

MENTAL HEALTH DELIVERY METHOD OUTCOMES FOR THE POSTSECONDARY  
STUDENT: A QUANTITATIVE QUASI-EXPERIMENTAL, NON-EQUIVALENT  
CONTROL GROUP PRETEST-POSTTEST STUDY

by

Mallory Nicole Ball

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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## ABSTRACT

The purpose of this study is to examine the impact that a virtual mental health intervention has on distance education postsecondary students. This study utilized a quantitative quasi-experimental non-equivalent control group pretest-posttest study design. The study design was used to determine if there is a statistically significant difference in the pretest and posttest scores for the Beck Depression Inventory (BDI) and the Center for Epidemiologic Studies Depression Scale-Revised (CESD-R). Furthermore, how these differences impact distance education postsecondary students utilizing online delivery method of mental health interventions compared to postsecondary distance education students who did not. The study setting was at a large, private university in Virginia during the fall semester of the 2020-2021 academic year. The sample came from a voluntary response sample of postsecondary students between the ages of 18-24. A total of 80 volunteer participants enrolled in the study. Data for both groups of distance education students were collected at the baseline and after the completion of the mental health intervention. Analyses were completed by utilizing two ANCOVAs. Findings supported the hypotheses that there is no significant difference in the mean differences of the pretest and posttest scores of the distance education students receiving online mental health interventions for depression symptoms compared to those who did not receive an intervention.

Keywords: Mental health intervention, Distance education, Depression, BDI, CESD-R

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### **List of Abbreviations**

Center for Epidemiologic Studies – Revised (CESD-R)

Beck Depression Inventory (BDI)

Feedback Intervention Theory (FIT)

World Health Organization (WHO)

## CHAPTER ONE: INTRODUCTION

### Overview

This chapter of the study created a compelling case for the problem under investigation. The chapter also provided the theoretical framework upon which this quantitative quasi-experimental, non-equivalent control group pretest-posttest study regarding the use of online mental health support treatment for postsecondary distance education students. Topics introduced include the background, problem statement, purpose statement, significance, research questions, and definitions.

### Background

Information communication technologies and the Internet have affected how individuals socialize (Lazurus & Dokou, 2016). Studies have found that there are little to no differences between the results of face-to-face learning when compared to distance education in college students (Barrable et al., 2018; Graber, 2019; Santarossa et al., 2018). Although humans continue to crave interaction with others, there have been variations and adaptations of how those interactions occur. Online mental health interventions have a history dating back to around 20 years ago (Andersson, 2018). Andersson (2018) explained that there are three roots of internet interventions. The first origin identified by the author is evidence-based psychological treatments, such as cognitive behavior therapy. The second historical root is the plethora of self-help literature with controlled trials. The third historical root of online interventions is computerized testing and interventions. The development of all three of these historical backgrounds has led to online mental health interventions. Lazuras and Dokou (2016) further explained that online mental health interventions (such as online counseling services) have developed as information and communication technologies have advanced.

Unfortunately, this does not mean that these interventions have lessened the existence of mental health issues. The dependent factor for successful results for both face-to-face and online interventions is the provision of human support (Santarossa et al., 2018). However, a recent review has attested that more studies are needed to provide a direct comparison (Bengsston et al., 2015). Students in higher education are no exception to this constant need. Higher education students continue to exhibit a high rate of mental health disorders (Harrer et al., 2019). Recently, between 20% to 36% of higher education students are dealing with a form of psychological distress (Sontag-Padilla et al., 2018). Additionally, the World Health Organization (WHO) released a study that found that the percentage of college students with a lifetime diagnosis of mental health disorders has increased from 22% to 36% between 2007 and 2017 (Lipson et al., 2019). These trends lead many public health professionals and leaders in higher education with the responsibility of finding ways to provide mental health interventions for this population (Harrer et al., 2019; Papadatou-Pastou et al., 2019). The answer to the question of how these interventions can reach distance education students remains to be seen.

Studies have found that there are little to no differences between the results of face-to-face learning when compared to distance education in college students; online interventions may likely be as successful as face-to-face interventions (Barrable et al., 2018; Graber, 2019). Van Genugten et al. (2019) cited three major advantages of online interventions: convenience, high reach, and low costs. The idea of a mental health intervention can be traced back to Bandura's (1986) social cognitive theory (Silva Almodovar et al., 2018). Bandura's theory held that depression and anxiety levels can be decreased with the increased knowledge of coping skills. Online mental health interventions allow for a self-guided lesson in coping skills with added personal support and social interaction. There have been various attempts at programs for online

mental health interventions. These include self-guided as well as professionally guided therapies/counseling. For example, MoodGYM (created in 2004) is an interactive book used for self-help, has been considered an innovative new form of intervention for mental health (Grohol, 2018). Multiple studies of online mental health interventions have been conducted; the findings demonstrate that these interventions have an impact on the severity of mental illness and may even increase the number of people that use this form of intervention (Papadatou-Pastou et al., 2019; Ruepert et al., 2019; Spijkerman et al., 2016). However, there has not been an intervention specifically targeted at distance education students. By implementing an online mental health intervention for university students, this study added to the scholarly research by providing additional empirical support. Also, this study can potentially impact policy and practice considerations at higher education institutions.

### **Problem Statement**

Students in higher education continue to experience increasing levels of depression and anxiety (Barrable et al., 2018). Due to the psychological stress students are subject to in college, they are much more susceptible to mental health disorders (Schultchen et al., 2020). Moreover, researchers have identified a mental health gap for students in lower-income countries due to their lack of access to mental health resources (Arjadi et al., 2015). Currently, the utilization of online treatments and interventions is on the rise (Barrable et al., 2018; Hill et al., 2017; Webelhorst et al., 2020). One of the major benefits of online mental health interventions is that there is more access, the process is easier, and the possibility for anonymity (Barrable et al., 2018; Dunbar et al., 2018). The WHO has reported an epidemic of mental health disorders that will result in an estimated loss of \$16 trillion in the United States by 2030 if improvements are not made to make resources more accessible (Chuenphithayavut et al., 2020).

However, one of the most significant challenges that clinical and research groups have faced has been providing an evidence-based approach that exhibits the effectiveness of internet-based mental health interventions (Hill et al., 2017). This difficulty is compounded even more when considering distance education students have less access to mental health resources than traditional students. There is a need for empirical studies to provide evidence for the effectiveness of mental health interventions for distance education students. Some studies have examined the effectiveness of various methods of intervention for university students. However, these studies include mental and physical health interventions, such as alcoholism interventions, health behavior interventions, and mental health interventions for traditional students (Cameron et al., 2015; Farrer et al., 2019; Norman et al., 2018). Consequently, there is a lack of literature informing the effectiveness of online mental health interventions for distance education university students. Fierro et al. (2020) stressed the importance of addressing the mental health of online students, as online professors have noted an increase in self-reported mental disorders of online learners. The problem is there is a gap in the literature concerning the effect of online mental health intervention in university students, specifically distance education students.

#### Purpose Statement

The purpose of this quantitative, quasi-experimental study was to determine the severity and frequency of depression symptoms after using online mental health interventions on distance education postsecondary students through a nonequivalent control group pretest-posttest study. The study population was made up of students at a large, private university in Virginia during the fall semester of the 2020-2021 academic year. The researcher collected data from distance education postsecondary students to determine the effect of online interventions for this student demographic. The independent variable was the online mental health intervention with two

levels: treatment with online mental health intervention and no treatment of mental health intervention. The dependent variable was the depressive symptoms, and the covariate was the pretest score. A covariate is defined as a quantitative predictor variable that is included for its association with the Y outcome and its confound with other predictors to be statistically controlled (Warner, 2013). This is used when the researcher is assessing the predictive importance of other variables of greater interest. The covariates for this study were the CESD-R (Center for Epidemiologic Studies – Revised) and BDI (Beck Depression Inventory) pretest scores for the participants in both groups.

An online mental health intervention was defined as remotely delivered interventions targeting people with a mental health condition (Naslund et al., 2015). Depression symptoms in this study indicate a depressive episode defined by the American Psychiatric Association and Statistical Manual utilized in both the CESD-R and BDI (Fried et al., 2016).

#### Significance of the Study

For students, transitioning to postsecondary education can create mental health disturbances (Rasanen et al, 2016). While universities typically have counselors and mental health professionals, some barriers exist to receiving much-needed mental health interventions. Students need to receive the same benefits of a face-to-face intervention whether they are on a college campus or attending distance education courses. This study is important because it can provide universities with mental health intervention approaches and methods for distance education students. This study aimed to discover valuable information to assist university officials and all those involved in mental health interventions. Internet-based interventions are seen as a low-cost, easily accessible resource, and effective in student support (Stallman et al., 2019). The study analysis determined the impact of online mental health interventions for

distance education students. This is critical to the sample being studied and those who serve them because this population is often forgotten and isolated as they are not physically on campus. Researchers have cited difficulties within digital mental health approaches due to a lack of instruction and practices that have been formalized (Saqr et al., 2018). This study added to the body of knowledge to provide more guidance on this topic.

#### Research Questions

The research questions in this study were the following:

**RQ1:** Is there a difference in the severity of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention when controlling for pretest (pre-intervention) scores?

Covariate: Pretest scores on Beck Depression Inventory pretest

Dependent Variable: Beck Depression Inventory Posttest scores

Independent Variables: Two levels (mental health intervention, no intervention)

**RQ2:** Is there a difference in the frequency of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention when controlling for pretest (pre-intervention) scores?

Covariate: Center for Epidemiologic Studies - Revised pretest scores

Dependent Variable: Center for Epidemiologic Studies - Revised posttest scores

Independent Variables: Two levels (mental health intervention, no intervention)

The research questions were answered by the data collected from the pretest and posttest BDI (RQ1) and CESD-R (RQ2).

## Definitions

1. *BDI* – The BDI is a self-report rating inventory that measures characteristic attitudes and symptoms of depression (Garcia-Batista et al., 2018).
2. *CESD-R* – *The CESD-R is a screening test for depression and depressive disorder as defined by American Psychiatric Association' Diagnostic and Statistical Manual (Van Dam & Earleywine, 2011).*
3. *Feedback Intervention Theory (FIT)* - This theory implies that feedback intervention affects performance, as well as decreases as attention is escalated (Kluger & DeNisi, 1996; Tindage & Myers, 2020)
4. *Online Community Inquiry Theory* – This theory emphasizes that learning takes place in community through the use of three core elements: cognitive presence, social presence, and teaching presence (Amemado & Manca, 2017; Garrison et al., 2000; Padilla & Kreider, 2018).
5. *Protection-Motivation Theory* – A theory that explains the magnitude of unwanted consequences, the probability that the unwanted event can occur, and the efficacy of the response to the event (Rogers, 1975).
6. *Self-Efficacy Theory* – A theory that highlights how individuals believe in their ability to perform a task or achieve a specified performance result (Bandura, 1977; Tak et al., 2017).
7. *Social Cognitive Theory* – A theory explaining the ability to use coping skills to manage anxiety and depression-induced stress (Silva Almodovar et al., 2018).



## CHAPTER TWO: LITERATURE REVIEW

### Overview

This literature review provides a theoretical understanding of the online delivery of mental health interventions for college students. It also examines the available knowledge on online mental health interventions for university students attending college through distance education courses. The main theory framing this inquiry is online community inquiry theory (Garrison, Anderson, & Archer, 2000). However, self-efficacy theory, protection-motivation theory, social-cognitive theory, and feedback intervention theory are also helping to shape this study's investigation. (Bandura, 1977; Garrison et al., 2000; Kluger & DeNisi, 1996; Rogers, 1975). The findings discovered from this information call attention to the gap in the literature around the use of online mental health interventions for distance education postsecondary students. This chapter presented current knowledge about the topic through the utilization of a thorough examination of related literature.

### Theoretical Framework

The theories that framed this study were protection-motivation theory, online community inquiry theory, feedback intervention theory, and self-efficacy theory (Bandura, 1977; Garrison et al., 2000; Kluger & DeNisi, 1996; Rogers, 1975). These theories explain the motivation behind the need for online mental health interventions. These theories also shed some light on the reasoning behind the motivation for others to complete these interventions. A theoretical framework is an essential tool used for any study. Theoretical constructs allow one to identify basic similarities among phenomena that may have been considered isolated events (Gall et al., 2007). This framework provides a way to be able to explain the event or experience understandably. Further, when identifying the tenets of a theory, predictions can be made as to

what is likely to occur next. This literature review examined online mental health interventions for online university students and the theoretical framework that supports the design and implementation of these online mental health interventions.

### **Protection-Motivation Theory**

Rogers' (1975) protection-motivation theory explains the magnitude of unwanted consequences, the probability that the unwanted event can occur, and the efficacy of the response to the event. When all three of these elements are in effect, the attitude can change. The presence of fear is indicated through the three elements being present, and the result of this presence can change or eliminate the instances of certain attitudes and responses (Rogers, 1975).

Protection-motivation theory has previously been used with mental health interventions. In one study, a two-page pamphlet was created for older adults to assess their attitudes toward depression screening (Shah et al., 2017). Rogers' theory was used to create this pamphlet, as researchers presented all the common health conditions and explained how they relate to depression (Rogers, 1975). By providing this information and available treatments, researchers found that many participants were willing to complete depression screenings with their primary care physicians if they felt that the screening was valuable to their health (Shah et al., 2017).

Rogers' protection-motivation theory was the basis for this research as it explains the mindset of potential participants. The knowledge of unwanted consequences of untreated depression and the anticipation of these consequences help to motivate individuals to seek ways to mitigate their risk for depression. This research targeted individuals that may want to volunteer for an intervention for mental well-being, this theory gives an understanding of the mindset of some of these individuals and their motivation for participation.

## **Self-Efficacy Theory**

Rogers' (1975) protection-motivation theory works in correlation with self-efficacy theory (Bandura, 1977). In self-efficacy theory, Bandura (1977) observed that research suggested that human behavior is regulated by cognitive processes, while other research indicated that performance-based procedures regulated cognitive processes. According to self-efficacy theory, one believes in their own ability to perform a task or their ability to reach a specified performance result (Bandura, 1977; Tak et al., 2017). This theory proposed that four sources of information cause self-efficacy: experience, modeling, social persuasion, and physiological or psychological states (Bandura, 1977; Tu & Zhang, 2015).

Beliefs about one's self-efficacy guides behavior, whether directly or indirectly (Tak et al., 2017). The idea that specific psychological procedures can cause self-efficacy or even strengthen it was the basis for Bandura's theory (1977). Self-efficacy can also vary with situations or environments. For example, an individual's self-efficacy may be at higher levels concerning an academic setting but lower with a more social environment (Tak et al., 2017).

When one has adequate self-efficacy, this can affect how the individual reacts to certain situations (Bandura, 1977). For example, a person may fear a situation if they are not confident they are adequately equipped with the skills needed to face it. Therefore, they may worry that they will not be able to cope. As a result of this fear, the individual may do their best to avoid entering this unwanted circumstance. This theory complements the protection-motivation theory (Rogers, 1975) when explaining students' common lack of participation in mental health interventions.

### **Social-Cognitive Theory**

Bandura's social-cognitive theory (1986) builds upon self-efficacy theory. This theory notes when one is aware of coping options, depression and anxiety levels can be decreased. This decrease is related to an individual's self-efficacy. Bandura (1986) explained that there are multiple ways to increase or acquire self-efficacy: overcoming obstacles, seeing others overcome obstacles, or social persuasion.

One of the most important concepts of this theory is that it is not about actual skill but the belief in self-efficacy that allows a person to succeed in the face of obstacles (Tak et al., 2017). This theory feeds into the other theories at the root of this research. The perception of an obstacle can determine one's success. Mindfulness interventions can affect and sculpt how a person deals with their mental health. They may develop coping strategies, seek health interventions, or find ways to build their confidence in their ability to cope. These strategies can affect their tendency to exemplify protection-motivation and self-efficacy theories.

### **Online Community Inquiry Theory**

Online community inquiry or community of inquiry theory originated from the idea that social context affects learning and outcomes and the importance of a sense of community for learning in higher education in America in the 1990s (Garrison et al., 2000). Community of inquiry theory held that learning takes place in a community using three core elements: cognitive presence, social presence, and teaching presence (Amemado & Manca, 2017; Garrison et al., 2000; Padilla & Kreider, 2018).

According to the community of inquiry theory, cognitive presence is a process or cycle that begins with understanding the problem to solve (Herrera Díaz & Gonzalez Miy, 2017; Padilla & Kreider, 2018). Cognitive presence involves four phases: triggering events,

exploration, integration, and resolution (Herrera Díaz & Gonzalez Miy, 2017). This understanding is accomplished by way of thorough reflection and dialogue (Amemado & Manca, 2017). Social presence is described as the ability to project oneself emotionally and socially (Padilla & Kreider, 2018). Further, this is the ability to project oneself and their entire personality through a specific method of communication (Amemado & Manca, 2017). Teaching presence is the way to design, facilitate and direct learners' cognitive and social processes to more meaningful learning (Padilla & Kreider, 2018).

Community of inquiry theory was originally developed to address learning for online graduate students due to courses utilizing the Internet as the primary method of communication (Amemado & Manca, 2017; Padilla & Kreider, 2018). This theory is helpful in situations such as teleconferencing in higher education. For traditional, face-to-face students, communication is typically accomplished through oral communication.

Traditional face-to-face education allows for more opportunities to give and receive social cues (Garrison et al., 2000). This social aspect of traditional education also needs to be created for online students, despite the virtual environment. According to the authors, computer conferencing is the tool that can be used to create this virtual version of the traditional environment (Garrison et al., 2000). However, this can only happen if all three elements are present in that environment. The idea behind this theory gives the main baseline theory for any effective internet-based intervention in higher education, as well as other environments.

### **Feedback Intervention Theory**

When completing a mental-health intervention, activities and progress are often overseen by those managing the intervention. Feedback intervention theory (FIT) implies that feedback intervention affects performance and decreases as attention is escalated (Kluger & DeNisi, 1996;

Tindage & Myers, 2020). When feedback interventions are used, a third party, presumably objective, assesses task performance (King, 2016; Kluger & DeNisi, 1996). These are not simple lists of items but are, instead, tasks that assess performance, memory, and physical behaviors.

Feedback in this theory is considered natural, personal, self-initiated, and task-generated (Kruger & DeNisi, 1996; King, 2016). When feedback is personal, it describes how a person feels about the performer. When it is task-generated, it is more of a pass/fail scenario or focused on how a person has completed a task. Self-initiated feedback is an individual's feedback within themselves (Kruger & DeNisi, 1996). This theory is more focused on students' academic performance; however, it can also be applied to other aspects of student life (Tindage & Myers, 2020). Feedback is often viewed as an ambiguous concept. However, it is very much a culmination of the previously mentioned theories in that it is all about the ability to interact (King, 2016).

Tindage and Myers (2020) examined the personality factor of students involved in feedback intervention. Referring specifically to students' feedback orientation, the researchers posed that students' feedback orientation allowed them to perceive and interpret feedback across four dimensions: utility, retention, sensitivity, and confidentiality. Feedback utility refers to the perception of importance or value of the feedback. Feedback retention refers to the ability to remember feedback to use it. Feedback sensitivity refers to the degree that students find feedback to be threatening or intimidating. Feedback confidentiality refers to the preference for receiving feedback, whether in a public or private context (Tindage & Myers, 2020). Researchers can consult with this theory to anticipate how to use and incorporate feedback.

## **Advancing the Theories**

The specific research focus of this study was rooted in these theories. Predominantly rooted in community inquiry theory, this study aimed to create a sense of community by giving online or distance education students a virtual environment that will provide them with a similar sense of community as traditional students. By combining protection-motivation theory and self-efficacy theory, this study attempted to provide participants with the necessary tools to feel confident in coping and managing mental health illness symptoms. The feedback intervention theory indicates that these efforts must be monitored through objective feedback (a third party) or personal feedback. All of these theories work together to describe and guide the approach developed for mental health interventions for distance education postsecondary students (Bandura, 1977; Garrison, Anderson, & Archer, 2000; Kluger & DeNisi, 1996; Rogers, 1975).

### **Related Literature**

The Related Literature section synthesized the current general knowledge of mental health issues and interventions for university students. This section elaborated on current issues in mental health, as well as information related to intervention efforts. The focus of the intervention efforts was web-based interventions for students. This section concludes with a summary section to explain how the knowledge, issues, and efforts tie together and what is currently known or not known related to this topic.

### **Current Mental Health Issues**

A recent study estimated that one in five people will experience a depressive episode at one point in their life (Malhi & Mann, 2018). The National Institute of Mental Health estimated that, in any given year, one in five adults in the United States would experience mental illness

(Grimm et al., 2018). Depression is defined as a mood in which one feels hopeless or overwhelmed by feeling inadequate or unworthy (Tu & Zhang, 2015).

Depression can occur gradually or all at once, but most people experience episodes of the disorder (Malhi & Mann, 2018).

Tu and Zhang (2015) explained that depression is an emotional impairment resulting from one's environment or a hormonal disorder. Further, the WHO estimated that depression will be ranked as the first cause of disease burden worldwide by 2030 (Malhi & Mann, 2018). This increase is due to the difficulty in diagnosing this illness. Depression is considered underdiagnosed because of physicians' and healthcare providers' challenges with identifying it (Arrieta et al., 2017).

Mental health disorders have become prevalent among college students (Auerbach et al., 2016; Fierro et al., 2020; Kosyluk et al., 2020). Mental illness in college students is not a new concept. In British universities, concern began to grow for students regarding their mental health as early as the 1940s. After World War II, new attention was drawn to psychological disturbances. These disturbances further support the fact that universities have been a longstanding environment where students can seek mental health assistance (Crook, 2020). College does not just mean a different form of education for students today. Instead, college can mean changes in many areas of life.

These changes include different experiences, such as self-discovery, new relationships, and new living situations (Liu et al., 2019). New living situations also include students not living near their parents, which can become a major factor influencing their studying and coping abilities (Chen et al., 2020). These experiences can result in added stress, resulting in



vulnerabilities, such as being more susceptible to mental health challenges (Chen et al., 2020; Liu et al., 2019).

Mental health problems resulting from this new chapter of life include internet addiction, emotional problems, and disorders related to interpersonal communication (Chen et al., 2020). Ultimately, this takes a toll on college students. Depression is one of the most common mental health problems found among university students. It is also important to note that students may be more at risk for depression than other individuals in their age range who do not attend higher education. However, studies report that more students are enrolling in college with mental health conditions before enrollment. One-third of college students enrolled have met the criteria for qualifying for a mental health problem that is clinically significant (Lipson et al., 2018).

The prevalence rate for depression is estimated to be over 30% for undergraduate students between 18 and 25 (Davies et al., 2016). The World Health Organization Mental Health International College Student initiative is the first to research epidemics and interventions for the college student population. This initiative was the largest dataset that has ever been collected on college students and has become an increasingly powerful force behind advocating for mental health interventions for this population (Cuijpers et al., 2019).

Initially, college counseling centers focused solely on career or vocational counseling. Today, there is a demand for these centers to also focus on adjusting to college life and helping students with life skills. These new programs were always part of the role of counseling centers, but a secondary role (Cornish et al., 2017). College counseling directors have reported an increase in the rates of symptoms of mental illness and an increase in the severity of those symptoms (Liu et al., 2019). Due to this increase, some universities are finding that they cannot meet students' needs. Many counseling centers cannot offer weekly appointments, are

understaffed, and have wait times that many consider unacceptable (Cornish et al., 2017). A recent study discovered that, among counseling centers, 95% of directors report a growing concern with meeting the needs of students that have psychological problems (Lipson et al., 2018).

Community colleges also note a need for mental health services as enrollment grows and the student population becomes increasingly diversified. Community college students tend to identify with demographic characteristics that may predispose them to mental health conditions. These demographic characteristics include single parents, first-generation students, or low socioeconomic backgrounds (Kalkbrenner et al., 2019). As a result, all college students may be at risk of mental health conditions during their academic careers.

When depression goes untreated, students can experience less productivity, lower grades, social isolation, and may even withdraw from the university they are attending (Davies et al., 2016). Furthermore, mental health disorders have also been the leading cause of other issues, such as chronic conditions, disability, and mortality (Ebert et al., 2017; Holtz et al., 2020). Jayawardene (2017) noted that when stress persists, it leads to cardiovascular problems, upper respiratory tract infections, and even stroke or auto-immune disorders. Students who do not receive mental health care when experiencing mental health issues face both short-term and long-term problems. These issues may involve low employment rates, higher dropout rates, and dysfunctional relationships in the future (Holtz et al., 2020).

Aside from being a student, outside factors can increase college students' susceptibility to depression and other forms of mental illness (Corona et al., 2017). One longitudinal study found that adverse childhood experiences (ACEs) can be used to predict the risk of mental health symptoms in college students. These ACEs include experiences such as physical abuse,

emotional abuse, sexual abuse, neglect, parental incarceration, parental divorce, and parental psychopathology. Furthermore, these situations can cause anywhere from moderately to severely stressful experiences (Karatekin, 2017). One study found that when mental illness results from ACEs, they persist throughout adulthood. Consequently, screening for ACEs may be an effective way to identify students who need mental health interventions.

Stress can be even higher for minority students due to outside factors, such as discrimination, racism, and other challenges associated with these students (Arbona et al., 2018). This kind of stress is referred to as minority status stress. The same susceptibility to stress can be applied to LGBTQ (Lesbian, Gay, Bisexual, Transgender, and Queer) minority students (Arbona et al., 2018; Bissonette & Szymanski, 2019). In a study conducted at three universities in the southeastern region of the United States, LatinX students were at an increased risk of mental illness.

This increased risk of mental illness is due to stressors that are unique to this population. The presence of cultural values helps these students moderate stress. The more connected this population is to their culture and family, the less likely they will experience mental health illness symptoms. Researchers have even gone as far as to say that cultural factors, such as cultural orientation and cultural values, protect Latino/Latina students from adverse mental health effects (Corona et al., 2017).

More recently, coronavirus disease (COVID-19) has created a greater emphasis on the mental health of university students. COVID-19 has caused additional stress and anxiety for students (Grubic et al., 2020; Keel et al., 2020; Li & Leung, 2020; Son et al., 2020). The pandemic has caused an additional level of stress, forcing schools to transition to online learning,

which increases stress and anxiety. These changes and other academic consequences have increased stress and anxiety for online students (Grubic et al., 2020).

In China, a study found that one-fourth of students in Hong Kong showed signs of suffering from COVID-19 related anxiety, and rates of depression and anxiety continue to rise (Li & Leung, 2020). As more individuals are placed under quarantines due to exposure to the virus, mental health will continue to be a concern. In a literature review completed to identify the psychological impact quarantines have on individuals, studies found negative psychological effects among the top stressors (Brooks et al., 2020). Researchers noted that the impact of quarantines can be long-term and may cause a wide range of symptoms.

The stress that college students experience is not isolated to causing only psychological problems. This situational stress is also causing a physiological and psychological cycle of both mental and physical comorbidities. Rather than the typical weight gain that occurs for college students in their first year (often referred to as the “freshman 15”), studies are now finding that college students are now gaining the “quarantine 15,” due to the spread of COVID-19 (Keel et al., 2020). In a study involving interviews of college students, 71% of students reported increased stress because of the pandemic outbreak, including fearing for the health of loved ones and themselves (Son et al., 2020).

It is important to note that individuals who suffer anxiety or distress related to COVID-19 tend not to seek treatment. A study of 6,854 adults from America and Canada had respondents participate in a survey with questions about their health and their views and experiences related to COVID-19. The study found what researchers identified as a COVID stress syndrome; the researchers described it as a network of symptoms revolving around the fear of the virus. This fear included traumatic stress, xenophobia, socioeconomic concerns, and compulsion. Most

importantly, the study found that COVID-19-related stress and the psychological symptoms it caused did not result in any more treatment-seeking behavior than other forms of stress not related to COVID-19. According to this study, the least common coping strategy for COVID-19-related stress was to seek medical or mental health services (Taylor et al., 2020).

As this pandemic continues to stretch across the better part of the year with no definite end in sight, the lack of interaction with others will only increase students' stress and anxiety levels. This pressure on students leads them to develop additional mental health illness symptoms. Also, with more universities moving toward an online model for instruction, it will be highly beneficial to have a plan in place for students that may struggle with depression or anxiety.

#### ***Student Attitudes Toward Available Services***

According to Dunbar et al. (2018), most students with mental health problems do not utilize mental health services. The authors noted this is despite the fact these services are available to them. Their study sampled eight community colleges in California and received 6,034 responses from students. The responses indicated that 1,557 students met the criteria for psychological distress. Analyzation of the responses indicated that 26% of students needed mental health treatment. Only 9% of those students had used on-campus services, 28% of the students with a mental health need had used on or off-campus services, and only 3% used online services.

More than half of the respondents reported that they were willing to use online services. However, 70% of the students stated they never received any mental health service. It is important to note that students with no prior in-person treatment were less likely to utilize services (Dunbar et al., 2018). Recently, many college administrators are finding that students

are seeking mental health resources at a more increased rate (White et al., 2019). Yet, although the number of students seeking mental health resources has increased, many colleges reported that they are inadequately staffed for this demand (Sandra, 2019).

Studies have demonstrated that students experiencing mental illness or mental health conditions are at a higher risk of dropping out of college (McManus & Henning, 2017). Almost half of the college students reported in a study that they would use an online mental health intervention program if it were available. Additionally, another study found that students under increased distress were even more likely to utilize an online mental health intervention program (Farrer et al., 2020). These online interventions must continue to be developed to assist students struggling with mental health and influence the stigma around mental health.

### ***Silence Surrounding Mental Health***

Mental health is often a topic that many do not wish to discuss. The general public tends to have negative and often inaccurate beliefs about mental health conditions. These assumptions create an environment that deters individuals from seeking help and recovering from mental illness (Wahl et al., 2019). Continuing to remain silent about mental illness only increases the stigma; individuals need a safe space to speak up for others and themselves (Menelaws, 2018).

In a cross-sectional quantitative study on the effect that this lack of discussion causes, researchers wanted to know if this silence impacts behaviors, support, well-being, and recovery (Wynaden et al., 2014). The researchers discovered 17.4% of students were at high risk for developing mental disorders. This research examined personality variables through a logistic regression model. The study revealed that web-based interventions could use these personality risk factors to prevent mental disorders.

Another study highlighted how student stigma was positively correlated with discrimination and disclosure of mental health illness symptoms (Wynaden et al., 2014).

Vidourek and Burbage (2019) conducted a study to assess positive mental health and mental health stigma in college students. This study found that students perceive stigma as a barrier to treatment. Further, the stigma in seeking help for mental health problems was seen as a common problem among the participants.

The best way to encourage students to speak up is to make individuals feel safe to talk or open up about mental health (Menalaws, 2018). Creating this environment can be done through educating others on mental health and the importance of mental health interventions (Menalaws, 2018; Wahl et al., 2019). Discussing individuals' ability to overcome difficulties resulting from mental illness is critical in breaking this silence, as it will encourage others to be open about their struggles (Thomas & Lovelace, 2020). Addressing this stigma will lessen the feeling of shame that tends to accompany topics related to mental illness (Menalaws, 2018; Thomas & Lovelace, 2020; Wahl et al., 2019). Making mental health interventions a common practice for higher education institutions would give this topic more visibility and create an open dialogue for students struggling with mental illness in silence.

### ***Stigma Surrounding Mental Health***

Stigmas in society have long created obstacles or difficulties for many reasons. Mental health stigma has a history of preventing individuals from receiving care or treatment (Dunbar et al., 2018; Thorncroft et al., 2016). A global survey was conducted online in which users from 299 countries responded to questions inquiring about their attitudes toward mental illness (Seeman et al., 2016). The study made it clear that stigma varies among different countries. The data also made it clear that many individuals are in daily contact with those with mental illness.

The difference is in the way that people from varying countries view those with mental illnesses. Some respondents reported mental illness resulting in shame or disgrace upon one's family, while others reported mental illness as a disease similar to a physical illness and not a cause for shame or embarrassment (Seeman et al., 2016).

Research has indicated that stigma related to how college students feel others perceive those receiving mental health is much higher than college students view others who seek mental health counseling or other resources (Lipson et al., 2018). Lipson et al. (2018) explained that stigma surrounding mental health services for college students could be divided into perceived stigma and personal stigma (2018). Personal stigma is how a college student might think less of a person that has received treatment for their mental health, while perceived stigma involves thinking less of a person who has received treatment for mental health. This stigma can also decide the choice of mental health resources for the few students seeking help. Students have reported being concerned with the stigma related to seeking support for mental health disturbances. Moreover, they were so concerned that they would even avoid a group support session due to fear that other members might recognize them in the group (Lee & Jung, 2018).

More importantly, what individuals may face due to mental illness can be more devastating than the mental illness itself (Thorncroft et al., 2016). An unfortunate result of the stigma surrounding mental health is that many individuals do not seek help or put off reaching out for help (Dunbar et al., 2018; Throncroft et al., 2016). These reasons are supported by the theories of Rogers (1975) and Bandura (1977) because it appeals to one's attitude of fear and their belief in their ability to overcome their symptoms. Stigma is centered around the perception of others; the use of the Internet provides much-needed anonymity for those worried about how they may be perceived when presented with mental health issues.



College students are also reportedly unwilling to make their primary care physician (PCP) aware that they are experiencing depression (Meyer et al., 2016). Sandra (2019) cited early detection as the best method for reducing depression within the college student population. The researcher also suggested that all students being seen for primary health care be screened for depression. This preventative measure is in addition to these students being given educational material and pointed toward helpful resources.

According to a study conducted at a small university, stigma was cited as the main reason for nondisclosure (Meyer et al., 2016). Most students were not only hesitant to report depression symptoms to their PCP, but they also cited that they were worried about how to initiate discussions about their symptoms. Further, students noted barriers to disclosure, such as fears about medication, referrals to psychotherapy, and the possibility of their medical records threatening their employability (Meyer et al., 2016). It is also less likely for racial, ethnic, and sexual minorities to continuously participate in counseling due to many concerns about stigma (Bissonette & Szymanski, 2019; Sandra, 2019).

### **Internet Interventions**

Internet-based interventions are coming to light as being a helpful method for maintaining multiple aspects of health (Fleischmann et al., 2018; Lipson et al., 2018; Musiat et al., 2014; Williams et al., 2014). Due to this new development, colleges are now searching for new ways to help students receive assistance for mental illness (Holtz et al., 2020). Some barriers to these interventions include limited resources being available on college campuses and a lack of awareness about the resources that are available to students (Holtz et al., 2020). Being in the digital age makes a way to overcome many of these barriers to accessing and helping students and universities.

A randomized control trial was conducted at a large university after discovering that many students had symptoms of mental disorders (Musiat et al., 2014). Results indicated that 17.4% of students were at a high risk of developing common mental disorders. The study deduced that web-based interventions that targeted personality risk factors provided a way of preventing common mental disorders (Musiat et al., 2014). Through mobile applications and other digital mental health approaches, counseling centers could become less strained and serve more students. Further, many issues that college students reported as barriers to accessing mental health resources (such as time and convenience) can be sidestepped through internet-based interventions (Holtz et al., 2020; Lipson et al., 2018). Mobile applications, specifically those used on mobile phones, provided a great way to reach students who need these services because they provided easy and readily accessible services. These mobile applications, or apps, not only offered a user-friendly way to interact and dedicated time to accessing mental health care, but they also provided a more inconspicuous method of delivery for individuals concerned with the stigma that surrounds self-help (Lee & Jung, 2018).

Fleischmann et al. (2018) studied this by interviewing students to evaluate their level of success in using internet and application-based training to reduce stress. The researchers found when interventions are tailored to student experiences; they prove much more successful. Feasibility and acceptability of web-based interventions for depression have also been studied by examining the use of Skype (a video-messaging and conferencing application) for video-based mental health services (Williams et al., 2014).

Unfortunately, many students who needed these services did not seek them, while those who did, found great success. This finding only confirms a greater understanding of the level of fear or reluctance to seek and use mental health resources for many students (Williams et al.,

2014). These interviews prevent distance and monetary barriers that many students may face when seeking mental health interventions. Using these videoconferencing tools, not only are people afforded the ability to experience more connectedness, but there is also the potential for data generation concerning research opportunities (Gray et al., 2020). To date, new technology has emerged for online meetings such as Google Meet, Microsoft Teams, WhatsApp, and Zoom (Atkinson, 2020; Pandey, 2020; Weston, 2020). Additional alternatives continue to be developed. These alternatives all use the same method and approach to videoconferencing, and each alternative may have new or differing features (Pandey, 2020).

Internet-based interventions are not one size fits all. There are additional intricacies to consider when designing an internet intervention; one must consider the audience. Hong Kong has begun to try to develop online counseling services for students. Researchers have indicated that future research is needed due to inevitable technological and ethical issues that may arise (Li & Leung, 2020).

Other areas are also beginning to find online counseling as a promising future endeavor. In Latin America, a culturally adapted psychotherapy approach was taken in a study involving internet interventions for college students in Columbia to deliver intervention for depression (Salamanca-Sanabria et al., 2019). This study found that these culturally adapted interventions can be conducted and supported by the results. Consequently, the need to assess the diversity of the student population in which the internet-based intervention is serving is critically essential. McKinley and Ruppel (2014) conducted a cross-sectional survey to evaluate students' perceptions in relation to online mental health resources. The participants' population consisted of 443 undergraduate students from northeastern, mid-sized universities. After surveying the

population, a positive correlation was discovered between self-efficacy and perceived wellness (Bandura, 1977; McKinley & Ruppel, 2014).

Additionally, the stigma that participants perceived from the public did not affect their attitude toward the mental health service resources. The biggest motivator for using online health resources in the study was personal mental health risk (McKinley & Ruppel, 2014). Harrer et al. (2019) explained that a person's responses to assistance might be conditioned due to childhood experiences, stressors, and personality, among other possibilities. As a result, this led researchers to believe students can be their own worst enemy when deciding whether to access mental health resources.

### ***Effectiveness for Internet-based Interventions***

Online preventative interventions have been previously evaluated for college students (Enrique et al., 2019; Harrer et al., 2016). It is important to note that today's college students were raised in a digital society; therefore, they have a greater understanding of the Internet and data use than previous generations (Chen et al., 2020). However, these preventative measures are not the same as online interventions for a mental health crisis. Harrer et al. (2016) found that internet-based interventions have a small effect on mental illness in university students, but they argued more research is required as the design and delivery need further examination.

Harrer et al. (2016) explained that students' responses to internet interventions were unpredictable because response rates' predictors have yet to be identified. When these interventions are studied and improved to fit the desired population, they will be more efficient for delivering mental health interventions (Räsänen et al., 2016). These improvements would allow for more internet-based interventions to be used, in addition to traditional interventions.

Many factors determine the appropriate treatment for students. These factors include background, symptoms, and current treatment (Harrer et al., 2016). The lack of literature on treatment response to internet interventions for university students is evident. There is also an unknown efficacy of internet-based interventions concerning more severe or chronic mental health illnesses, such as bipolar disorder (Dodd et al., 2017). The lack of literature in this field is a direct result of an insufficient number of conclusive trials. Interventions have been developed; however, they are unsupported because online interventions are new compared to traditional mental health interventions.

A randomized control trial was conducted at Dutch universities to evaluate the effectiveness of a web-based intervention that was individually tailored to students (Karyotaki et al., 2019). All students involved in the intervention had mild to moderate depression or anxiety symptoms. The intervention used homework exercises, information sheets, and audio-visual portions and was a transdiagnostic web-based approach that targeted depression and anxiety symptoms. This trial began in 2018 and was expected to be completed in August 2019. The trial's procedures, method, and analysis have been published; however, the trial results are still awaiting publication in a peer-reviewed journal. This speaks to the timeliness and the need for studies assessing the effectiveness of online interventions for depression and anxiety in college students (Karyotaki et al., 2019).

### ***Online Delivery***

Technology continues to forge ahead via developments, such as smartphones and increased internet speed. With each development comes increased flexibility (Wu et al., 2020). Researchers have also found information relevant to the method of interventions. This is because online interventions can help cut down on time, while traditional interventions can be time-

consuming (Chapman & Van Gordon, 2018). The translation to an online format has been tested on other interventions (Newman et al., 2019; Ward et al., 2017). In a cross-sectional pilot study, researchers tested the use of tablet computers, video conferencing, and an online management platform to deliver self-managed spinal cord injury interventions (Newman et al., 2019). Researchers found that interactivity and media can allow for the minimization of usability issues and accessibility.

In a study conducted to support childhood obesity prevention, early care and education programs created evidence-based strategies to translate these approaches into an online format (Ward et al., 2017). Researchers incorporated a self-directed instrument for observation. The study concluded that it was likely that the program may have upheld its same ability through this online format but called for a larger trial for definitiveness. This translation of evidence-based approaches is still a relatively new concept and should continue to be tested.

Nguyen-Feng et al. (2017) examined the efficacy of two online interventions: the PCI +Mindfulness Intervention (PCI+MF) and the Developed Mindfulness Only Interventions (MF-only). The researchers used a sample of 401 students from psychology classes at a large midwestern university. Among willing participants, the PCI+MF and MF-only interventions indicated that they were no more effective for reducing depression, anxiety, and perceived stress than the provided stress management information. More importantly, the MF-only intervention appeared to be effective only for students that did not have a history of trauma.

Researchers also examined the online delivery of counseling services in Malaysia to increase the usage of services (Wong et al., 2018). This study assessed attitudes toward using online or face-to-face counseling services for 409 students from six Malaysian universities. The study demonstrated that face-to-face counseling is the preferred method of delivery for

professionals. The results also found that service utilization would increase with online delivery as opposed to face-to-face counseling services.

Online interventions do not necessarily have to utilize video transmission. A synthesis of numerous papers indicated a gap for studying online students' progress as they navigated the many moving parts of higher education. However, it identified pitfalls for traditional students as well. There are multiple pitfalls to online mental health interventions (Ersahin & Hanley, 2017). Ersahin and Hanley (2017) synthesized 19 papers to evaluate the practice of chat counseling with 11- to 25-year-olds. The study found that there is a limited research base for this practice.

This conclusion further identifies the lack of literature around studying the progress of online students as they navigate through higher education. For these reasons, this study will utilize video-conferencing or live communication at various points to objectively evaluate participant progress and status within the timeframe of the study. Although this is a short-term follow-up, it will provide more information on baseline data and short-term goals that can be established as milestones for these mental health interventions for university distance education students.

### **Mindfulness Interventions.**

Mindfulness interventions can be described as the practice of dealing with an experience by distancing oneself from distracting thoughts and emotions in a way that allows for assessing one's awareness of their emotional and physical well-being (deVibe et al., 2018; Hamilton-West et al., 2018). Buddhist traditions are credited for being the originators of mindfulness interventions, with the term "mindfulness" coming from the Pali word for "remember" (Duarte et al., 2018; Dunning et al., 2018). Mindfulness interventions were first developed to help with pain

management (Cormack et al., 2017). There is no specific practice designated for mindfulness, and it is often misinterpreted as simply meditation (Jayawardene et al., 2017).

Mindfulness interventions are touted as being preventative and effective for multiple populations (Dowd et al., 2015; Duarte et al., 2018; Fishpool et al., 2018; Joyce et al., 2018; Ma et al., 2018; McIndoo et al., 2016). Mindfulness-based interventions are proven to be beneficial for individuals experiencing conditions related to mental health conditions (Duarte et al., 2018). More specifically, mindfulness-based cognitive therapy (MBCT) and mindfulness-based stress reduction (MBSR) have yielded great results, finding success in adults' physical and mental health (Dunning et al., 2018; Cormack, Jones, & Maltby, 2017). While there is not a wealth of information about the long-term effects of mindfulness interventions, these interventions continue to draw an increasing amount of interest among healthcare communities (deVibe et al., 2018; Dunning et al., 2018; Cormack, Jones, & Maltby, 2017).

In a random control design in the general population, online mindfulness-based interventions were also found to reduce stress and other forms of psychological distress (Ma et al., 2018). Online mindfulness interventions have also been proven to be effective for employee populations. A mindfulness program created specifically for a workplace environment was found to be effective at improving resiliency. More importantly, it was found to be more practical and effective at improving psychological flexibility in this employee population. Researchers explained that this was the first mindful-based resilience-training program delivered entirely online in the workplace (Joyce et al., 2018).

Online mindfulness interventions have been proven to influence chronic pain as well, due to the ability to manage emotions and stress as evidenced in a study for cancer patients (Dowd et al., 2015). Patients experiencing pain due to their cancer were randomly assigned to either



computerized mindfulness therapy or pain management psychoeducation programs. At the end of the study, it was determined that both groups showed equivalent improvement. Further, the study found that mindfulness therapy provided additional benefits such as convenience and privacy, but the study also calls for additional research on this topic (Dowd et al., 2015).

In another variation of internet interventions, rheumatoid arthritis patients were also involved in a research study that found online interventions as a favorable tool for combating psychological distress (Fishpool et al., 2018). However, much like the mindfulness intervention for cancer patients, the results were not completely conclusive (Dowd et al., 2015; Fishpool et al., 2018). This inconclusiveness can be attributed to the compounding factors of bias, the presence of this bias advocates for additional studies to examine online interventions in similar groups.

An eight-week mindfulness intervention was conducted online with nursing students. This study involved the use of a survey sent to potential participants in an email link. The survey consisted of open-ended questions that allowed participants to explain developments in their experiences with mindfulness-based interventions. The study found increased awareness, coping, and concentration (Spadaro & Hunker, 2020). This study also highlighted the use of mindfulness interventions with students; it demonstrated the usability of online mindfulness interventions.

An additional study was conducted with 50 college students with depression at the University of Tennessee. This study focused on examining how effective four abbreviated mindfulness-based therapy sessions were for students. Significant improvements were noted in the treatment group when compared to the control group. The findings were indicative of a need to begin these interventions upon a student's entrance into college (McIndoo et al., 2016).

There are very few studies examining the longitudinal results of mindfulness interventions. One of these few studies examined six-year longitudinal data of a mindfulness-

based course for Norwegian psychology and medical students (Lester & Murrell, 2018). The study was a randomized control trial in which participants completed a 15-hour long mindfulness course of seven weeks and attended booster sessions twice each year for six years. When compared to a control group that did not receive the mindfulness intervention, it was reported that there was less of an increase in coping and well-being (Lester & Murrell, 2018).

The first high-level perspective of firsthand accounts of students' perspective of mindfulness-based internet interventions was conducted by Sapthiang et al. (2019). The results of this literature review discovered that mindfulness interventions led to improvements in regulating emotions and increasing coping skills, social skills, relaxation, and reducing stress. The authors also explained that the onset of mental illness during childhood and adolescence could be linked to somatic health problems. These health problems could be physical problems, such as obesity. However, the health problems could also result from other issues, such as underachievement and psychiatric problems. These problems can be considered risk factors that may predispose students to mental illnesses or disorders (Sapthiang et al., 2019).

An intervention study with 120 students from a large university in the Midwest was conducted to use online mindfulness-based interventions to help with college students' mental health, focusing on sleep patterns. For four weeks, participants took part in daily interventions related to sleep health. The mindfulness-based intervention proved to reduce stress and insomnia symptoms, resulting in benefits to the students' health. Although abbreviated for this study, these online delivered interventions still proved to be beneficial when conducted online (Jarrett et al., 2017).

These mindfulness interventions have been tested to be effective on these populations; however, there is still a lack of information on the effectiveness of these types of interventions

on student populations. Student populations have not yet definitively demonstrated that they benefit from these interventions longitudinally. While it is probable that students could likely benefit from online interventions due to accessibility, online students could be even more likely to benefit from being encouraged to access online mental health interventions.

### **Recommendations**

Internet-based interventions for mental health or physical health are still a relatively new concept and have not been fully explored (Ebert et al., 2017; Okazaki et al., 2014). Online mental health interventions may be the answer to the problems of many distance education students. In the general population, these interventions are believed to hold the key to bridging treatment gaps and increasing treatments' effectiveness for those who have psychological disorders (Schröder & Moritz, 2015). Face-to-face interventions can be off-putting due to distance, time commitment, lack of resources, and economic burden. (Benton et al., 2016; Ebert et al., 2017).

Traditional mental health interventions are not always practical; there is limited knowledge about these non-traditional psychological interventions. Further, long-term follow-up has been relatively impossible up to this point. Additionally, online stress-reduction programs for university students have found that individuals do not retain the strategies learned in short interventions. That finding supports the notion that interventions should last longer than one month (Lanni et al., 2018).

Furthermore, these findings point study efforts toward more than just assessing symptoms, but rather, an intervention effort involving more than a self-paced course or exercise. Ebert et al. (2017) recommended that future studies consider long-term follow-ups of 12 to 18 months to determine if any major depressive episodes have been prevented due to an internet-

based mental health intervention. Additionally, a recent intervention for college students experiencing anxiety found that in a seven-week treatment plan in which online tools were used to treat anxiety. Therapist-assisted therapy recipients outperformed participants who did not utilize therapist-assisted treatment (Benton et al., 2016). These treatments involved speaking with the therapist via phone, teleconference, or other remote methods while accessing online resources.

However, it remains to be seen for remote or distance education students if these methods or approaches have the same effect. There may be underlying factors that aid traditional students more than distance education students. Yet, to remain consistent with previous studies, the recommended timeframe for this type of intervention is between 2 and 12 months (Benton et al., 2016; Ebert et al., 2017; Lanni et al., 2018). This study took a similar approach to assess internet-based interventions for postsecondary students by using the guidance given by previous researchers to shape the methods of the study.

This study was modeled, in some ways, after a similar study conducted in Canada. In that study evaluating a mindfulness-based application, known as “DeStressify,” full-time undergraduate students were assigned to either a control or treatment group. The participants used the mindfulness-based application five days each week for four weeks. Both groups were given pre-surveys and post-surveys to evaluate stress, anxiety, depression, and sleep levels. Of the 163 participants who completed all study activities, the DeStressify application reduced anxiety and improved these students' health, energy, and well-being. This study was conducted during a short period to examine pretest and posttest results. However, it paved the way for future research to continue to examine the use of mindfulness-based applications for university students (Lee & Jung, 2018).

## Summary

The current knowledge available on the mental health of college students all suggests that these students are in desperate need of mental health interventions and preventative care. The stress alone involved with transitioning into higher education can lead to an increased risk of depression and anxiety. This stress affects students that attend traditional or face-to-face classes. This pressure is an apparent problem for traditional students; one can assume that these risk factors, including results, may be more profound for online or distance education students in higher education. While studies have been completed that have evaluated mental health interventions for university students, it is unclear whether online students are at risk for mental health disorders than traditional students. It is also unclear whether online interventions will have better results for online students when compared to traditional students.

A gap in the literature exists, as few studies have been conducted to explore strictly online mental health interventions used for distance education or online students. If distance education students need mental health interventions, their needs may often go unmet by the university. With online students, there is no way to meet with them or monitor their symptoms. Online interventions may provide a better method than simply pointing them toward resources they may not understand or feel comfortable using. Thus, this study is necessary to provide universities with mental health intervention approaches and methods. This study aimed to discover valuable information to better anticipate and eliminate barriers to online mental health interventions for online students. With this evident gap in the literature, an opportunity exists to provide additional empirical research on this topic.

## CHAPTER THREE: METHODS

### Overview

This chapter of the study described the research methodology for this quantitative, quasi-experimental, nonequivalent control group pretest-posttest study regarding the mental health treatment for postsecondary distance education students compared to distanced education students receiving no treatment. This study examined if there was a statistically significant difference in the pretest and posttest scores for the Beck Depression Inventory (BDI) and the Center for Epidemiologic Studies Depression Scale-Revised (CESD-R) in distance education postsecondary students. Moreover, the researcher sought to investigate a significant difference between distance education students utilizing an online delivery method of mental health interventions and when they do not. The topics presented are the design, hypotheses, research questions, setting, population, instrumentation, procedures, and data analysis.

### Design

The research design of this study will be a quantitative, quasi-experimental, nonequivalent control group pretest-posttest design to determine the effectiveness of online mental health intervention as a treatment for reducing the frequency and severity of depression symptoms in distance education students. Gall et al. (2007) explained that quantitative research, also known as positivist research, is rooted in the assumption that the features of one's social environment create a constant and objective reality, leading to the collection of numerical data on observational behaviors. Further, a quasi-experiment is an experiment where participants are not randomly assigned to their respective groups (experimental and control groups). A nonequivalent control group design involves research participants not being randomly assigned to experimental and control groups, and each group takes a pretest and a posttest (Gall et al.,

2007).

The rationale for this study design was that a pretest-posttest design would assess differences between the two treatment groups in relation to a behavioral intervention. The pretest scores of participants, considered the covariate, cannot be randomized (Statistics Solutions, 2019). The use of ANCOVA allowed for controlling the effect of this variable, removing undesired variance, and controlling for group differences that existed before the study. Gall et al. (2007) explained that ANCOVA is useful because researchers are often unable to select two groups to compare that are matched on all relevant variables. This situation was true for this study as well. This study sought to examine the difference between the treatment and nontreatment groups of a mindfulness exercise (the independent variable) using the pretest scores as the covariate to control for any differences in the dependent variable before the treatment (Gall et al., 2007). This procedure was completed by controlling for any differences in the covariate pretest scores. The instruments used to provide pretest and posttest scores were the BDI, which measured the severity of depression symptoms and the CESD-R, which measured the frequency of depression symptoms.

The independent variable was the mental health intervention, the mindfulness exercise which was the treatment. The covariate in this study design was the pretest value of the participants' BDI and CESD-R scores. The dependent variables were the severity of depression symptoms measured by the BDI and the frequency of depressive symptoms measured by the CESD-R. The purpose of this design was to compare the two groups with similar characteristics before and after implementing the treatment program. This research design was selected because participants were not randomly assigned to conditions, and the groups were expected to be similar. The design for this study was similar to a study used to determine the effect of a

systematic treatment program on the scores of the Nottingham Adjustment Scale of individuals with visual field deficits following stroke (Taylor et al., 2011). The difference in scores is assessed after six weeks when evaluating treatment and experimental groups. However, researchers understand that participants will likely differ in some ways, causing them to be considered as nonequivalent groups (Price et al., 2017).

Previous studies have used the same design; for example, sexual health interventions have been assessed using pretest and posttest scores (Toprak & Turan, 2020). Data was collected from 130 students at a Turkish university where they completed questionnaires before and after attending a sexual health course at the university. In that study, the control group also filled out questionnaires before and after the treatment period while not attending the course. The study lasted for 15 weeks and found that attending the course helped reduce the belief in sexual myths and prejudices. A similar approach was also taken in a study to examine the effectiveness of mindfulness-based stress reduction in women with generalized anxiety disorder in Tehran (Masumian et al., 2019). Participants completed three different assessments related to depression and anxiety, with findings indicating that mindfulness-based stress reduction affected anxiety and depression levels.

#### Research Questions

**RQ1:** Is there a difference in the severity of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?

Dependent Variable: Severity of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

**RQ2:** Is there a difference in the frequency of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?



Dependent Variable: Frequency of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

The research questions were answered by the data collected from the posttest BDI (RQ1) and CESD-R (RQ2).

### **Hypotheses**

The null hypotheses for this study were:

**H<sub>01</sub>:** There is no statistically significant difference in the severity of depressive symptoms scores, as measured by the Beck Depression Inventory, between students receiving virtual mental health intervention and those not receiving the intervention.

**H<sub>02</sub>:** There is no statistically significant difference in the severity of depressive symptoms scores, as measured by the Center for Epidemiological Studies Depression Revised Scale, between students receiving virtual mental health intervention and those not receiving the intervention.

### **Participants and Setting**

The population was a sample of postsecondary students between 18 and 24 at a large, private university in Virginia during the fall semester of the 2020-2021 academic year. The university is one of the largest private nonprofit universities in the United States. The total enrollment of the campus is more than 100,000, with a student profile of 46% male, 54% female residential students, and 40% male, 60% female online students. Students were invited via email to participate in a depression treatment delivery method research study within the university.

Participants were recruited by convenience sampling through the university email listserv. The researcher emailed contacts from the university's Marketing Department to disseminate the recruitment email in Appendix X. This recruitment email stated the eligibility

requirements to participate in this study, allowing participants to self-identify as volunteers who qualify to participate in the study. After receiving the IRB approval letter, the Marketing Department distributed the recruitment email to the students between 18-24. The participants were asked to respond via email to request additional information about the study.

The study was introduced to the participants as a mindfulness exercise to reduce stress and anxiety for distance education students. The researcher targeted students who may feel overwhelmed or feel that they could benefit from stress reduction. Benefits to the participants were explained, such as the ability to manage stress. The number of participants sampled for this study was 70. This number exceeded the required minimum sample size of 66, assuming a medium effect size, with a statistical power of .7 at the .05 alpha level (Gall et al., 2007).

The overall demographic of the entire sample included a 4:6 male to female ratio. The population sample size (N= 80) will consist of two groups of college students, one treatment group (n1=40) and one control group (n2=40). The groups will vary in gender, age, and race/ethnicity.

#### Instrumentation

The researcher used two assessment instruments to measure depression symptoms. These assessments were administered at the baseline (pretest) and eight weeks after treatment (posttest) within the academic year. The pretests and posttests were the same tests. The BDI scores were used to assess the severity of depression symptoms in RQ1, and the CSED-R scores were used to assess the frequency of depression symptoms in RQ2. These instruments were used in numerous studies to assess mental health in various groups, such as spouses of wives with postpartum depression and young adults undergoing diet interventions (Francis et al., 2019; Suto et al., 2016). However, these pretests and posttests have yet to be utilized with this particular

population.

### **Beck Depression Inventory**

The Beck Depression Inventory (BDI), originally published in 1961, is a widely used questionnaire. See Appendix X for an example of the BDI used in the study. This instrument aimed to measure depressive symptoms and their severity in adolescents and adults (Garcia-Batista et al., 2018). This assessment was developed from clinical observations of attitudes and symptoms found to occur more often in depressed psychiatric patients (Gordon, 2016). The assessment relies on the theory that negative cognitive distortions are the root cause of depression.

The BDI went through revisions in 1978 and again in 1996 (Garcia-Batista et al., 2018; Gordon, 2016; Jackson-Koku, 2016). Currently, this assessment no longer relies on a theory of depression. The BDI has been developed in different forms, such as computerized forms and card form. The questionnaire has also been translated into many languages. A shorter version, the BDI Fast Screen, is used for medical patients in primary care settings (Jackson-Koku, 2016). The BDI has been used in more than 2,000 studies; it has been used to assess the severity of depression in individuals experiencing mental health issues, such as post-traumatic stress disorder (Barroso & Sandelowaki, 2001; Wiedemann et al., 2020). This instrument has also been used in populations consisting of adults that have received certain procedures, such as bariatric surgery (Alabi et al., 2018). Additionally, the BDI has been used in populations suffering from medical conditions, such as lupus (Macêdo et al., 2018).

This instrument was a 21-item questionnaire (Jackson-Koku, 2016). The BDI rated each item on a four-point Likert-type scale. A value of zero to three was assigned to each answer, then compared to a key to determine the severity of the depression. The researcher found the construct

validity of this instrument's medical symptoms high, with a reported  $\alpha$  of 0.93 for college students (Jackson-Koku, 2016).

Each question contained at least four responses, ranging in intensity, such as: (0) I do not feel sad, (1) I feel sad, (2) I am sad all the time and I can't snap out of it, and (3) I am so sad or unhappy that I can't stand it. The BDI uses cutoff scores to interpret the data. Standard scoring cutoffs included: 0–9 indicated minimal depression, 10–18 indicated mild depression, 19–29 indicated moderate depression, and 30–63 indicated severe depression (APA, 2020). The BDI was initially designed for administration by trained interviewers; however, it is often self-administered (Jackson-Koku, 2016).

A fifth to sixth grade reading level is recommended for individuals taking this assessment (Garcia-Batista et al., 2018). The e assessment takes between 5 and 10 minutes to complete. Internal consistency for the BDI ranged from .73 to .92 with a mean of .86. The BDI had a high internal consistency, with alpha coefficients of .86 for psychiatric patients and .81 non-psychiatric populations (APA, 2020). See Appendix X for email requesting permission to use this instrument (APA, 2020).

### **Center for Epidemiological Studies Depression – Revised Scale**

The Center for Epidemiological Studies Depression Revised Scale (CESD-R) was created in 1977. See Appendix X for an example of the CESD-R questions. This instrument aimed to measure the frequency of depression symptoms based on how the individual felt the week prior (Eaton et al., 2004; Radloff, 1977). At the time of its development, the scale was not designed to provide diagnostic criteria. It was originally created with a structure that represented four factors: depressed affect, absence of positive affect, somatic activity/inactivity, and interpersonal

challenges (Carleton et al., 2013). The CESD-R was revised in 2004 and has been used since the Community Mental Health Assessment Surveys in the 1970's. It has also been used in the National Health and Nutrition Examination Surveys. The CESD-R is one of the most used instruments in psychiatric epidemiology and has been used in numerous studies (Kagee et al., 2020; Pryor et al., 2020; Tran et al., 2019).

The CESD-R has been proven valid and reliable in multiple studies (Hasin et al., 2005; Mineka et al., 1988; Ogunbajo et al., 2020; Van Dam & Earleywine, 2011). Van Dam and Earleywine (2011) were able to validate the scale by examining its psychometric properties using a large community sample and a small student sample. They compared the base rates of depression with their samples (Van Dam & Earleywine, 2011). The CESD-R was found to have a construct validity that was considered high when compared to other similar scales (Ogunbajo et al., 2020).

The scale included 20 items that measured nine different groups of depression symptoms defined by the American Psychiatric Association Diagnostic and Statistical Manual. CESD-R responses were rated based on a four-point Likert scale and included: 0= Not at all or less than one day, 1= 1-2 days, 2= 3-4 days, 3 = 5-7 days, and 4 = Nearly every day for two weeks. The total score was the sum of all the responses, giving the total score a range from 0 – 60. The categories for the results of this test included: meets criteria for major depressive episode, probable major depressive episode, possible major depressive episode, subthreshold depression symptoms, and no clinical significance. Determining which category scoring fell into was completed via an algorithm based on scoring for each question. However, any score below 16 across all questions was considered as falling under the “no clinical significance” category.

The CESD-R is self-administered but also comes in versions that can be administered

over the phone. It is in the public domain; therefore, it is free for anyone to use in their research. The CESD-R took approximately 5-10 minutes to complete (Center for Epidemiologic Studies Depression Scale-Revised Online Depression Assessment, n.d.). Internal consistency for the CESD-R = (Cronbach's  $\alpha=0.85 - 0.90$ ) and test-retest reliability for the CESD-R= (0.45 - 0.70) was appropriate to be used in the study. The scale was moderately correlated to the Hamilton Clinician's Rating scale and the Raskin Rating scale (.44 to .54) (Maragakis & O'Donohue, 2018). This scale was tested on the general population in two samples and was found to have a high internal consistency in both samples: Cronbach's  $\alpha = 0.923$  and Cronbach's  $\alpha = 0.928$  in group 1 and 2, respectively (Van Dam & Earleywine, 2011).

#### Procedures

Approval from the Institutional Review Board (IRB) was sought from a large, private university in Virginia during the spring semester of the 2020-2021 academic year. The participants came from a voluntary response sample of postsecondary students between the ages of 18-24. See Appendix X for IRB approval. The researcher requested permission to use the BDI instrument; it is copyrighted and can only be used after being granted permission. After receiving authorization to use the instrument, the researcher elicited participants by requesting assistance from the research administration in circulating an email to request distance education student participation. The researcher contacted the university's Marketing department to disseminate the Recruitment Email in Appendix X.

All distance education students were eligible to participate in this study. The control group filled out the questionnaires (BDI, CESD-R) at the beginning and end of the treatment period. In contrast, the treatment group completed these questions and the mindfulness exercises located on the campus counseling page. The questionnaires served as a screening tool for

students exhibiting severe depression. Students who felt that they were experiencing severe depression were given resources for counseling on campus. Furthermore, they received more supervised treatment from mental health professionals.

The participants were asked to respond via email to request additional information about the study. As the potential participants responded to the recruitment email, the researcher sent the individuals a link to a Qualtrics survey which included the informed consent document to begin participation in the study. The consent form explained how the treatment group would utilize online mental health interventions and take mental health assessments (BDI and CSED-R) at the beginning and end of the eight-week treatment period. The consent form also explained that the participants in the nontreatment group were only required to take the mental health assessments at the beginning and end of the eight-week study period. See Appendix X for the informed consent documents. The consent document was placed at the beginning of the online survey and participants were able to click “Next” to proceed to the next screen, indicating that they consented to take part in the study. The demographic survey was the first portion of the survey completed. See Appendix X for the demographic survey.

All postsecondary students (mental health intervention and non-intervention) completed a BDI and CESD-R assessment (the pretest or baseline measurement). These assessments were included in the link sent to the email address they used to inquire about participating in the study. After completion of the pretests, the treatment group of students were directed to the university’s student counseling services webpage. The students were instructed to utilize each online resource available on the student counseling services webpage one time each week for the duration of the study. Students were emailed by the researcher with a weekly reminder to access the counseling services page with links to the resources included in the email. Upon completing

the 8-week study, all participants were asked to electronically complete the BDI and CESD-R assessments again to fulfill the posttest requirement via a link sent to their email. These steps were completed prior to data analysis.

#### Data Analysis

The statistics used for data analysis were two ANCOVAs. ANCOVA is a procedure used to determine if the differences between the mean scores of two or more groups on one or more dependent variables are statistically significant after controlling for initial differences between the groups on one or more extraneous variables (Gall et al., 2007). One ANCOVA was conducted for each null hypothesis. An analysis was completed by utilizing ANCOVA in SPSS. ANCOVA is typically used for quasi-experimental studies when treatment groups are not assigned randomly (Newsom, 2020). The purpose of pretest-posttest designs is to compare groups at posttest, using pretest scores as the covariate. The ANCOVA assessed whether the means (adjusted for the covariate to control for pre-existing differences on the dependent variable) differed between the treatment and the control group. This design allowed for pretest and posttest depression assessment scores (BDI and CEDS-R) to be collected from two related samples (distance education students receiving online mental health interventions and distance education students receiving no intervention).

Data screening included a visual screening of the data set to check for any missing data points or inaccuracies in the data. This procedure was followed by creating a box and whisker plot of the pretest and posttest BDI and CEDS-R scores to screen for outliers. The Assumption of Normality was tested using the Kolmogorov-Smirnov test. This test utilizes a two-tailed t-test with a p-value  $< .05$  as the probability of rejecting the null. For the Assumption of Linearity and Assumption of Bivariate Normal Distribution, a series of scatter plots between the pretest and



posttest variables for each group was used, assessing for the classic “cigar shape” to indicate the Assumption of Bivariate Normal Distribution was met. A scatter plot was created to determine whether there was a linear relationship between the covariate and dependent variable. The test for homogeneity of slope was completed by comparing the differences in variance from repeated measures in the two groups. The researcher was also looking for interactions from the sample of distance education students from the university. The Assumption of Equal Variance was tested using Levene’s Test for Equality of Error Variances.

Descriptive statistics, mean and standard deviation were reported for each group of independent variables. The effect size was reported by using a partial eta square. A Bonferroni correction was used to limit Type I error since two tests of significance were conducted (Warner, 2013). The calculation for a Bonferroni correction typically uses an alpha level of .05 and then divides by the number of hypothesis tests run. For that reason, the alpha level for this study was calculated as  $.05/2 = .025$  rounded to .03. Therefore, alpha level was set at  $p < .03$ . Data from the pretests for the mental health intervention group and the non-intervention group collected at the baseline were used as the covariate. In this analysis, the dependent variable was the depression symptoms measured by the posttest scores for either severity or frequency of depression. The control variable was the pretest depression score for the participants. The purpose of this statistical analysis was to determine whether the posttest scores of online university students receiving online mental health interventions were significantly different from the posttest scores of the students who did not receive online mental health interventions.

This study added to the existing literature on the effectiveness of online mental health interventions for college students. It will also begin to fill the gap that exists for mental health intervention approaches for online students. The use of pretest and posttest scores quantified any

improvements that resulted from the intervention to provide a baseline for future studies. This study also attempted to identify trends that may become apparent with this population concerning the prevalence of depression and anxiety symptoms in online postsecondary students.

## CHAPTER FOUR: FINDINGS

### Overview

This chapter contains the results of this quantitative, quasi-experimental, non-equivalent control group pretest-posttest to answer the research questions below:

### Research Question(s)

**RQ1:** Is there a difference in the severity of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?

Dependent Variable: Severity of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

**RQ2:** Is there a difference in the frequency of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?

Dependent Variable: Frequency of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

### Null Hypothesis(es)

**H<sub>01</sub>:** There is no statistically significant difference in the severity of depressive symptoms scores, as measured by the Beck Depression Inventory posttest scores, between students receiving virtual mental health intervention and those not receiving the intervention.

**H<sub>02</sub>:** There is no statistically significant difference in the severity of depressive symptoms scores, as measured by the Center for Epidemiological Studies Depression Revised Scale posttest scores, between students receiving virtual mental health intervention and those not receiving the intervention.

### Descriptive Statistics

Descriptive statistics were obtained on the dependent variables, severity of depression

symptoms (BDI score), and frequency of depression symptoms (CESD-R score), for each group; BDI control group  $M=46.83$ ,  $SD=19.05$ ; BDI treatment group  $M=39.13$ ,  $SD=13.10$ ; CESD-R control group  $M=40.80$ ,  $SD=16.18$ ; CESD-R treatment group  $M=36.56$ ,  $SD=10.18$ . Descriptive statistics can be found in Table 1.

**Table 1**

*Descriptive Statistics*

	Group	N	Mean	Std. Deviation
BDI	Control	35	46.83	19.05
	Treatment	16	39.13	13.10
CESD-R	Control	35	40.80	16.18
	Treatment	16	36.56	10.18

The total number of participants ( $N=51$ ) were divided into two groups. Thirty-five participants were in the treatment group, and 16 participants were in the control group. Findings included the results of descriptive statistics for the groups. In the control group, there were five males: two White, one Hispanic, and two Asian. There were 30 females: 26 were White, one was Black, one was Hispanic, one was multi-racial, and one was Asian. The treatment group was made up of five males: four were White and one was Black. There were and 11 females, all were White women. The lowest mean BDI score in the control group was found among Hispanic males (26.00), while the highest was found among White females (51.23). The lowest mean CESD-R score in the control group were Asian males and multi-racial females (both were 32.00) and the highest was White females (44.12). Additionally, the lowest mean BDI score in the treatment group was Black males (27.00) and the highest was among White females (41.82). The lowest mean CESD-R score in the treatment group was Black males (29.00). The highest mean CESD-R score was White females in the treatment group (38.73).

## Results

### Hypothesis

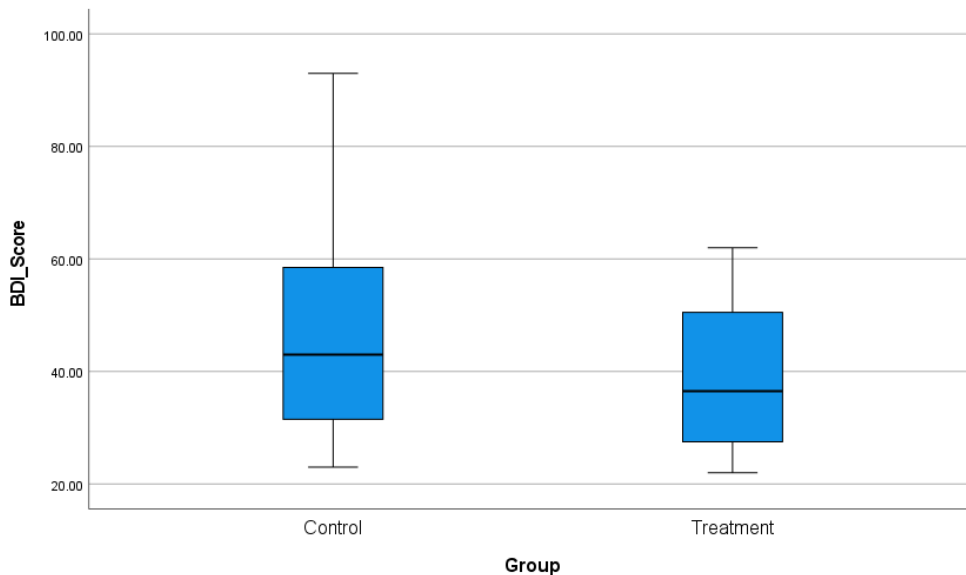
Due to a lack of response, only the posttest scores of the participants were analyzed.

#### *Data Screening*

Data screening was conducted on each group's dependent variable. The researcher sorted the data on each variable and scanned for inconsistencies. No data errors or inconsistencies were identified. Box and whiskers plots were used to detect outliers on each dependent variable. No outliers were identified. See Figures 1.1 and Figure 1.2 for box and whisker plots for control and treatment participant groups.

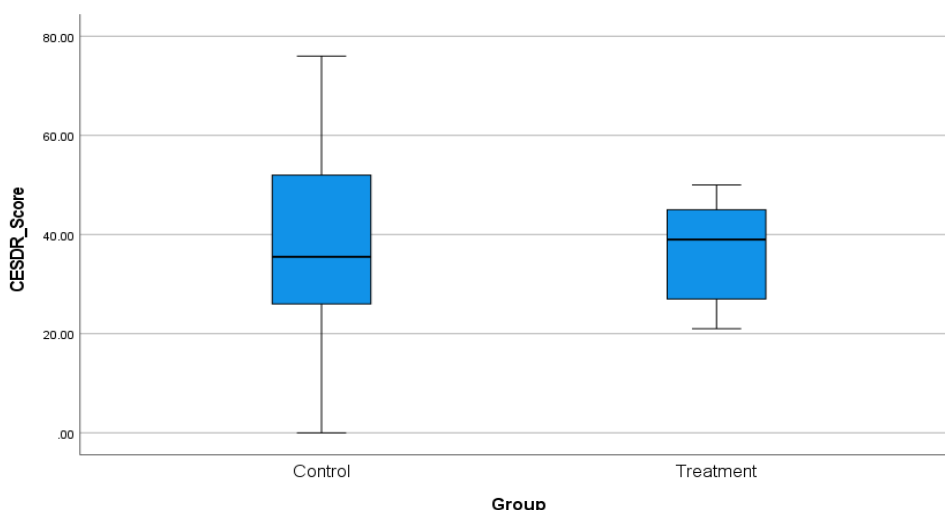
#### **Figure 1.1**

*Box and Whisker Plots for BDI Scores in Control and Treatment Groups*



**Figure 1.2**

*Box and Whisker Plots for CESD-R Scores in Control and Treatment Groups*



### *Assumptions Null Hypothesis One*

An independent samples t-test was used to test null hypothesis one (H01). The t-test required that the assumptions of normality and homogeneity of variance were met. Normality was examined using a Shapiro-Wilk test. Shapiro-Wilk was used because the sample size was less than 50. Since the t-test is robust to some violations of normality, the researcher continued with the analysis. See Table 2 for Tests of Normality. The assumption of homogeneity of variance was examined using Levene's test (Table 3). No violation was found where  $p = .101$ . The assumption of homogeneity of variance was tenable.

**Table 2**

*Tests of Normality*

	Group	Statistic	Df	Sig.
BDI	Control	.918	35	.013
	Treatment	.934	16	.286
CESD-R	Control	.926	35	.022
	Treatment	.896	16	.070

**Table 3***Levene's Test for Equality of Variances*

		<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
BDI	Equal variances assumed	2.802	.101	1.463	49	.150
	Equal variances not assumed			1.677	41.085	.101
CESD-R	Equal variances assumed	4.546	.038	.961	49	.341
	Equal variances not assumed			1.134	43.862	.263

***Results for Null Hypothesis One***

A t-test was used to test the null hypothesis regarding the differences in severity of depression symptoms between students receiving virtual mental health intervention and those not receiving the intervention. Equal variance was assumed. The researcher failed to reject the null hypothesis at the 95% confidence level where  $t(49) = 1.46$ ,  $p = .150$ ,  $h^2 = .442$ . The effect size was large. The control group ( $M = 46.83$ ,  $S.D. = 19.05$ ) did not have significantly higher BDI scores than the treatment group ( $M = 39.13$ ,  $S.D. = 13.10$ ).

***Assumption Tests for Null Hypothesis Two***

An independent samples t-test was used to test null hypothesis two ( $H_{02}$ ). The t-test required that the assumptions of normality and homogeneity of variance were met. Normality was examined using a Shapiro-Wilk test. Shapiro-Wilk was used because the sample size was less than 50. Since the t-test is robust to some violations of normality, the researcher continued with the analysis. See Table 2 for Tests of Normality. The assumption of homogeneity of

variance was examined using Levene's test (Table 3). A violation was found where  $p = .038$ . The assumption of homogeneity was not tenable.

### ***Results for Null Hypothesis Two***

A t-test was used to test the null hypothesis regarding the differences in the frequency of depression symptoms between students receiving virtual mental health intervention and those not receiving the intervention. Equal variance was not assumed. The researcher failed to reject the null hypothesis at the 95% confidence level where  $t(49) = 1.13$ ,  $p = .263$ ,  $h^2 = .290$ . The effect size was large. The control group ( $M = 40.80$ ,  $S.D. = 16.18$ ) did not have a significantly higher scores than the treatment group ( $M = 36.56$ ,  $S.D. = 10.18$ ).

### **Conclusion**

Although a global pandemic in some ways may have made this study more conducive to responses, the researcher found that participation was lacking when it came to follow-up and continuation in the study. However, the purpose of the study was to assess the impact of a mental health intervention for online postsecondary students. The posttest scores assisted the researcher in determining if there were any differences between the control and treatment groups based on their BDI and CESD-R scores at the end of the 8-week treatment period. The final chapter of this manuscript discussed how the results of this study support previous findings.



## CHAPTER FIVE: CONCLUSIONS

### Overview

This chapter discussed the findings detailed in Chapter 4, determining whether the results support those of other studies. The implications and limitations of the research are also discussed. The chapter concludes with recommendations for future research.

### Discussion

The purpose of this study was to examine the impact that a virtual mental health intervention had on distance education postsecondary students. This study evaluated the effect of an internet-based intervention on the severity and frequency of depression symptoms in postsecondary students at a university. The students were divided into treatment and control groups, and the treatment group was given mindfulness resources for eight-weeks. Upon completing the eight weeks, both groups took the BDI and the CESD-R assessments again.

**RQ1:** Is there a difference in the severity of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?

Dependent Variable: Severity of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

This study showed that mindfulness exercises did not appear to affect the severity of depression symptoms of postsecondary online students.

**RQ2:** Is there a difference in the frequency of depressive symptoms between students receiving virtual mental health intervention and those not receiving the intervention?

Dependent Variable: Frequency of depression symptoms

Independent Variables: Two levels (mental health intervention, no intervention)

This study showed that mindfulness exercises did appear to affect the frequency of depression symptoms of postsecondary online students.

The current available research on this topic indicated that internet-based interventions have a small effect on mental illness in university students. This population had a relatively unpredictable response rate, and that was evidenced by this study (Harrer et al., 2016). There is a limited amount of research conducted on this topic. This study was only a small part of a more significant amount of research that needs to be completed.

The first predictor variable for this study was the Beck Depression Inventory – BDI (Garcia-Batista et al., 2018). This has been a proven effective measurement of the severity of depression symptoms in multiple studies related to mental health, including those involving university students (Alabi et al., 2018; Barroso & Sandelowski, 2000; Garcia-Batista et al., 2018; Gordon, 2016; Jackson-Koku, 2016; Macêdo et al., 2018). Each response was measured on a four-point Likert-type scale, in which a value of zero to three was assigned for each answer and then compared to a key to determine the severity of the depression. For the BDI, any score above 29 was considered severe depression. Both groups were above this threshold; control group ( $M = 46.83$ ,  $S.D. = 19.05$ ) and treatment group ( $M = 39.13$ ,  $S.D. = 13.10$ ). From these results, there was a need for an intervention. The null hypothesis was rejected, and there was no statistical difference between the groups. This result is likely due to the small sample size.

The second predictor variable for this study was the Center for Epidemiologic Studies Depression Scale-Revised (Van Dam & Earleywine, 2011). This instrument also used a Likert scale to score responses to categorize the frequency of depression symptoms in individuals. The CESD-R is a trusted and reliable measurement for many participant groups (Eaton et al., 2004; Hasin et al., 2005; Kagee et al., 2020; Mineka et al., 1988; Ogunbajo et al., 2020; Pryor et al.,

2020; Radloff, 1977; Tran et al., 2019; Van Dam & Earleywine, 2011). For the CESD-R, a score of 16 or more indicates depression. Both groups were also above this threshold, demonstrated by control group ( $M = 40.80$ ,  $S.D. = 16.18$ ) and treatment group ( $M = 36.56$ ,  $S.D. = 10.18$ ).

Therefore, this study found the frequency of depression symptoms in both groups to the extent that they needed an intervention. The null hypothesis was rejected, and there was no statistical difference between the groups. This finding is also likely due to the small sample size. Regarding the assessment for whether internet interventions lower the severity and frequency of depression symptoms, the findings of this study supported the fact that the effects of longitudinal interventions remain primarily unknown (Dodd et al., 2017). This is likely tied to participants' self-efficacy or belief that they can manage their depression symptoms without outside resources. Conversely, an individual's lack of self-efficacy can produce hopelessness and severe or frequent bouts of depression (Bandura, 1977; McKinley & Ruppel, 2014). Previous research on the severity of depression symptoms in postsecondary students had various approaches to solving this mental health epidemic among students. The latest study on the topic involved a treatment and control group that was given access to a self-guided cognitive behavioral therapy based on a mobile application (McCloud et al., 2020). Participants were randomized into two groups using a six-week intervention; they completed an anxiety assessment at multiple points during that period. The study found that depression symptoms were reduced. However, the sample size in that study was also small, further exemplifying the difficulty in maintaining participation in studies of this nature.

Current research has taken the approach of implementing a waitlist control group for internet-based interventions to treat depression or anxiety, including self-guided resources (Kählke et al., 2019; McCloud et al., 2020). While the researcher did not officially implement a

waitlist control group, the participants in the control group were given all the resources that the treatment group was provided once the study was completed.

#### Implications

The results of this study informed the researcher of two main points. First, depression (both in frequency and severity) currently exists at this university with its distance education students at a concerning rate. Second, that this topic still has a lot more to explore. Due to the high average scores among both groups, it is safe to say that this is a significant problem among university students. These findings add to the current literature available on mental health interventions for students. This study highlighted how distance education students might have higher severity and frequency of depression compared to traditional university students.

#### Limitations

The first limitation identified by the researcher was the study design. The researcher would have benefitted from assigning a unique identifier to each participant prior to their completion of the pretest. A code could have been assigned to participants who completed the study and filled out the posttest survey.

This extra step would have allowed for the analysis of the pretest and posttest scores. Unfortunately, the unique identifiers were not assigned, which limited the researcher's study. As a result, only the posttest scores were evaluated. While there were still control and treatment groups, the researcher was able to identify differences between the groups but not the differences within the same group from pretest to posttest during the eight-week intervention.

Another limitation of this study was related to the survey method. Based on previous research, the researcher attempted to conduct an eight-week treatment period. However, this eight-week length of participation may have been too long, causing participants to lose interest

and not complete the posttest surveys. Also, this may have been too overwhelming of a task for participants to complete, along with their duties as students and their obligations outside of school.

The researcher also identified that using surveys could be a limiting factor. Survey participants typically have a strong bias toward or against the survey topic, as with most volunteer participants. This bias may have influenced the survey responses and may not accurately represent the study's sample population.

#### Recommendations for Future Research

This final section of this study discusses recommendations for further research. Recommendations include the consideration of changing the population, delivery, and methodology of this study. These recommendations will increase knowledge about this topic and improve future studies that may follow a similar approach to this topic.

1. Researchers can follow the suggested plan of assigning identifiers to each group. This step will allow future researchers to draw inferences from pretest and posttest scores to determine if there is an improvement in participants' scores before and after the interventions.
2. Researchers should consider providing smaller timeframes for intervention periods.
3. Future research should consider studying larger groups, more representative of the general population of postsecondary university students.

#### **Conclusion**

With the sudden shift to remote interactions due to the COVID-19 pandemic, research on these interactions must be ongoing. Advances continue to be made to allow technology to become more of an aid to mental health intervention efforts. This study is one of the first steps

toward fully remote mental health interventions for a population that desperately needs it. Due to these students being distance education learners, their interactions with resources that can help them are extremely limited. Consequently, the findings of this study demonstrate that interventions can impact the severity of depression. Further, the overall findings highlight that the need for these interventions with this population is prominent.

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## Appendix A: Test Instruments

### Beck's Depression Inventory Example

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1.
  - 0 I do not feel sad.
  - 1 I feel sad
  - 2 I am sad all the time and I can't snap out of it.
  - 3 I am so sad and unhappy that I can't stand it.

## CESD-R

Below is a list of the ways you might have felt or behaved. Please check the boxes to tell me how often you have felt this way in the past week or so.	LAST WEEK				Nearly every day for 2 weeks
	Not at all <i>or</i> Less than 1 day	1-2 days	3-4 days	5-7 days	
My appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not shake off the blues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not get going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing made me happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt like a bad person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I lost interest in my usual activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I slept much more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt like I was moving too slowly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt fidgety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wished I were dead.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wanted to hurt myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was tired all the time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not like myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I lost a lot of weight without trying to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I had a lot of trouble getting to sleep.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not focus on the important things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permission to Use Instrument – Email Request

To whom it may concern,

I am a doctoral student at Liberty University. I am completing dissertation Higher Education Administration and I am writing to ask written permission to use the Beck Depression Inventory in my research study. This study will assess the pretest and posttest scores of distance education students for an online mental intervention treatment group when compared to a control group. I do not plan to modify or adapt any of the questions and plan to use the entire instrument for assessment. Students will complete the assessment online. I plan to publish this dissertation in the American Journal of Public Health. I will use this instrument only for this research and will not share with others not participating in the study and will include any necessary copyright information. I will also send a copy of this completed study to you after the study data analysis and findings section are complete. If this is acceptable, please reply to this email. Thank you for your consideration.

Sincerely,

Mallory Ball, MPH

## Demographic Survey

1. Please select your gender:  Male  Female
2. Please select your ethnicity:
  - White
  - Black
  - Hispanic
  - Multi-racial
  - American Indian/Alaska Native
  - Asian
  - Pacific Islander

## Appendix B: Recruitment Material

### Recruitment Email

Dear LUO student:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Higher Education Administration degree. The purpose of my research is to understand more about mental health for distance education students and I am writing to invite eligible participants to join my study.

Participants must be 18 to 24 years old and currently only enrolled in online courses at Liberty University (LUO). Participants will be randomly assigned into two groups. The control group will be asked to complete pre- and post-surveys online. The experimental group will be asked to complete the pre-survey, 8 weeks of mindfulness exercises, and the post-survey online. The pre-survey will consist of a demographic survey and two surveys regarding depression. The post-survey will only include the two previous surveys regarding depression. The pre- and post-surveys will take approximately 20 minutes to complete. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please contact me at [REDACTED] for more information.

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. You do not need to sign and return the consent document.

Participants will be entered into a raffle to receive a \$25 Amazon gift card.

Sincerely,

Mallory Ball  
PhD Candidate  
Liberty University

## Appendix C: Consent Document

### Consent

**Title of the Project:** Mental Health Delivery Method Outcomes for the Postsecondary Student: A Quantitative Quasi-Experimental, Non-Equivalent Control Group Pretest-Posttest Study

**Principal Investigator:** Mallory Ball, PhD Candidate, Liberty University

#### Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be between 18 and 24 years old and an online student at Liberty University (LUO). Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

#### What is the study about and why is it being done?

The purpose of the study is to evaluate the effect of mental health interventions for online students.

#### What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

Treatment Group:

1. Complete a pre-survey online. The pre-survey will include demographic questions and two mental health evaluation scales (Beck's Depression Inventory or BDI and Center for Epidemiologic Studies Depression Scale or CESD-R). This will take approximately 20 minutes to complete.
2. Complete a designated mental health intervention online once per week for 8 weeks. The link to the mindfulness resources will be provided to you at the completion of the pre-survey.
3. Complete a post-survey online. The post-survey will include the two previous mental health evaluation scales (BDI and CESD-R) and will be completed at the end of the 8-week period. This will take approximately 20 minutes to complete.

Control Group:

1. Complete a pre-survey online. The pre-survey will include demographic questions and two mental health evaluation scales (Beck's Depression Inventory or BDI and Center for Epidemiologic Studies Depression Scale or CESD-R). This will take approximately 20 minutes to complete.
2. Complete a post-survey online. The post-survey will include the two previous mental health evaluation scales (BDI and CESD-R) and will be completed at the end of the 8-week period. This will take approximately 20 minutes to complete.

#### How could you or others benefit from this study?

The direct benefits treatment group participants should expect to receive from taking part in this study an increase in mindfulness and depression awareness. Participants in the control group should not expect to receive a direct benefit from taking part in this study.

Benefits to society could include a better understanding of mental health as well as information regarding the methods of delivery for mental health interventions.

#### **What risks might you experience from being in this study?**

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

#### **How will personal information be protected?**

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

#### **How will you be compensated for being part of the study?**

Participants will have the option to be entered into a raffle to win one \$25 Amazon gift card. A prompt will be included at the end of the pre-survey instructing participants to email the researcher if they would like to be entered into the raffle.

#### **Is study participation voluntary?**

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the pre-survey without affecting those relationships.

#### **What should you do if you decide to withdraw from the study?**

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

#### **Whom do you contact if you have questions or concerns about the study?**

The researcher conducting this study is Mallory Ball. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at [REDACTED]. You may also contact the researcher's faculty sponsor, Dr. Susan Stanley, at [REDACTED].

#### **Whom do you contact if you have questions about your rights as a research participant?**

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

#### **Your Consent**



Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

**Appendix D: Descriptive Statistics****Table 1***Descriptive Statistics*

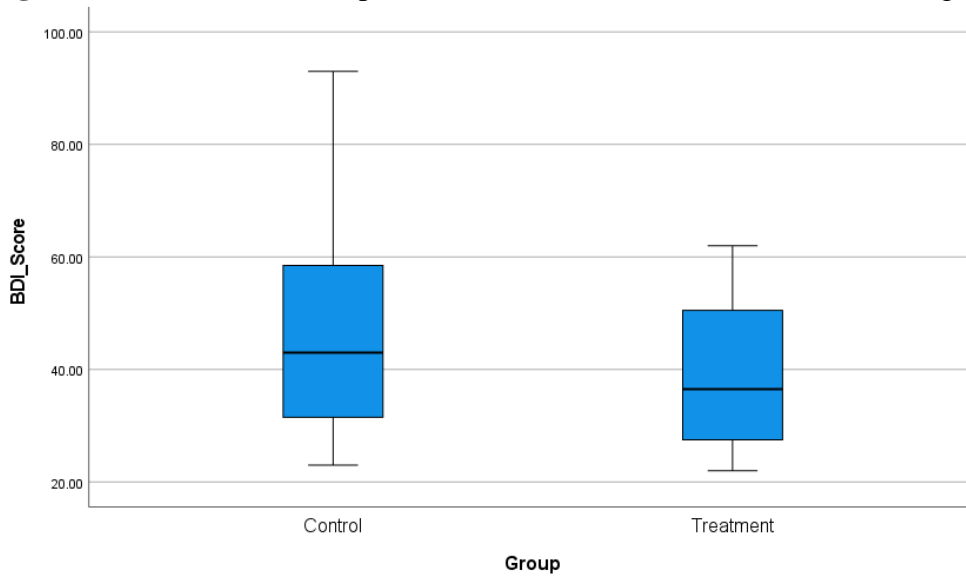
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	Group	N	Mean	Std. Deviation
BDI	Control	35	46.83	19.05
	Treatment	16	39.13	13.10
CESD-R	Control	35	40.80	16.18
	Treatment	16	36.56	10.18

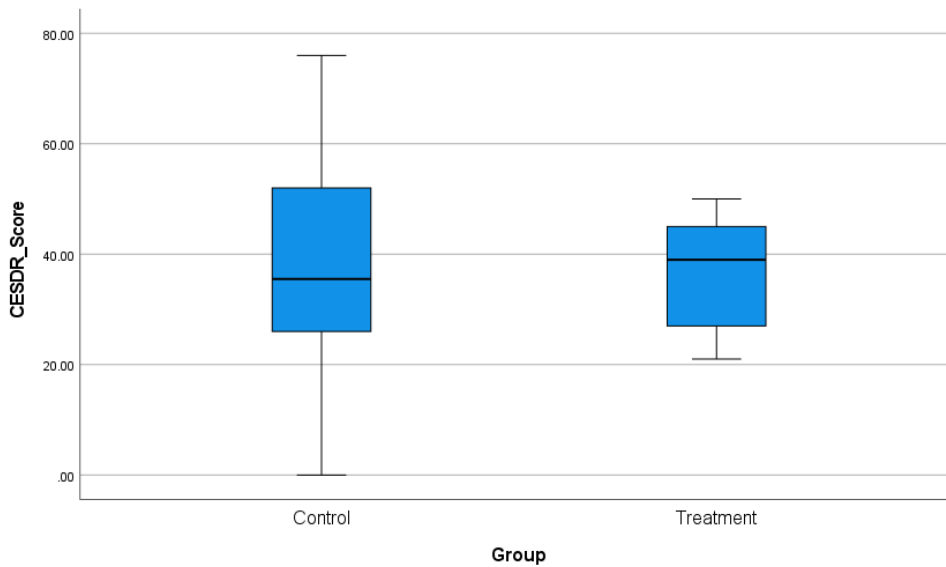
---

## Appendix E: Box and Whisker Plots for BDI and CESD-R scores

**Figure 1.1** Box and whisker plots for BDI scores in control and treatment groups



**Figure 1.2** Box and whisker plots for CESD-R scores in control and treatment groups



## Appendix F: Assumption Tests

**Table 2**

*Tests of Normality*

	Group	Statistic	Df	Sig.
BDI	Control	.918	35	.013
	Treatment	.934	16	.286
CESD-R	Control	.926	35	.022
	Treatment	.896	16	.070

**Table 3**

*Levene's Test for Equality of Variances*

		<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
BDI	Equal variances assumed	2.802	.101	1.463	49	.150
	Equal variances not assumed			1.677	41.085	.101
CESD-R	Equal variances assumed	4.546	.038	.961	49	.341
	Equal variances not assumed			1.134	43.862	.263