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Effectiveness of an EcoWellness Intervention for College Aged Individuals With a Developmental Disability

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EFFECTIVENESS OF AN ECOWELLNESS INTERVENTION FOR COLLEGE AGED
INDIVIDUALS WITH A DEVELOPMENTAL DISABILITY

by

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Abstract

Nature has the ability to heal many psychological wounds from anxiety and depression, stress, post traumatic stress disorder, and behavioral concerns. As a result, clinicians are recognizing the power of nature as a tool in the healing process. The purpose of this dissertation, which consists of one completed systematic review and a multiple probe single case study is to (a) provide background information on the current literature regarding nature, (b) create a manualized EcoWellness treatment intervention, and (c) test the effectiveness of the treatment intervention in order to provide practicing counselors with a potential new intervention to increase psychological wellbeing for those with a developmental disability. The systematic review lays the groundwork to identify the current research in the field of nature based counseling and what direction research needs to go. The intervention was implemented with young adults in a college setting who are diagnosed with neurodevelopmental disorder. The researcher used a single case multiple probe across participants design and visual analysis to determine if there was an effect when implementing the intervention.

Keywords: EcoWellness, single case design, nature, and counseling

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Chapter One: Introduction

Introduction to the Study

The concept of nature being a fundamental need for human existence and wellbeing has existed for decades (Searles, 1960). Biophilia is phenomena created by Wilson (1984) that suggests connecting with nature is a biological human need and is part of our genetic makeup. Wilson (1984) goes on to explain that fulfilling our basic human need to be around the natural environment results in an increase in cognitive functioning, enhanced mood and creativity, and an increase in resiliency.

There has been a growing number of research that makes the connection between nature and wellbeing and as a result, a greater understanding of the natural world and our human experience (e.g. Guite et al., 2006; Louv, 2008). Despite the research highlighting the importance of nature, western culture continues to see a decline in nature connection (Imai, Nakashizuka, & Kohsaka 2018; Soga & Gaston 2016). The increase in digital media shifted pastimes of people of all ages to activities such as video games, social media, video streaming, and spending much of the day connected online (Larson et al., 2019). Consequently, mental health needs and diagnoses are increasing every year. In 2019, nearly 20% of all U.S. adults were living with a mental illness and 49.5% of youth were diagnosed with a mental disorder, 22% of which were classified as having a severe impairment (Substance Abuse and Mental Health Services Administration, 2020). The increasing disconnect with nature brings into question the wellbeing of young adults, specially young adults with a disability.

College aged individuals with a disability have reported increased rates of depression and other mental health concerns (Coduti et al., 2016; Fleming et al., 2018; McLeod et al., 2019). Minotti et al. (2021) indicated that students with a disability on a college campus often report lower social wellbeing and decreased connection with others. Additionally, increased marginalization occurs when students with a disability are also a part of the LGBTQ+ community (Miller et al., 2021). Researchers suggests that college students with a disability often face decreased rates of psychological wellbeing, yet there has not been any literature looking at enhancing psychological wellbeing of college students with a disability through the use of nature-based counseling.

Problem Statement

According to the American Counseling Association, individuals with a disability are one of the largest minority populations in the United States. For individuals without a disability, moving to college can be an intimidating process. For individuals with a disability, there can be a lot of anxiety, unanswered questions, and feeling a loss of support surrounding the transition process. Individuals with a neurodevelopmental disorder might have a more difficult time with transitions (Bostrom & Broberg, 2017). Moving from a high school classroom or special education room to a college dorm with increased independence has the potential to be overwhelming and anxiety provoking. Young adults in an inclusive post-secondary education program (IPSE), have a unique opportunity to explore their independence as an individual with a disability. Post-secondary education programs accept individuals with a developmental disability including intellectual disability or autism spectrum disorder. With this transition in mind, when individuals enter an IPSE program their psychological wellbeing scores fluctuate

due to the change in environment, need to create social relationships, and increased autonomy (Alnahdi & Schwab, 2020). Since Ryff (1989) developed the six subsets of psychological wellbeing, most of them are applicable to the struggles that young adults entering an IPSE program experience.

Implementing supports in college settings to enhance and maintain the psychological wellbeing for individuals with a disability in college are important. Coduti, Hayes, Locke and Youn (2016) investigated the mental health needs of students with a disability through comparing scores from the Counseling Center Assessment of Psychological Symptoms-62 of 81 students with and 81 students without a disability. The results of this study suggested that students with a disability are more likely to report higher scores on anxiety, academic-related distress, suicidal ideation, suicidal attempts, and non-suicidal self-injury than their peers without a disability. Additionally, Hong (2015) utilized reflective journaling for students on a college campus with a disability, 37.5% of the students reported having an intellectual disability. The participants documented their thoughts and experiences of barriers they encounter. Two themes emerged that indicate a student's lack of self-awareness about their distress being mental health related and their mistrust of professionals who do not understand support needs of having a disability.

Furthermore, Nisbet, Zelenski, and Murphy (2011) completed a study on nature relatedness and its connection with wellbeing in college students and business professionals. The study suggests that having a connection to nature influences various aspects of psychological wellbeing. The study is limited in that it did not implement a

systematic nature intervention and utilized correlational design so causation could not be determined.

Nature of the Studies

The two studies in this dissertation act as a means of increasing knowledge and testing an intervention in order to advance the research of EcoWellness counseling for college aged individuals with a disability. Study One is a systematic review completed in order to systematically examine the current nature-based counseling literature. The review included 17 articles all of which met the following inclusion criteria; (a) quantitative, mixed methods, and single case design articles; (b) the use of a nature intervention; (c) the intervention must be conducted in a counseling or psychotherapeutic context and purposefully describe therapeutic approaches (e.g., a counseling theory, psychoeducational or skills model); and (d) client outcomes need to be assessed. The goal of the review was to assess articles that used nature-based interventions for counseling purposes. We then evaluated the strength of these articles with various quality assessment markers. After the review was complete, we determined that nature was utilized in counseling settings in a disorganized fashion. In order to accurately determine the effectiveness of nature-based interventions in the counseling process, the integration of nature should be in a manualized format that allows for easy replication.

Study two is highlighted in chapter four. The methodology for the study is a multiple probe single case design that tests the effectiveness of a manualized EcoWellness treatment intervention. The population of this study includes individuals in an inclusive post secondary education program (IPSE) at the University of South Carolina. Students in the IPSE program were recruited based on their low wellbeing

scores and asked if they would like to participate in the study. Once consent was obtained, I began assessing baseline scores until reaching a stable baseline and implementing the EcoWellness intervention. Single case design allowed me to test the effectiveness of a new intervention on a small sample of people and is becoming more popular in the field of counseling and counselor education (Ray, 2015).

Research Question and Hypothesis

The purpose of this study is to utilize a multiple probe single case research design across participants to test the effectiveness of an EcoWellness intervention for college age individuals with a developmental disability. Single case design is useful for this specific study because it is testing out the impact of a new intervention. Single case design will allow me to determine if the intervention is effective for this specific population (Ledford & Gast, 2018). The research question pertaining to the study is:

1. What is the effect of an EcoWellness intervention on psychological wellbeing for college age individuals with a developmental disability?

I hypothesize that the EcoWellness intervention (independent variable) will improve the psychological wellbeing (dependent variable) for individuals with a developmental disability. Please reference chapter four for a more detailed discussion of the research question.

Assumptions, Limitations, Scope, and Delimitations of the Study and Design

Some limitations of the study include the dependency on weather for the full effect of an EcoWellness intervention. On days it is raining there will need to be alternative activities that still maintain the benefits of being outside. Additionally, there will only be one counselor implementing the intervention which may result in potential

bias when generalizing the results of the study to other practicing counselors.

Additionally, there are limitations to the research design and analysis including the amount of time participants are in baseline and the continuous nature of the participants taking the survey. In the data analysis, there is a subjectivity to the visual analysis of the graphs that can result in various interpretations.

Assumptions of completing single case research include the importance of focusing on a small group of individuals and the specific dependent variable being studied. Group research tends to hide individual differences, but single case research allows the assumption of individual differences while still showing causality of an intervention. Another assumption of single case research involves the manipulation of the independent variable in order to discover a causal relationship. Finally, single case research assumes that the treatment or intervention has a strong social importance (Kazdin, 2010). The scope of the design is that because of the small sample size, there must be very strong internal validity. With strong internal validity, single case can be qualified as an experimental research design that looks at the effectiveness of an intervention for a specific population (Kazdin, 2010). Finally, delimitations of single case research design include the small and obtainable sample size of anywhere from one to five participants. Single case designs are primarily used in education settings looking at observable behaviors but are beginning to expand to the counseling field and can measure additional constructions through the use of self-report measures.

Significance of the Study

The results of this study will provide a potential effective treatment for practicing counselors. This study will provide counselors with a new way of operating when

working with individuals with a disability in hopes of increasing their psychological wellbeing. With further research of the intervention with other populations, the study can be expanded to impact counselors working with any population. Furthermore, the study can have a professional impact because as a new and potentially effective treatment, it is something that can be taught in various classes as an evidenced based practice to use with clients. In terms of social change, if the study has a positive outcome, other programs that implement a post secondary education program at their institution, will have a treatment manual in which they can effectively work with this population in order to increase the psychological wellbeing and healthy functioning of individuals with a developmental disability while at college.

Chapter Summary

Chapter one introduced constructs such as EcoWellness, nature, developmental disability, and psychological wellbeing. A review of the current literature was provided along with an identified purpose of the study and research questions. Chapter two discusses a more in depth literature review of the articles mentioned along with the theoretical tenets of the EcoWellness model and the intervention being implemented. Chapter three includes the systematic review and the methodological procedures used in the study to examine the effectiveness of the EcoWellness intervention. The manual referenced in chapter four is attached.

Chapter Two: Literature Review

Introduction

Chapter two presents the philosophical and theoretical framework of the major components of this study: psychological wellbeing and EcoWellness. In addition, the importance of these two constructs for the population of young adults with a developmental disability will be examined. The begin to conceptualize psychological wellbeing, a clear understanding of how the use of nature fits into psychological wellbeing is developed. A thorough review of the literature is presented, looking at conceptual, qualitative, and quantitative studies of psychological wellbeing and EcoWellness as it relates to individuals with a disability. I utilized a number of strategies to identify relevant articles. First, I utilized EBSCO Host to identify academic databases to search. The databases I used included but are not limited to databases related to counseling, psychology, and social sciences such as ERIC, PsycARTICLES, PsycINFO, PsycTESTS, Psychology and Behavioral Sciences Collection, and Social Sciences Full Text. I checked scholarly peer reviewed journals and adjusted the years of my articles from 1960- Present. I used search terms such as psychological wellbeing, psychological wellbeing scale/ model, EcoWellness, nature based counseling, wellbeing, young adults, or disability. Another strategy I utilized in finding articles was to browse relevant articles reference section to further identify important articles. The research question guiding my search is: What is the effect of an EcoWellness intervention on psychological wellbeing for college age individuals with a developmental disability?

Theoretical Framework

Positive Psychology

Positive psychology is the study of human experiences and needs in order for an individual to obtain optimal functioning (Putwain, Gallard, & Beaumont, 2019). The study of what helps individuals feel fulfilled and happy was not always the focus on psychological health. Traditionally, being healthy meant there was an absence of disease or disorder. This theory is derived from the medical model of psychological health (Park & Peterson, 2008). The movement towards positive psychology allows a better balance in the field of moving away from just treating symptoms and moving towards looking into what is going well in a client's life and working towards happiness, contentment, and fulfillment (White & Murray, 2015).

Common characteristics of positive psychologist is identifying character strengths in individuals. Psychologists will study the characteristics and how they relate to an individual's wellbeing and healthy functioning (Umucu et al., 2019). The strengths-based approach decreases the stigma of obtaining psychological help by moving away from medical terms such as disorder and using terms such as fulfillment and wellbeing (Umucu et al., 2019).

Psychological Wellbeing

Ryff (1989) first conceptualized the idea of psychological wellbeing (PWB), defining it as an individual's ability to function in a positive and healthy way as measured by six factors. The six factors include autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance. When an individual can rate themselves highly on these six scales, their psychological wellbeing is

functioning in a positive and healthy way. Ryff (2014) defines each of these aspects beginning with self-acceptance. Self-acceptance involves a self-evaluation that incorporates awareness and acceptance of strengths and weaknesses within an individual. Ryff (2014) also described positive relationship with others as an important component in developing a genuine human connection that enhances our feelings of love and empathy towards others. Personal growth is defined as a dynamic and continual process of self-realization. For an individual to be high functioning in this aspect of psychological wellbeing, one must have an openness to experience how they are developing and becoming truer to themselves. Ryff (2014) continues to define purpose in life as an existential perspective in which an individual creates meaning for themselves and lives according to what brings them happiness and joy. Environmental mastery involves an individual's ability to choose environments that are suitable to their needs and allows for a confidence in moving through their environment. Finally, autonomy is an aspect of PWB that involves being independent in making decisions and emphasizes qualities such as self-determination and independence. Each of the theoretical underpinnings of each of these domains are described as follows:

Self- Acceptance

Self- acceptance in Ryff's (1989) theory postulates that we should know ourselves and provide a constant positive regard towards ourselves. Self acceptance comes from the accepting oneself in the present but also accepting of our past actions, thoughts, and feelings. The theoretical underpinning that Ryff (1989) derived self acceptance from is Erikson's ego integrity and Carl Jung's individuation. Both of these theories emphasize

something deeper than self esteem but rather a long term awareness and acceptance of our full self.

Positive Relationship with Others

Another component to pertinent to the fulfillment of one's life is having a healthy and positive connection with others. This came to be a part of Ryff's PWB components based on Erikson's stage theories that emphasize intimacy and close relationships with others. Additionally, Becker (1992) emphasized the importance of love, empathy, and affection in living a fulfilling life and Maslow describes individuals who have reach self actualization as having empathy and strong connections with other individuals.

Personal Growth

Personal growth is described as self realization of an individual, it involves a continuous process of developing oneself and recognizing ones potential. This aspect is supported by Maslow's hierarchy of needs and the ability for one to reach self actualization. Carl Rogers also supported the notion that for a person to be functioning to the highest potential they will continually be developing and working towards having a better understanding on themselves. Finally, other lifespan theorists such as Carl Jung, Erikson, and Neugarten support the notion that continuous growth is important to an individuals life fulfillment.

Purpose in Life

Purpose in life involves a sense of direction and meaning in ones life. This includes being creative, productive in activities that make an individual happy, and finding daily meaning and fulfillment. The theoretical backing to this subset of PWB comes largely from Frankl's book, *A Mans Search for Meaning*. The book purposes that

individuals should find meaning and purpose in their lives to enhance satisfaction and decrease suffering. By creating genuine meaning in life, it allows for a more authentic life.

Environmental Mastery

Environmental mastery allows an individual to create an environment in which they feel confident to navigate at any stage of life. Whether in young adulthood or older adulthood, an individual should be able to act authentically and with purpose in their environment that promotes positive psychological functioning. Environmental mastery allows an individual to feel a sense of control and efficacy in navigating their environment in a way that is supportive of one's needs. This concept had theoretical basis in Allport's criteria of maturity, specifically his idea of "extend the self", which allows for an individual to navigate their environment to their full potential.

Autonomy

Finally, autonomy integrates qualities such as self-determination, independence, and self-regulation to promote individualized functioning. Carl Rogers supported the notion of autonomous functioning being authentic in not looking to others for approval as well as Jung that states an individual should be able to separate themselves from unproductive collective beliefs. This aspect of wellbeing is one of the most supported aspects that promote healthy functioning and the ability to be confident in the decisions one makes for themselves.

I chose this model of PWB for the study because of its six subsets. Each of these subsets can similarly coincide with the seven subsets of EcoWellness, allowing for a comprehensive step-by-step guide to incorporate EcoWellness practices for the purpose of

enhancing psychological wellbeing. Additionally, the six subsets of PWB are common areas of need for young adults with disabilities, specifically the need for development of positive relationships, autonomy, environmental mastery, and self acceptance.

Furthermore, PWB was developed into a model that allows for counselors to identify how to integrate aspects of PWB into practice.

Psychological Wellbeing Model of Counseling

After the development of the PWB construct, Fava (1999) took this and applied it to the therapeutic process. Fava (1999) created a PWB model and tested the model on a number of different pathological disorders, finding validation in its use with clients. The basic tenets of the model involves short term counseling over the course of about eight sessions. In the beginning phase, clients are assessed on their wellbeing and then asked to identify what impedes them from rating higher on the wellbeing scale. Throughout the sessions, clients are asked to self-monitor and observe their thoughts throughout the process and how they are making progress. The main features of wellbeing therapy include monitoring wellbeing through the use of a diary, behavioral exposure to trigger optimal experiences and feelings of wellbeing, monitoring wellbeing episodes, and remaining realistic and balanced in the amount of wellbeing each individual should aim for (Fava, 2016). All throughout the process, the six dimensions of PWB are introduced to the clients in a way of working to enhance each of these aspects in the client's life. Fava (2016) designed wellbeing therapy to be utilized in congruence with cognitive behavioral therapy (CBT).

EcoWellness

The need for creative ways to ground individuals in an environment that is shown to reduce stress, build resilience, decrease behavioral symptomology and mood changes, and enhance overall mental health and wellbeing is crucial (Faber et al., 2011; Unruh & Hutchinson, 2011). EcoWellness is an emerging model that integrates aspects of nature into the field of counseling (Reese & Myers, 2012). EcoWellness was created by Reese and Myers (2012) and is described as “a sense of appreciation, respect for, and awe of nature that results in feelings of connectedness with the natural environment and the enhancement of holistic wellness” (p. 400). EcoWellness integrates the natural world into the counseling practice in a way that contributes to our holistic wellness. Currently, the EcoWellness model serves as a framework for counselors in integrating nature into the counseling practice in order to enhance the wellness of an individual. The populations in which nature-based counseling interventions have focused on consist of veterans, young children, and youth (Anderson et al., 2018), addiction and recovery (Bennett et al., 1998), school settings (Faber et al., 2011; Chiumento et al., 2018), homeless women (Norton et al., 2020), and families (Norton et al., 2019).

Myers, Sweeney, and Witmer (2000) defined wellness as a “way of life oriented toward optimal health and well- being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community” (p. 252). The details of the EcoWellness intervention that was developed and implemented in this study is described in further detail in chapter four. There is a potential for EcoWellness to be an effective treatment for individuals due the various research on the positive outcomes of being in nature such as a healing agent for stress, anxiety, ADHD, or

externalized behaviors (Faber et al., 2011; Unruh & Hutchinson, 2011; Biedenweg, Scott, & Scott, 2017).

Impact of Nature

EcoWellness is derived from holistic wellness models (Reese & Lewis, 2018; Reese & Myers, 2012). Holistic wellness is defined as the connection and balance of an individual's mind, body, and spirit that contribute to overall health and wellbeing of an individual. EcoWellness helps to foster the mind, body, spirit connection through the use of nature (Reese & Myers, 2012). An individual who is able to incorporate wellness into their lives, can promote a greater connection with the natural world and community (Myers, Sweeney, & Witmer, 2000). On a client level, EcoWellness interventions can connect individuals with new resources that help build up protective factors (Reese & Myers, 2012).

Current studies looking at individual's interaction with nature have shown to promote positive self-worth (Richardson, Richardson, Hallam, & Ferguson, 2019), improve physical health (Kardan et al., 2015), and have restorative qualities that promote greater life satisfaction (Biedenweg, Scott, & Scott, 2017). Interaction with nature also showed a decrease in pathological symptoms in clients, such as lowered symptoms of ADHD, depression, stress, and anxiety (Faber, et al., 2011; Unruh & Hutchinson, 2011). The EcoWellness model provides an outline to integrate nature into counseling to obtain optimal client outcomes.

Noar and Mayseless (2019) completed research on the human connection to nature and found that individuals report a more profound sense of meaning and connection through the natural environment. Ryan et al. (2010) conducted five studies on

the effects of being in and viewing nature on physical and mental vitality. The authors found that each of their studies resulted in a positive association between nature and overall wellbeing, vitality, and restorative health. Furthermore, a study looking at military veterans, at risk youth, and college students found that experiencing awe through the context of a natural setting resulted in positive effects on wellbeing, stress related symptoms, and life satisfaction (Anderson, Monroy, & Keltner, 2018). Green spaces can have a significant impact on children diagnosed with ADHD, resulting in less severe symptomology after spending time in nature than it did with indoor settings (Taylor, Kuo, & Sullivan, 2001). Tyrväinen et al. (2014) found that when comparing a city center, an urban park, and a greener urban woodland, participants who spent time in progressively greener settings showed higher perceived restoration and lower stress levels and salivary cortisol levels. Taylor, Kuo, and Sullivan (2002) found that girls living in inner city high rises that had views of nature showed signs of greater self discipline including impulse control, delayed gratification, and high concentration.

Currently, there is one single case study relating to nature based counseling that examines the effectiveness of a nature based child centered play therapy treatment (Swank et al., 2014). The study results in an effect of two out of four participants, although with significant flaws in the data analysis and use of single case methodology. Methodological considerations include the lack of protocol for the use of nature and limitations in the interpretation of results such as small number of baseline points and interrater bias. Although it is evident through the literature that there is a connection between physical environment and mental wellbeing there is a lack of articles that examine the use of a nature interventions through single case research designs (Guite,

Clark, & Ackrill, 2006). Consequently, the use of EcoWellness in counseling can result in positive outcomes for clients through the integration of both counseling and nature for individuals with a neurodevelopmental disability (Baker, 2002; Howell, Dopko, Passmore, & Buro, 2011; World health organization, 2001).

Inclusive Post Secondary Education

Inclusive postsecondary education programs (IPSE) are programs at colleges and universities in which students with a disability can immerse themselves into college life and have a supportive environment needed to be successful socially and academically (Harrison, Bisson, & Laws; 2019). IPSE programs around the United States are steadily increasing as research continues to come out about the positive impact these programs can have for increasing independence, vocational training, and academic learning in higher education. IPSE programs are designed for a holistic approach in which students with disabilities can have their unique needs supported. These needs include life skills, career coaching, social engagement opportunities, individualized academic attention, and in some cases mental health support (Institute for Community Inclusion & University of Massachusetts, Boston, 2020).

Westling, Kelley, Cain, and Prohn (2013) completed a survey design study examining the attitudes of students in an inclusive post secondary education program. 572 students responded to the survey. The survey asked questions about attitudes towards the students in the program, the inclusivity of the program, and the impact the program and its participants have on college life and academic courses. The results of the study found that a large percentage of individuals felt the program was beneficial and reported positive attitudes towards the individuals enrolled in the program. After analyzing the

qualitative data, findings suggest that the program is well received, helpful, and beneficial not only to the individual with a disability but also to traditional college students. In addition to the positive attitudes towards IPSE programs, research has also found the programs to be effective and meaningful. Uditsky and Hughson (2012) explored the student outcomes of 18 different IPSE programs and found that these programs are effective in transitioning an individual with a developmental disability into adulthood. Additionally, IPSE programs foster inclusivity for individuals with disabilities and creates a number of unique opportunities for individuals. Limitations of these studies are the limited availability of funding to incorporate all aspects of an IPSE program at the university. IPSE programs typically require a significant amount of funding for a program at the university in order to obtain employees and proper training, but overall IPSE programs can be very beneficial for the holistic development of individuals with a disability (Uditsky & Hughson, 2012).

Young Adult Wellness

Young adults entering college are at an influential time in their lives with being in a new environment and a new amount of independence. First year college students were found to have a significant decline in their psychological wellbeing at the start of their transition freshman year (Conley, Kirsch, Dickson & Bryant, 2014). Studies have found there is a higher frequency of alcohol and tobacco use along with a decrease in physical activity and lack of sleep that contributes to a fluctuation in psychological wellbeing (Lanier, Nicholson, & Duncan, 2001).

One study in particular looked at the predictors of why psychological wellbeing may decline when young adults transition into college. Ridner et al. (2016) completed a

study using the Public Health Surveillance Wellbeing Scale across college students at a large university. 568 students responded to the survey and the authors utilized descriptive statistics, ANOVA, and a multiple regression analysis to analyze the data. The authors found that males reported a higher amount of wellbeing than female and heterosexual individuals reported higher wellbeing than LGBTQ students. Additionally, the authors found that wellbeing positively correlated with a higher GPA.

Furthermore, Ridner et al. (2016) found that college students who reported higher body mass index and low physical activity had lower wellbeing. Unsurprisingly, individuals who engaged in illicit drug use and/or tobacco had significantly lower levels of wellbeing. Furthermore, those who have needed mental health services in the past, reported a history of depression, or another disability reported significantly lower wellbeing scores. Finally, amount of sleep and sleep quality was a significant predictor of high or low wellbeing. The results of this study display that wellbeing can fluctuate for an individual throughout their college experience. Many behaviors that first year college students engage in can result in a decrease in psychological wellbeing. This study focuses on university students who are not part of an post secondary education program, meaning that individuals who are diagnosed with a disability have an added factor of having a developmental disability which may make the transition all the more difficult.

Wellness of individuals with a disability

Coduti, Hayes, Locke and Youn (2016) completed a study that examined the support needs of individuals on a college campus with a disability. The researchers began by analyzing the data of 1,620 with and without a disability who utilized the college campus mental health center. The researchers analyzed the results using a multivariate

analysis of variance to compare the subscale of the measurement with individuals with and without disabilities.

The results of the study show that students with a disability report higher rates of anxiety, academic related stress, higher rates of suicidal ideation, higher rates of suicide attempts, and self injurious behaviors. The results show that students with disabilities on a college campus show a significantly higher rate of distress than students without a disability. This study shows that individuals with a disability have an increased amount of mental health needs relating to their psychological health and wellbeing. Students with disabilities will feel an elevated level of anxiety and stress, on top of taking college level classes, maintaining social relationships, and staying healthy (Coduti et al., 2016). It is apparent that college students wellbeing can decrease when going off to college and become significantly more distressing for those with a disability. Students that are in IPSE programs have an opportunity to work with mental health professional to increase their overall wellbeing and through the use of unique interventions or nature related interventions, there is an opportunity for optimal functioning.

Usefulness of Nature

After considering the fluctuating circumstances of psychological wellbeing for college students and the mental health needs of individuals with a disability, the multitude of research on the therapeutic use of nature as a healing agent could be of benefit to individuals in an IPSE program. The need for mental health services for college aged individuals with a disability, in addition to effectiveness of nature-based interventions in reducing pathological symptoms, provides a unique opportunity for the implementation of an EcoWellness intervention.

Constructs of Interest

EcoWellness

EcoWellness was developed by Reese and Myers (2012) and expanded upon in later years. The EcoWellness model allows counselors to promote healing and wellness through nature integration. Reese et al., (2015) later expanded EcoWellness by testing the validity of different EcoWellness subsets. The study resulted in seven subsets that make up the EcoWellness construct. The subsets of EcoWellness include physical access, sensory access, connection, protection, preservation, spirituality, and community connectedness (Reese et al., 2015). Each of these subsets is measured in the Reese EcoWellness Inventory (Reese et al., 2015). By measuring the client's level of each of these subsets, it provides a starting point for counselors in developing an EcoWellness treatment plan for the client.

Nature

Furthermore, nature is a construct because it can mean something different from one person to the next (Reese, 2018). As such, when developing an EcoWellness model, it is important to identify what nature means to the client. Nature can be a few trees that are outside of an apartment complex, potted plants in a home, a nearby park, a local walking trail, an animal a client connects with, or a full immersion into the natural world through a hike in the mountains. It is important to ask the client what nature means to them and decide how to incorporate the client's definition of nature into the counseling process. A client can expand their EcoWellness through connection with nature either alone or with company (Reese, 2018). For the purpose of this study, college age is defined as any individual between the ages of 18-24.

Developmental disability

Finally, according to the DSM-5 (2013), a developmental disability, also called neurodevelopmental disability includes intellectual disabilities, communication disorder, autism spectrum disorder, attention deficit hyperactivity disorder (ADHD), learning disorder, and motor disorder. For the purposes of this study, individuals will primarily be diagnosed with either autism spectrum disorder or intellectual disability. In some instances, ADHD may be co-occurring.

Psychological well-being

According to Ryff's (1989) six factor model of psychological wellbeing, there are a number of factors that contribute to a person's wellbeing, contentment, and happiness. The six factors include positive relationships with others, environmental mastery, personal growth, autonomy, a feeling of purpose and meaning in life, and self awareness. A balance of these six factors contributes to an increase in happiness and wellbeing (Ryff, 1989).

Conclusion

Chapter two discussed the philosophical and theoretical tenets of positive psychology and the development of psychological wellbeing. Ryff's (1989) model of psychological wellbeing was described in terms of the theoretical basis and research backing. Additionally, research on IPSE programs was explored, along with research on wellness for young adults, and wellness of students on a college campus with a disability. Chapter three will first include a systematic review then chapter four will be the procedures of a multiple probe research design of using an EcoWellness intervention for students with a developmental disability.

Chapter Three

A Systematic Review of Nature-Based Counseling Interventions to Promote Mental Health and Wellness

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Abstract

There is a strong association between nature engagement and stress reduction, restoration, and an increase in wellbeing. Recently, practitioners and researchers are integrating nature into psychotherapeutic interventions in clinical settings to address individuals' mental health and wellness. The purpose of this systematic review is to (a) identify nature interventions that are currently integrated within counseling, (b) summarize the outcomes of research studies that integrate nature interventions, and (c) review the quality of research studies to date. We found that most nature interventions include forms of adventure and wilderness therapy. Counseling intervention protocol varies among nature interventions. Overall, we found preliminary evidence that nature engagement in the counseling process contributes to positive client outcomes. However, the methodology in the available studies makes it challenging to delineate the contribution of nature versus the counseling intervention in client outcomes, or what aspects of the nature intervention are helpful for clients.

Keywords: nature interventions, adventure therapy, wilderness therapy, counseling, systematic review

A Systematic Review of Nature-Based Counseling Interventions to Promote Mental Health and Wellness

Nature has been studied across concentrations and conceptualized to be a fundamental need for human existence (Searles, 1960). Wilson (1984) suggested that humans have a genetic basis that requires a connection with nature to improve cognitive functioning, enhance mood and creativity, and increase resiliency as part of his theory of Biophilia. Although the definition of nature is personal to each individual, nature encompasses products of the earth and nonhuman living organisms (Reese, 2018). Nature is largely considered a subjective experience due to the fact that an individual can experience nature in their own way. For example, caring for potted plants inside a home, walking in a park, a close connection with an animal, or full immersion into the wilderness are all forms of nature engagement. Broadly defined, nature engagement is how an individual interacts with the natural world physically and emotionally (Reese, 2018) and nature exposure is being in the presence of an outdoor or natural setting (Repke et al., 2018). With rising reliance on technology for completing daily tasks (Edwards & Larson, 2020; Fan et al., 2017; Mark et al., 2018), nature engagement has drastically decreased, despite the well-documented mental health benefits of nature exposure (Gatersleben, 2008; Guite et al., 2006; Herzog et al., 2003). A positive association has been identified between nature interventions and positive mental health outcomes (Dobud & Harper, 2018; Maller et al., 2006; Shanahan et al., 2019); however, the literature is limited as to how nature is integrated in clinical settings as part of a client's treatment plan.

Rationale

Although nature is incorporated into a variety of counseling modalities (Harper et al., 2019; Harper & Dobud, 2020), the counseling field has yet to research nature interventions in a way that practicing counselors can easily integrate it into intervention planning. As such, our overall knowledge of effective implementation of nature interventions in counseling is limited. Currently, there are no systematic reviews or meta-analyses that summarize the nature interventions implemented in the counseling process or how effective the interventions are for various client populations or presenting concerns. Therefore, the purpose of this systematic review is to provide an analysis of the current nature-based interventions in counseling and identify the quality of the interventions and their implementation. Additionally, the review will identify areas the literature is lacking to assist future researchers in identifying a research focus.

In this systematic review, we identify the current nature interventions that are used in counseling settings and review how they are implemented. The use of the PRISMA framework (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009) allowed us to narrow down articles based on the criteria we were specifically looking for. We were not seeking out a specific participant pool but instead we wanted to identify quantitative or outcome studies for all types of clients that utilize a type of nature intervention in a counseling setting to identify the effectiveness of the intervention. Our question of interest was “Are the nature interventions currently used in the counseling practice effective?” Based on this question we were able to eliminate a number of articles that did not utilize a nature intervention in a counseling context as well as articles that did not assess client outcomes. Furthermore, we assess the quality of the empirical studies and evaluate the outcomes of the studies to identify gaps in the literature. We discuss

implications of the systematic review for counselors and address focus areas for future empirical studies.

Nature and Mental Health

Experiencing awe in natural settings has positive effects on overall wellbeing. For example, researchers have found that nature engagement is related to reduced stress and increased life satisfaction for military veterans, at-risk youth, and college students (Anderson et al., 2018). Tyrväinen et al. (2014) found that more time spent in natural greenery (i.e. a city center, an urban park, or a woodland) resulted in lowered salivary cortisol levels and higher levels of perceived restoration among adults. Nature exposure is also related to restorative qualities that improve life satisfaction (Biedenweg et al., 2017), promote positive self-worth (Richardson et al., 2019), and improve physical health (Kardan et al., 2015). Further, a study conducted on young girls living in inner city high-rises found that girls in apartments that had views of nature displayed greater impulse control, self discipline, and higher rates of concentration than girls who did not have views of nature (Taylor et al., 2002). Conversely, Louv (2008) asserted that children's increasing disconnect with natural elements results in diminished emotional health and resiliency, and labeled the phenomenon "nature deficit disorder."

Nature deficit disorder is a conceptual term in which disconnect with the outdoors comes from an increase in technology, urban planning that decreases the amount of open space, lack of importance placed on outdoor benefits in the education system, and the increase parental fear from news and entertainment media (Louv, 2008). A child's disconnect from natural environments results in symptoms such as attention difficulties, emotion regulation concerns, behavioral difficulties, as well as physical illnesses (Louv,

2008). Additionally, Taylor, Kuo, & Sullivan (2001) found that for children diagnosed with ADHD, learning and playing in an outdoor setting resulted in less symptomology than it did with children learning and playing in an indoor setting. Consequently, as an individual's connection to nature increases, negative symptoms such as inattention, depression, stress, and anxiety, tend to decrease (Faber et al., 2011; Unruh & Hutchinson, 2011).

Nature Interventions in Counseling

Connection with nature provides individuals with a protective factor that can be used to enhance wellness and decrease pathological symptoms related to life stressors. Reese et al. (2015) asserted that integrating nature into counseling has the potential to lead to positive outcomes in clients' mental health and wellness. The connection with other living organisms enhances wellbeing and could be used to the advantage of counselors in helping clients attain the best possible mental health outcomes (Guite et al., 2006). Common types of nature interventions include wilderness therapy, adventure therapy, horticulture therapy, forest rehabilitation therapy, and animal assisted therapy.

Wilderness therapy typically involves nature-based interventions in a residential setting. This particular type of nature intervention includes full immersion into a wilderness setting ranging from five days to several weeks. Clients learn backcountry survival skills as well as outdoor recreation skills (Russell, 2001). Adventure therapy incorporates team building exercises into the therapeutic process such as low ropes courses, rock climbing, hiking, kayaking, and other activities (Itin, 2001). Horticulture therapy involves spending time in an outdoor garden setting in which participants practice gardening, digging, and planting (Simson & Straus, 1998). Forest rehabilitation

requires individuals to spend time connecting with nature in the forest, and animal assisted therapy incorporates the care and comfort of animals throughout the counseling process (Fine, 2010; Sonntag-Öström et al., 2015).

The use of nature as a resource for healing and wellness promotion is apparent throughout the literature (Guite et al., 2006; Ryan et al., 2010; Reese & Myers, 2012). Previous researchers examined the use of nature interventions with a wide range of populations and diagnoses including but not limited to veterans, youth, and college age individuals (Anderson et al., 2018), addiction and recovery (Bennett et al., 1998), school settings (Faber et al., 2011; Chiumento et al., 2018), homeless women (Norton et al., 2020), and families (Norton et al., 2019).

Although the correlation among positive mental health outcomes, wellbeing, and nature is apparent, the lack of integration of nature into the process for practicing counselors may be due to lack of creative resources, safe green spaces, understanding of how to integrate nature, or unawareness of the benefits of nature integration (Louv, 2008). It is important that counselors and psychotherapists adhere to evidence-based practices when working with clients (Allan, 2019), and specifically when integrating nature into their practices. Most studies that examine the effectiveness of nature for improving mental health outcomes are correlational and do not utilize experimental designs (e.g. Barton et al., 2016; Combs et al., 2016; Norton et al., 2020; Roberts et al., 2017). Additionally, many of the nature-based studies that exist do not occur in formal counseling settings; and lack guidance on how counselors can integrate nature-based interventions in formal counseling settings. Thus, we conducted a systematic review of

the literature in order to identify how nature has been utilized within formal counseling settings and to assess best practices when integrating nature into counseling.

Method

In this systematic review, we examined counseling interventions that incorporated nature engagement with clients. We defined nature interventions as the use of nature engagement to promote positive change or improved functioning for a client. Types of nature interventions consisted of wilderness therapy, adventure therapy, horticulture therapy, animal assisted therapy conducted outside, and forest therapy. We conducted the review in April 2020 and utilized the protocol outlined by PRISMA (Moher et al., 2009) to identify relevant sources, complete the search, and extract data. PRISMA was utilized because it is an evidenced based practice that focuses on evaluating effects of interventions into a logical and easy to understand process. The databases screened for articles include Academic Search Complete, Education Resources Information Center (ERIC), APA PsycArticles, APA PsycInfo, APA PsycTests, and Psychology and Behavioral Sciences Collection. The search terms included “nature, green space, outdoors”, “wellbeing, mental health”, “counseling, intervention”, and “activity, wilderness, adventure, or eco”. The terms are grouped based on perceived similarity from the research team and to capture the largest amount of articles that discuss nature in counseling.

Search Strategy, Screening, and Eligibility Criteria

We included only peer-reviewed articles in academic journals, written in English. Our initial database search yielded 1,342 articles. After accounting for duplicates, we narrowed the article count to 1,209. The first round of eligibility criteria for articles

included: (a) quantitative, mixed methods, and single case design articles; (b) the use of a nature intervention; (c) the intervention must be conducted in a counseling or psychotherapeutic context and explicitly describe therapeutic approaches (e.g., a counseling theory, psychoeducational or skills model); and (d) client outcomes need to be assessed. These criteria were chosen for the purpose of identifying articles that test the effectiveness of nature-based counseling interventions. Qualitative studies were excluded from the search because no outcomes were measured. The purpose of the systematic review is to identify the strength of current nature-based counseling interventions as well as gaps in the research in order to assist future researchers and counselors in creating and utilizing evidence-based practices in their work with clients.

We were able to extensively narrow the pool of articles because a large portion of the articles were not completed in a counseling or psychotherapeutic context. We created an Excel spreadsheet to track the articles and team members began by individually reviewing the articles. During this round of screening, team members reviewed the article title and abstract. After the initial round of screening, we excluded a total of 1,123 articles and 86 relevant articles were funneled into a separate Excel sheet for further screening.

During the second round of article screening, team members individually reviewed the methods section of each article to identify a final count based on the initial inclusion criteria. A total of 69 articles were excluded, leaving 17 final articles for the review. Any article in which a team member was unsure of eligibility was reviewed by the group to come to a consensus on its inclusion or exclusion. Our search and screening process is outlined in Figure 3.1.

Quality Assessment

In order to assess the quality of the 17 final articles, we used the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018). The MMAT includes a series of definitions of multiple types of quantitative, qualitative, and mixed method studies, and a set of criteria to determine the quality of each study. The MMAT is structured similarly to table 1, in which you first determine the type of study. Our studies consisted of quantitative randomized, non-randomized, and mixed methods. We then moved to the questions based on the type of study used. To determine the quality of each study, the questions differ based on the type of methodology. For example, randomized studies ask if the study was appropriately randomized and non-randomized quality assessors ask about if the participants are representative of the population.

After reviewing the tool as a group, team members split into pairs and reviewed two to three articles each. Each member of the pair individually and independently assessed their assigned studies using the MMAT, and then came together as a pair to review their separate ratings and come to a consensus on the quality of each study. Any disagreements that could not be resolved between the pair were brought to the team in order to achieve a consensus. See table 1 for a detailed overview of how the research team used the MMAT for each study in the review and the results of the assessment.

Data Extraction

We used an Excel spreadsheet to track relevant articles for the study. The team members entered information from their articles into the chart in order to clearly define the purpose and outcomes of each study on nature-based interventions. We included a section for population, presenting concerns, type of nature-based intervention, psychotherapeutic/counseling intervention(s) used, and the outcomes and outcome

measurements. Additionally, we discussed our bias of having different definitions of nature engagement as well as all being counselors. We accounted for our biases by having clear inclusion criteria of articles and coming to consensus for articles in question.

Results

Study Characteristics

Population

Of the 17 articles included in the review, the populations served varied among children (ages 8-17), adolescents (ages 11-18), young adults (ages 18-32), and adults (ages 25-65). There was overlap in studies with how the researchers defined each of the age groups. Two studies focused on children, six studies focused on a population of adolescents, one on young adults, and eight studies focusing on adults.

Presenting Concerns and Setting

The 17 studies addressed various presenting concerns including mood disorders (e.g. depression), anxiety disorders, substance use disorders, behavioral disorders (e.g. conduct disorder), post-traumatic stress disorder (PTSD), self-esteem, attention deficit hyperactivity disorder (ADHD), and psychotic disorders (e.g. schizophrenia). Studies occurred in either residential settings or outpatient setting. Residential settings included overnight, outdoor wilderness programs whereas outpatient settings did not include overnight stays.

Interventions and Implementation

Of the 17 total articles, five researchers utilized a wilderness therapy intervention model (Lewis, 2013; Barton et al., 2016; Combs et al., 2016; Roberts et al., 2017; DeMille et al., 2018). Seven studies included adventure therapy on an outpatient basis

with one study utilizing sailing as their adventure activity and another incorporating family systems work into their adventure activities (Gelkopf et al., 2013; Norton et al., 2019). In two of the studies, researchers used horticulture therapy (Vujcic et al., 2017; Chiumento et al., 2018) and in one article, researchers tested the use of boreal forest rehabilitation (Sonntag-Öström et al., 2015). One article used animal assisted therapy, specifically with farm animals to enhance therapeutic outcomes and one study examined the effects of walking in an outdoor park setting (Pedersen et al., 2011; Korpela et al., 2016).

A variety of counseling interventions were used in conjunction with the nature interventions. The type of counseling intervention was not always consistent with the type of nature intervention, meaning the studies that utilized a wilderness therapy or adventure therapy approach did not all utilize the same counseling approach. Furthermore, various types of theoretical approaches were used including cognitive behavior therapy (CBT), reality therapy, choice therapy, or family systems. Therapeutic interventions were conducted either in a group counseling setting or individual setting. A variety of skills and interventions were also used within different settings. Examples include psychoeducation, problem solving skills, interpersonal/ intrapersonal skills, communication, de-escalation, mindfulness, stress management, relapse prevention, negative thought challenging, processing situations, empowerment building, and a number of coping skills.

The implementation of nature was inconsistent throughout all of the studies. Many studies utilized numerous counselors to implement an intervention without a manual to standardize their implementation of treatment. This results in inconsistent

outcomes and several confounding variables in which the studies did not account for. While nature can be integrated across theoretical approaches, integrating nature for the purpose of accomplishing goals should be done with intention as opposed to a haphazard integration.

Outcomes

The majority of studies reported a positive effect with the use of a nature intervention. The outcomes measured included self-esteem, connectedness to nature, psychological, emotional, and behavioral symptoms, overall mental health functioning, symptom distress, wellbeing, stress, depression, conduct, substance use, social connectedness, PTSD, exhaustion disorder, anxiety, self efficacy, anger, and family functioning. Some studies measured one outcome and others measured multiple outcomes. All of the outcomes measured showed a positive effect, except family functioning and exhaustion disorder in which no significant effect was found (Sonntag-Öström et al., 2015; Norton et al., 2019). Additionally, two studies found no significant effect for their measure of self esteem and psychological, emotional, and behavioral functioning (Bryson et al., 2013; Chiumento et al., 2018).

The outcomes were measured by a number of different assessments across studies. As such, there is no commonality in the measures utilized for each study. The outcome measurements varied based on participant age, setting, and variables being measured. However, three studies did utilize the Beck Depression Inventory, two studies utilized Rosenberg's Self-Esteem Scale, and two studies utilized the Youth Outcome Questionnaire. All of the studies utilized self report measures. Overall, the studies

concluded there are primarily positive outcomes from using nature engagement in a counseling or therapeutic context.

Quality Assessment

Once the pairs came to consensus on a quality assessment for each of the articles, we recorded the data presented in Table 1. Three articles were quantitative randomized control trials, 11 were quantitative non-randomized, and three articles were mixed methods studies. The articles were assessed based on the MMAT (Hong et al., 2018) criteria listed at the top of the table and a “yes”, “no”, or “can’t tell” answer was provided. Of the quantitative non-randomized studies, six studies did not account for confounding variables, three studies were unclear if they accounted for confounding variables or not, and two studies did account for confounders. The majority of the quantitative non randomized studies did not have fidelity reports of the interventions, leading to 10 of the 11 studies in category 3.5 to receive a “can’t tell” and one study a “no”.

As such, the lack of fidelity reporting calls into question the consistency of implementation across researchers as well as the reliability of the data. Fidelity could be increased through the use of standardized intervention practices when implementing nature into the counseling process. Additionally, fidelity checks or having an outside observer watch the implementation of the intervention in order to conclude it is being conducted properly would have been helpful for presenting strong results in each of the studies and enhance the replicability of the study. Furthermore, most of the studies did not account for or report on confounding variables meaning there are potentially outside variables that impact the outcome of the study. The results of the quality assessments

show the lack of quality outcome studies that utilize nature interventions in a counseling context.

Discussion

Main Findings

Nature integration in counseling is a complimentary treatment that can be used for a wide variety of clients and presenting issues. Sixteen articles we reviewed indicated that clients experienced improvement on outcome measures used in the studies. For example, several studies reported improvement in client overall functioning and symptom distress. Additionally, all but one study found improvement in positive aspects of mental health such as self-esteem or overall well-being. However, the structure of the nature interventions reviewed made it difficult to determine what aspect of the intervention influenced client outcomes. Norton et al. (2020) was the only study that utilized an approach specific to adventure therapy titled the ABC-R model. Several other studies utilized different counseling approaches such as cognitive behavior therapy, family theories, or choice therapy in an outdoor setting. The lack of a standardized treatment in all of the studies makes it difficult to determine if the outcomes are due to the nature intervention, the counseling intervention, or a combination of both.

Consequently, developing a standardized measure would allow researchers to differentiate and isolate variables in the study in order to determine where the change in taking place. A standardized procedure could be developing a manual for nature integration for practicing counselors in a way that is research based and easy to implement. A manual would allow for researchers to study the outcomes of clients, across multiple counselors. Similar to adapting a theoretical approach to the needs and

experiences of clients, counselors can implement nature-based interventions in a similar fashion. This would take into account how they client defines nature and how to use this definition to integrate nature into the counseling process. Based on our review, we found various conceptualization of how nature was incorporated for therapeutic purposes.

Of the 17 studies we reviewed, each article conceptualized nature in a different way and used various counseling interventions. The studies all measured several different mental health outcomes. Despite the variety of nature engagement practices, counseling interventions, and outcomes the majority of studies showed an improvement of mental health outcomes, reduced stress related symptoms, and improved wellbeing. However, the studies raised some questions in terms of research designs and methodology. Each study varied in its use of control groups, operational definitions, and protocols. It was difficult to parse out which aspects of the interventions contributed to the improved mental health outcomes. Furthermore, it is unclear if the improvements were a result of the nature interventions, the counseling approach, social connection, or additional confounding variables. Although preliminary evidence exists to support the use of nature for improved mental health and wellbeing, the overall lack of standardization across nature and counseling interventions makes it difficult to discern how to best replicate the studies for professionals to incorporate nature into their everyday counseling practice.

Limitations

There are additional studies that examine the positive effects of nature; however, for the purpose of this review, we only reviewed studies that utilized nature in a counseling setting and utilized a counseling or psychotherapeutic intervention. This eliminated many studies from our scope that examined nature in a way that was unrelated

to the counseling field yet may have an influence on individuals' mental health. Utilizing the PRISMA structure to guide our systematic review was helpful in keeping an organized approach and account for bias. However, due to the various number of terms that are used to represent nature and counseling internationally, it may be likely some studies did not come up in our search. Additionally, we included international studies resulting in the possibility of variations in approaches to counseling and use of nature. Finally, there may be limitations with our use of the MMAT for screening articles. The screening tool only allows for binary yes or no options, limiting the depth of quality assessment.

Implications for Future Research and Practice

In this systematic review, we provide readers with an examination of current nature interventions used in the counseling field. Counselors will be able to use this review if they are interested in incorporating nature into their practice with clients and would like to review the literature available. Additionally, through this research, we hope to ensure that counselors interested in incorporating nature into their practice with clients are operating with evidenced-based interventions. Counselors seeking to incorporate nature into their practice can identify the variety of methods in which clients engaged with nature and see the strengths and weaknesses of the articles available. This allows counselors to incorporate nature engagement in an individualized capacity and specific to the needs of the client. Further, counselors can use this review as a resource to inform their clients of various nature interventions and consider if their client would benefit from nature engagement programs.

We found that there are limited high quality randomized control trials using nature in counseling. Future researchers should use rigorous designs to ensure the validity of the nature intervention being used. For example, studies could utilize an experimental research design such as randomized control trials or single case research design to examine how using nature in counseling can reduce mental health concerns such as depression, anxiety, or post traumatic stress, or improve clients' overall wellbeing. Furthermore, researchers can improve the validity and reliability of outcomes by utilizing fidelity checks along with a manualized way to integrate nature in order to enhance replication of studies.

Additionally, it will be important to examine how existing evidenced based theoretical orientations such as cognitive behavioral therapy can integrate nature into their treatment protocols. However, the lack of standardization of nature intervention means that future research should focus on creating structured intervention protocols for the use of nature in counseling. Future researchers should be able to replicate studies that include nature interventions. Specific nature interventions should be tested with various populations and presenting concerns to examine the effectiveness across different populations. Further, researchers should consider testing nature engagement interventions against existing evidence-based interventions. Overall, numerous amounts of research identifying nature as a useful tool for an individual's physical and mental health, provides counselors with an additional resource in their practice with clients.

Conclusion

Nature engagement as part of the counseling process is a promising approach for counselors to provide additional evidenced based interventions to promote optimal client

outcomes. Clients may benefit from nature interventions, although the current research on nature interventions in counseling does not provide enough evidence to differentiate between what aspects of the nature intervention is helpful as well as what is contributing to the outcome, the nature interventions or the counseling interventions. It will be important to evaluate the effectiveness of various nature interventions in the future, and control for confounding variables. Future researchers should develop standardized, replicable protocols for using nature that can be tested for effectiveness while accounting for additional variables.

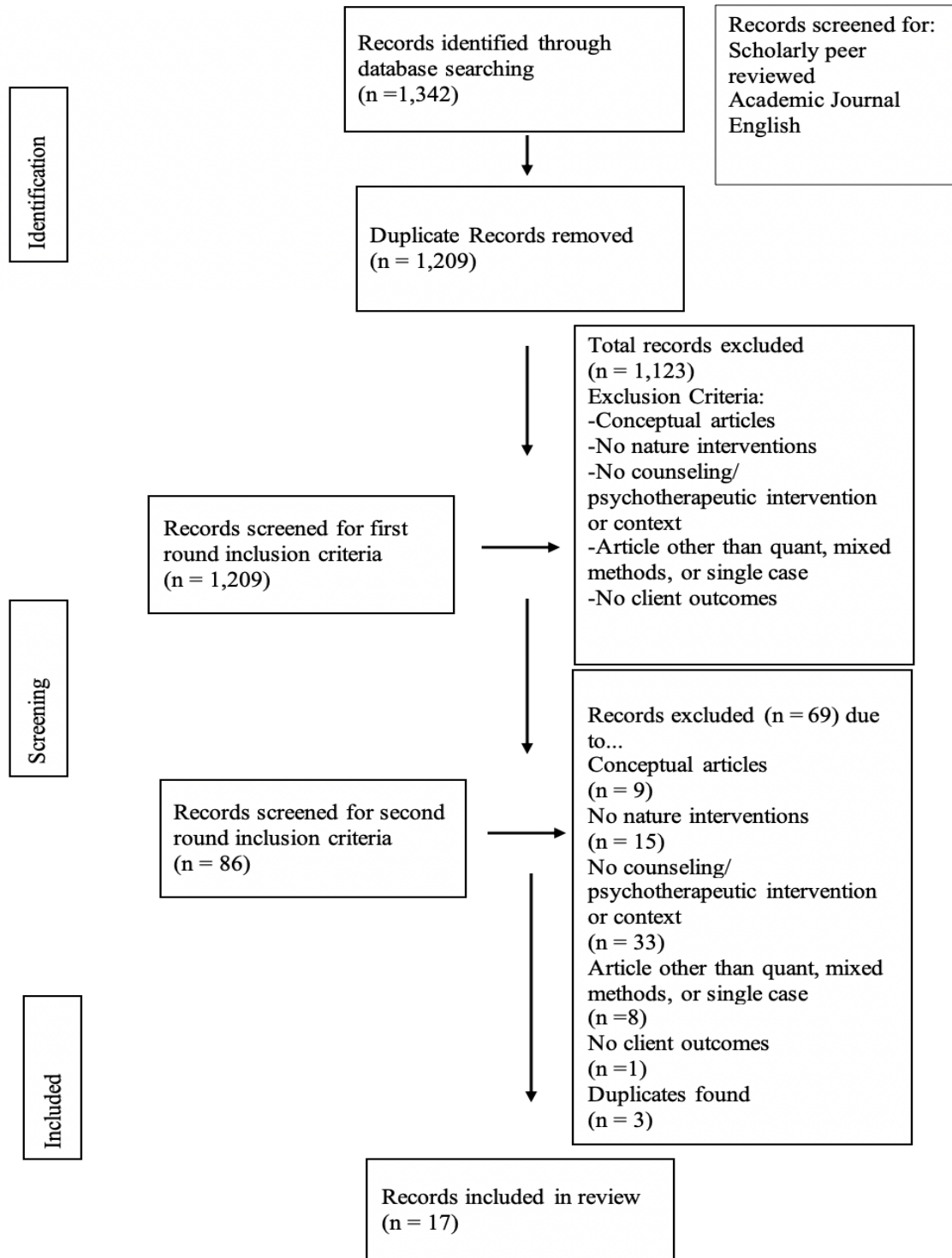


Figure 3.1

Article Screening Flowchart

Table 3.1

Study Quality Appraisal

Quantitative Randomized Control Trials	2.1 Is randomization appropriately performed?	2.2 Are the groups comparable at baseline?	2.3 Are there complete outcome data?	2.4 Are outcome assessors blinded to the intervention provided?	2.5 Did the participants adhere to the assigned intervention?
Vujcic, Tomicevic-Dubljevic, Grbic, Lecic-Tosevski, Vukovic, Toskovic (2017)	Can't tell	Yes	Yes	Can't tell	Can't tell
Sonntag-Öström, Nordin, Dolling, Lundell, Nilsson, Slunga Järholm (2015)	Yes	Yes	Yes	Can't tell	Yes
Gelkopf, Hasson-Ohayon, Bikman, Kravetz (2013)	Yes	Yes	Yes	No	Yes

Quantitative Non- Randomized	3.1 Are the participants representative of the target population?	3.2 Are measurements appropriate regarding both the outcome and intervention (or exposure)?	3.3 Are there complete outcome data?	3.4 Are the confounders accounted for in the design and analysis?	3.5 During the study period, is the intervention administered (or exposure occurred) as intended?
Barton, Bragg, Pretty, Roberts, Wood (2016)	Yes	Yes	Yes	No	Can't tell
Combs, Hoag, Javorski, Roberts (2016)	Yes	Yes	Can't tell	No	Can't tell
Roberts, Stroud, Hoag, Massey (2017)	Yes	Yes	Can't tell	No	Can't tell
Vankanegan, Tucker, Mcmillion, Gass, Spencer (2019)	Yes	Yes	Can't tell	No	Can't tell
Norton, Tucker, Pelletier, VanKanegan, Bogs, Foerster (2020)	Yes	Yes	Yes	No	Can't tell
Korpela, Stengård, Jussila (2016)	Yes	Yes	Yes	No	Can't tell
Lewis (2013)	Yes	Yes	Yes	Can't tell	No
Schell, Cotton, Luxmoore (2012)	Yes	Yes	Yes	Can't tell	Can't tell
Pedersen, Nordaunet, Martinsen, Berget, Braastad (2011)	Yes	Yes	Yes	Can't tell	Can't tell
DeMille, Tucker, Gass, Javorski, VanKanegan, Talbot, Karoff (2018)	Yes	Yes	Can't tell	Yes ; confounds due to lack of randomization were	Can't tell

				controlled for using a mixed method design (2 treatment times and 2 treatment conditions)	
Bennett, Cardone, Jarczyk (1998)	Yes	Yes	Yes	Yes	Can't tell

Mixed Methods	5.1 Is there an adequate rationale for using a mixed methods design to address the research question?	5.2 Are the different components of the study effectively integrated to answer the research question?	5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	5.5 Do different components of the study adhere to the quality criteria of each tradition of the methods involved?
Bryson, Feinstein, Spavor, Kidd (2013)	Yes	Yes	Yes	Yes	No-Quantitative 3.1- Yes 3.2- Yes 3.3- No 3.4- No 3.5- Can't tell Yes- Qualitative
Chiumento, Mukherjee, Chandna, Dutton, Rahman, Bristow (2018)	Yes	Yes	Yes	Yes	No-Quantitative: 3.1- yes 3.2- No 3.3- Can't tell 3.4- No 3.5- Can't tell No- Qualitative: 1.1- Can't tell 1.2- No 1.3- No 1.4- No 1.5- No
Norton, Tucker, Farnham-Stratton, Borroel, Pelletier (2019)	Can't tell	Yes	Yes	Yes	Yes-Quantitative: 3.1- Yes 3.2- Yes 3.3- Can't

				tell 3.4- Yes 3.5- Can't tell Can't tell- Qualitative: 1.1- Can't tell 1.2- Can't tell 1.3- Can't tell 1.4- Yes 1.5- No
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Chapter Four

Effectiveness of an EcoWellness Intervention on Well-Being for College Aged Individuals with a Developmental Disability: A Single Case Research Design

Lewis, O., and Ohrt, J. To be submitted to *Journal of Counseling and Development*.

Abstract

Using a multiple probe, single case research design, this study investigated the effects of a an ecowellness intervention on college students with a neurodevelopmental disability. More specifically, this study utilized an eight-week intervention that was derived from the ecowellness model, to have an impact on psychological wellbeing as measured by the Psychological Wellbeing Scale (Ryff, 1989). The results of this study provide some preliminary evidence to support the use of ecowellness interventions to enhance psychological wellbeing for individuals with a disability in a college setting.

Keywords: Ecowellness, single case research design, psychological wellbeing, disability, counseling, nature

Effectiveness of an EcoWellness Intervention on Well-Being for College Aged Individuals with a Developmental Disability: A Single Case Research Design

The idea of nature as a healing tool has existed for decades (Searles, 1960). Biophilia is phenomena developed by Wilson (1984) that suggests connecting with nature is a biological human need and is part of our genetic makeup. Wilson (1984) goes on to explain that fulfilling our basic human need to be around the natural environment results in an increase in cognitive functioning, enhanced mood and creativity, and an increase in resiliency. Research in nature-based healing has since expanded and has strong correlation with wellness and our human experience (e.g. Guite et al., 2006; Louv, 2008). Despite the research highlighting the importance of nature, western culture continues to see a decline in nature connection (Imai et al., 2018; Soga & Gaston 2016). The increase in digital media shifted pastimes of people of all ages to activities such as video games, social media, video streaming, and spending much of the day connected online (Larson et al., 2019). Consequently, mental health needs and diagnoses are increasing every year. In 2019, nearly 20% of all U.S. adults were living with a mental illness and 49.5% of youth were diagnosed with a mental disorder, 22% of which were classified as having a severe impairment (Substance Abuse and Mental Health Services Administration, 2020). This study will examine the effectiveness of an EcoWellness intervention for young adults with a developmental or intellectual disability in an inclusive post secondary education program.

Theoretical Framework

Positive Psychology

Positive psychology is the foundational basis to psychological wellbeing. Positive psychology studies the conditions an individual needs to obtain optimal functioning (Putwain, Gallard, & Beaumont, 2019). Positive psychologists will identify the positive aspects of an individual's functioning rather than keep a focus on what is going wrong or what makes an individual unhealthy (White & Murray, 2015). Positive psychology is an important subject to psychological wellbeing because wellbeing is a construct often studied in positive psychology.

Psychological Wellbeing

Ryff (1989) first conceptualized the idea of psychological wellbeing (PWB), defining it as an individual's ability to function in a positive and healthy way as measured by six factors. The six factors include: (a) autonomy, (b) environmental mastery, (c) personal growth, (d) positive relationships with others, (e) purpose in life, and (f) self-acceptance. When an individual can rate themselves highly on these six scales, their psychological wellbeing is functioning in a positive and healthy way. Ryff (2014) defines each of these aspects beginning with self-acceptance. Self-acceptance involves a self-evaluation that incorporates awareness and acceptance of strengths and weaknesses within an individual. Ryff (2014) also described positive relationship with others as an important component in developing a genuine human connection that enhances our feelings of love and empathy towards others. Personal growth is defined as a dynamic and continual process of self-realization. For an individual to be high functioning in this aspect of psychological wellbeing, one must have an openness to experience how they are

developing and becoming truer to themselves. Ryff (2014) continues to define purpose in life as an existential perspective in which an individual creates meaning for themselves and lives according to what brings them happiness and joy. Environmental mastery involves an individual's ability to choose environments that are suitable to their needs and allows for a confidence in moving through their environment. Finally, autonomy is an aspect of PWB that involves being independent in making decisions and emphasizes qualities such as self-determination and independence.

Young Adults with a Disability and Wellness

According to the American Counseling Association (ACA), individuals with a disability are one of the largest minority populations in the United States (Woo et al., 2016). For individuals without a disability, moving to college can be an intimidating process. For individuals with a disability, there can be a lot of anxiety, unanswered questions, and feeling a loss of support surrounding the transition process. Individuals with a neurodevelopmental disorder might have a more difficult time with transitions (Bostrom & Broberg, 2017). Moving from a high school classroom or special education room to a college dorm with increased independence has the potential to be overwhelming and anxiety provoking. Young adults in an inclusive post-secondary education program (IPSE), have a unique opportunity to explore their independence as an individual with a disability. Post-secondary education programs accept individuals with a developmental disability including intellectual disability or autism spectrum disorder. With this transition in mind, when individuals enter an IPSE program, their psychological wellbeing scores fluctuate due to the change in environment, need to create social relationships, and increased autonomy (Alnahdi & Schwab, 2020). Since Ryff (1989)

developed the six subsets of psychological wellbeing, most of them are applicable to the struggles that young adults entering an IPSE program experience.

Implementing supports in college settings to enhance and maintain the psychological wellbeing for individuals with a disability in college are important. Coduti, Hayes, Locke and Youn (2016) investigated the mental health needs of students with a disability through comparing scores from the Counseling Center Assessment of Psychological Symptoms-62 of 81 students with and 81 students without a disability. The results of this study suggested that students with a disability are more likely to report higher scores on anxiety, academic-related distress, suicidal ideation, suicidal attempts, and non-suicidal self-injury than their peers without a disability. Additionally, Hong (2015) utilized reflective journaling for students on a college campus with a disability, 37.5% of the students reported having an intellectual disability. The participants documented their thoughts and experiences of barriers they encounter. Two themes emerged that indicate a student's lack of self-awareness about their distress being mental health related and their mistrust of professionals who do not understand support needs of having a disability.

Furthermore, Nisbet, Zelenski, and Murphy (2011) completed a study on nature relatedness and its connection with wellbeing in college students and business professionals. The study suggests that having a connection to nature influences various aspects of psychological wellbeing. The study is limited in that it did not implement a systematic nature intervention and utilized correlational design so causation could not be determined.

EcoWellness

The need for creative ways to ground individuals in an environment that is shown to reduce stress, build resilience, decrease behavioral symptomology and mood changes, and enhance overall mental health and wellbeing is crucial (Faber et al., 2011; Unruh & Hutchinson, 2011). EcoWellness is an emerging model that integrates aspects of nature into the field of counseling (Reese & Myers, 2012). EcoWellness was created by Reese and Myers (2012) and is described as “a sense of appreciation, respect for, and awe of nature that results in feelings of connectedness with the natural environment and the enhancement of holistic wellness” (p. 400). EcoWellness integrates the natural world into the counseling practice in a way that contributes to our holistic wellness. However, but there are no current interventions that integrate each aspect of EcoWellness and therefore no studies have developed a specific treatment intervention or tested the effectiveness of an intervention. Currently, the EcoWellness model serves as a framework for counselors in integrating nature into the counseling practice in order to enhance the wellness of an individual. Myers, Sweeney, and Witmer (2000) defined wellness as a “way of life oriented toward optimal health and well-being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community” (p. 252). There is a potential for EcoWellness to be an effective treatment for individuals due the various research on the positive outcomes of being in nature such as a healing agent for stress, anxiety, ADHD, or externalized behaviors (Faber et al., 2011; Unruh & Hutchinson, 2011; Biedenweg, Scott, & Scott, 2017).

Impact of Nature

EcoWellness is derived from holistic wellness models (Reese & Lewis, 2018; Reese & Myers, 2012). Holistic wellness is defined as the connection and balance of an individual's mind, body, and spirit that contribute to overall health and wellbeing of an individual. EcoWellness helps to foster the mind, body, spirit connection through the use of nature (Reese & Myers, 2012). An individual who is able to incorporate wellness into their lives, can promote a greater connection with the natural world and community (Myers, Sweeney, & Witmer, 2000). On a client level, EcoWellness interventions can connect individuals with new resources that help build up protective factors (Reese & Myers, 2012).

More research is needed in the area of EcoWellness as it may provide an alternative treatment for certain diagnoses. For example, if a client presents with symptoms of a diagnosis such as ADHD, the likely treatment is going to be stimulant medications or behavioral therapy (Evans et al., 2016; Wolraich et al., 2019). Clients that present with depression or anxiety are likely to be met with some version of cognitive behavioral therapy (Bandelow, Michaelis, & Wedekind, 2017; Beck, 2011). While all of these treatments have been studied to have effective outcomes (Kumara & Kumar, 2016; Twomey, O'Reilly, & Byrne, 2015), EcoWellness provides an additional treatment potential for various populations and client issues including ADHD, anxiety, depression, stress, externalizing behaviors, and more.

Furthermore, there is a gap in the research of the use of nature interventions with individuals with a disability. According to the DSM-5 (2013) neurodevelopmental disability includes intellectual disabilities, communication disorder, autism spectrum

disorder, attention deficit hyperactivity disorder, learning disorder, and motor disorder. Current studies looking at individual's interaction with nature have shown to promote positive self-worth (Richardson, Richardson, Hallam, & Ferguson, 2019), improve physical health (Kardan et al., 2015), and have restorative qualities that promote greater life satisfaction (Biedenweg, Scott, & Scott, 2017). Interaction with nature also showed a decrease in pathological symptoms in clients, such as lowered symptoms of ADHD, depression, stress, and anxiety (Faber, et al., 2011; Unruh & Hutchinson, 2011). An outdoor mental health counseling approach for individuals on the autism spectrum or an intellectual disability has the ability to be a useful approach for counselors working specifically with this population. The EcoWellness model provides an outline to integrate nature into counseling to obtain optimal client outcomes.

Currently, there is one single case study relating to nature-based counseling that examines the effectiveness of a nature based child centered play therapy treatment (Swank et al., 2014). The study resulted in an effect for two out of four participants, although with significant flaws in the data analysis and use of single case methodology. Methodological considerations include the lack of protocol for the use of nature and limitations in the interpretation of results such as small number of baseline points and interrater bias. Although it is evident through the literature that there is a connection between physical environment and mental wellbeing there is a lack of articles that examine the use of a nature interventions through single case research designs (Guite, Clark, & Ackrill, 2006). Consequently, the use of EcoWellness in counseling can result in positive outcomes for clients through the integration of both counseling and nature for

individuals with a neurodevelopmental disability (Baker, 2002; Howell, Dopko, Passmore, & Buro, 2011; World health organization, 2001).

Problem Statement

There is a gap in the literature of any EcoWellness specific interventions, the effectiveness of such interventions, or any nature-based counseling intervention that focuses on individuals with a developmental disability. The populations in which nature-based counseling interventions have focused on consist of veterans, young children, and youth (Anderson et al., 2018), addiction and recovery (Bennett et al., 1998), school settings (Faber et al., 2011; Chiumento et al., 2018), homeless women (Norton et al., 2020), and families (Norton et al., 2019). In this study we tested a manualized treatment for an EcoWellness intervention with young adults with a developmental disability. The results of this study can be useful for counselors and provide a way for counselors to utilize EcoWellness practices in their work with this population. Additionally, on a client level there is potential for clients to obtain positive outcomes in terms of psychological wellbeing as a result of an EcoWellness intervention.

Constructs of Interest

EcoWellness

EcoWellness was developed by Reese and Myers (2012) and expanded upon in later years. The EcoWellness model allows counselors to promote healing and wellness through nature integration. Reese et al., (2015) later expanded EcoWellness by testing the validity of different EcoWellness subsets. The study resulted in seven subsets that make up the EcoWellness construct. The subsets of EcoWellness include physical access, sensory access, connection, protection, preservation, spirituality, and community

connectedness (Reese et al., 2015). Each of these subsets is measured in the Reese EcoWellness Inventory (Reese et al., 2015). By measuring the client's level of each of these subsets, it provides a starting point for counselors in developing an EcoWellness treatment plan for the client.

Nature

Furthermore, nature is a construct because it can mean something different from one person to the next (Reese, 2018). As such, when developing an EcoWellness model, it is important to identify what nature means to the client. Nature can be a few trees that are outside of an apartment complex, potted plants in a home, a nearby park, a local walking trail, an animal a client connects with, or a full immersion into the natural world through a hike in the mountains. It is important to ask the client what nature means to them and decide how to incorporate the client's definition of nature into the counseling process. A client can expand their EcoWellness through connection with nature either alone or with company (Reese, 2018). For the purpose of this study, college age is defined as any individual between the ages of 18-24.

Developmental disability

Finally, according to the DSM-5 (2013), a developmental disability, also called neurodevelopmental disability includes intellectual disabilities, communication disorder, autism spectrum disorder, attention deficit hyperactivity disorder (ADHD), learning disorder, and motor disorder. For the purposes of this study, individuals are primarily be diagnosed with either autism spectrum disorder or intellectual disability. In some instances, ADHD may be co-occurring.

Psychological well-being

According to Ryff's (1989) six factor model of psychological wellbeing, there are a number of factors that contribute to a person's wellbeing, contentment, and happiness. The six factors include positive relationships with others, environmental mastery, personal growth, autonomy, a feeling of purpose and meaning in life, and self awareness. A balance of these six factors contributes to an increase in happiness and wellbeing (Ryff, 1989).

Research Question and Hypothesis

The purpose of this study is to utilize a multiple probe single case research design across participants to test the effectiveness of an EcoWellness intervention for college age individuals with a developmental disability. Single case design is useful for this specific study because it is testing out the impact of a new intervention. Single case design will allow me to determine if the intervention is effective for this specific population (Ledford & Gast, 2018). The research question pertaining to the study is:

1. What is the effect of an EcoWellness intervention on psychological wellbeing for college age individuals with a developmental disability?

I hypothesize that the EcoWellness intervention will improve the psychological wellbeing for participants with a developmental disability.

Method

Research Design

Single case research design, more specifically multiple probe design, is being used for the purposes of my study. Multiple probe single case research design uses a staggered implementation of the intervention to demonstrate a causal impact of the intervention. Similar to between groups experimental research designs, single case

research can demonstrate causality and generalizability if properly conducted as the individual participants act as their own control group (Kratochwill et al., 2010).

Typically, single case is used when testing the effectiveness of a new intervention, if the population being studied is a small group of people or recruitment is difficult, or the intervention is new and is being utilized on a small sample size to assure there are no adverse effects before testing it on a larger sample size (Kazdin, 2011). The nature of my study fits well with a single case research design because the intervention being tested is newly developed and has not previously been tested on other participants. Additionally, the research question looks at the effectiveness of the intervention for a specific population of individuals. The multiple probe design is being used because it can be implemented across participants in a staggered fashion. Typically, multiple probe or multiple baseline designs are used when the dependent variable cannot be reversed. Multiple probe differs from multiple baseline because the dependent variable will be measured intermittently as opposed to every session like a multiple baseline design. The advantage of an intermittent testing is that it allows for participants to have a break in the consistent measurement so as not to be burned out from the measure (Kazdin, 2011).

Dependent and Independent Variables

In single case research design, there are operational definitions of the observable behaviors in the study as well as a discussion on the recording system used to measure interobserver agreement (Kazdin, 2011). However, since I am using unobservable constructs and self report measures to measure my dependent variable, I defined my constructs above based on definitions in the corresponding literature.

Dependent Variable

The dependent variable for the study is psychological wellbeing, developed by Ryff (1989) and later expanded to become a model of counseling by Fava (1999). Psychological wellbeing is defined as contentment and happiness with their life. Psychological wellbeing is measured based on the six subsets mentioned above. I am measuring psychological wellbeing using the psychological wellbeing scale developed by Ryff (1989). The psychological wellbeing scale is a self-report assessment with questions about an individual's wellbeing that coincide with the six dimensions. I aim to use the traditional version of the measure (42 questions) rather than the short form (18 questions) because the short form has lower internal consistency and does not measure all of the wellbeing subsets making it difficult to determine in what way I should be using EcoWellness interventions. Due to the long measure, I am utilizing a multiple probe approach in my study design to prevent testing fatigue.

Independent Variable

The independent variable is the EcoWellness intervention. The intervention is in a manualized format to make it easy to replicate for other studies. Additionally, the manualized treatment will allow for treatment fidelity, so the intervention is implemented accurately and as planned (Ledford & Gast, 2018). Furthermore, to increase the treatment integrity of my study, I had an outside counselor observe an audio recording to assure that I implemented the IV as it was supposed to be implemented. The outside observer recorded the data on the amount of time I utilize a nature specific technique from the manual. At least 30% of the sessions were observed to account for fidelity of implementation (Ledford & Gast, 2018).

The EcoWellness intervention intertwines the seven subsets of EcoWellness (Reese & Myers, 2012) with the six components of psychological wellbeing (Ryff, 1989). The seven subsets of EcoWellness include psychical access, sensory access, connection, protection, preservation, spirituality, and community connectedness. The six subset of psych wellbeing are positive relationship with others, environmental mastery, autonomy, purpose in life, personal growth, and self acceptance (Ryff, 1989). After looking at the individuals scores on the psychological wellbeing subsets, I began to systematically integrate nature into the counseling process that focuses on enhancing aspects of their wellbeing utilizing nature.

Participants and Setting

The participants for the study included individuals in a large southeastern university enrolled in a four-year inclusive post-secondary education program for individuals with developmental and intellectual disabilities. I met with three consenting participants for an hour each week to implement the EcoWellness intervention. I identified appropriate participants for the study by administering the Psychological Wellbeing Scale before starting with sessions (PWBS; Ryff, 1989). Once this scale was administered, I chose three participants who scored the lowest on the scale to make sure I provide the intervention to those in need as well as assuring I give the EcoWellness intervention an opportunity to show an effect. I recruited three participants for the study, because there needs to be at least three points in the study in which I can make a causal inference (Kratochwill et al., 2010).

Participants included two females and one male, age ranging from 18- 22. Two participants are Caucasian, and one participant is Biracial. Official diagnoses included

Autism spectrum disorder, Fragile X syndrome, speech impairment, and learning disability.

Instrumentation

Typically, in single case research design direct observation is used for measurement purposes. For the purposes of my study, I utilized a self-report measurement to measure my dependent variable. The instrument being utilized for measurement of psychological wellbeing is the psychological wellbeing scale (PWBS; Ryff, 1989). The PWBS is developed to be 6th-8th grade reading level and take 6-8 minutes to administer. The scale is 42 items long and measures the six subsets of psychological wellbeing on a Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The six aspects of wellbeing include autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff et al., 2007; adapted from Ryff, 1989). If an individual scores low in autonomy they will tend to rely on others to make decisions for them and conform to social pressure. If an individual scores high in autonomy, they are self-determining and feel confident in making important decisions for themselves. A high score in self-acceptance has a positive attitude towards themselves and their past self, a low scoring individual in self-acceptance would feel negative about themselves and their qualities. A high scoring individual in positive relationship with others has healthy and fulfilling relationships and a low scoring individual would find it hard to trust people or has difficulty engaging in healthy relationships. An individual scoring high in environmental mastery is confident with their surroundings and can navigate activities and resources available to them, a low scoring individual has difficulty managing their everyday life, is unaware of available

resources, and lacks a sense of control. A high scoring individual in purpose in life has goals, a sense of direction, and a feeling of purpose in life. A low scoring individual for this category lacks a sense of meaning in life, has few goals and no sense of direction. Finally, an individual who scores high in personal growth continues to develop, challenge themselves, foster growth, realize their potential, and increase their self-awareness. An individual scoring low in this section is not progressing with their goals and feels bored or uninterested in their life.

The psychometric properties have been tested with the PWBS on various populations including adolescents and adults, individuals from lower socioeconomic status (Ryff & Keyes, 1995; Curhan et al., 2014), Latinx college students (Gloria, Castellanos, Scull, & Villegas, 2009), African Americans living in New York, and Mexican Americans living in Chicago (Ryff, Keyes, & Hughes, 2003). I am utilizing the 42 item scale because it has stronger psychometric properties than the short version. Additionally, the 42 item scale has seven questions for each of the six constructs to get an idea of how each individual measures in the six aspects of wellbeing.

The psychometric properties of the scale include a .93 internal consistency and .85 test-retest reliability of the self-acceptance domain. Positive relationships with others obtained a .91 internal consistency and .83 test-retest reliability score and autonomy obtained a .86 internal consistency score and a .88 test-retest reliability score. Environmental mastery obtained a .90 internal consistency and .81 test-retest reliability. Purpose in life obtained a score of .90 internal consistency and .82 test-retest reliability score. Finally, personal growth obtained a .87 internal consistency and .81 test-retest reliability score (Ryff & Keyes, 1995; Ryff & Singer, 2006).

Additionally, the outcome rating scale (ORS; Miller & Duncan, 2000) was utilized as an additional measure to further reflect the participants perspective of their change or improvement each week. The ORS consists of four visual scales that measure how the participant perceives their level of functioning each week. The four areas measured include personal wellbeing, interpersonal wellbeing (family and close friends), social wellbeing (work, school, and friends), and an overall general sense of wellbeing. The psychometric properties of the ORS include a high internal consistency with a coefficient alpha of .93 and .97 (Bringhurst et al., 2006). Test retest reliability was shown to have a more moderate to high estimate of .80 to .84 (Bringhurst et al., 2006). Concurrent validity of the ORS showed to have consistent moderately strong correlations with the Outcome Questionnaire 45.2 with correlations ranging from .57 to .69. Finally, Bringhurst et al., (2006) found through a factor analysis that the one factor model of the ORS is shared with other similar outcome measures.

Finally, the Session Rating Scale (SRS; Miller et al. 2002) was used at the end of the 8-week intervention as a way to measure therapeutic alliance throughout the intervention period. The scale consists of four items to measure therapeutic alliance including therapeutic relationship, goals and topics, approach to treatment, and overall rating. The psychometric properties of the session rating scale include a high degree of internal consistency (.90) when compared to the Helping Alliance Questionnaire (HAQ-II; Luborsky et al., 1996). The overall test retest reliability of the SRS is .64 and the concurrent validity when compared to the HAQ II is .48, providing evidence that they are measuring the same construct.

Data Collection

To begin, the participants baseline will have to be measured over the course of at least 3-5 weeks or until a stable baseline pattern is developed (Kazdin, 2010). I established a baseline by administering the scale once a week to participants and gathered baseline data with no intervention. No intervention meaning, I provide psychoeducation and listening support but did not implement any specific counseling techniques to increase wellbeing. Additionally, I did not utilize any nature related or EcoWellness based interventions. Once a stable baseline pattern was developed, I used a random number generator to randomly select the first participant to start the individual EcoWellness intervention. The interventions were implemented at staggered intervals to account for maturation and history validity (Heppner et al., 2018). At the end of each session, I gave the participant the Psychological Wellbeing Scale. I kept track of the reported data from the scales in an excel spreadsheet.

Materials

The materials needed for the study include the self-report survey used to measure psychological wellbeing, the outcome rating scale, and the session rating scale. Additionally, audio or video recording equipment are needed in order to account for treatment fidelity checks throughout the implementation of the intervention. Finally, materials to enhance the intervention such as plants, pots, paint and coloring supplies were purchased.

Procedures

As previously mentioned, the single case research design is most often used when testing the effectiveness of a new intervention on a specialized population of individuals

(Kazdin, 2011). This study meets the criteria for the use of a single case research design because it tests the effectiveness of a new EcoWellness intervention on a small and specialized population of individuals. The use of a multiple probe design allows for repeated measures across participants with the use of intermittent measurement in order to reduce threats to validity. Without the use of multiple probe, possible threats to validity would include testing fatigue or diffusion of treatment. Once participant one established a stable baseline, they moved into the intervention phase. For the participants following, once they established a stable baseline, they move into the intermittent measurement of baseline (Kratichwill et al., 2010).

Baseline Condition

The purpose of the baseline condition is to ensure that the independent variable is isolated in order to reduce external factors and conclude that the intervention is causing a change in the DV (Kazdin, 2011). Therefore, during the baseline condition there will be an absence of any EcoWellness counseling intervention. During the baseline phase, participants will engage in psychoeducational opportunities with no specific counseling intervention implemented so as not to impact the stable baseline pattern. Participants will engage in individual sessions, once a week, for one hour, until a stable baseline is established. These counseling sessions were held indoors, in a counseling room that consists of no windows and a couch and two chairs. In order to isolate the independent variable, there was no use of nature for therapeutic purposes during baseline condition.

The counselor implementing the baseline and intervention conditions is a third-year doctoral student and a nationally certified counselor. Additionally, the implementor holds a licensed professional counselor associate title in South Carolina. The

implementor will also be getting biweekly supervision from a licensed professional counselor supervisor (LPC-S) to provide an unbiased look at the implementation of the baseline and intervention condition to account for treatment fidelity and the ethical implementation to uphold the standards of the counseling field. In the intervention phase, I utilized a cognitive behavioral theoretical lens (Beck, 1995) in order to uncover core beliefs and automatic thoughts that hinder the wellness of an individual related the Ryff's (1989) model of psychological wellbeing.

Intervention Condition

The intervention condition is similar to the baseline condition with the exception that the participants will engage in an EcoWellness intervention. The participants moved from check in meetings to counseling with the EcoWellness model in order to enhance their wellbeing. The intervention was implemented with participants during a one-hour session, once a week, for the duration of the intervention period. The intervention took place in an outdoor setting with minimal distractions of man-made structures in order to enhance the integration of nature. The outdoor setting was in various areas on the University of South Carolina campus, or if transportation allows, in surrounding community parks or nature preserves. If the weather does not permit being outside, nature was integrated in an indoor counseling room through the use of other sensory inputs such as bringing in smells of nature, doing a nature related visualization exercise, or listening to nature sounds on a computer.

The EcoWellness intervention is based off of Reese and Myers (2012) EcoWellness model. At the start of the intervention period, the participants were asked to provide their own definition of nature and how it has played a role in their lives. I then

took this definition of how they want to integrate nature into their lives and use aspects of nature in order to enhance psychological wellbeing. I then began implementing the EcoWellness intervention by using nature in a therapeutic way that promotes an increase in psychological wellbeing. Appendix A displays the intervention manual along with a chart with the EcoWellness domains and definitions and the psychological wellbeing domains and definitions to provide a visual of how these two constructs coincide with each other. It should be noted that this is merely a guide and different aspects of each model can match with various domains.

Depending on the needs of the client, I implemented the EcoWellness intervention in a variety of ways. The following are examples of how the intervention can be implemented based on each of the seven domains of EcoWellness:

Physical Access

Physical access to nature can be implemented with a participant through simply being in an outdoor setting. This could be through walking or sitting in an outdoor area that enhances the participants' feelings of being physically comfortable and safe in an outdoor setting. I can discuss with the client how they can access outdoor spaces that are enjoyable to them while not in session, in order to provide the client with a space to return to outside of session.

Sensory Access

I can use nature to increase sensory access by accessing nature through all of the senses. Techniques such as practicing mindfulness or being present and aware of surroundings through the use of smell, listening closely, and identifying the sounds when outdoors. Additionally, identifying colors found in nature, wildlife that can be found, the

way different trees look, and so on. Furthermore, objects of interest can be found and held by the client in order to practice mindfulness in feeling different textures. This can also be utilized in an indoor setting if the weather does not permit being outside by having the clients bring in a nature related object that has meaning to them. Or exploring the natural world through nature sounds on a computer or through pictures.

Community Connectedness

I can promote community connectedness by encouraging a felt sense of community with others while in nature. This could be assigning homework to go on an outdoor walk or picnic with a friend or joining a community garden or other outdoor club offered at the university. Additionally, other techniques such as role-playing interactions with friends in an outdoor setting, or using caring for nature (i.e. an indoor plant or garden) as a way to relate to how you might care for a friend or work at other relationships in the participants life.

Protection

I can use the EcoWellness framework to promote protection by utilizing an outdoor obstacle in order to develop a sense of accomplishment and confidence in navigating the environment. An obstacle may consist of a physical challenge such as a hike for a certain number of miles, attempting an indoor rock climbing wall, or walking in a park for a certain number of minutes. This obstacle will largely depend on the abilities of the participant and providing them an opportunity in which they will be successful. Additionally, this could also be promoted through the use of enhancing self efficacy skills in an outdoor setting whether through survival skills in the wilderness or learning the uses of different plants or flowers.

Spirituality

I can promote spirituality by having the participant practice gratitude for nature and what the natural world can provide whether it is nourishment, beauty, or physical health benefits. Additionally, spirituality can be promoted through awe experiences in nature such as watching a sunset or growing food to eat. Additionally, spirituality can be fostered through connecting with an individual's higher power while in the natural setting, or having a discussion about core guiding values and how these values can develop in a natural environment.

Connection

I can implement the EcoWellness intervention to promote connection by having the participant identify metaphorical objects in nature that may represent certain experiences in their past, current feelings or mood, or to describe aspects of the identity. Having the client identify ways in which they relate to nature and use nature in a way that provides a sense of grounding and reconnection to the natural world. This can be through disconnecting from everyday stressors during the hour session. Examples of disconnecting may include emotionally distancing from the social pressure or anxiety about being around others or the use of social media. Additionally, connection can be increased through discussing the different aspects of the client's identity and how nature relates to this. Connection might also include developing or revisiting an emotional connection and individual holds to a certain outdoor space, tree, plant, or animal.

Preservation

Finally, I can implement the EcoWellness intervention to promote preservation by showing the participant things in nature they can control, such as planting trees or

growing a garden, and things they cannot such as the weather and relating it back to their life. Additionally, I can work with the client to identify areas of the natural world the individual cares about and encourage involvement in global initiatives or local efforts to care for the natural world and advocate for the needs to various species or other natural elements to foster a sense of purpose and meaning in the participants life.

Treatment Fidelity

Treatment fidelity refers to the strategies used to evaluate the extent in which the intervention was implemented as it was intended or planned (Ledford & Gast, 2018). The treatment fidelity procedures included audiotaping of sessions and review of 30% of the recordings or 12 sessions in total as recommended by Ledford and Gast (2018). One outside observer, a doctoral level counselor, completed fidelity checks to ensure the intervention was being implemented as planned, utilizing a fidelity checklist, located in Appendix B. Additionally, I reviewed the audio recordings using the fidelity checklist. After comparing scores from the checklist for each portion of the intervention, the inter-observer agreement (IOA) was 100% and after comparing the marked checklist, the procedural fidelity of the study completed 40 out of the 42 markers in the fidelity checklist, meaning the procedural fidelity of the study was at 95%. There were two markers missed in which the implementor forgot to ask for informal feedback at the end of the session.

Threats to Validity and Social Validity

There are a number of threats to validity that were accounted for throughout the study (Ledford & Gast, 2018). The first threat I will need to be aware of is history. A history threat involves another outside event coinciding with the intervention. I

documented any big life events with participants and was aware of social and cultural influences that may have occurred during intervention implementation. Overall, the biggest event that may have impacted scores was the school holiday breaks in which participants would leave campus for a number of days at a time. Additionally, I will have to be aware of maturation throughout my study. Since all the participants are in their freshman year of college, maturation has the potential to be most influential to my study because throughout the time participants spend being away from their comfortable environment, they begin to adjust. Meaning there is potential for their psychological wellbeing to improve over time due to the fact that they are adjusting to the new environment. I will control for an instrumentation threat by measuring the DV in the same way over the course of the intervention. I will utilize the same measurement tool across participants and keep track of their answers in a visual plot. Furthermore, I will control for a testing threat to validity by utilizing a multiple probe design. This allows for the measure to be administered periodically to participants instead of every week after a stable baseline is established. I will give them enough time at the end of the session to complete the assessment, so they do not feel rushed. Finally, I will account for the diffusion of treatment threat to validity by consulting with others when moving from baseline to intervention and implementing the intervention in a staggered fashion in order to obtain at least three causal relationships.

Additionally, I will make sure to incorporate social validity into the study by looking at the importance of goals, the intervention, and the outcomes of the study (Horner et al., 2005). I will make sure to account for social validity of the goals of the intervention by collaborating with each of the participants to utilize nature in a personal

way that is meaningful to them, and they can utilize after the intervention is over. In order to incorporate social validity of the intervention I asked for informal feedback from the participants each week to identify if the intervention procedures are appropriate for their needs and goals. Additionally, I asked for formal feedback at the end of the 8 week intervention from each participant by having them fill out the session rating scale (Miller et al., 2002). Social validity of the outcomes can be identified with subjective evaluation by asking the participants for feedback and also comparing the participants results to other peers. (Ledford & Gast, 2018). Furthermore, Since the dependent variable is not an observable behavior, I will not be utilizing interobserver agreement for reliability purposes but rather I will define my constructs and instruments used to measure them. Finally, I will account for social validity by consulting with other counselors and the feasibility of the use of the EcoWellness intervention in their everyday practice.

Results

Analysis

I began the measurement process for each individual during the first session of the baseline procedures. Once participant one established a consistent baseline, after four weeks, I began to systematically implement the EcoWellness intervention. During baseline, the scale was administered throughout the first couple weeks and then periodically as to not have participants burn out from taking the scale each week. The interventions was implemented at staggered intervals for each participant (Ledford & Gast, 2018).

The goal of the study is to identify a shift in direction of wellbeing. A stable baseline pattern will need to be established in order to detect a change in direction. The

scores on the Psychological Wellbeing Scale, Outcome Rating Scale, and Session Rating Scale were plotted in excel and a visual graph was created for analysis.

Psychological Wellbeing Results

Figure 1 displays the visual analysis graphs for the three participants utilized in the study. Data collection started in late September and participant three finished with the 8 week intervention by early March, lasting approximately 5 months. All clients met for their scheduled sessions each week and remained in the study throughout their time. Since the study involved students at a university, no services were provided during the week of thanksgiving break and throughout the holiday break. Due to the lapse in treatment over the holiday breaks, there is a possibility of a history threat to validity. My research question for the purposes of this study is *What is the effect of an EcoWellness intervention on psychological wellbeing for college age individuals with a developmental disability?* I will take a closer look at trend or slope of the data points, the level, variability between data points, immediacy of effect, overlap, and consistency across participants (Kratchowill et al., 2010; Wolfe et al., 2019).

Visual Analysis

All participants established a stable baseline before implementation of the intervention. Participant one established a baseline with very little variability ranging in scores on the PWBS of 162-169. Participant two had a range of scores in baseline from 179-199 and participant three, in baseline for the longest, scored a range from 137- 164 on their psychological wellbeing scale in baseline.

Level, Trend, and Variability

Participant one was in baseline for four weeks until a stable pattern was reached, and I could implement the intervention. In baseline, participant one shows low variability and a level of 165.25, meaning on average participant one reported their psychological wellbeing scores to be 165.25 out of 247. The highest score when taking the Psychological Wellbeing Scale (Ryff, 1989) is a 247 and the lowest score is 47. Additionally, participant one displayed a neutral slope. Moving into the intervention phase, participant one shows low variability of data, a level of 198 which is a 32.75 level increase from baseline. Participant one displays a slightly positive slope, meaning it can be predicted that there will be a continued positive trend in the data. Overall, participant one does display a basic effect.

Participant two had five multiple probe measurements before starting intervention. In baseline, participant two displays some variability of the data in baseline. The level or the average scores on the psychological wellbeing scale (Ryff, 1989) in baseline was 189.8. Additionally, there is a neutral slope meaning there is no positive or negative moving trend. Participant two had to cancel the meeting before intervention was started so a limitation is that there is no additional point in baseline. Moving into intervention phase, participant two also displays low variability in data points, a level increase to 197.25, and a slightly positive slope of data. Participant two had a level increase of 7.45 points on the psychological wellbeing scale. Overall, participant two does not show a basic effect. Although there is a slight positive slope to the data in intervention phase, there are not enough data points to confidently state there is a basic effect.

Finally, participant three had eight measurements of psychological wellbeing in baseline and displays low to medium variability of the data. The level in baseline is 152.5, meaning on average, this participant scored 152.5 out of 247 for psychological wellbeing. There appears to be a neutral slope to the data points in baseline. Moving into intervention phase, there is medium to low variability of data and a level increase to 162.43, meaning there was a 9.93 overall level increase from baseline to intervention. Additionally, there is a neutral to positive seeming trend of the data in intervention phase. Overall, there was a 9.93 level increase but does not appear to show a basic effect based on trend of the data.

Participants two and three show a large number of overlapping data, whereas participant one does not have any overlapping data points, indicating a stronger effect. Participants one and three display an immediacy of effect from baseline to the first intervention data point. Participants one and two display an upward trend in data points once the intervention is implemented and participant three shows a very slight upward trend and increased stability of the data. Overall, based on the data there is not a functional relationship between the EcoWellness intervention and psychological wellbeing.

Social Validity

Based on the scores from the session rating scale (Miller et al., 2002), all participants rated a 10 out of 10 for each section. The sections include therapeutic relationship, goals and topics, approach to treatment, and overall rating. Meaning, there was a strong therapeutic alliance, the participants all felt they got to choose goals that were relevant to them, they enjoyed the approach or the nature-based aspect of the

intervention, and overall felt happy with the sessions. Based on informal feedback from participants, participants stated it made sessions more fun and was helpful in finding ways to destress. The positive scores on the session rating scale (Miller et al., 2002) relates to social validity because the participants felt the goals they created were relevant to them, the environment can foster a therapeutic environment, and they felt it could be helpful to their wellness.

Discussion

Main findings

Overall, there is not enough preliminary evidence to support the use of this EcoWellness intervention for clients with developmental and intellectual disabilities. Since there are not three basic effects, we cannot conclude a functional relationship, meaning it cannot be determined that an EcoWellness intervention causes an increase in psychological wellbeing for young adults with developmental and intellectual disabilities.

Three participants engaged in an 8 week EcoWellness intervention that was developed to focus on increasing the psychological wellbeing of individuals with a developmental disability. The EcoWellness intervention was developed based on the theoretical components of psychological wellbeing (Ryff, 1989) and intertwined to incorporate the EcoWellness model into a synthesized intervention that allows for future replication and fidelity checking.

The primary method of analysis for single case design in visual analysis (kratochwill et al., 2010). Utilizing this method to analyze the trend, level, and variability of the data, along with overlapping data and immediacy of effect, confirmed the

conclusion that there is not a causal relationship between the EcoWellness intervention and psychological wellbeing. Based on the visual analysis, there is a basic effect for participant one although no basic effect for participant two and three. However, participant one and two show a positive upward trend in the data in intervention phase. Furthermore, all participants demonstrate a positive level shift from baseline to intervention phase. Participant one had a level increase in the average scores on the PWBS (Ryff, 1989) being 32.75 points higher in the intervention phase. Participant two demonstrated a 7.45 level increase in scores on the PWBS during the intervention phase as well as participant three showing a 9.93 level increase in intervention phase.

While we cannot conclude a functional relationship between psychological wellbeing and an EcoWellness intervention, there is some positive support for its use with clients. The positive direction of the data supports previously completed nature-based intervention literature (Anderson et al., 2018; Bennett et al., 1998; Faber et al., 2011; Chiumento et al., 2018; Norton et al., 2019;2020). This specific intervention differs in that it utilized a manualized intervention to allow for fidelity checking and control of outside variables. Using a manualized intervention can help determine where the change is taking place, displaying that there is some slight positive correlation between nature and psychological wellbeing.

Limitations

The limitations of the study include the threats to validity. First, history threat involves an outside event coinciding with the intervention. Since there were multiple weeks that interrupted the implementation of the intervention due to the university holidays, it is possible that those weeks off may have impacted the data. Furthermore,

since all participants were freshman, it is possible that maturation had an impact.

Meaning, psychological wellbeing may have gone up simply because the participants were adjusting to college life and being independent.

Additional limitations, include the timing of the intervention, many of the sessions were during the winter months. As a result, a couple of the sessions needed to be in indoor settings due to inclement weather so nature was integrated through sensory access rather than physical access. Additionally, there was a tight time frame on the study so there were only three participants and since not all three of the participants displayed a basic effect, the intervention cannot be determined to have a functional relationship. Finally, since the intervention has first been utilized for individuals with a developmental and intellectual disability, it impacts the generalizability of the study to other populations.

There are a number of limitations that comes with single case research design including, (a) the amount of time participants have to stay in baseline in a multiple probe design. This can result in testing fatigue and lack of motivation during our baseline meetings. Additionally, (b) testing effects can have an impact because participants were taking two measurements each week, one of them being a long 42 item measure; (c) the subjectivity of visual analysis; and finally, (d) the possibility of threats to validity since this occurred in a natural setting rather than a setting with a large amount of control over variables. However, this does strengthen the applicability of using this intervention for practicing counselors. Single case research design typically utilizes direct observation of overt behaviors, however, for the purposes of this study non observable constructs were utilized such as psychological wellbeing and needed to be assessed with a self-report measure. Since direct observation could not be utilized, I had to rely on the strong

psychometric properties of the surveys being utilized as well as hope the participant is honest in their responses. The psychological wellbeing scale (Ryff, 1989) was not normed for continuous use on the same individual in intervention studies, so to increase reliability, the outcome rating scale (Miller et al., 2002) was used in conjunction with the PWBS.

Implications for future research and practice

The implications for the study in regard to practice is, although there was no functional relationship, there are still upward trends in the level of the data meaning participants did improve on their average PWBS scores from baseline to intervention. With more client outcome research in this area, improvements can be made to the manual in order to promote optimal scores. Based on the social validity of the data, participants all seemed to enjoy the intervention suggesting that it could be used in conjunction with counseling when working with individuals with developmental or intellectual disabilities. Although there is not three basic effects, there are some positive trends in the data when utilizing an EcoWellness intervention. Furthermore, this could impact the field of research in nature-based fields of counseling because it is a manualized intervention that allows for replication of the study. More research is needed in testing the intervention with various populations and settings.

Conclusion

The current study utilizes a multiple probe single case research design to test the effectiveness of an EcoWellness intervention on individuals with a developmental or intellectual disability who are enrolled in an inclusive post-secondary education program. An EcoWellness manual was created for the purposes of this study to enhance

psychological wellbeing. The results of this study do not indicate a functional relationship but there are some positive trends in the data to suggest with more research and work on the manual, this could be a useful intervention.

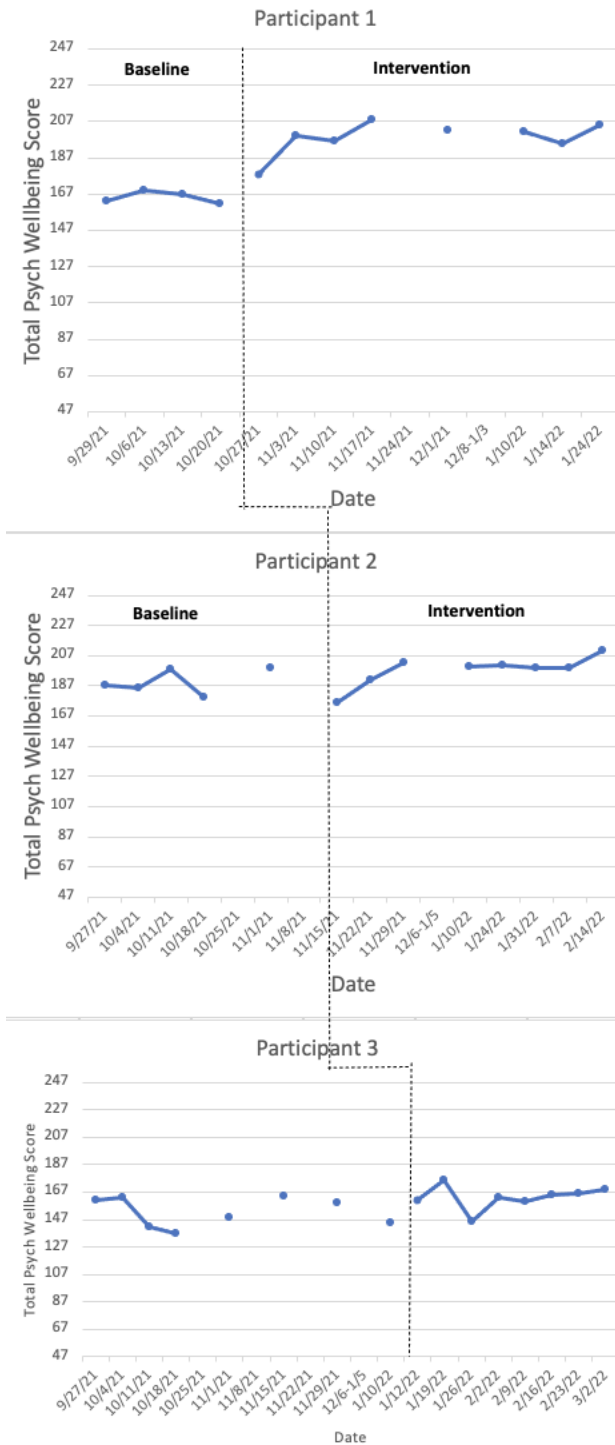


Figure 4.1

Participant Psychological Wellbeing Scores

Chapter 5: Discussion

Results

Study One Results

The conclusions drawn from the systematic review indicate preliminary evidence for support of nature-based interventions in the counseling process. Sixteen articles we reviewed indicated that clients experienced improvement on outcome measures used in the studies. For example, several studies reported improvement in client overall functioning and symptom distress. Additionally, all but one study found improvement in positive aspects of mental health such as self-esteem or overall well-being. However, the lack of a standardized treatment in all of the studies makes it difficult to determine if the outcomes are due to the nature intervention, the counseling intervention, or a combination of both. Although preliminary evidence exists to support the use of nature for improved mental health and wellbeing, the overall lack of standardization across nature and counseling interventions makes it difficult to discern how to best replicate the studies for professionals to incorporate nature into their everyday counseling practice.

Study Two Results

The results of study two, the multiple probe single case research design, indicates that there is some evidence to predict positive outcomes from a manualized EcoWellness intervention. However, the data did not display three basic effects meaning we cannot conclude a functional relationship between the EcoWellness intervention and psychological wellbeing. One of the three participants showed a basic effect meaning

there was change detected in the psychological wellbeing scores as measured by the psychological wellbeing scale (Ryff, 1989). However, all three participants showed a level change in their data, meaning the mean scores on the PWBS (Ryff, 1989) in intervention were higher than the mean scores of the PWBS in baseline. The average point increase ranges from 7.45 to 32.75. The results also address the need for nature-based intervention research with individuals diagnosed with a developmental or intellectual disabilities. The intervention displays some positive support for utilizing nature-based interventions as a way to enhance psychological wellbeing for young adults with a disability but overall are not conclusive.

Implications for Counseling

Implications of these studies at a client level is that there is a review synthesizing the results from nature-based counseling interventions to conclude they have a positive impact in the counseling room. Counselors will be able to use this review if they are interested in incorporating nature into their practice with clients and would like to review the literature available. Additionally, through this research, we hope to ensure that counselors interested in incorporating nature into their practice with clients are operating with evidenced-based interventions. Counselors seeking to incorporate nature into their practice can identify the variety of methods in which clients engaged with nature and see the strengths and weaknesses of the articles available. This allows counselors to incorporate nature engagement in an individualized capacity and specific to the needs of the client. Further, counselors can use this review as a resource to inform their clients of various nature interventions and consider if their client would benefit from nature engagement programs.

Additionally, a manualized intervention was created for the purposes of this study that showed slight positive outcomes. Meaning, after some additional research, there is potential for a new intervention for practicing counselors to use in session. Practicing counselors have the ability and outline to utilize this intervention with clients who are diagnosed with a developmental disability. This adds to the counselors list of resources and provides an engaging way for clients to build community, autonomy, grow as an individual, build positive relationships with others, accept themselves, and provide meaning and connection. The client population can benefit from this intervention as well as find a safe place in being outside as a protective factor against life stressors.

Implications for Counselor Education

Counselor educators work to provide counselors in training with all the resources and knowledge they will need to be helpful towards a variety of populations and settings. Counselor educators have an additional resource with a succinct list of interventions and outcomes. Counselor educators can provide students with nature as a tool for their practice with clients and have an evidence-based backing for implementing these interventions. Furthermore, counselor educators can supply their students with a manual for implementation and practicing techniques.

Implications for Future Research Direction

Researchers should continue in the development of the EcoWellness manual for different populations. The research in nature-based counseling interventions should move towards a more standardized manual based interventions in order to effectively identify what is creating change within clients. Furthermore, research can expand to the implementation of nature-based interventions within different theories. Researchers also

have the opportunity to continue testing the effectiveness of various nature-based interventions with other non-nature-based interventions to identifying which has the strongest positive outcomes. Furthermore, different settings, populations, pathologies, and more should be tested with the use of the EcoWellness intervention to determine which populations it may be most useful with.

Study One Limitations

There are additional studies that examine the positive effects of nature; however, for the purpose of this review, we only reviewed studies that utilized nature in a counseling setting and utilized a counseling or psychotherapeutic intervention. This eliminated many studies from our scope that examined nature in a way that was unrelated to the counseling field yet may have an influence on individuals' mental health. Utilizing the PRISMA structure to guide our systematic review was helpful in keeping an organized approach and account for bias. However, due to the various number of terms that are used to represent nature and counseling internationally, it may be likely some studies did not come up in our search. Additionally, we included international studies resulting in the possibility of variations in approaches to counseling and use of nature. Finally, there may be limitations with our use of the MMAT for screening articles. The screening tool only allows for binary yes or no options, limiting the depth of quality assessment.

Study Two Limitations

The limitations of the study include the threats to validity. First, history threat involves an outside event coinciding with the intervention. Since there were multiple weeks that interrupted the implementation of the intervention due to the university

holidays, it is possible that those weeks off may have impacted the data. Furthermore, since all participants were freshman, it is possible that maturation had an impact. Meaning, psychological wellbeing may have gone up simply because the participants were adjusting to college life and being independent.

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Appendix A: EcoWellness Counseling Intervention Manual

Preparation:

Session 1: Education and history

Session 2: Goal development and treatment planning

Session 3: Intervention implementation

Session 4: Intervention implementation

Session 5: Intervention implementation

Session 6: Intervention implementation

Session 7: Intervention implementation

Session 8: Intervention implementation

Termination:

Session 1:

EcoWellness and Psychological Wellbeing Education

Goals of session 1:

- Informed consent
- Take psychological wellbeing scale
- Define EcoWellness (what is the EcoWellness model, what will this intervention look like)
- Define psychological wellbeing
- Foster understanding of how these fit together
- Obtain personal definition of nature, discuss possible psychological wellness goals
- Obtain background information

Session guidelines/ Overview:

The initial session will start with an overview of the informed consent, what is EcoWellness, and how will the counselor structure the EcoWellness model to fit the needs of the clients psychological wellbeing. The counselor will begin by providing a definition of EcoWellness and psychological wellbeing. Definitions and additional information is provided in supporting materials.

The client will then take the Ryff Psychological wellbeing scale. Following the scale, obtain the clients nature interaction history. This includes what their definition of nature is, how they like to interact with nature, what are their past experiences interacting with nature, what their reservations are about nature, and what they would like to gain from being outside more. Additionally, it will be important to review the issues of confidentiality and other potential ethical considerations when conducting nature based therapy outdoors.

Issues of confidentiality/ ethical considerations include:

- competency regarding EcoWellness practices and staying up to date with new literature
- Additionally, provide clients with a very detailed informed consent of the additional risks of integrating nature into counseling.
- The informed consent should make note of confidentiality risks of being out in a public place or the possibility of injury

Other questions to ask in the first session:

- What outdoor activities are you drawn to?
- How do they conform to your values and needs for restoration and growth?
- What level of challenge and intensity seems appropriate?

After session:

score the PWB scale and determine their lowest area of psychological wellbeing. Identify and come up with a rough treatment plan that includes their definition of nature, potential interventions and potential goals.

Markers of Understanding:

- Client is able to articulate what EcoWellness, psychological wellbeing, and nature is
- Client is able to articulate the reasoning as to why wellbeing is important and how healthy psych wellbeing can impact their life

Session 2:**Goal Development and Treatment Plan****Goals of session 2:**

- Explain scores of the scale to the client
- Fit the EcoWellness model to their psych wellbeing goals and set areas of focus
- Have the client identify potential goals based on areas of focus they would like to work on.
- Write their goals into a treatment plan for their approval
- Begin discussing what goals to start with

Session guidelines/ overview

After the PWB scale is scored and the wellbeing domains are identified, match up what EcoWellness domains fit with the wellbeing domain. Please see figure 1 for more detail. Work with the client to come up with goals related to wellbeing that can be enhanced through EcoWellness interventions. Create a treatment plan with the client. Example treatment plan is attached under supporting material

Markers of Understanding:

- Client is able to articulate their goals and area of focus in terms of increasing wellbeing utilizing EcoWellness counseling
- Client is able to review and approve treatment plan with counselor in a collaborative effort

Session 3:**Implementation****Goals of Session 3:**

- Begin sessions outside
- Assess comfort level
- Begin developing a sense of connection
- Develop confidence being in an outdoor setting

Session guidelines/ overview:

This session should begin by developing a confidence and connection with nature. For EcoWellness to work, a client should begin to feel comfortable outside. Check in with the client to assure they are comfortable. Begin work by developing a connection to nature. How can the client relate to the outdoors? With a guide of the wellbeing goals working to be enhanced and the EcoWellness domains that work alongside the wellbeing domains, The location of the outdoor setting should largely depend on the what the client is comfortable with. Ideally, it should be a place with optimal privacy and minimal manmade structures.

Session Format and Counseling Approach

This session should work to create a relationship with nature. As the counselor, you are utilizing nature as your cotherapist. Nature should be integrated in a way that allows the client to reflect how they are feeling with nature, process events in their life utilizing nature and so on. One way to start this process is by putting away distractions that take you away from being with nature. Meaning, electronics should be put away throughout the session.

Markers of Understanding:

- Client can express an general level of comfort in being outside
- Client is willing to engage in the process of EcoWellness counseling

Session 4-8

Implementation

Goals of Session 4-8:

- Building on the connection with nature through the use of additional nature based interventions
- Monitor wellbeing of client through asking for feedback and adjusting to promote optimal wellbeing
- Implement appropriate interventions and follow treatment plan to obtain goals of client

Session Guidelines/ Overview:

For the rest of the 8 week intervention with the client, the counselor will be working towards the goals the client set in the beginning of the intervention. The goals will be wellbeing based and will work to increase psychological wellbeing through the use of EcoWellness interventions. In order to do this the counselor can follow the chart below that looks at each of the domains and interventions that go alongside these domains.

Session Format and Counseling Approach:

The intervention can be implemented utilizing any theoretical orientation.

Supporting Material:

Coinciding Definitions and possible interventions

EcoWellness Domains	Definition (Reese & Myers, 2012)	Psychological Wellbeing Domains	Definition (Ryff, 1989; 2014)
Community Connectedness	Feeling a greater sense of connection and caring for other when in natural settings.	Relationship with Others	Warm, satisfying, trusting relationships with others. Is concerned about the welfare of others, capable of empathy, affection, and intimacy. Understands the reciprocal nature of relationships
Protection	nature-self-efficacy, addresses one's ability to safely navigate natural environments as well as feel confident in an outdoor setting	Environmental Mastery	Confidence and mastery in navigating the environment. Make use of surrounding opportunities and resources and create an environment that is suitable to personal needs
Spirituality	Connection to something bigger than oneself or a higher power in nature, including experiences that result in awe and wonderment.	Purpose in Life	Has goals and a sense of self direction. Feels there is meaning to present and past life and has aims and objectives for living.
Preservation	Environmental agency, includes the belief that one is making a positive difference in the natural environment, and makes an effort to engage in an environmental cause	Personal Growth	Has a feeling of continued development. Sees self as growing, open to new experiences, realizes their potential and works to improve self over time.

Connection	Experiential, emotional, or cognitive connection to the natural world and themselves- positive memories of nature, valued time in nature, attachment to a specific outdoor place.	Self Acceptance	Has a positive attitude towards self, acknowledges and accepts various aspects of their identity, and feels positive about past life.
		Autonomy	Self determining and independent. Able to resist social pressures and think and act in ways that are congruent to their values
Sensory Access	having indirect access to nature through one's senses. For instance, having a view of nature from one's place of work, listening to nature sounds on YouTube, or having photos of nature.		
Physical access	Having close physical access to nature by place of residence, work, or where most time is spent		

Termination

Goals of Termination:

- Have the client understand how they can come back to nature without a counselor present
- Go over progress that has been made with the client
- Create an idea for the future and things to continue to work on for the client

Session Guidelines/ Overview:

During the last session, the counselor should focus on connecting the client with any resources needed to continue growth in the outdoors. The counselor will review the progress made with the client and how they feel their wellbeing has changed since beginning the intervention. The counselor should review some of the interventions used so the client can come back to nature in their own way without the counselor. The

counselor should also troubleshoot any potential barriers with the client moving forward without the counselor. The counselor should emphasize progress and strengths throughout this session.

Appendix B: Fidelity Checklist

Session 1	Check if occurred
Explanation of EcoWellness	
Explanation of psychological wellbeing	
Obtain background information on personal definition of nature as well as other background information on experiences with nature	
Discussion of psych wellbeing goals based on PWBS	
Session 2	
Discussion of psych wellbeing scale scores	
Set areas of focus for in terms of psych wellbeing and EcoWellness domains	
Identification of potential goals	
Create treatment plan	
Collaboration on where to start	
Session 3	
Integration of nature through outdoor session	
Assess comfort level in being outdoors by asking client	
Developing a sense of connection and grounding through having the client relate to the outdoors. Counselor asks for thoughts on surrounding, experiences with the outdoors, how they have connected with nature in the past	
Build confidence in the outdoors. Counselor should point out strengths they notice within client and being outside	
Session 4-8	
Nature is fully integrated into the session through use of nature for therapeutic purposes. E.g. sensory connection, metaphorical purposes, observation, how client relates to nature	
Monitor wellbeing of client through check ins with treatment plan	
Asks for feedback at the end of the session	

Appendix C: Session Rating Scale

Session Rating Scale (SRS V.3.0)

Name _____	Age (Yrs.): _____
ID# _____	Gender: _____
Session # _____	Date: _____

Please rate today's session by placing a mark on the line nearest to the description that best fits your experience.

Relationship

I did not feel heard,
understood, and
respected.

I-----I

I felt heard,
understood, and
respected.

Goals and Topics

We did *not* work on or
talk about what I
wanted to work on and
talk about.

I-----I

We worked on and
talked about what I
wanted to work on and
talk about.

Approach or Method

The therapist's
approach is *not* a good
fit for me.

I-----I

The therapist's
approach is a good fit
for me.

Overall

There was something
missing in the session
today.

I-----I

Overall, today's
session was right for
me.

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Appendix D: Outcome Rating Scale

Outcome Rating Scale (ORS)

Name _____ Age (Yrs.): ____ Gender: _____
Session # ____ Date: _____
Who is filling out this form? Please check one: Self _____ Other _____
If other, what is your relationship to this person? _____

Looking back over the last week, including today, help us understand how you have been feeling by rating how well you have been doing in the following areas of your life, where marks to the left represent low levels and marks to the right indicate high levels. *If you are filling out this form for another person, please fill out according to how you think he or she is doing.*

Individually (Personal well-being)

I-----I

Interpersonally (Family, close relationships)

I-----I

Socially (Work, school, friendships)

I-----I

Overall (General sense of well-being)

I-----I

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Appendix E: Demographic Survey

Effectiveness of an EcoWellness Intervention for College Aged Individuals with a Developmental Disability

Directions: Please complete the following general demographics survey (all responses are confidential). Please type in your answers. Feel free to change the formatting or use more space if needed.

Gender: ____ Cisgender Male ____ Cisgender Female ____ Transgender Female
____ Transgender Male

Current Age: ____

Ethnicity: ____ African-American ____ Asian-American ____ Caucasian/White (Non-Hispanic)
____ Hispanic ____ Native-American ____ Pacific/Islander
____ Other

What disability do you identify as having: _____

Appendix F: Informed Consent

Dear Participant,

My name is Olivia Lewis. I am a doctoral student in the Counseling Education and Supervision program at the University of South Carolina. I am conducting a research study and I would like to invite you to participate.

The purpose of this study is to test the effectiveness of an EcoWellness intervention on psychological wellbeing. The only potential risks include the uncertainty when engaging in the outdoor world in terms of injury such as falling or bug bites. Potential benefits include the opportunity to engage in a new manualized treatment that has a strong theoretical grounding and is supported by positive research outcomes. Additionally, contributing to the research on the use of nature for therapeutic purposes. Participants will not be compensated for participation in this study. Participation is voluntary and if you decide to participate, you will be asked to take part in an eight week treatment intervention.

In particular, we will conduct our sessions in an outdoor space with the use of nature for therapeutic purposes, the intervention will be conducted by one counselor and you can withdraw your participation at any time. The meetings will take place at an agreed upon location and will last one hour. Some sessions will be audio recorded so that I can accurately account for fidelity of the study. Verbal consent prior to the audio recording will take place. At the end of each session you will be asked to take two different measures that assess for psychological wellbeing. Data from the assessments will be stored in a locked location with no identifying information. Additionally, all information on a computer will be stored in a password protected file.

Participation is confidential. Study information will be kept in a secure location at the University of South Carolina. The results of the study may be published or presented at professional meetings, but your identity will not be revealed.

We will be happy to answer any questions you have about the study. You may contact me at 267.629.9198 or ojlewis@email.sc.edu You may also contact my faculty advisor, Dr. Jonathan Ohrt at ohrt@mailbox.sc.edu

Olivia J. Lewis, M.A.

Counselor Education and Supervision – PhD Student
University of South Carolina
Ojlewis@email.sc.edu

Name of Participant (print): _____

Signature: _____ **Date:** _____