Other university housing
Parent-guardian home
Other off-campus housing
Other
What is your relationship status? (check primary category)
- Single
- Married/Partnered
- Separated/Divorced
- Other, please specify: ________

Which of the following represents your primary ethnic origin? (check primary category)
- Asian (e.g., Chinese, Japanese)
- Hispanic
- First Nations/Métis
- African
- Middle Eastern
- Caucasian/Euro
- South Asian
- Other, please specify: ________

What is your current employment status? (check primary category)
- Employed full-time
- Retired
- Full-time student
- Employed part-time
- Homemaker
- Part-time student
- Unemployed
- Short-term disability
- Seeking employment
- Casual employment
- Long-term disability
- Other, please specify: ________

What is your current status as a student?
- 1st year undergraduate
- 2nd year undergraduate
- 3rd year undergraduate
- 4th year undergraduate
- 5th or more year undergraduate
- Master’s student
- PhD student
- Professional student

Please indicate which professionals (if any) you have visited in the past 12 months:

- Campus counselling services
- Physician/GP/Family doctor
- Mental health professional off-campus (e.g. psychologist, therapist, counsellor, social worker, etc.)
- Psychiatrist

Have you taken medication for anxiety and/or depression in the past 12 months?
- Yes
- No
Appendix B: Patient Health Questionnaire-9 item Scale

Instructions:

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</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 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 a lot more than usual</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead, or of hurting yourself</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you checked off any problems, how difficult have these 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 C: Generalized Anxiety Disorder-7 item Scale

Instructions:

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

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>Several days</th>
<th>Over 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's 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 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 D: Alcohol Use Disorders Identification Test (AUDIT)

Please indicate the answer that is correct for you.

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you have a drink containing alcohol?</td>
<td>Never</td>
<td>Monthly or less</td>
<td>Two to four times a month</td>
<td>Two to three times per week</td>
<td>Four or more times a week</td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
<td>1 or 2</td>
<td>3 or 4</td>
<td>5 or 6</td>
<td>7 to 9</td>
<td>10 or more</td>
</tr>
<tr>
<td>3. How often do you have more than 6 drinks on one occasion?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>4. How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>5. How often during the last year have you failed to do what was normally expected from you because of drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Two to three times per week</td>
<td>Four or more times per week</td>
</tr>
<tr>
<td>9. Have you or someone else been injured as a result of drinking?</td>
<td>No</td>
<td>Yes, but not in the last</td>
<td>Yes, during the last</td>
<td></td>
<td></td>
</tr>
<tr>
<td>your drinking?</td>
<td>year</td>
<td>year</td>
<td></td>
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<td>------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>10. Has a relative or friend, or doctor or other health worker, been concerned about your drinking or suggested you cut down?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
<td>Yes, during the last year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: General Help-Seeking Questionnaire (GHSQ)

1. If you were dealing with anxiety, how likely is it that you would seek help from the following people? Please indicate your response by identifying the number that best describes your intention to seek help from each help source that is listed.

1 = Extremely Unlikely 3 = Unlikely 5 = Likely 7 = Extremely Likely

<table>
<thead>
<tr>
<th>Help Source</th>
<th>1 (Extremely unlikely)</th>
<th>2</th>
<th>3 (Unlikely)</th>
<th>4</th>
<th>5 (Likely)</th>
<th>6</th>
<th>7 (Extremely likely)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus counselling services</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mental health professional off campus (e.g. psychologist, social worker, counsellor)</td>
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<tr>
<td>Internet-delivered cognitive behaviour therapy (ICBT)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Doctor/GP</td>
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</tr>
<tr>
<td>Intimate partner (e.g. girlfriend, boyfriend, husband, wife, etc.)</td>
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<tr>
<td>Friend</td>
<td></td>
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<tr>
<td>Other relative/family member</td>
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<tr>
<td>Phone helpline</td>
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<tr>
<td>Minister or religious leader (e.g. Priest, Rabbi, Chaplain)</td>
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</tbody>
</table>
2. If you were dealing with DEPRESSION, how likely is it that you would seek help from the following people? Please indicate your response by identifying the number that best describes your intention to seek help from each help source that is listed.

1 = Extremely Unlikely 3 = Unlikely 5 = Likely 7 = Extremely Likely

<table>
<thead>
<tr>
<th>Help Source</th>
<th>1 (Extremely unlikely)</th>
<th>2</th>
<th>3 (Unlikely)</th>
<th>4</th>
<th>5 (Likely)</th>
<th>6</th>
<th>7 (Extremely likely)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus counselling services</td>
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<tr>
<td>Mental health professional off campus (e.g. psychologist, social worker, counsellor)</td>
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<td>Internet-delivered cognitive behaviour therapy (ICBT)</td>
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<tr>
<td>Doctor/GP</td>
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<tr>
<td>Intimate partner (e.g. girlfriend, boyfriend, husband, wife, etc.)</td>
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<td>Friend</td>
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<tr>
<td>Other relative/family member</td>
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<tr>
<td>Phone helpline</td>
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<tr>
<td>Minister or religious leader (e.g.</td>
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<tr>
<td>Priest, Rabbi, Chaplain)</td>
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<tr>
<td>I would not seek help from anyone</td>
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</tr>
</tbody>
</table>
Appendix F: Treatment Vignettes

The goal of this study is to investigate student perceptions of different treatments for anxiety and depression. Your feedback will help us improve how psychological treatments are offered to student populations.

Instructions:

A variety of options exist for the treatment of anxiety and depression. Please read the following descriptions of these treatments carefully. Complete the questionnaires that follow each description.

Face-to-face cognitive behavioural therapy

Cognitive behavioural therapy (CBT) is a structured treatment that has been found effective for both anxiety and depression. CBT addresses the relationships between thoughts, feelings, and behaviours. It is recommended that clients receive between 8 to 20 sessions with a therapist, with each session lasting approximately 50 minutes. In the first couple of sessions, the therapist provides education about the CBT model of anxiety or depression, and explains how the client’s personal experience fits into this model. The therapist and client work collaboratively to set treatment goals. In later sessions, clients develop skills for emotional awareness and the awareness and tolerance of physical sensations. Unhelpful behavioural and thinking patterns are identified, and the client learns alternative strategies for dealing with their emotions. Homework is a critical element of CBT, and clients typically receive weekly homework to practice the skills that they learned in session. The final sessions focus on relapse prevention, with clients and therapists creating a plan for how the client can stay well after finishing therapy.

Advantages: There is a large body of research that supports CBT as an effective treatment for anxiety and depression. CBT focuses on the shared features of anxiety and depression, so if a client chooses to focus on one condition (e.g. depression), they often experience improvements in another condition (e.g. anxiety) too. CBT is also time-limited, which encourages the therapist and client to remain on task throughout the sessions. Clients who receive CBT for anxiety and depression experience significant decreases in their symptoms that are maintained even after treatment ends.

Disadvantages: Students may find it difficult to access face-to-face services that offer CBT. Campus counselling services may not offer CBT, or may limit the number of sessions per student. The student’s schedule must allow for weekly, face-to-face sessions with the therapist. Student health care plans may not cover the necessary number of treatments if students seek help from a therapist outside of their university campus.
Medication

There are several medications that have been found to reduce symptoms of anxiety and depression in the research literature. Physicians or psychiatrists prescribe a small, daily dose that increases over the span of several weeks. It may take several weeks before the client experiences a decrease in symptoms. Individuals who receive medication for anxiety or depression report greater reduction in their symptoms than individuals who receive a placebo, which is a harmless pill that has no therapeutic effect. It is recommended that individuals continue to take the medication for several months after their symptoms have improved, as this can help prevent relapse and may allow for further reductions in symptoms. Some individuals report withdrawal symptoms when they stop taking the medication.

Advantages: Medication appears to assist with symptoms of anxiety and depression. Clients do not have problems weaning off the medication. Often clients who take medications for depression experience improvements in other symptoms, like general anxiety or panic. Medication is widely used and a convenient form of treatment, as it is prescribed by a family doctor or psychiatrist. It requires relatively little client time, compared to weekly therapy sessions and homework from each session. Medication can help prevent relapse in patients with chronic anxiety and depression.

Disadvantages: Clients should not drink alcohol, become pregnant, or breastfeed while taking medication for anxiety or depression. It can take 12 weeks or longer before changes in symptoms occur. Side effects, such as headaches, fatigue, irritability, insomnia, weight gain, and sexual dysfunction have been experienced. These side effects usually occur early on in treatment and last for a few weeks; however, some side effects (e.g., weight gain, sexual problems) may persist for the duration of treatment. It is possible that symptoms of anxiety or depression may reappear once medication is stopped.
Therapist-assisted Internet-delivered cognitive behavioural therapy

Various Internet-delivered cognitive behaviour therapy (ICBT) programs have been found to be effective for the treatment of anxiety and depression. One ICBT program that has been researched for use with student populations consists of 4 core online lessons for students to complete over the span of 5 weeks in a time and place that is convenient for them. The content of the ICBT program mirrors that of face-to-face therapy. Students receive education about anxiety and depression, and how their thoughts, feelings, and behaviours contribute to their symptoms. Students develop skills for emotional awareness, and learn to identify and change unhelpful thinking and behavioural patterns. In each of the lessons, students view power point slides with text information and supporting images. The information in each lesson can be downloaded so users can access it at a later date. Students receive homework assignments to complete for the first three lessons. The online content also includes resources for common problems that students experience including sleep, problem solving, and assertiveness skills. Students receive automated emails as reminders to work on the lessons. Additionally, they receive brief weekly contact with a therapist via email or phone.

Advantages: ICBT appears to be an effective treatment for anxiety and depression. Clients have continual access to high quality information that can be reviewed repeatedly as well as support from a therapist. They can access this treatment in the evening while in the comfort of their own home. Clients do not need to travel to their appointments and the therapist does not need to be in the same community as the client. Clients may experience improvements in other symptoms. Clients typically feel better after the treatment is done.

Disadvantages: Clients need to have access to a computer and the Internet in order to complete this treatment. It requires time and effort in order to see improvements and symptoms may increase before they decrease. There is no face-to-face contact with a therapist. There is a small risk that privacy will be breached by unauthorized third parties who are using sophisticated tools. If individuals have severe symptoms or are experiencing suicidal thoughts, then ICBT is not an appropriate treatment option.
Appendix G: Treatment Acceptability and Adherence Scale

Instructions:

Please respond to the treatment that you just read about by indicating your agreement with each of the below statements.

1. If I began this treatment, I would be able to complete it.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

2. If I participated in this treatment, I would be able to adhere to its requirements.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

3. I would find this treatment exhausting.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

4. It would be distressing to me to participate in this treatment.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

5. Overall, I would find this treatment intrusive.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

6. This treatment would provide effective ways to help me cope with anxiety or depression.
   1 2 3 4 5 6 7
   Disagree strongly               Neither agree nor disagree           Agree strongly

7. I would prefer to try another type of psychological treatment instead of this one.
8. I would prefer to receive medication for my anxiety/depression instead of this treatment.

   1 2 3 4 5 6 7
Disagree strongly  Neither agree nor disagree  Agree strongly

9. I would recommend this treatment to a friend with a similar problem (e.g. depression/anxiety).

   1 2 3 4 5 6 7
Disagree strongly  Neither agree nor disagree  Agree strongly

10. If I began this treatment, I would likely drop out.

    1 2 3 4 5 6 7
Disagree strongly  Neither agree nor disagree  Agree strongly

**Based on the information provided here, if I needed treatment right now and it were feasible, I would choose:**

   a. Face-to-face CBT
   b. Medication
   c. Internet-delivered cognitive behaviour therapy (ICBT)

For the following questions, please indicate which choice you prefer (a or b):

1. Would you rather receive:
   a. Face-to-face CBT in one week
   b. ICBT today

2. Would you rather receive:
   a. Face-to-face CBT in two weeks
   b. ICBT today
3. Would you rather receive:
   a. Face-to-face CBT in one month
   b. ICBT today

4. Would you rather receive
   a. Face-to-face CBT in 6 months
   b. ICBT today
Appendix H: Credibility and Expectancy Questionnaire

Instructions:

We would like you to indicate below how much you believe, right now, that the treatment would help to reduce symptoms of depression and/or 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.

1. At this point, how logical does the treatment seem to you?

   1 2 3 4 5 6 7 8 9
   not at all somewhat very logical logical

2. At this point, how successful do you think this treatment would be in reducing symptoms of depression and/or anxiety?

   1 2 3 4 5 6 7 8 9
   not at all somewhat very logical logical

3. How confident would you be in recommending this treatment to a friend who experiences depression and/or anxiety?

   1 2 3 4 5 6 7 8 9
   not at all somewhat very logical logical

4. By the end of this treatment, how much improvement in symptoms of depression and/or anxiety do you think would occur?

   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

For this set, close your eyes for a few moments, and try to identify what you really feel about the treatment and its likely success. Then answer the following questions.
1. At this point, how much do you really feel that the treatment will help to reduce symptoms of depression/anxiety?

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<td>not at all</td>
<td>somewhat logical</td>
<td>very logical</td>
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2. By the end this treatment, how much improvement in symptoms of depression and/or anxiety do you feel would occur?

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<td>90%</td>
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Appendix I: ICBT Perceptions Questionnaire

1. If you used ICBT, how often would you like to have a trained provider email you to check-in on your progress? Please select from the following:
   Daily
   Once every 2-3 days
   Weekly
   Monthly
   Never

2. If you used ICBT, how often would you like to email a trained provider? Please select from the following:
   Daily
   Once every 2-3 days
   Weekly
   Monthly
   Never

3. What types of content do you think would be useful to include in an ICBT program to improve student mental health? Please rate all options on a scale of 1 to 7, where 1 is not at all useful, and 7 is very useful:

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<thead>
<tr>
<th>Rating (1 to 7)</th>
<th>Program Material</th>
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<tr>
<td></td>
<td>Depression</td>
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<td>Anxiety</td>
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<td>Alcohol and other drug use</td>
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<td>How to help others in distress</td>
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<td>Relationship difficulties</td>
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<td>Sexual assault/relationship violence prevention</td>
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<td></td>
<td>Sexually transmitted disease/infection (STD/I) prevention</td>
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</tbody>
</table>
4. Select which option you would prefer if you were seeking ICBT (choose one):

- Complete ICBT on my own with no therapist support.
- Complete ICBT with no regular check-in from a therapist, but have the option to ask questions and get a response (by phone or email) from a therapist in one business day. In this case, you would hear from the first available therapist.
- Complete ICBT with no regular check-in, but the option to get a response (by phone or email) to questions in 2-3 business days. In this case, it would be the same therapist who would answer your questions each time.
- Complete ICBT with the option to have the same therapist check the website once a week and respond to any questions you had.

5. What do you think are some possible benefits of using ICBT for mental health concerns in post-secondary students?

6. What do you think are some possible problems with using ICBT for mental health concerns?
Appendix J: Treatment Preference Form

Instructions:

After reading the three vignettes, please rank the treatment options in order of preference as an intervention for health anxiety from 1 ("Most likely to receive for anxiety/depression") to 3 ("Least likely to receive to receive for anxiety/depression").

__________ Medication
__________ Face-to-face cognitive behaviour therapy
__________ Internet-delivered cognitive behaviour therapy (ICBT)

Please provide a brief explanation for your ranking:

__________________________________________________________

__________________________________________________________

__________________________________________________________

(The following question will only be included in the survey at the University of Regina): To learn more about internet-delivered cognitive behaviour therapy (ICBT), you can visit the following link: https://www.onlinetherapyuser.ca
Appendix K: Research Ethics

Research Ethics Board
Certificate of Approval

PRINCIPAL INVESTIGATOR
Vanessa Peynenburg

DEPARTMENT
Department of Psychology

REB#
2018-153

SUPERVISOR
Dr. Heather Hadjistavropoulos

TITLE
Perceptions of and preference for internet-delivered cognitive behaviour therapy among post-secondary students

APPROVED ON
September 21, 2018

RENEWAL DATE
September 21, 2019

APPROVAL OF
Application for Behavioural Research Ethics Review; Consent form (participant pool); Demographics Questionnaire; Patient Health Questionnaire-9 item Scale; Generalized Anxiety Disorder-7 item Scale; General Help-Seeking Questionnaire (GHSQ); Treatment Acceptability and Adherence Scale; Credibility and Expectancy Questionnaire

Full Board Meeting ☐ Delegated Review ☒

The University of Regina 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 related documents.
Any significant changes to your proposed method, procedures or related documents 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 the renewal and closure forms:
https://www.uregina.ca/research/for-faculty-staff/ethics-compliance/human/ethicsforms.html

Laurie Clune PhD
REB Chair
University of Regina

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