William James College

Investigating the Effectiveness of Telepsychology Administered Cognitive Behavioral Therapy to Treat Anxiety and Depression Among College Age Individuals

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PsyD School Psychology, William James College, 2021

Submitted in partial fulfilment of the

requirements for the degree of

Doctorate of Psychology

Ackknowledgements

I would like to express my sincere gratitude to Dr. Daniel Jacobs, Dr. Craig Murphy, and Dr. Tyler Ferguson who supported me throughout this doctoral project and helped strengthen my research abilities. Their immense knowledge and research experience have encouraged and guided me through every stage of the research project.

This doctoral project would not have been possible without the love, support, and encouragement I received from my parents, my fiancé Declan Foley, and my fiancé's parents. Throughout my doctoral program, they have believed in me and my future aspirations.

Dr. Steven Locke fostered and broadened my understanding of telepsychology which proved to be a landmark effort towards the success of my research project. Dr. Locke dedicated countless hours providing mentoring whether it was evenings after class, weekends, or video conferencing appointments on my lunch breaks from work, he always was there to help strengthen my skills as an aspiring researcher and psychologist.

Furthermore, I have benefited greatly from my undergraduate psychology professor, Dr. Pamela Elizabeth. Dr. Elizabeth has always inspired and motivated me to always strive for more. Her wisdom and guidance are what lead me to pursue graduate studies.

Abstract

The present study investigated the effectiveness of telepsychology administered cognitive behavioral therapy to treat anxiety and depression among college age individuals. Specifically, the study investigated effect sizes of telepsychology administered CBT for treating symptoms of depression and anxiety among college-aged adults with depression and/or anxiety diagnoses. Additionally, the study investigated if there was a significant difference in effect sizes for treating depression symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of depression as well as, if there was a significant difference in effect sizes for treating anxiety symptoms between the two methods of CBT treatment delivery for college-aged adults with a primary diagnosis of anxiety. The researcher utilized a retrospective causal comparative research design using 83 college-aged subjects that were gathered from pre-recorded, patient-centered data from a telepsychology company. The 83 subjects received telepsychology administered CBT to treat symptoms of anxiety and depression. The effect sizes from the treatment sample of the 83 subjects were compared to effect sizes identified from the current literature for clients receiving traditional face-to-face administered CBT. Results suggest that there is not a significant difference between the effectiveness of telepsychology administered CBT and traditional face-to-face administered CBT when treating symptoms of anxiety and depression among college-aged adults with diagnoses of either anxiety or depression. Given the lack of research investigating the effectiveness of telepsychology administered CBT to treat symptoms of anxiety and depression among students, more research is needed to better understand the effectiveness of this treatment method for various school-age groups.

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Introduction

There has been a drastic increase in the number of college students seeking mental health services on campus over the past decade (Lipson et al., 2019). The challenge colleges face to meet an increased demand for mental health services (Xiao et al., 2017) has been described as a crisis by the American Psychological Association (APA). College students are often referred to community mental health centers or placed on wait lists when campus services are not readily available (Xiao et al., 2017). The Association for University and College Counseling Center Directors (2013) has reported that 32% of college counseling centers had to place students on waitlists each school year. The results of the National College Health Assessment (NCHA) survey have indicated that anxiety and depression were the most common mental health disorders treated at college counseling centers (Oswalt et al, 2018).

There are multifaceted explanations for the college mental health crisis. First, there has been a significant increase in the number of people diagnosed with mental health problems (Lipson et al., 2019). Second, the United States is becoming more accepting of people who face mental health challenges, which means that more people are willing to pursue treatment (L'Hôte et al., 2017). For example, the NCHA survey results indicated that between 2009 to 2015, a college student was 30% more likely to seek campus mental health services in comparison to prior years (Oswalt et al., 2018). Third, the limited resources allocated by colleges and universities to mental health services is limiting the ability of on-campus counseling centers to increase the number of services they provide. The National Council on Disability reported in 2017 that the lack of financial resources was one of the main barriers to students receiving mental health services ("Federal Study on College," 2017).

Anxiety and depression are the most common mental health disorders in college students who seek mental health services. According to the Anxiety and Depression Association of America (ADAA), anxiety is the most common mental health disorder in the United States and affects 40 million adults. The ADAA has further stated that nearly three quarters of adults who are affected by anxiety experience their first episode before the age of 22. The National Institute of Mental Health (2017) has stated that anxiety symptoms can interfere with daily activities such as job performance, schoolwork, and relationships. Additionally, the ADDA has stated that in 2015 alone, over 16 million adults in the United States have experienced a major depressive episode. Furthermore, depression is the leading cause of disability among people aged 15-44 in the United States. Without treatment, mental health issues will likely persist for college students, which can have negative effects on academic achievement, rates of graduation, social interactions, and future employment (Dunley & Papadopoulos, 2019).

There are various forms of treatment for anxiety and depression. Specifically, psychotherapy is one of the most common forms of effective treatment for such disorders (Bandelow et al., 2017). Additionally, patients can benefit from psychoeducation, which involves imparting information about how anxiety and depression cause physiological responses and about available treatment options (Bandelow et al., 2017). Cognitive behavioral therapy (CBT) is the form of psychotherapy with the most empirical support (Bandelow et al, 2017). Cognitive behavioral therapy helps patients to identify and challenge distorted cognitions. This form of therapy also helps patients develop effective problem-solving skills to reduce and manage symptoms of anxiety and depression. The APA has explained that CBT sessions help people to develop coping skills that can assist them to change their thinking, emotions, and behaviors. Furthermore, psychopharmacology and CBT combined has been shown to be another effective

treatment modality. Research suggests that the combination therapy of CBT with pharmacotherapy can be equally or more effective in comparison to CBT alone for treating symptoms of depression and anxiety (Hoffman, 2012).

Although effective treatments have been identified and college-age students have become more accepting of mental health services, there are constraints on receiving services. Since anxiety and depression are the most common types of mental health issues among college students, the symptoms of those conditions cannot be ignored, and treatments should not be delayed when students are seeking help. According to the Center for College Mental Health Survey, in 2014, "one fourth of students seeking services reported having self-harmed, nearly one third had considered suicide, and nearly one tenth had attempted suicide or recently endorsed suicidal ideation" (Xiao et al., 2017). Additionally, the Center for Collegiate Mental Health annual report (2019) explained from 2010 to 2016 there was a 28% increase in students utilizing counseling center services while resources for routine mental health decreased by 7.6%. Furthermore, the Center for Collegiate Mental Health annual report (2019) stated, "as clinicians' standardized caseload increase, centers provided fewer appointments per student with more days between appointments." Lastly, in 2007, the members of the American College Counseling Association completed a survey that investigated the increasing demand for college students who sought mental health services. The survey results indicated that 96% of respondents viewed the caseloads at their colleges and universities to be problematic. Additionally, most respondents reported that limited resources led to insufficient staff at college counseling centers. Ninety percent of counseling directors reported concerns regarding college students not receiving the necessary treatment (Xiao et al., 2017).

Colleges and universities have adopted strategies to use their limited resources to meet the demands for mental health services, including placing students on waitlists, setting clinic-wide session limits, or referring students to off-campus mental health centers. According to the Federal Study on College Mental Health Services (2017), counseling clinics set limits of about five counselling sessions per person, and waitlists for counseling services range from a few days to over a month ("Federal Study," 2017). As a result, many students do not receive treatment within appropriate time frames, and there is a lack of continued mental health support for pervasive issues in addition to challenges with accessing services that require transportation.

Some colleges and universities have adopted telehealth to deliver mental health services to effectively overcome barriers to service (Xiao et al, 2017). Telehealth has been defined by the Federal Health Resources and Services Administration (HRSA) as "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration" ("Telemedicine and Telehealth," n.d.) The American Psychological Association (APA) uses the term "telepsychology" to describe the administration of mental health care through telehealth technology. Telepsychology increases access to mental health services by allowing clients to receive services without facing many of the typical barriers associated with onsite mental health services, such as scheduling constraints and a lack of transportation. Telepsychology services are offered beyond usual clinical hours and remove the need to travel (Dunley & Papadopoulos, 2019). Telepsychology may create a physical barrier between the patient and the mental health provider, but videoconferencing technology allows for the observation of non-verbal behavior, much like traditional in-person methods of care (Théberge-Lapointe et al., 2015).

Studies found promising results from utilizing video conferencing technology to deliver mental health services (Matsumoto et al., 2018). Cognitive behavioral therapy through telepsychology has been demonstrated to significantly reduce symptoms of depression and anxiety while increasing quality of life. Additionally, studies have indicated that there were no significant differences in treatment efficacy between treatment groups that received video conferencing CBT therapy and control groups that received traditional face-to-face CBT (Stubbings et al., 2013).

The working relationship between mental health providers and clients has also been studied to shed more light on the effectiveness of providing mental health services through telepsychology. This relationship is key to effective mental health therapy because it entails the clinician and patient effectively working together to achieve a beneficial goal for the patient (Richardson et al., 2015). Studies have suggested that administering CBT treatment via videoconference does not compromise this working alliance (Stubbings et al., 2013).

There are significant benefits to using videoconferencing technology when there is a lack of local mental health providers or college counseling center availability. Videoconferencing allows the mental health clinician and patient to see and hear each other in real time (Rees & Maclaine, 2015). This permits the clinician to view facial expressions and body language, and the clinician may assess client well-being and emotional state more precisely than if communication was restricted to verbal dialogue. Research has indicated that video conferencing is as effective as face-to-face treatment and does not negatively impact the development of the therapeutic alliance between the clinician and patient (Rees & Maclaine, 2015).

This study adds to the emerging body of research by exploring the efficacy of mental health specialists administering CBT through telepsychology to treat anxiety and depression-

related symptoms in college-age individuals. Specifically, the study conducts a retrospective review of how CBT telepsychology affects patients with diagnoses that fall within the Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition)'s diagnostic categories of either anxiety disorders or depressive disorders. The study focuses on evaluating the effectiveness of treatment by reviewing treatment outcomes. The results are grouped, analyzed, and compared to published data that has supported the effectiveness of traditional, face-to-face CBT. The study contains a literature review that sheds light on the increasing demand of mental health services among college students that is leading to the shortage of available services. This literature review highlights the imbalance between needed and available mental health services amongst college students. The review also informs the process of how to administer the most appropriate mental health treatment options to provide effective counseling services in a timely manner. The researcher hopes that through reviewing current research along with conducting the proposed study, there will be additional information available to help guide best practices of delivering mental health services to college- age individuals while alleviating some of the treatment barriers.

Literature Review

Increasing Demands for Mental Health Services for College Students

The mental health crisis has been explored in a study conducted by Duffy et al. (2019), which explored trends in mood, anxiety, and suicide-related outcomes among college students in the United States. The study analyzed two large national datasets collected between 2007 and 2018 by the NCHA to better understand the increase in mental health symptoms among college students (Duffy et at., 2019). The NCHA included 610,543 college students who answered a 5-point Likert scale that was mainly composed of single-item measures that sought to determine mood symptoms (e.g., depression, anxiety, and anger); intentional self-injury; and suicide-related behaviors over the past year and over a lifetime. The results of the NCHA indicated that "rates of depression, anxiety, non-suicidal self-injury, suicidal ideation, and suicide attempts markedly increased over the assessed years, with rates doubling over the period in many cases" (Duffy et al., 2019, p.1). Specifically, between the 2011–2012 academic year to the 2017–2018 academic year, anxiety increased by 24% and depression increased by 34%. Self-injury increased by 47%, suicidal ideation increased by 75%, and suicide attempts increased by 58%. Additionally, the data analyzed the NCHA indicated that female respondents had a larger increase in mood symptoms, intentional self-injury, and suicide-related behaviors (except suicide attempts) than male respondents (Duffy et al., 2019).

The Healthy Minds Study, like the NCHA study, was a longitudinal study conducted between 2007 and 2018 and involved 177,692 college students. Data was gathered with a web-based screening survey designed to measure "positive mental health, depression, anxiety, intentional self-injury, and suicide-related outcomes" (Duffy et al., 2019, p.3). Positive mental health was measured with the Flourishing Scale, depression was measured with the Patient

Health Questionnaire-9 (PHQ-9), and anxiety was measured with the Generalized Anxiety Disorder 7-Item Scale. The results indicated that the number of students who reported being severely depressed, having engaged in intentional self-injury, and having made a suicide plan or attempted suicide had doubled between 2012 and the 2017–2018 academic school year. Moreover, there was a reported increase of 92% in severe anxiety symptoms and an 81% increase in suicidal ideation (Duffy et al., 2019). In reference to the nationwide trends of mental health needs associated with anxiety and depression that were highlighted within Duffy et al. (2019)'s study, additional studies were conducted to further understand the increasing need of mental health services to treat anxiety and depression symptoms among college students.

Increase in College Students Diagnosed with Anxiety and Depressive Disorders

Between 2010 and 2014, the Franciscan University in Ohio reported a 231% increase in student yearly visits to their on-campus counseling center and a 173% increase in the total number of yearly clients. These alarming statistics led Beiter et al. (2015) to conduct a study that investigated the causes of the increasing demand for mental health services among college students for anxiety, depression, and stress. The study involved a survey that comprised a demographics section; a 5-point Likert scale that rated 19 commonly reported stressors for college students; and a 21-question depression, anxiety, and stress scale (DASS). The study included 374 participants between 18 and 24 who were students at Franciscan University. Of the subjects, 37% identified as male and 63% identified as female, which was an accurate representation of the school's gender demographics.

The results of the study indicated that the top four areas of concern were academic performance, pressure to succeed, post-graduation plans, and financial concerns. Additionally, the researchers found their findings to be like those from other studies that investigated the

causes of college students experiencing anxiety and depression (Beiter et al, 2015). Furthermore, the results indicated that students who lived off campus, transfer students, and upperclassmen scored higher in anxiety, depression, and stress (as per the DASS) than students who lived on campus, non-transfer students, or underclassmen (Beiter et al, 2015). The results explain the variables that affect mental health and the types of college students who are the most affected by anxiety, stress, and depression. In the ensuing years, there began to be collection and publication of data that supported the increasing needs of mental health services of college students diagnosed with anxiety and depression. Thus, researchers began reviewing nationwide surveys and conducting research to better understand the barriers faced by students who attempt to access mental health treatment.

Barriers to Receiving Mental Health Services for College Students

Xiao et al. (2017) investigated the ability of on-campus counseling centers to meet the needs of the increasing population of students who seek mental health treatments. The results of the study have indicated that approximately 9% of college students utilized on-campus counseling centers. The Center for Collegiate Mental Health (CCMH) survey results on mental health treatment utilization between 2009 to 2014 have indicated that the number of students seeking counseling services increased by fourfold the rate of institutional enrollment. These results have also indicated that the number of counseling center appointments increased by more than six times the rate of institutional enrollment. In addition, a study conducted by Smith et al. (2007) has reported that 96% of the members of the American Counseling Association expressed concerns over caseload sizes and 26% expressed the need for more employees in counseling centers (Xiao, et al., 2017).

Additionally, the National Council on Disability conducted a study to determine the challenges experienced by college students with mental health disabilities and to provide targeted best practices for college counseling centers. The participants of the study were 76 mental health practitioners and 148 college students. The results of the study have indicated that 47% of the respondents believed that the limited availability of services due to insufficient federal, state, and college funding significantly affected students' abilities to address mental health problems ("Federal Study on College Mental Health Services", 2017). To this point, 83% of the respondents believed that mental health services could be improved by increasing the number of mental health providers. Moreover, the survey found that 70% of mental health providers were Caucasian. College student respondents emphasized the need for culturally diverse mental health providers to meet the needs of the diverse student population ("Federal Study on College Mental Health Services", 2017). Additionally, 33% of the respondents in the practitioner questionnaire sample believed that mental health services were inadequate at meeting students' needs.

Another reported barrier to receiving mental health services on campus was limited-service availability due to the times of operation. Seventy-five percent of campus mental health counseling centers did not offer services outside of 8 a.m. to 5 p.m. on Monday through Friday. That period conflicted with students' class schedules, thus limiting their opportunities to seek mental health services. Ninety-seven percent of college representatives who completed the Association for University and College Counseling Center Directors Annual Survey reported that their institutions have waitlists for counseling services due to limited office hours and mental health staff ("Federal Study on College Mental Health Services", 2017). Effective methods of treatment must be explored to address the current mental health crisis among college students.

Cognitive behavioral therapy (CBT) has been widely used to treat a broad range of mental health concerns. This study reviews CBT's effectiveness at treating anxiety and depression symptoms.

Cognitive Behavioral Therapy

The CBT model focuses on teaching mental health patients to identify and modify maladaptive cognitions to change emotional and behavioral responses that result in mental health problems. As its name suggests, CBT uses cognitive, behavioral, and physiological mechanisms. The cognitive mechanisms include restructuring and correcting maladaptive thought patterns, adjusting attentional awareness, and learning adaptive strategies for coping with maladaptive thoughts. Strategies for increasing adaptive behavioral responses include reinforcement, extinction of maladaptive responses, and associated learning. Finally, the normalization of physiological arousal can occur through habituation and incompatible response training (Drake, et al., 2017).

Cognitive behavioral therapy is a goal-oriented combination of behavioral therapy and cognitive therapy. Behavioral therapy focuses on the relationship between behaviors and thoughts, while psychotherapy emphasizes the relationship between previous experiences and subconscious thoughts that drive current behaviors. Cognitive behavioral therapy focuses on how cognitions create emotions and helps people to gain a deeper understanding of their thoughts and beliefs. Additionally, CBT is customizable to each patient's mental health needs. Cognitive behavioral therapy is also an umbrella term for a broad range of mental health therapies that are focused on correcting maladaptive cognitions and behaviors (Miller, 2019).

History

Cognitive behavioral therapy was built upon foundational theories such as behaviorism, operant learning, operant conditioning, and social learning. These theories focused on how

behaviors were created through interactions within the environment and how behavior can change by adjusting the environment. In the 1950s, a shift occurred within the field of psychology when Albert Ellis created rational emotive behavior therapy (REBT), which focused on helping patients identify, challenge, and replace irrational thoughts (Miller, 2019). The goal of REBT was to help patients gain rational views of themselves and their environment. In the 1960s, Aaron Beck at the University of Pennsylvania developed the practice of cognitive therapy which focused on identifying, challenging, and replacing cognitive distortions to help patients learn healthier methods of functioning in daily life (Miller, 2019). Beck believed that people interact with their environment based on their perceptions; therefore, if there were cognitive distortions that affected perceptions or reasoning, distorted emotions and behaviors would occur (McLeod, 2019).

Beck's CBT included three mechanisms: the cognitive triad, negative self-schemas, and errors in logic (McLeod, 2019). The cognitive triad represents negative views of the self, the world, and the future. Negative self-schemas describe negative views that a person has about themselves. Errors in logic represent faulty information processing. Beck believed that when these negative views interacted with inaccurate information, distorted cognitions would be created, which would lead to impairments in perceptions, problem-solving abilities, and memory (McLeod, 2019). Furthermore, Beck discovered the importance of the connection between thoughts and feelings; he also invented the term "automatic thoughts" to classify emotionally charged thoughts that occur at a conscious or subconscious level. Additionally, he believed that automatic thoughts were created from distorted thought patterns that occurred during childhood (Martin, 2019).

Clinical Application

The clinical application of CBT entails structured sessions and maintains a problem-solving focus. CBT is client-centered therapy which requires the mental health provider and patient to collaboratively work towards treatment goals. Beck created the term "collaborative empiricism," which refers to the importance of the collaborative relationship between a patient and mental health provider; this relationship should evaluate how the ideas and methods of CBT could apply to patients' problems (Martin, 2019).

The beginning stages of CBT therapy involve mental health providers helping patients to identify their problematic beliefs that influence problematic thoughts and behaviors. This stage is also important for teaching patients how thoughts, feelings, and situations can influence their targeted problem behaviors (Cherry, 2019). Patients also learn how to distinguish their distorted thoughts from reality (McLeod,2019). After patients experience self-discovery and insight through functional analysis, patients are then able to focus on the targeted problem behaviors of their focused problem. Therapists then teach their patients skills and coping strategies that can be applied outside of therapy to help shape and manage emotions and behaviors within their environments. Patients are also assigned homework, which involves practicing the skills used in therapy to improve their emotional and behavioral functioning in daily life.

Effectiveness

Cognitive behavioral therapy is most effective for treating emotional issues related to different depression, anxiety, and eating disorders (Cherry, 2019). For example, cognitive behavioral therapy has repeatedly been shown to be a reliable first-line treatment approach to managing the symptoms of generalized anxiety disorder (Hofmann, et al., 2012). Hofmann, et al.

(2012) conducted a meta-analysis of 106 studies that examined the use of CBT for various mental health problems:

> substance use disorder, schizophrenia and other psychotic disorders, depression and dysthymia, bipolar disorder, anxiety disorders, somatoform disorders, eating disorders, insomnia, personality disorders, anger and aggression, criminal behaviors, general stress, distress due to general medical conditions, chronic pain and fatigue, distress related to pregnancy complications and female hormonal conditions. Additional meta-analytic reviews examined the efficacy of CBT for various problems in children and elderly adults. (p.1)

Administering CBT for social anxiety disorder yielded results of medium-to-large effect size at immediate post-treatment and follow-up in comparison to control groups and waitlisted groups (Hofmann et al., 2012). Additionally, CBT that is applied with relaxation techniques for treating panic disorder (without agoraphobia) has been demonstrated to be superior to medication. Administering CBT for post-traumatic stress disorder has been demonstrated to be superior to other forms of treatment. Furthermore, clinical trials have revealed that CBT had a large effect size for obsessive compulsive disorder (Hofmann et al., 2012). In addition, CBT has been demonstrated to be more effective than waiting lists or no treatment; it has a medium effect size for treating depressive symptoms (Hofmann et al., 2012). The studies on the efficacy of CBT for depression have produced medium results when compared to waitlisted or no treatment groups (Hofmann et al., 2012). Additionally, meta-analysis has indicated that CBT is effective for depressive symptoms in patients with bipolar disorder (Hofmann et al., 2012). Finally, CBT treatments have been demonstrated to have similar effects to pharmacological treatment for

chronic depressive symptoms and yielded results of a medium-to-large effect size. (Hofmann et al., 2012)

Effective Components

Best practices for mental health treatment interventions are key to addressing the increasing need to use mental health services to treat anxiety and depressive symptoms in college students. Cognitive behavioral theory has been described as the "gold standard" of the psychotherapy field because it is the most researched form of psychotherapy, has been proven to be one of the more effective forms of psychotherapy, and has a theoretical framework that aligns with the modern paradigms of understanding the human mind and the causes of behavior (David, at al., 2018). Even though the mechanisms involved in CBT are clearly defined, numerous variations that follow the behavioral learning theory and cognitive theory are also categorized as a kind of CBT.

A systematic review and meta-analysis have been conducted by Oud et al. (2019) to identify the components of CBT that could influence treatment outcomes for youths with depressive symptoms (Oud, et al., 2019). The studies in the review and meta-analysis performed randomized controlled trials that investigated CBT intervention effectiveness at preventing and treating depressive symptoms in youths. Each reviewed study had to have a control group that received an inactive intervention. In total, 31 randomized controlled trials were utilized as part of the systematic review and meta-analysis. In total, 2,369 participants were included in the randomized CBT intervention group, and 1,966 participants were assigned to the control group. The mean age of the participants in the trials was 14 years. The results highlighted a correlation between improvement in depression outcomes and CBT interventions that use both behavioral activation and cognitive restructuring. No significant correlation was found between treatment

outcomes on one hand and the format and setting of the interventions on the other. These findings have suggested that following ethical and legal guidelines for administering mental health care could entail utilizing various formats and settings to provide effective CBT therapy to youths with depressive symptoms without affecting treatment outcomes (Oud, et al., 2019).

Effectiveness for Special Populations

Lastly, it is important to note that the effectiveness of CBT varies for special populations. Patients with limited intellectual functioning may not be able to benefit fully from CBT due to the cognitive demands of the treatment methods (David, Cristea, & Hofmann, 2018). When children receive CBT services, it is advised that treatment should be modified to ensure it is delivered in a way that is developmentally appropriate for their cognitive functioning (David, et al., 2018). When CBT is adjusted for children, it has been demonstrated to be effective for treating internalizing disorders, and the benefits outweighed pharmacological treatments for mood and anxiety symptoms (Hofmann et al., 2012). However, meta-analyses have indicated mixed results for utilizing CBT to treat children with externalizing disorders (Hofmann et al., 2012). Additionally, CBT has been demonstrated to be moderately effective for the treatment of emotional symptoms in elderly patients (Hofmann et al., 2012). Since CBT effectiveness can vary across populations, the following sections explore the effectiveness of CBT treatment across various age groups.

Treating Depression Symptoms

Rubin and Yu (2017) have conducted a study to further understand the effect size of CBT specifically related to reducing and managing depressive symptoms among adult populations. That study entailed a meta-analysis of 84 studies to form benchmark data on the effectiveness of cognitive behavioral therapy at treating depressive symptoms in adult populations. The study

included published randomized clinical trials that supported the efficacy of CBT in the treatment of adult depression and utilized a randomized controlled trail (RCT) design or a treatment group that solely used CBT treatment. Additional inclusion criteria included studies that reported separately for the treatment and control group sample sizes, pre-and posttest means, and standard deviations using a standardized outcome measure to score the level of depressive symptoms. Exclusion criteria of the metanalysis included studies that combined CBT with another treatment, included CBT components as part of the treatment as usual (TAU), used only paraprofessionals to provide the CBT, compared CBT without antidepressant medication to a control condition with such medication, or had inconsistencies between groups in the timing of outcome measurement. (Rubin & Yu, 2017, p.137).

Additionally, many of the included studies measured outcome data using the Hamilton Depression Rating scale regarding the interview method of data collection and the Beck Depression Inventory for self-reported data collection. The results of the metanalysis yielded an aggregated within-group effect size of 1.19 for self-reports and a 1.156 effect size from the Hamilton Depression Rating Scales interview results. Those results were compared to corresponding control groups that had effect sizes of 0.477 and 0.478 respectively (Rubin & Yu, 2017). The results of the within-group effect size and the comparison of control group effect size indicate that CBT treatment may decrease depressive symptoms among adults at a strong effect size.

Treating Anxiety Symptoms

Hoffman and Smits (2008) have studied the effectiveness of using CBT to treat anxiety symptoms. The authors (2008) conducted a meta-analysis to determine the acute efficacy of CBT in treating adults with anxiety disorders. The meta-analysis covered other studies that directly

compared the treatment effectiveness of CBT to a placebo condition. Additional study inclusion criteria included patients between 18 to 65 years old who met DSM-III-R or DSM-IV diagnostic criteria for an anxiety disorder as determined by a psychometrically sound diagnostic instrument. The clinical severity of anxiety had to be measured by psychometrically sound report measures, and there had to be sufficient information to calculate effect sizes. Excluded studies were those that included child, adolescent, and geriatric participants. In total, the meta-analysis yielded 27 studies that totaled 1,496 subjects that met criteria. The results of the meta-analysis indicated that "the random effects meta-analysis of completer samples yielded mean effect sizes for the main outcome measures that were in the medium to large range, each reflecting an advantage of CBT over placebo (Hofmann & Smits, 2008)." The metanalysis study results indicated an overall medium effect size, as calculated by Hedges'g, of 0.73 in relation to CBT reducing symptoms of anxiety (Hofmann & Smits, 2008).

Effectiveness in Primary Education Client Populations

The effectiveness of CBT is supported by the strongest evidence out of all empirically supported psychological treatments for youths with anxiety (Kendall, Swan, Carper, & Hoff, 2018). Administering CBT to youths involves helping them to develop awareness of feelings and behaviors, to learn skills to cope with anxiety, and to practice those skills in real-life settings. Cognitive behavioral therapy has been demonstrated to be effective in both individual and group counseling settings (Kendall, et al., 2018). Chiu et al. (2013) conducted a study to explore the effectiveness of CBT for elementary school students in real-world settings. The participants of the study were 40 elementary school children between the ages of 5 and 12 who met the DSM–IV's diagnostic criteria for anxiety disorders. The participants were randomly assigned to a CBT treatment group or a waitlist control group for a three-month period. Prior to treatment, the

Anxiety Disorders Interview Schedule for DSM–IV (parent and child forms), the parent-rated and child-rated Multidimensional Anxiety Scale for Children, and the Child Behavior Checklist Internalizing Scale were administered to gain baseline data for the symptom severity in both groups (Chiu et al., 2013). The Clinical Global Impressions Improvement Scale was administered at the end of the study to rate the level of symptom improvement. Each of the participants in the treatment group received 10 to 16 60-minute treatment sessions in a school setting. After three months, the results were that 95.5% of the participants in the treatment group no longer met the criteria for an anxiety disorder, unlike only 16.7% of the participants in the waitlist group (Chiu et al., 2013).

Effectiveness in Secondary Education Client Populations

Shirk, et al. (2009) evaluated the effectiveness of school-based CBT in reducing depressive symptoms in adolescents. The participants were 50 high school students between the ages of 14 and 18 who were diagnosed with depressive disorders. Treatment for the study was administered by eight doctoral-level psychologists who followed a manualized and guided CBT intervention for 12 sessions. The CBT treatment involved three models: cognitive, behavioral, and interpersonal. The Diagnostic Interview Schedule for Children (C-DISC-IV) was administered at the pre-treatment and post-treatment stages to assess depressive symptoms. The Beck Depression Inventory-II (BDI-II) and the Life Events Questionnaire were also used throughout the study to gather treatment effectiveness data. The treatment outcome data from nine randomized controlled trials of CBT for adolescent depression were utilized to establish the research benchmark for the study. Sixty-four percent of participants no longer met the diagnostic criteria for depressive disorder, which is comparable with results from previously published

efficacy trials of CBT treatment for depression. The findings of the study support the effectiveness of CBT in treating depression in school-age populations (Shirk, et al., 2009).

Furthermore, Rozenman et al. evaluated the effectiveness of CBT in decreasing anxiety and depressive symptoms in adolescents with a diagnosis of obsessive-compulsive disorder (OCD). “CBT for OCD is comprised of several components, which vary by protocol but typically include psychoeducation, exposure, coping skills, cognitive restructuring, and reward systems;” these components are also treatment techniques that are commonly applied during CBT for depression and anxiety (Rozenman et al., 2019, p. 115). The participants of the study were 137 children and adolescents between 7 and 17. Each participant received 12 therapy sessions of manualized CBT. Independent evaluators administered the Anxiety Disorders Interview Schedule to youths and their parents during pretreatment to confirm a primary diagnosis of OCD and to assess diagnostic comorbidities. The severity of OCD symptoms was assessed with the Children's Yale-Brown Obsessive-Compulsive Scale, and OCD-related functional impairment was measured using the Children's Obsessive-Compulsive Impact Scale. In addition, the Multidimensional Anxiety Scale for Children and the Children's Depression Inventory (CDI) were administered to rate symptoms. All the rating scales were administered during pre-treatment, mid-treatment, and post-treatment. The results have that anxiety and depression symptoms improved over the course of CBT. Furthermore, the study has found that the treatment group demonstrated greater rates of change in the improvement of anxiety-related and depressive symptoms than the control group (Rozenman et al., 2019).

Effectiveness in Postsecondary Education Client Populations

According to Huang et al. (2018), college students are within the age range when common mental health problems such as depression, anxiety, OCD, and posttraumatic stress

disorder (PTSD) are at their developmental peak. Huang et al. conducted a systematic review and meta-analysis of 51 randomized control trials that examined interventions for depression, anxiety, OCD, and PTSD. The study calculated the post-intervention effectiveness of interventions for each of these common mental health problems (i.e., depression, anxiety, OCD, and PTSD). The inclusion criteria for the meta-analysis were as follows: randomized controlled trials on college student participants with depression, OCD, anxiety, and PTSD. The controls had to include a placebo, waitlist, or no treatment; the assessment measures had to be valid; the trials had to involve experimental groups of at least 10 participants; and the examined studies had to have been published between 2000 and 2018. The 51 randomized control trials comprised 3,396 college students from North America, Europe, Asia, and Australia. The metanalysis results indicated that CBT was an effective treatment for depression and generalized anxiety disorder among college students (Huang et al., 2018). In addition to understanding the effectiveness of CBT for treating anxiety and depression, treatment modality is another component involved in providing effective mental health interventions. Specifically, one of the newer methods of treatment delivery is through the use of telepsychology services.

Telepsychology

The American Psychological Association (APA) refers to telepsychology as mental health care that can be administered through technology such as telephones, smartphones, interactive videoconferencing, email, texting, and the internet. Psychologists must make every effort to ensure that the same ethical and professional standards of care and professional practice are applied when administering psychological services through telepsychology. Campbell et al. (2018) have described telepsychology as follows:

> It is not a specialty. It is not a separate domain of practice. Telepsychology is an extension of the broad and general practice of psychology. This conceptualization of telepsychology as an extension of psychologists' current practice is a valuable perspective to take in that the application of telepsychology to practice is not to change fundamental competence, modality of practice, therapeutic approach, or other building blocks of psychologists' practice. Rather, telepsychology offers an opportunity for psychologists to apply their skills, their ethical decision-making, and the profession's standards of care to technology assisted practice. (P.4)

The Use of Telepsychology

Telepsychology can be used as the primary source of therapy, or it can augment traditional face-to-face mental health services through the provision of psychoeducation materials and homework to clients (APA, 2013). In addition, The American Psychological Association's Joint Task Force for the Development of Telepsychology Guidelines for Psychologists (2013) has advised that mental health professionals should consider whether similar traditional methods of service are available, and if so, why telepsychology services would be an equivalent or preferable way to meet the client's needs. Videoconferencing has been referred to as the gold standard of telehealth services due to its ability to simulate traditional face-to-face therapy services (Luxton et al., 2016). Videoconferencing allows a mental health provider to interact with a patient while observing nonverbal behaviors in real time. According to the APA's Practitioner's Guide to Telemental Health (2016), "The visual component of videoconferencing creates a social presence that promotes familiarity, connectedness, and comfort for discussing complex topics that approximates the interactions of in-office settings" (Luxton et al., 2016, p. 10).

Therapeutic Alliance

The therapeutic alliance between the clinician and patient is a major component of therapy and directly affects treatment goal outcomes. The therapeutic alliance is a collaborative and affective bond between a clinician and patient that includes rapport, empathy, and acceptance (Richardson et al., 2015). Such therapeutic factors are present in all effective mental health counseling services, regardless of theoretical orientation (Richardson et al., 2015). The components of the therapeutic alliance are the consensus on tasks to be accomplished during therapy, agreement on treatment goals, and the quality of the relationship between the clinician and patient.

Germain et al. (2010) assessed and compared the development of the therapeutic alliance in patients with PTSD who were receiving therapy via telepsychology services or in person. The study examined 46 participants who had a primary diagnosis of PTSD: 29 of them were in an in-person group, and 17 were in a videoconferencing group. The same psychologists were used for both treatment groups, and none of them had prior videoconferencing experience. Each participant received a one-hour CBT session each week. The duration of services was 16 to 25 weeks, depending on the severity of the participant's PTSD symptoms. Treatment sessions entailed psychoeducation and anxiety management training. Additionally, treatment integrity measures were used to ensure that the therapeutic interventions were followed with fidelity. The following measures were used to evaluate the therapeutic relationship: the Videoconference Therapy Questionnaires (completed pre-treatment),Working Alliance Inventory (completed after every session and again after treatment concluded), Session Evaluation Questionnaire (completed after every counseling session by the psychologist and participant), Videoconferencing Telepresence Scale and the Videoconference Therapy Sessions Questionnaire

(VTSessions-Q) (completed after every counseling session), and Distance Communication Comfort Scale (completed pre- and post-treatment).

The results of the study have indicated that the therapeutic alliances developed similarly between the two treatment groups. Interestingly, the participants' pretreatment comfort levels and perceptions of telehealth did not relate to the developmental process of the therapeutic alliance. These results suggest that even patients who are unaccustomed to videoconferencing technology can still receive effective mental health services. Effectiveness was measured by the Modified PTSD Symptom Scale, which was administered pre-treatment and post-treatment to measure the severity and frequency of PTSD symptoms. There was a significant decrease in both severity and frequency after treatment, with no significant differences between the groups (Germain at al., 2010).

Ethical Guidelines

Competency is an important ethical guideline for telepsychology services. Smucker et al. (2018) explained as follows:

> A thoughtful needs assessment thoroughly explores the psychologist's reasons for pursuing training; targets technologies that the psychologist intends to use; considers the psychologist's prior experience with the technology; and lays out the psychologist's plans to implement technology, including available training resources. (P.13)

A needs assessment will help a psychologist to understand the degree of their competency in relation to administering technology-assisted therapy and will help to determine if any additional training is needed prior to the practical utilization of telepsychology (Smucker et al., 2018).

The Joint Task Force for the Development of Telepsychology Guidelines for Psychologists (2013) has urged mental health providers to conduct an initial assessment of each

patient to determine whether telepsychology services are appropriate for them. It is important to evaluate the potential risks, benefits, multicultural concerns, and ethical concerns that could emerge in the provision of telepsychology services. Additionally, patient competencies at using various forms of technology must be assessed to ensure that the appropriate format of telepsychology is being utilized for therapy (Smucker et al., 2018). Furthermore, mental health providers should continually assess the appropriateness of telepsychology services throughout the duration of treatment to ensure that they are the optimal route of treatment ("Joint Task Force," 2013). Psychologists should collaboratively create and document an emergency plan for each patient who receives telepsychology services. The emergency plan should include a clear procedure and descriptions of local community resources such as hospitals, remote emergency service hotlines, and an emergency contact person (Smucker et al., 2018).

Telepsychology services must uphold the same confidentiality standards as traditional face-to-face counseling services. However, telepsychology may require different considerations for risks to confidentiality and security of information. Psychologists must consider telepsychology's potential threats to patient security, data, and information. Psychologists must also utilize appropriate policies and procedures to protect their patients' confidentiality. Additionally, psychologists are encouraged to appropriately inform their patients about threats to confidentiality and the policies and procedures that are used to protect their information. Psychologists who provide telepsychology services should conduct discussions with their patients regarding what data and information will be stored, how data and information will be stored and accessed, the degree of security of the information communicated through telepsychology technology, and any potential technology-related threats to patient confidentiality ("Joint Task Force", 2013).

Laws and Regulations

In addition to ethical guidelines, psychologists who provide telepsychology services need to be aware of laws and regulations when providing services to patients across jurisdictional lines. The laws and regulations that govern mental health services vary by state, province, territory, and country (Smucker et al., 2018, p. 142). According to the Joint Task Force for the Development of Telepsychology Guidelines for Psychologists (2013), "Psychologists should make reasonable efforts to be familiar with and, as appropriate, to address the laws and regulations that govern telepsychology service delivery within the jurisdictions in which they are situated and the jurisdictions where their clients/patients are located" ("Joint Task Force", 2013, p. 799). Additionally, there are various jurisdictions that lack specific laws that govern the provision of telepsychology. When providing telepsychology services in such jurisdictions, psychologists should be aware of declaratory statements made by other practitioner licensing boards that may shed light on the relevant legal and regulatory requirements ("Joint Task Force", 2013).

Insurance Barriers

Despite the benefits of telepsychology services, some insurance companies require services to be delivered only in specific supervised settings such as clinics. Individuals with mobility issues thus face barriers to accessing telepsychology (Luxton et al., 2016). Currently, the United States federal Mental Health Telemedicine Expansion Act is under review to further help people over 65 to receive telepsychology services. The Mental Health Telemedicine Expansion Act would allow Medicare beneficiaries to access psychotherapy services regardless of whether they live in geographic areas that have mental health provider shortages. Additionally, the act would alleviate patients' transportation burden by enabling them to receive

telepsychology services in their homes instead of having to commute to clinical settings. If the act is passed, it would make it easier for elderly people to receive telepsychology services in their own home by removing insurance restrictions on the use of telehealth services (Luxton et al., 2016).

Response to COVID-19's Implications for Mental Health Services

In response to the impact of the COVID-19 pandemic, rapid changes have been made to ethical, legal, and federal guidelines concerning telepsychology to keep up with the current need for mental health services during the pandemic. On March 17th, 2020, the Office for Civil Rights (OCR) at the U.S. Department of Health and Human Services (HHS) announced that it would immediately "waive potential penalties for Health Insurance Portability and Accountability Act (HIPAA) violations against health care providers that serve patients through everyday communications technologies during the COVID-19 nationwide public health emergency" (U.S Department of Health and Human Services, 2020). Additionally, Medicare used the 1135 waiver authority and Coronavirus Preparedness and Response Supplemental Appropriations Act to waive their restrictions of health insurance coverage for telehealth services effective March 6th, 2020; the restrictions stated that Medicare would only pay for a person to receive services if they were residing in a designated rural area and were receiving services in a mental health clinic or medical facility. These changes have allowed people to receive mental health services from home, regardless of their location within the United States, and have granted mental health providers the flexibility to offer telehealth services without fearing HIPPA violations when they administer services in good faith (U.S Department of Health and Human Services, 2020).

Such rapid changes to policies are uncommon but not unheard of. Prior to World War II, psychology was predominantly an academic discipline. However, following World War II,

members of Congress were concerned about mental health in the nation due to the influx of war veterans battling mental health issues, more civilians coping with the effects of the war, and anxieties around the introduction of atomic warfare. The Department of Defense and other federal agencies provided funding for psychological sciences and training to enable more mental health professionals to provide treatment to the nation by combining psychology research and practice (Pickren, 2007).

Benefits

Telepsychology can also improve access to mental health care for people living in geographically remote locations by delivering videoconferencing services that are similar to traditional on-site therapy (so long as the patients have access to technology). The Health Resources and Services Administration (2014) has identified 80 million Americans who are living in locations that have shortages of professional mental health providers. Populations who live in rural areas with a limited number of mental health providers tend to have increased poverty rates, few transportation options, and limited access to mental health insurance. Such factors lead to these populations struggling to receive the necessary mental health treatments (Luxton et at., 2016). Furthermore, telepsychology provides opportunities for typical service hours to be extended and can make it easier for mental health providers to provide brief check-ins of 5 to 10 minutes between in-office or telepsychology sessions that would be less practical to perform if transportation was required (Luxton et al., 2016).

Additionally, telepsychology can help people with physical, medical, or mobility disabilities who would otherwise experience difficulty accessing mental health services due to transportation issues. The National Council of Disabilities (NCD) has explained that increasing access to services is the key to helping people receive the mental health treatment that they need.

Furthermore, the NCD has stated that telepsychology holds "great promise" for special populations and people with physical disabilities ("Federal Study", 2017). Telepsychology services can also provide access to a broader range of mental health specialists. For example, telepsychology can help patients access faraway mental health professionals who have experience working with specific populations (Luxton et al., 2016), such as those immersed in a military culture, deaf and hard-of-hearing populations (DHH), and different ethnic groups. According to Wilson and Schild (2014),

> the deaf population has traditionally been marginalized and underserved when it comes to mental health services. The inequity is partly due to a general lack of knowledge about hearing loss and a shortage of linguistically and culturally qualified clinicians in most parts of the United States. (p.1)

Therefore, by utilizing technology to administer mental health services, there are greater opportunities for clients to access mental health services that can meet their diverse and specific needs.

Furthermore, telepsychology can increase access to psychologists who are fluent in different languages. A federal study conducted by the NCD has demonstrated that DHH college students face barriers to accessing mental health counseling support in their preferred language and to finding clinicians who understand subtle distinctions within the DHH culture. Additionally, the NCD has stated that "while technology supports (such as remote interpreting) have helped, these supports are not always available during a time-sensitive crisis period" ("Federal Study," 2017, p.49). Video conferencing telepsychology services could help address these challenges by connecting DHH students to suitable clinicians regardless of location ("Federal Study," 2017).

An additional benefit to receiving telepsychology services is the possible reduction in patient confidentiality concerns, specifically the fear of being seen when accessing mental health support. Telepsychology may address such concerns by "offering access to a therapist outside of the community in nontraditional mental health settings that may be less stigmatizing, such as when visiting general health clinics, schools, and churches or perhaps directly in the home" (Luxton et al., 2016, p.13). According to the NCD's national study on the experiences of students with mental health disabilities on U.S. college campuses, "students are more likely to seek services when the mental health center is not in a separate location and it is not obvious they are seeking mental health support" ("Federal Study," 2017, p.53). Furthermore, the NCD has also explained that creating safe options for students with mental health disabilities to access services while not feeling "singled out" is imperative and should include various methods to receiving treatment ("Federal Study", 2017). Telepsychology addresses such concerns by offering in-home access to mental health professionals who are located outside of patients' communities (Luxton et al., 2016). Telepsychology can also offer economic benefits by eliminating travel costs, lost work wages, and potential childcare costs (Luxton et al., 2016). Additionally, telepsychology offers greater access to care because it extends the hours-of-service availability. Only 24% of college campus mental health centers offered services outside of typical hours (8am to 5pm) during the weekdays, and only 1% of the centers offered services on weekends ("Federal Study", 2017).

Challenges

However, telepsychology also poses unique challenges. Patient confidentiality should be assured through the creation of a private, undisturbed area for therapy sessions. Even though mental health professionals review confidentiality with patients prior to beginning services,

confidentiality issues may arise if the provider fails to rigorously evaluate the patient's environment to ensure that there are no risks of others in the environment being able to easily hear or view the therapy sessions (Campbell et al., 2018). Another issue could arise is the fluctuation of the internet connection during therapy services, leading to the session being disconnected. Mental health professionals can do their best to assess that technology is appropriate for telepsychology services, but the internet connection could negatively impact technology performance in different ways (Luxton et al., 2016). It is thus important for mental health professionals to create a plan with their patient prior to engaging in telepsychology services so that an alternative method of communication is available if necessary (Luxton et al., 2016).

Additionally, mental health providers need to be aware that using videoconferencing eliminates the full body view of the client, which can result in the provider losing information such as subtle, off-camera patient movements (Luxton et al, 2016). In addition, if a mental health provider is utilizing technology such as a smartphone, its small viewing screen may cause them to lose additional visual details as facial expressions and grooming habits (Luxton et al., 2016).

Furthermore, mental health providers need to evaluate if telepsychology services would be appropriate for each patient. For example, a patient with substance or alcohol abuse issues may not be suitable candidates for telepsychology because videoconferencing may make it more difficult for mental health providers to detect signs of intoxication through the smell of alcohol, gait, and voice amplitude (Luxton et al., 2016). Due to such challenges, it is important that mental health providers follow ethical guidelines and utilize their best professional judgment when they administer telepsychology services.

Effectiveness for Children

There are limited studies investigating the effectiveness of telepsychology specifically focused on treating children. Specifically, Monzon et al. (2021) reviewed the available videoconferencing telepsychology research for youth populations in relation to treating symptoms of depression and only yielded one published study. Nelson et al. (2003) examined 28 child participants between 8 and 14 who met the DSM-IV criteria for clinical depression. Half the participants formed the treatment group, which underwent videoconference-administered CBT. The other half, control group, received face-to-face CBT. Each participant and their parent met for weekly CBT sessions over 8 weeks. The first CBT session was 90 minutes, and the ensuing sessions were 60 minutes each. The Schedule for Affective Disorders and Schizophrenia for School Age Children–Present Episode and the CDI were administered pre-intervention and post-intervention to determine the presence and severity of depressive symptoms. Furthermore, during the post-evaluation, participants in the treatment group completed the Telemedicine Satisfaction Questionnaire to measure their satisfaction with telepsychology services. The parents and children of the treatment group reported high satisfaction with telepsychology services. Also, the treatment group had a significantly greater rate of decline in depressive symptoms than the control group. Finally, 82% of the participants of both groups no longer met the criteria for depression during the post-treatment evaluation, suggesting that CBT—whether conducted via videoconferencing or face-to-face—is effective in decreasing depressive symptoms in children (Nelson et al., 2003).

In relation to videoconferencing telepsychology for children to treat symptoms of anxiety, Carpenter at al. (2018) stated, “real-time care conducted remotely by a live therapist using videoconferencing techniques have yet to be evaluated in the treatment of school-aged children

presenting with principal anxiety disorders" (p. 919). Due to the lack of research, Carpenter (2018) conducted a research study investigating the effectiveness of videoconferencing telepsychology services to treat symptoms of anxiety among children. The study included 13 children and their families with the age of the children ranging from 8 to 13 years old. Children and their families participated in weekly, family-based CBT service that were administered via video-conferencing technology. Each session was a duration of an hour and administered by a mental health professional. The *Multidimensional Anxiety Scale for Children, Child and Parent Reports* (MASC) was administered weekly and 3 months post treatment to assess severity of anxiety symptoms and the *Child Behavior Checklist* (CBCL) assessment was conducted at baseline, mid-treatment, post-treatment, and during a 3 month follow up post-treatment to assess parent perceptions of levels of anxiety symptoms among the child participants. Additionally, parents completed the Barriers to Treatment Participation Scale on the fourth and twelfth week of treatment to assess perceived barriers to the telepsychology treatment. Of the participants, 11 children and their families completed the intervention and completed assessments through the 3 month follow up period.

Results of the CBCL parent report indicated significant improvement of anxiety symptoms with an effect size of 1.56 post-treatment and 1.57 at the 3 month follow up. Additionally, parent reports on the MASC yielded significant improvements of anxiety symptoms with an effect size of 1.23 post-treatment and 1.57 at the 3 month follow up. In contrast to parent reports, the children did not report significant improvements in anxiety symptoms at post-treatment and 3 month follow up. Overall, results of the study indicated parents perceived the intervention to be highly effective in decreasing symptoms of anxiety

among their children however, the children were unable to identify significant changes in their anxiety symptoms when completing the progress monitoring assessments (carpenter et al., 2018).

Effectiveness for Adults

Stubbings et al. (2013) investigated the effectiveness of telepsychology-delivered CBT compared with the traditional in-person model. The study included 26 participants with a mean age of 30 years and who had a primary diagnosis of a mood or anxiety disorder. Participants were randomly assigned to receive 12 CBT sessions in either a videoconferencing group or an in-person group. All participants received their treatment sessions within a designated mental health clinic. Participants in the videoconferencing group used a computer in a treatment room within a scheduled timeframe. The same therapist provided the individualized CBT sessions to both groups.

The self-reporting measures used in the study were the DASS and the Quality of Life Enjoyment and Satisfaction Scale. Disorder-specific measures were also used to assess the various primary presenting disorders of participants: the BDI-II, Obsessive-Compulsive Inventory, Health Anxiety Questionnaire, Penn State Worry Questionnaire, and the Anxiety Sensitivity Index. The post-treatment measures were the Working Alliance Inventory-Short Form to measure the strength of the working relationship, the shortened Client Satisfaction Questionnaire to measure patient satisfaction, and the Telehealth Satisfaction Questionnaire to measure patient satisfaction with technology. The symptoms of depression, anxiety, stress, and quality of life were assessed using the pre-treatment questionnaires and were administered immediately after the final treatment session and six weeks post-treatment. The secondary outcomes at the six-week post-treatment assessments related to the therapeutic relationship and patient satisfaction. The results of the study indicated that CBT therapy was effective at

increasing quality of life while significantly reducing symptoms of anxiety, stress, and depression for both groups. The results for both groups were comparable, and no significant difference was observed between the videoconferencing group and the in-person group (Stubbings at al., 2013).

Perini et al. (2009) assessed the effectiveness of clinician-assisted and internet-based CBT in relation to depression. The study included 45 adult participants with a mean age of 49 and who met the DSM-IV diagnostic criteria for depression. The participants were randomly assigned to the Sadness Program (an eight-week clinician-assisted CBT program) or to a waitlist control group. Participants in the treatment group received six online sessions, weekly homework assignments, and weekly e-mail contact from a clinical psychologist. The participants had to participate in a moderated online discussion forum with the other treatment participants. An intention-to-treat model was used for data analyses. The PHQ-9 and BDI-II were used to measure symptoms of depression for all participants. These questionnaires were administered one week prior to treatment, at mid-treatment, and one-week post-treatment. Based on a comparison of the pre- and post-PHQ-9 results, 41% of the treatment group's participants had a 50% decrease in symptoms, while 6% of the control group participants experienced the same decrease (Perini at al., 2009).

Furthermore, a study conducted by Matsumoto et al. (2018) investigated the effectiveness of videoconference-based CBT for adults with obsessive-compulsive disorder, panic disorder, and social anxiety disorder. The study included 30 Japanese adult participants with a mean age of 35. The participants each received 16 50-minutes weekly CBT videoconference-based counseling sessions. To measure symptoms of anxiety disorders for participants, the following patient rating scales and questionnaires were administered; the Yale-Brown obsessive-

compulsive scale, the Panic Disorder Severity Scale, Liebowitz Social Anxiety Scale, and the GAD-7. The patient rating scales and questionnaires were administered prior to treatment, at mid-treatment, and one-week post-treatment. Based on the comparison of the pre- and post-GAD-7 results, overall effect size for generalized anxiety disorder as measured by the GAD-7 yielded a medium effect size. Furthermore, a significant reduction in anxiety symptoms as measured by the patient rating scales were also noted for obsessive-compulsive disorder, panic disorder, and social anxiety disorder symptoms (Matsumoto et al., 2018).

Summary

A review of the literature highlighted the increasing demand of mental health services for college students within the United States and the barriers they face in receiving treatment for anxiety and depression-related symptoms. College counseling centers are struggling to meet the increasing needs of college students, resulting in session limits of therapy, waitlists, and community-based mental health center referrals. College students are then met with additional barriers to mental health services such as transportation and scheduling conflicts.

Cognitive behavioral therapy has proven to be an effective method of treatment for symptom reduction and management of anxiety and depression. Specifically, the CBT model focuses on teaching skills to identify and modify maladaptive cognitions to change problematic behaviors. Some colleges have begun utilizing telepsychology services to administer CBT to meet the needs of college students who are experiencing anxiety and depression-related symptoms. The peer-reviewed studies described within this paper have proven telepsychology to be an equally effective to traditional face-to-face CBT services. Furthermore, the literature review highlighted the lack of published peer reviewed studies focused on the youth population within the area of telepsychology for treating symptoms of anxiety and depression which further

supports the need for additional research. The proposed research compares the effectiveness of telepsychology-delivered CBT with traditionally administered face-to-face CBT for college-age individuals with anxiety and depression-related symptoms with the hopes of expanding the available data for understanding the effectiveness of telepsychology for specific populations.

Methodology

The previous section introduced the proposed area of research, which included the study's research problem, the need for further research within the area of interest, the purpose of the study, and statistical hypothesis to guide the data analysis. Additionally, the researcher conducted a review of the relevant literature that related to the main study variables, telepsychology, and traditional face-to-face CBT. Both traditional face-to-face CBT and telepsychology have been studied with the college-age population, however, not together with the primary focus on anxiety and depression symptoms. This research study is an effort to examine the effectiveness of telepsychology delivered CBT in comparison to traditionally administered face-to-face CBT. The intent of this section is to describe the methodology for this research project. This section includes a detailed description of the proposed study, subjects, instruments, procedure, research design, data collection methods, and analysis efforts.

Subjects

The subject data was collected from an online database of a New England-based telepsychology company that utilizes a network of certified licensed clinicians to deliver technology-guided CBT for anxiety and depression symptoms. The subjects were 83 college-aged individuals who were living in New England and participated in technology-guided CBT via phone and video conferencing technology between 09/01/2016 through 09/18/2020. The inclusion criteria for the study were college-aged individuals between 18 to 25 who met the criteria for diagnoses under the Diagnostic and Statistical Manual of Mental Disorders (DSM-V)'s categories of depressive disorders or anxiety disorders. Subjects were diagnosed by licensed mental health clinicians who utilized the Mini International Neuropsychiatric Interview. Exclusion criteria included individuals who were receiving additional face-to-face mental health

services while also receiving telepsychology services. These exclusions ensured that any changes in symptoms were related to the telepsychology-administered CBT therapy and not to other forms of mental health therapy. All eligible candidates were considered regardless of race, religion, gender, and sexual orientation with the intention of the study incorporating a sample that is representative to the diverse population of college age adults. Each patient file was given a unique identifying code.

Distribution of Subjects

Of the 83 subjects involved in the retrospective causal comparative research study, 56 were women (67%) and 27 were men (33%). Thus, there was a greater number of women in the study sample compared to men. The criteria for this study included the requirement that subjects were between the ages of 18 and 25 years old. Specifically, there were 4 subjects who were 18 years old, 9 subjects who were 19 years old, 12 subjects that were 20 years old, 17 subjects that were 21 years old, 20 subjects that were 22 years old, 6 subjects that were 23 years old, 11 subjects that were 24 years old, and 4 subjects that were 25 years old. Overall, most of the subjects (44%) were between the ages of 21 and 22. Furthermore, the percentage of younger subjects (18 to 21 years old) and older subjects (22 to 25 years old) were evenly distributed, with 50% of subjects falling under each age grouping.

In relation to distribution grouping of diagnostic criteria, 35 subjects (42%) had a diagnosis that fell under the anxiety disorder category in the DSM-V, 20 subjects (24%) had a diagnosis that fell under the depression disorder category, and 28 subjects (34%) had a dual diagnosis that fell under both categories. The diagnostic grouping results highlight that the largest group among the study's sample size was comprised of the people diagnosed with an anxiety disorder which aligns with the national statistics of anxiety being the most common

mental health disorder (ADAA, 2020). Furthermore, 28 subjects (34%) had a dual diagnosis that fell under both categories which similarly aligns with the research by Zhou et al. (2017).

Instruments

The following section provides a summary of the instruments for the following study. Specifically, the study included three instruments: The Mini International Neuropsychiatric Interview, the Patient Health Questionnaire (PHQ-9), and the Generalized Anxiety Disorder Assessment (GAD-7).

Mini International Neuropsychiatric Interview (MINI)

The MINI is a short structured clinical interview utilized for diagnosing psychiatric disorders according to the DSM-V. The average administration time of the assessment is 15 minutes. The MINI has demonstrated useful psychometric properties regarding reliability and validity (Sheehan et al., 1998). The MINI's reliability and validity were assessed through comparison of the Composite International Diagnostic Interview (CIDI): the MINI and CIDI were administered to research subjects within the same session. The research sample comprised 346 subjects with the mean age of 42.2 years. The subjects were identified as having major depressive disorder, mania, anxiety disorder, psychotic disorders, alcohol or drug dependence disorders, and no previous psychiatric diagnosis. Results of the study indicated when compared to the CIDI, the MINI's validity was 0.72 to 0.97. Reliability was also assessed by having two raters interview 42 of the research subjects within two days to assess interrater reliability. The interrater reliability ranged from 0.88 to 1.0 (Sheehan et al., 1998).

Patient Health Questionnaire (PHQ-9)

The PHQ-9 is a nine-item instrument that is used for screening, diagnosing, monitoring, and measuring the severity of depression. Specifically, the tool rates the frequency of depressive

symptoms, which factors into scoring the severity index (Kroenke & Spitzer, 2002). The assessment utilizes a four-point Likert scale (0–3) with a total possible score of 27. Scores of 5 indicate mild depression, scores of 10 indicate moderate depression, and scores of 20 indicate severe depression. The PHQ-9 has demonstrated useful psychometric properties regarding the reliable and valid measurement of depressive symptoms (Johnson, Ulvenes, Oktedalen, Hoffart, 2019).

Specifically, the PHQ-9's reliability and validity were assessed through a sample size of 6,000 patients in primary care clinics and obstetrics-gynecology clinics. "Construct validity was assessed using the 20-item Short-Form General Health Survey, self-reported sick days and clinic visits, and symptom-related difficulty" (Kroenke, Spitzer, & Williams, 2001). Additionally, criterion validity was assessed from 580 patients who were subject to an independent structured mental health professional (MHP) interview. (Kroenke, Spitzer, & Williams, 2001). The results of the study have indicated that the PHQ-9 has an excellent internal reliability and a Cronbach's alpha of 0.89 among the patients of the primary care clinics and 0.86 among patients of the obstetrics-gynecology clinics (Kroenke & Spitzer, 2002).

Generalized Anxiety Disorder Assessment (GAD-7)

The GAD-7 is a seven-item instrument that is used to measure or assess the severity of generalized anxiety disorder (GAD) symptoms. Each item requires the client to rate the symptoms they have experienced over the past two weeks (Spitzer, Kroenke, Williams, & Löwe, 2006). The assessment utilizes a four-point Likert scale (0–3) with a total possible score of 21. Scores of 5 indicate mild anxiety while scores above 10 are classified within the clinical range of having moderate to severe symptoms. To assess the psychometric properties of the GAD-7, a study was conducted involving 797 test subjects (72% female and 28% male) which yielded

results indicating a reliability score of $\alpha = 0.88$. Lastly, when compared to the Beck Anxiety Inventory, results indicated a validity score of (r= .69). These results suggest that the GAD-7 is reliable and valid when it assesses the symptoms and severity of anxiety (Johnson, Ulvenes, Oktedalen, Hoffart, 2019).

Procedure

The researcher utilized a retrospective causal comparative research design in which pre-recorded, patient-centered data was used to answer the research question. The data was gathered from a telepsychology company's electronic database from the Northeast, which included results from the Mini-International Neuropsychiatric Interviews; patient-reported symptom rating scales which include the Patient Health Questionnaire (PHQ-9) and the Generalized Anxiety Disorder Assessment (GAD-7); documentation of duration and frequency of counseling sessions; and demographic information gathered at the initial intake counseling sessions. The researcher utilized the online database to conduct a filtered search of patients with diagnoses that fell within the DSM-V categories of anxiety or depression to determine eligibility for the present study; these patient files represented the participants of the current study.

After eligible patient records had been identified, quantitative data from patient-reported symptom rating scales such as the PHQ-9 and the GAD-7 were reviewed from the online database to measure the severity of anxiety and depression-related symptoms. The symptom rating scales were administered during the initial consultation session and again after the final session of treatment. Effects of the telepsychology CBT treatment were evaluated by comparing patients' pre- and post-symptom rating scale results. The GAD-7 symptom rating scale results were utilized to measure severity of anxiety symptoms while the PHQ-9 rating scale results were used to measure the severity of depression symptoms. Specifically, the pre- and post-symptom

rating scale results were used to calculate the research sample's overall effect sizes of the telepsychology treatment for depression and anxiety.

The effect sizes of the telepsychology-administered CBT were compared to those of traditionally administered CBT for treating depression and anxiety. The effect size for traditionally administered CBT services to treat anxiety symptoms was gathered from Hofmann & Smits (2008), a meta-analysis study that yielded a medium effect size of 0.73. The effect size for traditionally administered CBT for treating depressive symptoms was identified by Rubin & Yu (2017), a meta-analysis study that yielded a large effect size of 1.19.

Research Design

The researcher utilized a retrospective causal comparative research design. Pre-recorded, patient-centered data was used to answer the research questions. Specifically, the experiment consisted of a one-way, two-groups design t-test comparing anxiety and depression symptoms between college age subjects receiving traditional face-to-face CBT and telepsychology administered CBT. The differences between pre- and post-test scores for clients receiving telepsychology was used to calculate effect sizes for the patient files selected for the present study. These effect sizes were compared to those identified from the current literature for clients receiving psychology services in traditional, face-to-face environments.

Subject data was collected from an online database of a New England-based telepsychology company that utilized a network of certified and licensed clinicians to deliver technology-guided manualized CBT for anxiety and depression symptoms. Only data between the dates of 09/01/2016 through 09/18/2020 was used in this study. The following types of data was collected: patient demographics, diagnosis, symptom rating scale results, clinical interview results, and number of sessions. 186 Patient files were reviewed and 83 patient files met the

inclusion criteria. The independent variables within the study were the CBT counseling services delivered through telepsychology services and traditionally delivered CBT counseling services delivered face-to-face. “Telepsychology services” was defined in this study as a licensed mental health clinician administering manualized CBT treatment counseling sessions that were administered through videoconferencing. “Traditional CBT face-to-face services” was defined as a mental health professional administering CBT therapy within a traditional face-to-face setting. The dependent variables within the study were the symptoms of anxiety and depression. Anxiety was measured by the 7-item GAD-7 and depression was measured by the 9-item PHQ-9.

Data Analysis and Statistical Considerations

SPSS software was used to conduct the analyses for the study. First, descriptive information on age and gender was presented to describe the sample from which data was collected. Second, measures of central tendency and variability for the PHQ-9 and GAD-7 was also be calculated. Third, the effect sizes of the telepsychology administered CBT treatment for anxiety and depression symptoms were calculated utilizing Cohen's *d* to compare pre- and post-mean scores for the PHQ-9 and GAD-7 (Lachenbruch & Cohen, 1989). Lastly, the effect sizes identified from the literature, which were based on the traditionally administered face-to-face CBT, were compared to the effect sizes generated by the data from the telepsychology sample.

Data Storage and Confidentiality

The researcher signed a HIPPA Business Associate Agreement with the telepsychology company that was utilized for this study. In relation to data storage, data was stored either within a locked office, locked suite, or a password-protected computer that utilized a secure Google server owned by the telepsychology company. Subjects were de-identified via the company’s patient ID coding system which ensured that all data the researcher was provided could not be

utilized to identify patients through direct and indirect identifiers. Therefore, no identifiable information was recorded, and each patient was labeled with a patient ID code that could not be traced back to identifiable information. No social security numbers, names, addresses or other personal information was recorded. Files were not shared with non-study personnel.

Summary

The purpose of this research was to investigate the effectiveness of telepsychology administered CBT for treating symptoms of anxiety and depression among college-aged adults due to the increasing demands of mental health services among college students for the treatment of anxiety and depression symptoms. Furthermore, the study aimed to investigate if telepsychology administered CBT would be an equally effective treatment method in comparison to traditionally administered face-to-face CBT due to the disproportionate balance between the demands of college mental health services and the limited availability of college counseling services. Due to the various barriers to college students receiving mental health services such as long waitlists, scheduling conflicts between office hours and college class schedules, lack of transportation, lack of culturally diverse mental health providers, and limited staffing at college counseling centers, some colleges have adopted telepsychology administered CBT services to meet the mental health demands of students. However, limited research had been conducted to investigate the effectiveness of telepsychology administered CBT to treat symptoms of anxiety and depression among college-aged adults.

The purpose of this chapter is to outline the research method used to answer the research questions of investigating the effectiveness of telepsychology delivered CBT in comparison to traditionally administered face-to-face CBT to treat symptoms of anxiety and depression for college age individuals. Effectiveness of telepsychology administered CBT was analyzed in

relation to the effectiveness of decreasing depressive symptoms among college-aged adults with diagnosis of anxiety, depression, or dual-diagnoses of anxiety and depression. Similarly, the effectiveness of telepsychology administered CBT was analyzed in relation to the effectiveness of decreasing symptoms of anxiety amongst college-aged adults with diagnosis of anxiety, depression, or dual-diagnoses of anxiety and depression. Furthermore, the effectiveness of telepsychology administered CBT for decreasing symptoms of depression among college-aged adult with diagnoses of depression was compared to similar traditional face-to-face CBT effectiveness studies to investigate if there is a significant difference between the two CBT administered methods. Similarly, the effectiveness of telepsychology administered CBT for decreasing symptoms of anxiety among college-aged adult with diagnoses of anxiety was compared to similar traditional face-to-face CBT effectiveness studies to investigate if there is a significant difference between the two CBT administered methods. A discussion of the study, participants, instruments, procedure, research design, data collection methods, and analysis efforts were outlined to show how the study was conducted after receiving IRB approval. The goal of the following section is to provide study results and support how the methodology discussed was implemented and followed.

Results

This chapter discusses the data analysis and findings using pre- and post-data from the GAD-9 and PHQ-7 screeners of 83 patients who participated in telepsychology administered CBT to treat anxiety and depression symptoms. The purpose of the study was to investigate the effectiveness of telepsychology administered CBT to treat anxiety and depression symptoms among college-aged students compared to traditional face-to-face CBT. The objectives of the study were to identify and compare the effect sizes of treatment for anxiety and depression symptoms between the study sample and published research on traditional face-to-face CBT.

The current chapter presents the collected data in a meaningful way to facilitate the discussion in Chapter 5. The findings and analysis incorporate results on the effectiveness of telepsychology administered CBT across diagnostic categories of anxiety and depression among college-aged individuals. The following graphs and analysis highlight the results of the study in relation to the research questions to then facilitate the discussion section.

What are the effect sizes of telepsychology administered CBT for treating symptoms of depression and anxiety among college-aged adults with depression and/or anxiety diagnoses?

To calculate the effect size of telepsychology administered CBT for treating depressive symptoms, measures of central tendency and variability for the PHQ-9 pre- and post-data were calculated by dividing the scores for the entire sample of 83 subjects into two groups (pretest and posttest), then running a paired sample *t*-test using SPSS software. The results of this test indicated the mean and standard deviation for each group: pretest ($M = 10.93$, $SD = 6.29$) and posttest ($M = 5.64$, $SD = 5.46$). Next, the effect size of the telepsychology administered CBT treatment for depression symptoms was calculated using Cohen's *d* to compare pre- and post-

mean scores for the PHQ-9. The telehealth CBT effect size for depression yielded a large Cohen's *d* of .84 (*M* = 5.28, *SD* = 6.27). (Figure 1)

To calculate effect size of telepsychology administered CBT for treating anxiety symptoms, measures of central tendency and variability for the GAD-7 pre- and post-data were calculated by dividing the scores of the entire sample into two groups (pretest and posttest), then running a paired sample *t*-test using SPSS software. The mean and standard deviation of each group was as follows: pretest (*M* = 10.36, *SD* = 5.60) and posttest (*M* = 5.21, *SD* = 5.15). Then, the effect size of the telepsychology administered CBT treatment for anxiety symptoms was calculated utilizing Cohen's *d* to compare pre- and post-mean scores for the GAD-7. The telepsychology CBT effect size for treating anxiety among college-aged adults with an anxiety diagnosis yielded a large Cohen's *d* of .83 (*M* = 5.15, *SD* = 6.22). (Figure 2)

Figure 1: Telepsychology Effect Size for Decreasing Symptoms of Depression

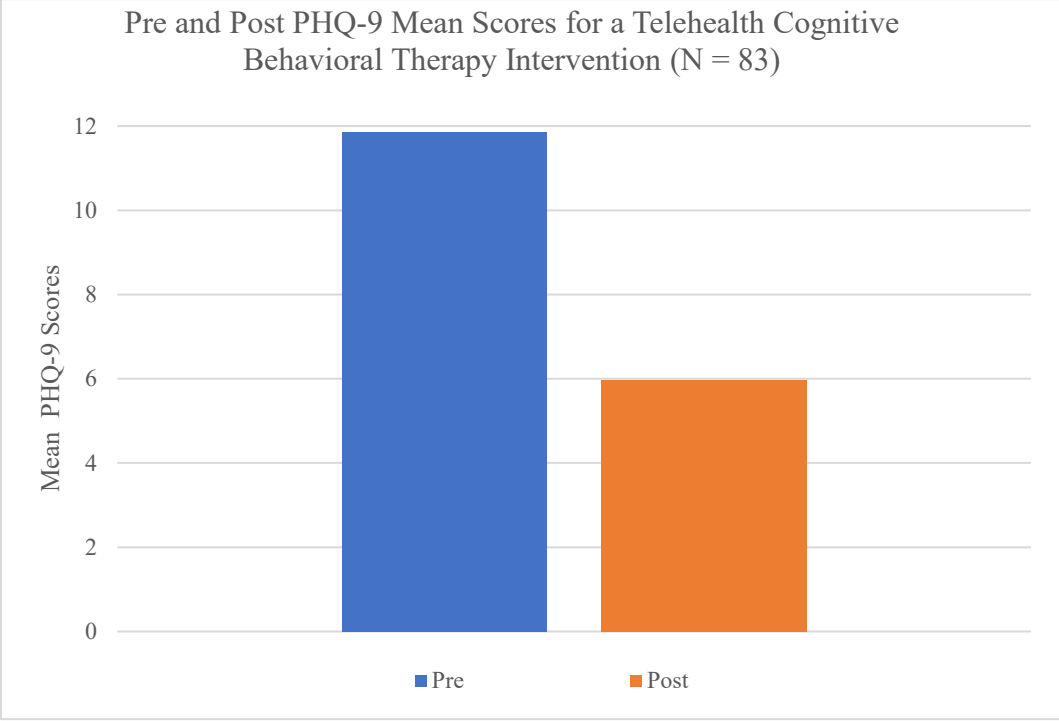
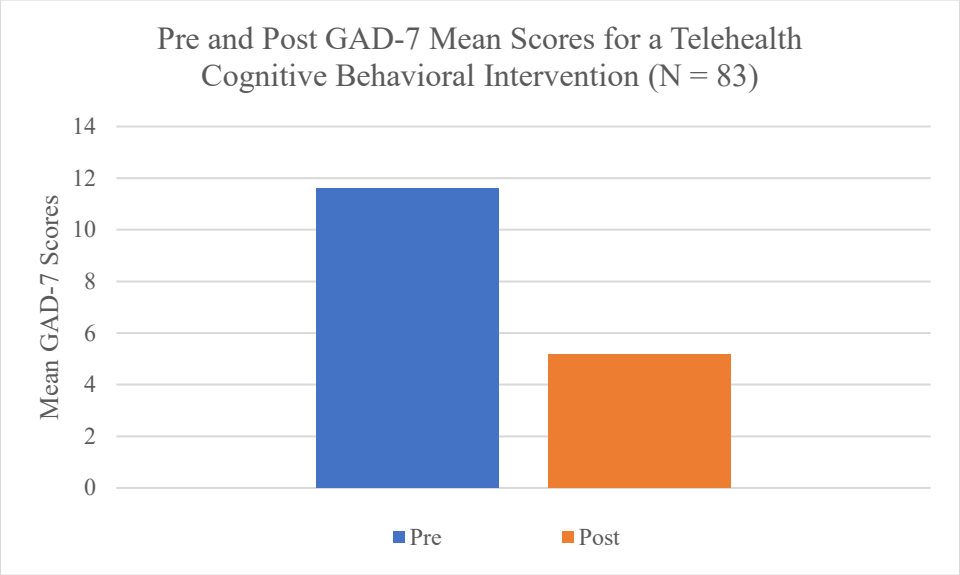


Figure 2: Telepsychology Effect Size for Decreasing Symptoms of Anxiety



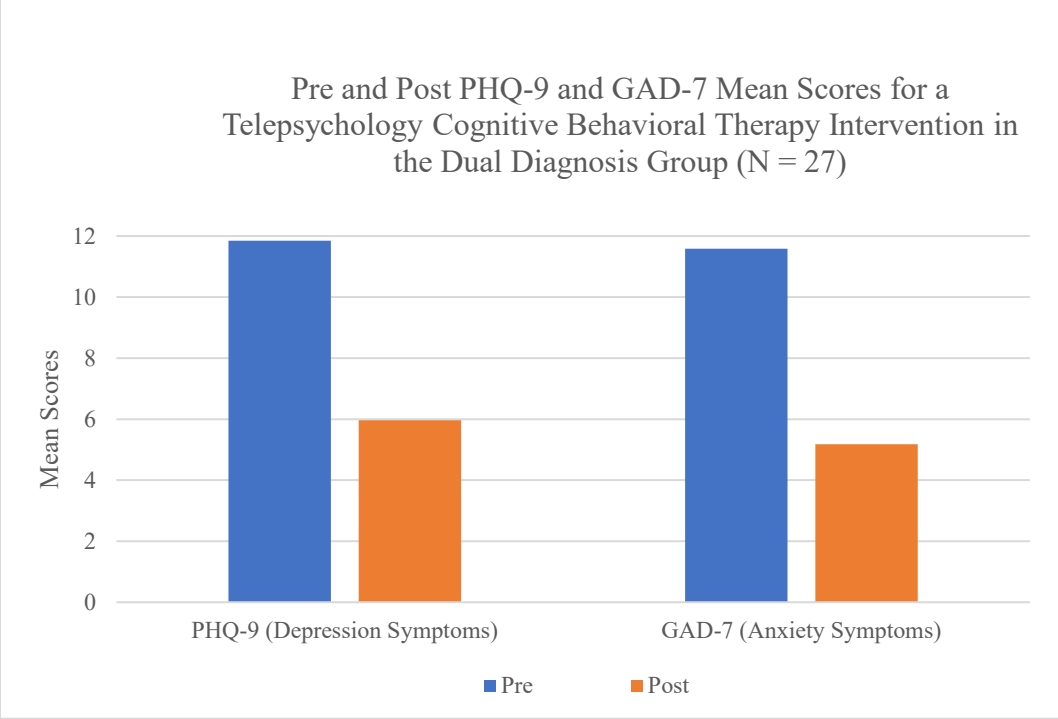
What is the effect size of treating depression symptoms through telepsychology administered CBT for college-aged adults with dual diagnoses of anxiety and depression?

Measures of central tendency and variability for the PHQ-9 pre- and post-data were calculated by dividing the scores of the 27 subjects with dual diagnoses of depression and anxiety into two groups (pretest and posttest), then running a paired sample *t*-test in SPSS. Results indicated that the mean and standard deviation of each group were as follows: pretest (M = 11.85, SD = 6.92) and posttest (M = 5.96, SD = 4.84). Then, the effect size of the telepsychology administered CBT treatment for depression symptoms was calculated using Cohen's *d* to compare pre- and post-mean scores for the PHQ-9. The effect size of the telepsychology CBT for depression among subjects with a dual diagnosis of anxiety and depression (n = 27) was .79 (M = 5.89, SD = 7.46), which represents a moderate effect size according to Cohen's *d* classification. (Figure 3)

What is the effect size of treating anxiety symptoms through telepsychology administered CBT for college-aged adults with dual diagnoses of anxiety and depression?

Measures of central tendency and variability for the GAD-7 pre- and post-data were calculated by dividing the scores of subjects with dual diagnoses into two groups (pretest and posttest), then running a paired sample *t*-test in SPSS. The results of this test yielded the mean and standard deviation of each group: pretest ($M = 11.59$, $SD = 6.05$) and posttest ($M = 5.19$, $SD = 5.04$). Then, the effect size of the telepsychology administered CBT treatment for anxiety symptoms was calculated utilizing Cohen's *d* to compare pre- and post-mean scores for the GAD-7. The effect size of telehealth CBT for anxiety among subject with dual diagnoses of anxiety and depression (n = 27) was .89 ($M = 6.40$, $SD = 7.17$), which represents a large effect size according to Cohen's *d* classification. (Figure 3)

Figure 3: Telepsychology Effect Size for Decreasing Symptoms of Depression Among the Dual-Diagnosis Group

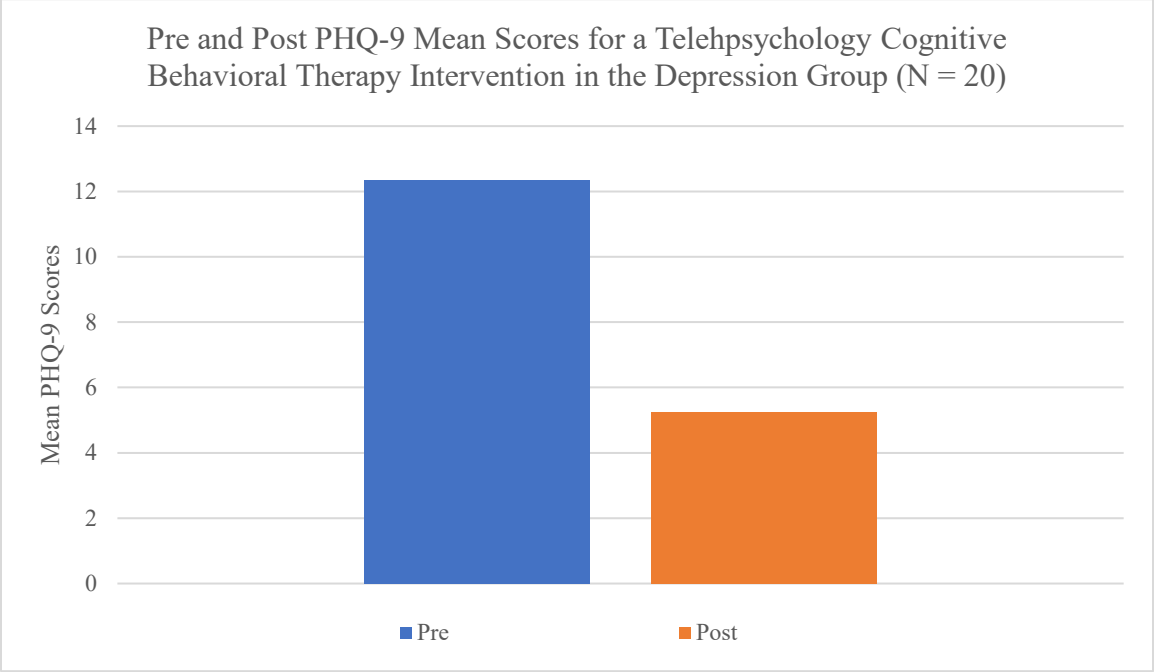


Is there a significant difference in effect sizes for treating depression symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of depression?

Measures of central tendency and variability for the PHQ-9 pre- and post-data were calculated by dividing the scores of the 20 subjects with a primary diagnosis of depression and who did not have a secondary diagnosis of anxiety into two groups (pretest and posttest), then running a paired sample *t*-test in SPSS. Results indicated that the mean and standard deviation of each group. Pretest (M = 12.35 SD = 5.47) Posttest (M = 5.25 SD = 6.69). Then, the effect size of the telepsychology administered CBT treatment for depression symptoms was calculated utilizing Cohen's *d* to compare pre- and post-mean scores for the PHQ-9 scores. (Figure 4)

In terms of the effect sizes of telehealth CBT and traditional face-to-face CBT on depression, no significant difference was found between both groups, which both yielded large Cohen's *d* effect sizes of $d \geq .08$. The effect size of telehealth CBT on depression among subjects with a primary diagnosis of depression (n = 20) was 1.11 (M = 7.10, SD = 6.38) and that of traditional face-to-face CBT was 1.19. The latter was identified by Rubin and Yu (2017) in a meta-analysis study that yielded an effect size of 1.19. Both effect sizes fall under the classification of a large effect size.

Figure 4: Telepsychology Effect Size for Decreasing Symptoms of Depression Among the Depression Group

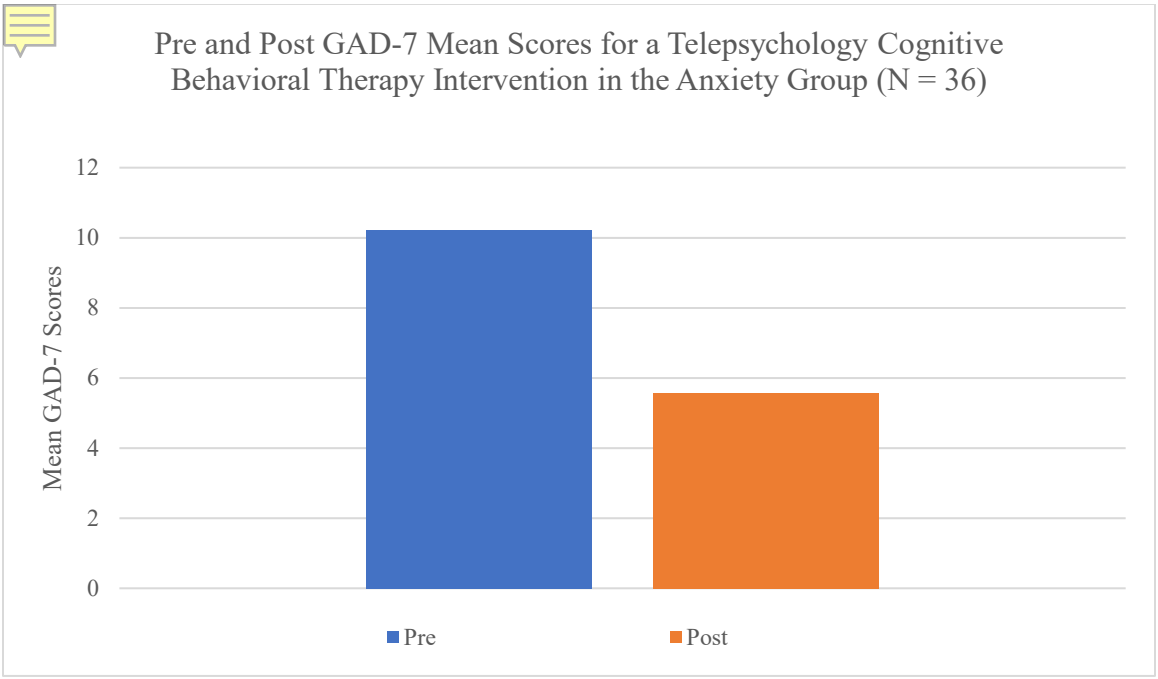


Is there a significant difference in effect sizes for treating anxiety symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of anxiety?

Measures of central tendency and variability for the GAD-7 pre- and post-data were calculated by dividing the scores of subjects with a primary diagnosis of anxiety and who did not have a secondary diagnosis of depression into two groups (pretest and posttest), then running a paired sample *t*-test in SPSS. Results indicated the mean and standard deviation of each group: pretest ($M = 10.22$, $SD = 5.11$) and posttest ($M = 5.58$, $SD = 4.48$). Then, the effect size of the telepsychology administered CBT treatment for anxiety symptoms was calculated using Cohen's *d* to compare pre- and post-mean scores for the GAD-7. (Figure 5)

No significant difference was found between telepsychology CBT and traditional face-to-face CBT when analyzing the treatments' effect sizes on anxiety; both groups yielded large Cohen's *d* effect sizes of $d \geq .08$. The effect size of telepsychology CBT on anxiety among subjects with a primary diagnosis of anxiety (n = 36) was .76 ($M = 4.63$, $SD = 6.09$), compared to an effect size of .73 for traditional face-to-face CBT. The latter figure was taken from the research of Hofmann and Smits (2008), who conducted a meta-analysis study that yielded a medium effect size of 0.73. Overall, both treatment modalities yield medium effect sizes, according to Cohen's *d* classification.

Figure 5: Telepsychology Effect Size for Decreasing Symptoms of Anxiety Among the Anxiety Group



Discussion

The purpose of this retrospective causal comparative research study was to investigate the effectiveness of telepsychology administered CBT to treat anxiety and depression symptoms among college-aged students compared to traditional face-to-face CBT. This chapter summarizes the study's major findings as they relate to existing literature on the effectiveness of traditionally administered CBT and telepsychology. In addition, the chapter discusses the connections of this study to the increasing need for mental health services at college counseling clinics for college-aged adults. Finally, it concludes with an overview of the study's limitations, areas for future research, and a summary. The study aimed to answer the following research questions:

- What are the effect sizes of telepsychology administered CBT for treating symptoms of depression and anxiety among college-aged adults with depression and/or anxiety diagnoses?
- Is there a significant difference in effect sizes for treating depression symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of depression?
- Is there a significant difference in effect sizes for treating anxiety symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of anxiety?

In terms of the first research question, the findings suggest that telepsychology administered CBT is an effective treatment for college-aged adults, with results indicating large effect sizes for the treatment of both anxiety and depression symptoms. Specifically, when analyzing the entire sample which included college age-aged adults with either an anxiety diagnosis, depression diagnosis, or dual diagnosis of both anxiety and depression, telepsychology administered CBT

resulted in a large effect size of .83 for treating symptoms of anxiety. Additionally, when analyzing the entire sample in relation to the effectiveness of telepsychology administered CBT to reduce symptoms of depression, the results yielded a large effect size of .84. Furthermore, when analyzing the effectiveness of decreasing symptoms of depression among the depression diagnosis group, results indicated a large effect size of 1.11. Similarly, when analyzing the effectiveness of decreasing symptoms of anxiety among the anxiety diagnosis group, results indicated a medium effect size of .76. Lastly, telepsychology administered CBT was found to be effective in the treatment of both depression and anxiety symptoms among college-aged students with a dual diagnosis of anxiety and depression with effect sizes of .89 for decreasing symptoms of anxiety and .79 for decreasing symptoms of depression. Such results suggest that telepsychology administered CBT is an effective intervention for treating symptoms of anxiety and depression among college-aged adults who are diagnosed with anxiety and/or depression.

In relation to the second question, results indicated that there was not a significant difference in effect sizes between telepsychology administered CBT and traditional face-to-face CBT when treating depression symptoms among college-aged adults with a primary diagnosis of depression. As previously noted, the effect size of treating depression symptoms utilizing telepsychology administered CBT for college-aged adult yielded a large effect size of 1.11. In comparison to traditional face-to-face CBT which yielded an effect size of 1.19 (Rubin &Yu, 2017), there is not a significant difference between the two administration methods of CBT with both yielding large effect sizes for treating symptoms of depression amongst patients with diagnoses of depression.

Similarly, in terms of the third research question, no significant difference was found in effect sizes between telepsychology administered CBT and traditional face-to-face CBT for the

treatment of anxiety symptoms among college-aged adults with a primary diagnosis of anxiety. As previously stated, the effect size of treating anxiety symptoms utilizing telepsychology administered CBT for college-aged adult yielded a medium effect size of .76. In comparison to traditional face-to-face CBT which also yielded a medium effect size of 0.73. (Hofmann & Smits, 2008), there is not a significant difference between the two administration methods of CBT with both yielding medium effect sizes for treating symptoms of anxiety amongst patients with diagnoses of anxiety.

Interpretation of Findings

In terms of the first research question, which investigated the effect sizes of telepsychology administered CBT for treating symptoms of depression and anxiety among college-aged adults with depression and/or anxiety diagnoses, the findings broadly align with those of some researchers reviewed in Chapter 2. Specifically, Stubbings at al.'s (2013) study highlighted similar results regarding the effectiveness of telehealth-administered CBT to reduce symptoms of anxiety and depression among adults compared to traditional face-to-face CBT in a study sample of participants with a mean age of 30 and a primary diagnosis of mood disorders and anxiety.

In terms of the second research question, which investigated whether there was a significant difference in effect sizes for treating depression symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of depression, the findings also align with research explained in the literature review. Specifically, Perini et al.'s (2009) study highlighted the effectiveness of telepsychology administered CBT to reduce symptoms of depression among adult participants with a mean age of 49. Similarly, Nelson et al. (2003) obtained comparable results on the effectiveness of

telepsychology in comparison to face-to-face CBT. Their research suggested that telehealth-administered CBT (via videoconferencing) and face-to-face CBT were equally effective in reducing depressive symptoms among children.

Furthermore, in relation to the third research question, which investigated whether there was a significant difference in effect sizes for treating anxiety symptoms between telepsychology administered CBT and traditional face-to-face CBT for college-aged adults with a primary diagnosis of anxiety, the study's results seem to closely track with various other findings in the literature that support the effectiveness of telehealth-administered CBT. For example, Matsumoto et al. (2018)'s results highlighted similar effectiveness of telepsychology administered CBT to reduce symptoms of anxiety among adults compared to traditional face-to-face CBT. Additionally, the literature echoed the present study's methodology by measuring the effectiveness of treatment modalities to decrease symptoms of anxiety by using pre- and post-GAD-7 symptom rating scales.

Overall, the results for the current study were consistent across diagnostic groups, which indicates that telepsychology administered CBT is an effective modality for treating symptoms of anxiety and depression among college-aged individuals who have been diagnosed with anxiety and/or depressive disorders. Due to the frequent comorbidity of these diagnoses, it is important to understand how telepsychology administered CBT could effectively treat symptoms of anxiety and depression for patients who seek mental health treatment for either or both of these disorders.

However, participants in the studies reviewed were either children or adults with a mean age of over 30, whereas the current study comprised college-aged adults between the ages of 18 and 25. By evaluating the effectiveness of telepsychology administered CBT to treat anxiety and

depressive symptoms among college-aged individuals and comparing it to that of traditional face-to-face CBT, this study contributes to the field of psychology research by focusing on an age group that currently struggles to receive timely mental health services due to various barriers and lacks supportive research that investigates the effectiveness of telepsychology administered CBT to help meet their needs. Such research is needed due to the significant increase in the number of college students seeking mental health services on campus over the past decade and colleges struggling to meet the demands, which has led the American Psychological Association to describe it as a crisis. The hope of the current research is to provide additional data to guide the decision-making process of best practices of mental health treatment to provide more opportunities for effective therapeutic services while also decreasing barriers to treatment.

Limitations

This study found telepsychology administered CBT to be an equally effective method of treatment in comparison to traditional face-to-face administered CBT for the treatment of anxiety and depression symptoms among college-aged adults however, there are some limitations and constrictions that should be considered for future research in this area. Specifically, limitations regarding the study sample's size, distribution of gender, and consistency of treatment are discussed within this section. Furthermore, the researcher proposes that additional studies should be conducted to increase the understanding of the effectiveness of telehealth- administered CBT by including larger sample sizes of college aged-adults in order create a stronger research data base representative of the nation's college-age population. Lastly, additional studies should be conducted utilizing school aged youth to investigate if the current study's results could be generalized to younger populations.

Gender

Ideally, the study would have had an equal ratio of male and female participants to ensure a lack of bias. However, this was not possible due to the use of retrospective data from a telehealth company database. When recruiting subjects for the study, 83 people met the study criteria and were included. The sample included 56 women (67%) and 27 men (33%). These numbers indicate that the difference between genders was 35%, with there being a higher number of women than men.

Study Sample

Due to the use of retrospective data comprising only college-aged students in New England and the sample's relatively small size, the results of the present study may not be generalizable across all populations. Thus, future RCTs should be conducted to further support the generalizability of the results. Additionally, due to the retrospective causal comparative research design, it cannot be determined with absolute certainty that unknown variables did not affect the results therefore, to increase the confidence of the results, future RCTs should be conducted utilizing randomized assignment of participants among an experimental group utilizing telehealth treatment and a comparison group utilizing traditional face-to-face administered CBT treatment. Random assignment of the participants helps ensure that the experimental group and control group are comparable and reduces chances of unknown variables effecting study results.

Treatment Consistency

Due to the study's use of retrospective data to analyze effect sizes, the intervals between telepsychology administered CBT sessions could not be controlled among patients. Such factors could impact treatment effectiveness if patients did not follow a weekly treatment schedule for

their manualized therapy. By contrast, in studies performed in experimental settings, each patient would receive the same number of sessions at specific intervals to help minimize the possibility of outside variables interfering with treatment effectiveness. Furthermore, future RCTs should include fidelity components such as, utilizing manualized treatments and incorporating methods for monitoring treatment delivery across the experimental and control groups to strengthen validity by reducing within and across group differences of treatment effectiveness from outside variables (McArthur et al., 2012).

Implications of Practice and Future Directions

As discussed in Chapter 2, Smucker (2018) explained that psychologists who practice telepsychology services must be aware of the laws and regulations applicable to districts in which they treat patients. However, the Joint Task Force (2013) has stated that various jurisdictions lack specific laws that govern the provision of telepsychology. Due to the lack of research to guide laws, regulations, and best practices, psychologists may encounter ethical dilemmas when they attempt to independently solve situations using their best clinical judgement. However, it can be difficult to exercise clinical judgement if a broad source of information is not available to guide psychologists.

Due to these implications, which could result in unethical practices, further research must be conducted in the field of telepsychology administered therapy services. Furthermore, beyond challenges regarding the lack of specific laws to govern the provision of telepsychology, another obstacle involves insurance companies. For patients to receive mental health services that are covered by insurance, insurance companies must approve the specific treatment. However, barriers to service include insurance companies that require patients to access services through clinics or to live in specific geographic areas. Such insurance policy barriers restrict the benefits

of telepsychology administered therapy for patients, including greater accessibility (as sessions do not require office visits) and the convenience of receiving services at times that would usually be considered after typical office hours.

However, when a crisis occurs at a national or global level, policies must be changed for the greater good. Currently, the world is experiencing a global pandemic due to the outbreak of coronavirus (COVID-19), which has led to a worldwide necessity to engage in social distancing to protect one's health. Due to the associated constraints of accessing care for a large number of people who seek mental health services, the U.S. Department of Health and Human Services (HHS) announced on March 17, 2020 that it would immediately "waive potential penalties for Health Insurance Portability and Accountability Act (HIPAA) violations against health care providers that serve patients through everyday communications technologies during the COVID-19 nationwide public health emergency" (U.S Department of Health and Human Services, 2020). Such rapid changes have enabled telepsychology administered mental health services to be used across the United States, which during a pandemic outweighs the risks of allowing a newer treatment method to be used without restrictions.

However, the current situation highlights the importance of current and future research that can provide guidance for best practices related to telepsychology administered mental health services for patients to access care without the previously discussed traditional barriers to treatment. The current study underlines the effectiveness of telepsychology administered CBT to treat symptoms of anxiety and depression among college-aged adults, which aligns with previous studies on telepsychology and broadens the available data on effective treatment modalities specifically for college-aged students. This study aimed to contribute to available data bases on

the effectiveness of telepsychology administered CBT for college-aged adults to help create a meaningful and accurate source of information that is representative of the treatment population.

Further research must be conducted to build on the evidence surrounding the effectiveness of telepsychology administered mental health services. Although the current study focused on CBT, future studies should investigate topics such as a comparison of specific manualized CBT programs, the use of different technology platforms to administer mental health services, the effectiveness of telepsychology administered mental health services for various psychological disorders, and the specific components of telepsychology that contribute to positive treatment outcomes among patients. It is the researcher's hope that the current study will inspire other researchers to further investigate telepsychology administered mental health services and that together, as a community of mental health providers, we will be able to make data-driven decisions on future policies and laws related to telepsychology administered mental health services.

References

Beiter, R., Nash, R., Mccrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *Journal of Affective Disorders*, *173*, 90–96. doi: 10.1016/j.jad.2014.10.054

Campbell, L. F., Millán, F., & Martin, J. (2018). Introduction. In *A telepsychology casebook: Using technology ethically and effectively in your professional practice.* (pp. 3–6). Washington, DC: American Psychological Association. https://doi-org /10.1037/0000046-001

Carpenter A., Pincus D., Furr J., Comer J. (2018) Working from home: an initial pilot examination of videoconferencing-based cognitive behavioral therapy for anxious youth delivered to the home setting. *Behavior Therapy*, 49, 917–930

Cherry, K. (2019). How Cognitive Behavior Therapy Works. Retrieved December 1, 2019, from https://www.verywellmind.com/what-is-cognitive-behavior-therapy-2795747.

Chiu, A. W., Langer, D. A., McLeod, B. D., Har, K., Drahota, A., Galla, B. M., … Wood, J. J. (2013). Effectiveness of modular CBT for child anxiety in elementary schools. *School Psychology Quarterly*, *28*(2), 141–153. https://doi-org/10.1037/spq0000017

Center for Collegiate Mental Health. (2020). 2019 Annual Report (Publication No. STA 20-244).

David, D., Cristea, I., & Hofmann, S. G. (2018). Why Cognitive Behavioral Therapy Is the Current Gold Standard of Psychotherapy. *Frontiers in psychiatry*, *9*, 4. doi:10.3389/fpsyt.2018.00004

Duffy, M. E., Twenge, J. M., & Joiner, T. E. (2019, November). Trends in mood and anxiety symptoms and suicide-related outcomes among U.S. undergraduates, 2007-2018: Evidence from two national surveys. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/31279724

Drake, K., Keeton, C. P., & Ginsburg, G. S. (2017). Cognitive Behavioral Therapy (CBT). In *Johns Hopkins Psychiatry Guide*. Available from https://www.hopkinsguides.com/hopkins/view/Johns_Hopkins_Psychiatry_Guide/787145/all/Cognitive_Behavioral_Therapy__CBT_

Dunley, P., & Papadopoulos, A. (2019). Why Is It So Hard to Get Help? Barriers to Help-Seeking in Postsecondary Students Struggling with Mental Health Issues: A Scoping Review. *International Journal of Mental Health and Addiction, 17*(3), 699-715. doi:10.1007/s11469-018-0029-z

Federal Study on College Mental Health Services Reveals Long Waiting Lists, Other Gaps and Barriers Impeding Student Success. (2017). Retrieved from https://ncd.gov/newsroom/2017/federal-study-college-mental-health

Harerimana, B., Forchuk, C., & O'Regan, T. (2019). The use of technology for mental healthcare delivery among older adults with depressive symptoms: A systematic literature review. *International Journal of Mental Health Nursing*. https://doi-org/10.1111/inm.12571

Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2012). The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. *Cognitive therapy and research*, *36*(5), 427–440. doi:10.1007/s10608-012-9476-1

Hofmann, S. G., & Smits, J. A. (2008). Cognitive-behavioral therapy for adult anxiety disorders: a meta-analysis of randomized placebo-controlled trials. *The Journal of Clinical Psychiatry*, *69*(4), 621–632. https://doi.org/10.4088/jcp.v69n0415

Huang, J., Nigatu, Y. T., Smail-Crevier, R., Zhang, X., & Wang, J. (2018). Interventions for common mental health problems among university and college students: A systematic review and meta-analysis of randomized controlled trials. *Journal of Psychiatric Research*, *107*, 1–10. https://doi -org/10.1016/j.jpsychires.2018.09.018

Johnson, S. U., Ulvenes, P. G., Øktedalen, T., & Hoffart, A. (2019, August 6). Psychometric properties of the General Anxiety Disorder 7-Item (GAD-7) Scale in a heterogeneous psychiatric sample. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6691128/#__ffn_sectitle

Joint Task Force for the Development of Telepsychology Guidelines for Psychologists. (2013). Guidelines for the practice of telepsychology. *American Psychologist, 68*(9), 791-800. http://dx.doi.org/10.1037/a0035001

Kendall, P. C., Swan, A. J., Carper, M. M., & Hoff, A. L. (2018). Anxiety disorders among children and adolescents. In J. N. Butcher & P. C. Kendall (Eds.), *APA handbook of psychopathology: Child and adolescent psychopathology., Vol. 2.* (pp. 213–230). Washington, DC: American Psychological Association. https://doi-org/10.1037/0000065-011

Kroenke K, Spitzer RL. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric Annals, 32*,509-521.

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

L'Hôte, L., Fond, M., & Volmert, A. (2017). Beyond awareness of stigma: Moving public understanding to the next level. Retrieved from https://www.frameworksinstitute.org/assets/files/mental_health/TCHD_MentalHealth_MTG_FINAL.pdf

Lachenbruch, P. A., & Cohen, J. (1989). Statistical power analysis for the behavioral sciences (2nd ed.). *Journal of the American Statistical Association, 84*(408), 1096. doi:10.2307/2290095

Langarizadeh, M., Tabatabaei, M. S., Tavakol, K., Naghipour, M., Rostami, A., & Moghbeli, F. (2017). Telemental health care, an effective alternative to conventional mental care: A Systematic Review. *Acta informatica medica : AIM : journal of the Society for Medical Informatics of Bosnia & Herzegovina : casopis Drustva za medicinsku informatiku BiH*, *25*(4), 240–246. doi:10.5455/aim.2017.25.240-246

Lipson, S. K., Lattie, E. G., & Eisenberg, D. (2019). Increased rates of mental health service utilization by U.S. college students: 10-Year population-level trends (2007–2017). Psychiatric Services, 70(1), 60-63. doi:10.1176/appi.ps.201800332

Luxton, D. D., Nelson, E.-L., & Maheu, M. M. (2016). Concepts, principles, and benefits of telemental health. In *A practitioner's guide to telemental health: How to conduct legal, ethical, and evidence-based telepractice*. (pp. 9–16). Washington, DC: American Psychological Association. https://doi-org/10.1037/14938-00

Martin, B. (2019). In-Depth: Cognitive behavioral therapy. *Psych Central*. Retrieved on November 30, 2019, from https://psychcentral.com/lib/in-depth-cognitive-behavioral-therapy/

Matsumoto, K., Sutoh, C., Asano, K., Seki, Y., Urao,Y., Yokoo, M., Takanashi, R., Yoshida, T., Tanaka, M., Noguchi, R., SNagata, S., Oshiro, K., Numata, N., Hirose, M., Yoshimura, K., Nagai, K., Sato, Y., Kishimoto, T., Nakagawa, A., & Shimizu, E. (2018). Internet-Based cognitive behavioral therapy with real-time therapist support via videoconference for patients with obsessive-compulsive disorder, panic disorder, and social anxiety disorder: Pilot single-arm trial. *Journal of Medical Internet Research*, *20*(12), 19. https://doi-org/10.2196/12091

McArthur, B., Riosa, P. and Preyde, M. (2012). Treatment fidelity in psychosocial intervention for children and adolescents with comorbid problems. *Child Adolescent Mental Health, 17*, 139-145. https://doi.org/10.1111/j.1475-3588.2011.00635.x

McLeod, S. A. (2019, Jan 11). *Cognitive behavioral therapy*. Simply Psychology. https://www.simplypsychology.org/cognitive-therapy.html

Miller, K. (2019, June 19). CBT explained: An overview and summary of CBT (Incl. History). Retrieved December 1, 2019, from https://positivepsychology.com/cbt/.

Monzon A., Zhang E., Marker A., Nelson E. (2021) Overview of child telebehavioral interventions using real-time videoconferencing. In: Latifi R., Doarn C., Merrell R. (eds) Telemedicine, Telehealth and Telepresence. Springer, Cham. https://doi.org/10.1007/978-3-030-56917-4_22

Nelson, E.-L., Barnard, M., & Cain, S. (2003). Treating childhood depression over videoconferencing. *Telemedicine Journal and e-Health*, *9*(1), 49–55. doi: 10.1089/153056203763317648

Novotney, A. (2014). Students under pressure: College and university counseling centers are examining how best to serve the growing number of students seeking their services. *PsycEXTRA Dataset*. doi:10.1037/e522492014-013

Oud, M., Winter, L. D., Vermeulen-Smit, E., Bodden, D., Nauta, M., Stone, L., … Stikkelbroek, Y. (2019). Effectiveness of CBT for children and adolescents with depression: A systematic review and meta-regression analysis. *European Psychiatry*, *57*, 33–45. doi: 10.1016/j.eurpsy.2018.12.008

Perini, S., Titov, N., & Andrews, G. (2009). Clinician-assisted Internet-based treatment is effective for depression: Randomized controlled trial. *Australian and New Zealand Journal of Psychiatry, 43*(6), 571–578. https://doi-org/10.1080/00048670902873722

Pickren, W. (2007). Tension and opportunity in post-World War II American psychology. *History of Psychology, 10(*3), 279–299. https://doi-org/10.1037/1093-4510.10.3.279

Rees, C. S., & Maclaine, E. (2015). A systematic review of videoconference-delivered psychological treatment for anxiety disorders. *Australian Psychologist*, *50*(4), 259–264. doi: 10.1111/ap.12122

Richardson, L., Reid, C., & Dziurawiec, S. (2015). “Going the extra mile”: Satisfaction and alliance findings from an evaluation of videoconferencing telepsychology in rural Western Australia. *Australian Psychologist*, *50*(4), 252–258. https://doi-org/10.1111/ap.12126

Rubin, A., & Yu, M. (2017). Within-Group effect size benchmarks for cognitive–behavioral therapy in the treatment of adult depression. *Social Work Research*, *41*(3), 135–144. doi: 10.1093/swr/svx011

Sara B. Oswalt, Alyssa M. Lederer, Kimberly Chestnut-Steich, Carol Day, Ashlee Halbritter & Dugeidy Ortiz (2018). Trends in college students' mental health diagnoses and utilization of services, 2009–2015, *Journal of American College Health,* DOI: 10.1080/07448481.2018.1515748

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (MINI): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *The Journal of Clinical Psychiatry*, *59*(Suppl 20), 22–33.

Smucker Barnwell, S., McCann, R., & McCutcheon, S. (2018). Competence of the psychologist. In *A telepsychology casebook: Using technology ethically and effectively in your professional practice.* (pp. 7–26). Washington, DC: American Psychological Association. https://doi-org/10.1037/0000046-002

Spitzer RL, Kroenke K, Williams JBW, Löwe B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*, 166:1092-1097.

Stubbings, D. R., Rees, C. S., Roberts, L. D., & Kane, R. T. (2013). Comparing in-person to videoconference-based cognitive behavioral therapy for mood and anxiety disorders: randomized controlled trial. *Journal of Medical Internet Research*, *15*(11), e258. doi:10.2196/jmir.2564

Telemedicine and Telehealth. (n.d.). Retrieved from https://www.healthit.gov/topic/health-it-initiatives/telemedicine-and-telehealth

Théberge-Lapointe, N., Marchand, A., Langlois, F., Gosselin, P., & Watts, S. (2015). Efficacy of a cognitive-behavioural therapy administered by videoconference for generalized anxiety disorder. Revue Européenne De Psychologie Appliquée/European Review of Applied Psychology, 65(1), 9-17. doi:10.1016/j.erap.2014.10.001

Wilson, J. A. B., & Schild, S. (2014). Provision of mental health care services to deaf individuals using telehealth. *Professional Psychology: Research and Practice*, *45*(5), 324–331. doi: 10.1037/a0036811

Xiao, H., Carney, D. M., Youn, S. J., Janis, R. A., Castonguay, L. G., Hayes, J. A., & Locke, B. D. (2017). Are we in crisis? National mental health and treatment trends in college counseling centers. *Psychological Services, 14*(4), 407-415. doi:10.1037/ser0000130

Appendix A
Entire Sample Depression Effect Size

Table A1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PrePHQ	10.9277	83	6.28933	.69034
	PostPHQ	5.6386	83	5.46291	.59963

Table A2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PrePHQ & PostPHQ	83	.437	.000

Table A3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PrePHQ - PostPHQ	5.28916	6.27719	.68901	3.91849	6.65982	7.676	82	.000

Appendix B

Entire Sample Anxiety Effect Size

Table B1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreGAD	10.3614	83	5.60178	.61488
	PostGAD	5.2048	83	5.15316	.56563

Table B2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PreGAD & PostGAD	83	.333	.002

Table B3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PreGAD - PostGAD	5.15663	6.22050	.68279	3.79834	6.51491	7.552	82	.000

Appendix C

Anxiety Group Effect Size

Cohen's d= .76 Effect size

Table C1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GADpre	10.2222	36	5.11084	.85181
	GADpost	5.5833	36	4.48091	.74682

Table C2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GADpre & GADpost	36	.196	.251

Table C3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GADpre - GADpost	4.63889	6.09990	1.01665	2.57498	6.70280	4.563	35	.000

Appendix D

Depression Group Effect Size

Cohen's d= 1.11 Effect size

Table D1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PrePHQ	12.3500	20	5.47025	1.22319
	PostPHQ	5.2500	20	6.69544	1.49715

Table D2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PrePHQ & PostPHQ	20	.463	.040

Table D3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PrePHQ - PostPHQ	7.10000	6.38996	1.42884	4.10941	10.09059	4.969	19	.000

Appendix E

Dual Diagnoses Group Effect Size for Depression Symptoms

Cohen's d= .79 effect size

Table E1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PrePHQ9	11.8519	27	6.92100	1.33195
	PostPHQ9	5.9630	27	4.83959	.93138

Table E2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PrePHQ9 & PostPHQ9	27	.234	.240

Table E3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PrePHQ9 - PostPHQ9	5.88889	7.45929	1.43554	2.93809	8.83969	4.102	26	.000

Appendix F

Dual Diagnosis Group Effect Size for Anxiety Symptoms

Cohen's d= .893

Table F1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreGAD7	11.5926	27	6.04635	1.16362
	PostGAD7	5.1852	27	5.03860	.96968

Table F2

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PreGAD7 & PostGAD7	27	.173	.388

Table F3

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PreGAD7 - PostGAD7	6.40741	7.16970	1.37981	3.57117	9.24365	4.644	26	.000

Appendix G

Effect Sizes for Telehealth Administered CBT

Table G1

The table highlights the moderate to large effect sizes for telehealth administered CBT for reducing symptoms of depression among the entire sample, depression group, and dual diagnosis group. Similarly, the table displays moderate to large effect sizes for telehealth administered CBT for reducing symptoms of anxiety among the entire sample, anxiety group, and dual diagnosis group.

Sample	Telehealth CBT Effect Size for Depression	Telehealth CBT Effect Size for Anxiety
Entire Sample (N = 83)	.84	.83
Depression Group (N = 20)	1.11	-
Anxiety Group (N = 36)	-	.76
Dual Diagnosis Group	.79	.89