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Occupational Therapy for Adolescents: A Nature-Based Interventions Approach

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**Occupational Therapy for Adolescents: A Nature-Based Interventions
Approach**

Occupational Therapy for Adolescents: A Nature-Based Interventions Approach

by

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A Scholarly Project

Submitted to the Occupational Therapy Department

of the

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for the degree of

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This Scholarly Project submitted by Amanda Cruze and Myrtyce Remus in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Faculty Advisor

Date

PERMISSION

Occupational Therapy for Adolescents: A Nature-Based Interventions Approach

Department: Occupational Therapy

Degree: Master's of Occupational Therapy

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ABSTRACT

PURPOSE: The first purpose of this scholarly project was to address current trends in relation to adolescents' increased reliance on technology, decreased exposure to natural settings, and utilization of nature in adolescent occupational therapy care. The second purpose of the scholarly project was to provide occupational therapists with an interventions guide for nature-based activities to be used with the adolescent population.

METHOD: A literature review was conducted on adolescents, technology and nature using PubMed, CINAHL, AJOT, OT Search, MESH, Google Scholar, and textbooks.

RESULTS: A review of the literature indicated that the target population, Generation Z, had grown up with increased exposure and availability to technology. Adolescents who engaged in online activities and video games were observed to have increased negative psychosocial and physical effects. With an increased reliance and dependence on technology a decrease in engagement in nature-based activities was observed. Nature has been found to have many positive physical and psychosocial effects. Therefore, occupational therapists can use nature as a medium to benefit adolescent clients physically and psychosocially.

CONCLUSION: Due to the decreased engagement in nature-based activities within Generation Z and the positive psychosocial and physical changes generated through nature-based activities, a manual was developed comprised of nature-based occupational therapy interventions. These interventions were designed for skilled occupational

therapists to implement within adolescent group or individual therapy settings using the Person Environment Occupation Model to guide the intervention process. Many positive aspects of nature were incorporated into the therapeutic interventions and were an influential force in the development of this manual. The benefits of nature include but are not limited to: relaxation, restoration, and increased awareness to sensory stimulation and self. Therefore, the nature-based manual is a useful tool for occupational therapists to address these areas of concern.

CHAPTER I

INTRODUCTION

The reliance on technology for various tasks of daily living has been rapidly increasing throughout western civilization. Less than 20 years ago computers were large, bulky and very expensive. In today's society many households have computers that can be used for many different activities including simplifying daily living tasks with a click of a button (Alking, 2006). However, with the increased availability and reliance on technology the latest generation of children has come to depend on it (Geck, 2006 & Rosen, 2010). The target population for this project is Generation Z, or the i-generation, which is comprised of individuals who were born in the mid-1990s or later (Geck, 2006). This generation of adolescents has grown up using technology in many aspects of daily living.

Computers are used within classrooms to teach math, reading and other school subjects. To support this usage, many computer and video games are readily available and relatively inexpensive to the average family. Parents are using educational video games to assist with their child's learning and help with the education process. However, the increased reliance on video games to entertain and teach children has led to a rapid decline of time adolescents spend outdoors with their peers being both mentally and physically active (Seibre, Jago, Gorely, Ciller, & Biddle, 2011). The lack of nature

within adolescents' lives and the correlation of deficits and disorders that may arise from this infrequency was the primary focus of this scholarly project.

With lack of nature being the primary concern of this scholarly project, the goal was to create a product comprised of meaningful, engaging, and therapeutic interventions that are centralized around the concept of nature and take place outside. These interventions are laid out in a reader-friendly format and can be adapted to various natural contexts based on the region in which the individuals reside. The nature-based interventions are designed to be implemented by skilled occupational therapists. Occupational therapists possess the skills to complete activity analysis and adapt each intervention to the needs of individual clients in order to promote the best possible outcomes. These interventions were also designed for occupational therapists to implement due to their extensive knowledge and skills with both the physical and psychosocial aspects of an individual. Since not all natural environments have the same layout and resources, variations of the interventions are provided to assist the occupational therapist with formulating different ideas to incorporate both the context and the individual or group.

The combination of adolescent reliance on technology contributing to physical and psychosocial deficits, the multiple benefits of occupational participation in nature and the unique skill set of occupational therapists to address aspects of a person, their occupations and environments creates a perfect harmony for this project to be implemented. Although there is literature to describe each of the elements of this project; adolescents, technology, nature and occupational therapy, there is limited literature combining all elements together. Therefore, this scholarly project addresses the skill sets

and intervention techniques that occupational therapists can implement in order to address adolescents and the effects of nature and technology.

In the formation of this scholarly project, a review of relevant published literature on the aforementioned elements was completed. Additionally, the occupational therapy model of Person Environment Occupation was used to guide the intervention and therapeutic process (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996; Turpin & Iwama, 2011). This model was selected due to its unique approach of assessing the person, environment and occupation and how they interact and influence outcomes across a lifespan (Law, et al., 1996; Strong, Rigby, Stewart, Law, Letts & Cooper, 1999; Turpin & Iwama, 2011). The person-environment relationship is comprised of how the person responds to the environment and what impact the environment has on the individual. The person-occupation relationship is comprised of how the task requirements match the individual's abilities as well as self-efficacy, value and perceptions. Lastly, the environment-occupation relationship of the intervention is considered; in this scholarly project, this consisted of the natural outdoor environment and what was necessary within the environment to complete the given intervention (Law et al., 1996; Strong et al., 1999; Turvina & Iwama, 2011). This may include leaves, sand, open area, trails, snow, trees, etc. The Person Environment Occupation model guides the therapeutic process by the analysis of the different relationships and how each relationship can inhibit or promote success for the adolescent in the nature-based intervention setting.

The following are main concepts and terms that can be used throughout the entirety of this scholarly project.

- Generation Z: Also known as the i-generation, consisting of individuals born in the mid-1990's to present day. These individuals were born after the invention of the World Wide Web, and are said to be "connected", communicating through media technology, World Wide Web, cellular devices, etc (Geck, 2006).
- Exergame: A video game that requires the player to interact with the device rather than just pushing a button as in most sedentary video games. An example of a common exergame is *Dance Dance Revolution* (Konami, 1998), which is a game that requires individuals to physically interact and dance with the game while using a controller to track the movements (Gebel, 2012).
- Nature: The external and natural world independent of humans including: trees, flowers, streams, oceans, animals, clouds, weather, etc. (Nature, 2011).
- Person Environment Occupation Model: This model provides a framework to assess the transactional relationships between a person, their environment and the occupations performed across their lifespan. The person is viewed as a holistic being comprised of affective, cognitive, physical and spiritual components. The environment includes cultural, institutional, physical and social aspects. The occupation is viewed as a whole and can be broken down into activities and tasks. The better the fit between the person, environment and occupation, the more successful the client will be. (Law, et al., 1996; Strong, et al., 1999; Turpin & Iwama, 2011)
- Adolescence: The stage of life in which change embeds itself, beginning at puberty until maturity. Puberty affects individuals at different ages, therefore the ages of 10 to 19 will be addressed for this scholarly project.

The following chapters address the key aspects of this scholarly project. The second chapter consists of a literature review comprised of information on the four foundational elements of this project: adolescents, technology, nature and occupational therapy. After the background information is addressed, the actions in which the students took to develop the literature review and nature-based interventions manual is explained in detail in Chapter 3. A copy of the nature-based interventions manual will directly follow the methodology. Lastly, a summary to highlight the purpose as well as the findings will conclude the scholarly project.

CHAPTER II

LITERATURE REVIEW

Introduction

As society continually changes, develops, and evolves, it is crucial that occupational therapy mirrors these changes to remain client centered, innovative and current with best practice. Presently, one major societal shift in industrialized and developed countries is the shift to the dependence and reliance on technology. This shift is greatly reflected through the adolescent population. Adolescents' dependence on technology has positive and negative impacts on their daily lives (Divian, Kheifets, Obel, & Olsen, 2012; Fischer, Aydin, Kastenmuller, Frey & Ficher, 2012; Gevel, 2012). Positive impacts of technology are well recognized, publicized and are common knowledge to most. However, the increasing numbers of negative impacts are unknown to much of the overall population (Divian et al., 2012; Fischer et al., 2012).

With the increased dependence on technology, adolescent's engagement in nature and natural settings has greatly decreased resulting in negative mental, social and physical outcomes (Louv, 2011; Stevens, 2010). Occupational therapists have the responsibility to address environmental and contextual factors that are affecting treatment populations, and incorporating nature into therapy is one way to promote the positive well-being of adolescents. The purpose of this scholarly project is two-fold. First, to identify the relationship between adolescents, technology, nature and occupational

therapy and address deficits caused by adolescents increased engagement in technology and decreased engagement in nature. Second, the purpose is to develop a nature-based interventions manual for occupational therapists to use with adolescents.

Person Environment Occupation

The model of Person Environment and Occupation (PEO) was used to guide the scholarly project process. This model is sufficient for the purposes of analyzing the relationship and interconnectedness between the adolescent population, their environment as well as the occupations in which they engage in. The interaction between the person, environment and occupation is described as “transactive” meaning “the person and environment are interdependent and a person’s behavior cannot be separated from the context within which it occurs. Therefore, occupational performance is a context-, person-, and occupation-specific process. It is the result of particular people doing particular things in particular times and places” (Turpin & Iwama , 2011, p101). The unique aspects that the PEO model is comprised of provide a well-constructed foundation for the development of interventions for the adolescent population. The PEO model addresses the affective aspect of the person, such as their motivation, thoughts and feelings towards an occupation, as well as the cognitive, spiritual and physical components. This model can be used among different populations and looks at development across the lifespan with an emphasis of creating skills for a lifetime. The PEO model is an exceptional fit within this scholarly project as it allows the adolescent to see how the changes between the person, environment and occupation can increase occupational performance and gives adolescents the tools to continue these changes

throughout their lifetime (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996; Turpin & Iwama, 2011).

Adolescence

Adolescence is a stage of life in which change embeds itself. It is defined as “the period from the beginning of puberty until maturity” (Venes, 2005, p51). Because puberty affects people at different ages, the ages between 10 and 19 will be used as the primary age range of adolescence for this project. Humans change immensely during this time. Due to the release of hormones, adolescents grow and develop male and female secondary sex characteristics. They build larger muscle mass and coordination increases (Vroman, 2010).

Another change that many people do not commonly identify during adolescence is the further development of the brain's pre-frontal cortex (National Institute of Mental Health, (NIMH) 2011b). The prefrontal cortex is an area of the brain highly involved in decision making. As this area is developing, the regions controlling more simple tasks develop first, such as the regions that process sensory information and movement control. The last areas of the brain to develop and mature are those that control impulses and plan ahead (NIMH, 2011b). This can contribute to adolescent's impulsivity and risk taking behavior. All of these changes may contribute to anxiety, confusion and affect self-esteem. Due to these effects, when looking at the adolescent population from an occupational therapy perspective, it is important to identify not only physical and cognitive changes but also psychosocial aspects of development.

Through the adolescent years, children progress from their primary childhood occupation of play to exploring other occupations and their social identity (Vroman,

2010). They begin to take more responsibility at home and in school, participate in sports and other extra-curricular activities, and enter the work force. They learn to drive and manage money. Technology becomes a large part of their communication and interaction with others through email, social media, phones, websites, online bulletin boards, etc. Through new independence and freedom, adolescents form their own opinions about likes and dislikes as well as what is right and wrong. Adolescents must try to comprehend who they are and want to be as well as where they fit in to the world around them. Many factors influence this concept of identity and self-efficacy including culture, socioeconomic status, family dynamics and peer groups. Adolescents want to be unique yet fit in with their peers. Peers can offer a sense of belonging and social support which significantly impacts emotional and psychosocial development. Input from peers becomes more important while input from guardians becomes less valued; they are continually developing, learning and seeking independence (Vroman, 2010).

As adolescents work toward independence, they experiment with their own personal image through choosing clothing, hair styles, piercings and tattoos. Despite what may be seen as rebellious behavior, these adolescents may still successfully hold a job, complete school and appropriately accept the responsibilities of adulthood (Vroman, 2010). Overall, it is vital to remember that not all adolescents develop at the same rate, and although there may be a “typical” pattern to development, not everyone is going to follow it. Each person is unique and should be expected to develop and learn at his/her own pace. Adolescence can foster a period of vulnerability during this development.

While many adolescents will go through this stage of life successfully with mostly positive experiences and behaviors, some experience difficulties and may develop a

mental illness. According to Merikangas et al. (2010) and the NIMH (2011c), approximately 21% of adolescents experience a serious mental disorder that lasts throughout their lifetime. Of these mental disorders, mood disorders have the highest prevalence within the population of adolescents ages 13-18 in the United States. The most common adolescent mood disorder is Major Depression (Sustainable Development Commission, 2008). Additionally, bipolar disorder has a high prevalence rate among the adolescent population (NIMH, 2011c).

Many adolescents with a mental disorder or illness, especially depression, have comorbidity with other disorders such as attention deficit disorders, eating disorders or substance abuse. Societal pressures through media and technology, such as ideal body image and substance use, can be a contributing factor to depression in adolescence (Vroman, 2010). Many of these pressures can lead to isolation due to fear of not fitting in. Adolescents can suffer significantly if they do not successfully develop healthy relationships. Other contributing factors to developing mental illness may include not adequately relating to peers, limited sense of identity and low self-esteem. Mental illness along with the aforementioned factors can combine to contribute to more severe negative outcomes.

One outcome that may result from mental illness is suicide, which is the third leading cause of death among the adolescent population (Bhattacharya, 2013; NIMH, 2011a; Vroman, 2010). Having a mental illness increases the risk of suicide. Unfortunately, identifying the mental illness in an adolescent may be difficult because the symptoms do not present in the same manner as with an adult, however it is important to accurately identify mental illness and risk for suicide (Bradley, 2012).

As adolescents age, they are more likely to identify symptoms of mental illness in their peers which can be a vital system of support. Swords, Hennessy and Heary (2010) found that the peers of adolescents with mental illness have an impact on whether that adolescent seeks help. Not only is it important to educate adolescents on available sources of professional help and support, such as occupational therapy, but it is important for adults to support adolescents and facilitate their development of an identity, self-concept and engagement in healthy occupations whether mental illness is present or not.

Technology

Evolution of Technology

Although the use of technology is prevalent among the adolescent population it does not always promote engagement in healthy occupations. For the purposes of this project the definition of technology includes electronic or digital products and systems considered as a group (Technology, 2011). Technology has been ever changing since the early 1900's; from the 1940's where the microwave was first invented by Percy Spencer, to when the first game console was invented by Ralph Baer in 1968 (Alking, 2006). The pace of the evolution of technology rapidly increased after the World Wide Web was created in 1990. Since then most of the human population has evolved to use technology in the majority of daily activities (Alking, 2006). Technology can be utilized throughout various daily activities such as using an electric toothbrush, electronic kitchen utensils, entertainment and more. While technology has improved many aspects of life, the increase in the reliance on technology has decreased the emphasis that is placed on engaging in outdoor activities. Thus, technology can become a barrier to the positive effects that exposure to natural environments has on the human body.

The generation of youth, born in the mid 1990's to present day, is considered Generation Z, also known as the net generation or igeration (Geck, 2006; Rosen, 2010). According to Geck (2006), this generation of adolescents is unique because their birth coincides with the introduction of the World Wide Web making it the first generation born into the digital world (Rosen, 2010). Generation Z has grown up always being electronically connected. Because technology is so prevalent in their lives, they experience many of the benefits and drawbacks that the digital world has to offer (Geck, 2006 & Rosen, 2010). Technology has both advantages and disadvantages that can significantly affect human beings developmentally, cognitively, psychosocially, and physically.

Advantages of Technology

When used correctly, technology can be a medium to introduce new concepts, educate and inform on any topic, and cater to the needs of a variety of individuals (Geck, 2006). There is a significant advantage to using technology to educate, inform and engage Generation Z. If instructions and information are giving through a technological fashion that requires adolescents to navigate through a computer program they are more likely to become and stay engaged (Geck, 2006).

Generation Z has not only grown up with increased computer programming and technology but the gaming systems being used have evolved immensely. Video games have often been viewed negatively due to violent or graphic nature, however, a portion of these electronics have been referred to as “exergames” which may actually have significant health benefits (Gebel, 2012). An exergame is a game that requires the player to interact with the device instead of just pushing a button. For example, *Dance Dance*

Revolution (Konami, 1998) is a exergame that requires players to dance to specific songs while other popular games require the player to box, do yoga or run in place. Having an option for fitness that is exciting is beneficial for individuals of all ages, especially the adolescent population.

Incorporating fun and interactive video games is an important approach to promote physical activity in adolescents (Gebel, 2012). Alternatively, the increased number of adolescents playing sedentary video games or engaging in screen viewing rather than playing physically active outdoor games with peers is alarming. In a study conducted by Sebire, et al. (2011) about the amount of adolescents' screen viewing, one participant stated, "If there wasn't technology then I would probably be out everyday", (Sebire, et al., 2011, p. 304). Televisions, computers, tablets, and smart phones are widely available which can contribute to decreased physical engagement with peers outdoors. However, since these technologies are readily available it is necessary to utilize its advantages to engage adolescents in non-traditional ways of physical play with peers in multiple settings.

Incorporating these user-friendly and commercially available technologies into occupational therapy interventions is not only beneficial to engage adolescents in physical activity it also is an opportunity to engage individuals with a variety of diagnoses. These devices can be geared towards and adapted for individuals of all abilities (Leena, Tomi, & Arja, 2005). Popular devices such as the iPhone by Apple or Droid by Android are desired by many and individuals with disabilities can feel a sense of belonging with these devices in modern society. These devices have applications and other features available to adapt the device for its owner's special needs. There are free

or inexpensive applications available that can adapt a given appliance for the blind, hearing impaired or other need-based populations.

Being aware of adaptations and different features of technological devices is crucial when promoting positive and productive engagement. When used correctly cellular devices and computers can be educational to adolescents in an interesting and positive manner. Advertisements with positive messages could be placed on popular games which certain young populations are more likely to view. Cell phones could be positively used by creating a message for health education and reaching out to individuals not otherwise captured through traditional means (billboards, newspaper, etc.) (Leena, et al., 2005). Cellular devices are more readily available and can be used in case of an accident or other emergency, thereby decreasing the response time for emergency services to arrive (Leena, et al., 2005). Cellular devices are also being used within healthcare services to remind individuals of their appointments or prescriptions through text message as well as offering services to purchase prescriptions via phone or text message (Stroh, 2011). While these advances in technology have many advantages, there are alarming rates of disadvantages that correlate with increased technology as well.

Disadvantages of Technology

Many of the disadvantages documented throughout this project are reflected upon the target population, Generation Z. This population has grown up being familiar with the continuum of advancements in technology and media. Unlike prior generations, they have grown up with forms of communication which are reliant on technology (Geck, 2006 & Rosen, 2010). As a recently noted drawback, online chatting as well as emailing with friends and strangers has been linked to increased depression and loneliness among

adolescents (Holtz & Appel, 2010). These negative effects are not only experienced through online chatting but cyber bullying as well.

With communication among this generation being primarily indirect and face-to-screen (texting, chatting online, or social networking), cyber bullying has been on the rise. A study conducted by Mishna, Khoury-Kassabri, Gadella and Dacuik (2012) reported that over 50% of 2186 participants were involved in cyber bullying in some aspect. The victims of cyber bullying reported “feeling significantly more unsafe than students who were not involved in cyber bullying” (Mishna et al., 2012, p. 68). Mishna et al. (2012) stated that the internet may be a means for students to extend the traditional school bullying beyond school grounds. In addition to the increase in cyber bullying, video games can also have a negative impact on adolescents.

Video games are popular with many adolescents of all ages, however video games that promote/glorify delinquent behavior are particularly well-liked. A study conducted by Fischer et al. (2012) compared adolescents who played games that endorsed or glorified delinquent behaviors with individuals who played neutral video games. Upon comparison the results reflected that the individuals who engaged in the delinquent endorsing games were more tolerant of delinquent behaviors and more likely to engage in such behaviors. It was also found that those who played neutral games were more likely to abide by the law when compared with the delinquent game users who were found to have a greater tendency to violate criminal laws (Fischer, et al., 2012). A second study indicated that video game playing resulted in externalized and internalized behaviors. The externalized behaviors were reflected by aggression and juvenile delinquency among the adolescent gaming population (Holtz & Appel, 2010).

Negative effects were not only found to be apparent in games that promoted delinquent behaviors but in games that involved fantasy play as well (Fischer et al, 2012). Fantasy play or role-play is video or computer games in which the player assumes the role of a character in a fictional setting (Role-play, 2011). The participants that engaged in fantasy play were more likely to reflect internalized behaviors such as anxiety, depression and socially withdrawn attitudes (Holtz & Appel, 2010).

Additionally, video and online games, online chatting, and emailing have all been linked to both internalized and externalized disruptive behaviors. Popular online activities such as engaging in chat room conversations with strangers and emailing have also been associated with anxiety, depression and loneliness (Holtz & Appel, 2010). The increased number of adolescents playing sedentary games and engaging in online activity is noteworthy. A disrupt in physical and psychosocial factors is associated with an increase of television, computer, tablet, phone, and video game viewing (Sebire et al., 2011).

The easy access to and reliance on television is a concern due to the increased amount of screen viewing (SV) by individuals of all ages, especially adolescents. Screen viewing includes activities that require one to watch a screen such as watching television, using the computer, hand held device, etc. (Sebire et al., 2011). In a study conducted by Sebire et al. (2011), focus groups involving children ages 10-11 were conducted about their views relating to topics on SV. The majority of the participants agreed that SV should be balanced with other physical or productive activities, similar to a balanced diet (Seibre et al., 2011). Participants' willingness to decrease the amount of SV in their lives ranged. Some were willing to decrease SV and increase physical activity in order to

create a more balanced lifestyle. Others stated that they enjoy their time spent on the computer and would be upset if this time was reduced. Unfortunately, decreasing the amount of SV in a child's life is becoming increasingly difficult due to the decreasing age that children start the habit of watching television, using iPads, iPods, cellphones, etc.

A comprehensive survey conducted by Vandewater, Rideout, Wartella, Huang, Lee and Shim (2007) provided the first information regarding the extent in which media is being used by children in the United States. It was found that 75% of children watch the television for approximately 1 hour and 20 minutes daily. In today's society young children are growing up in an environment saturated with media, making it more difficult to decrease the amount of time spent on these activities. Many parents are providing their young child with their own television to view within their bedroom. The most common reasoning for this is to free the other televisions in the household for other family members, keeping the child busy/entertained, or helping the child fall asleep (Vandewater et al., 2007).

Not only does an increase in SV lead to decreased physical activities and health risks such as obesity and social isolation, it can also lead to a potential increase in sleep disorders among the younger generations. Parents who are using television to help their child fall asleep may be setting them up for future sleep disorders as television viewing has been thought to be stimulating to the reticular activating system in the brain, thus increasing the rate that neurons are firing while sleeping and decreasing the amount of rest being obtained by the child (Vandewater, et al., 2007). Overall, increased technology and SV have advantages and disadvantages. The challenge however, is creating and

implementing a balance between time spent with technology and time spent in nature and the outdoors.

Nature and the Environment

Nature is commonly defined in two different ways. First it can be defined as the inherent disposition or demeanor of a person; for example, a person may have a kind nature (Nature, 2011). Secondly, it is defined as the external and natural world independent of humans. This includes: trees, flowers, streams, oceans, animals, clouds, weather, etc. (Nature, 2011). The main focus of this project is developed around the second definition of nature, its effects on humans and how it can be used therapeutically.

According to Milton (2009), a lack of engagement in the natural world facilitates enmeshment into technology and urbanization. This enmeshment in technology and media is thought to be a contributing factor to problems such as depression, alcoholism, eating disorders and poor self-image. Milton states “many of our needs are not met in heavily populated environments where relationships are monitored by wealth, ownership, and the consumption of things” (2009, p10); meaning many of our needs are not met in busy, heavily industrialized environments that are not supportive of nature or natural in their contexts. This suggests that involvement in nature as well as being immersed in a natural environment can provide several benefits to the well-being of humans. As with all things, there are both benefits and limitations to utilizing nature in a therapy setting.

Benefits of Nature

Stevens (2010) and Berman, Jonides and Kaplan (2008) state that nature has inherent properties that facilitate relaxation and peacefulness and capture humans' attention in a restorative manner. More specifically, nature is filled with captivating

stimuli which discreetly grab an individual's attention and facilitate a bottom-up approach for attention (taking in several pieces of information to form a larger picture or perception). This allows an individual to have a more therapeutic experience with nature. When an individual is able to take the time to experience the stimuli around them and to process and perceive their surrounds as they desire the overall experience is more relaxing, therapeutic and holistic. In contrast, in urban areas where there are multiple immediate demands that require an individual's direct attention a top-down approach must be utilized (Berman et al., 2008). A top down approach is a situation that requires direct attention and a decision to be made immediately, such as responding to traffic lights or avoiding being hit by a moving vehicle. These immediate demands require direct attention and time to figure out how to respond is limited, thus making this form of attention less restorative when compared to the bottom up approach (Berman et al., 2008).

The restorative and relaxing context of nature and the bottom-up approach provides the perfect media for topics of contemplation and conversation. Elements of nature can be used metaphorically to reflect upon aspects of one's life and talk about problems or struggles that are otherwise not easily discussed within group settings (Berger, 2010; Berger & Lahad, 2010). For example, individuals may have difficulties talking about recent changes or a loss that they have experienced in a typical group setting, however, they may find it easier to convey how they are feeling through nature such as the falling of leaves representing a loss of a loved one or the changing colors of the leaves representing a difficult change in the individual's life.

The dynamic nature setting can be beneficial for individual, group, family, educational and health purposes. An occupational therapist (OT) is required to use therapeutic use of self, (American Occupational Therapy Association, 2008) to gather narrative information from his or her client(s) and use professional judgment when choosing a nature setting that is most beneficial. Different activities in different environments can provide a diverse range of therapeutic outcomes dependent upon the goal and purpose of each specific therapy session.

Some common activities that are implemented in natural settings require minimal resources, and are beneficial to an individual's well-being are hiking, walking, biking, running, playing and swimming (Louv, 2011). In a formal report completed by the SDC (2008) of the United Kingdom, exposure to natural spaces is good for health, physical activity and socializing (Priest, 2007). It has been found that people who spend more time outdoors are typically more physically active when compared with individuals who do not (Hansen-Ketchum, Marck & Reutter, 2009; SDC, 2008; Stevens, 2010). The SDC (2008) also found that people who live further away from urban areas or near more natural environments are three times more likely to be physically active than those residing in urban areas. Not only referring to physical activity, urban areas also pose more health risks than natural areas.

Air pollution is more concentrated in urban areas and is closely associated with respiratory illness and heart disease. Urban areas are also known for increased automobile traffic which is associated with chronic noise. Exposure to chronic noise for long periods of time have been shown to increase a person's risk for heart disease and hearing impairment (SDC, 2008). In a study conducted by Hartig, Evans, Jamer, Davis

& Garling, (2003) two groups were compared, one in a room with a natural view and walked within a natural environment while the other group in a room with no window and walked in an urbanized environment. Individuals with natural views showed lower blood pressures when compared with the urban group (Hartig et al, 2003). Therefore, individuals who use transportation systems that promote physical activity such as cycling and walking in more rural environments benefit through increased physical fitness, decreased obesity, potential decreased air pollution and respiratory illness. Exposure to a natural environment also promotes physical well-being through increased mood and sleeping patterns (Priest, 2007).

Not only do encounters with nature provide physical benefits but mental and social benefits as well. Participants in a study completed by Priest (2007) identified that taking walks in nature had a meditative effect. Even brief encounters with nature can be restorative and help improve cognitive functioning. (Louve, 2011; Milton, 2009; Priest, 2007). Being outdoors in a less urbanized environment can decrease stimulation and anxiety as well as promote mental health within the adolescent population (Hartig et al. 2003; Milton, 2009; Louve, 2011; Smyth, Harries & Dorer, 2011). Engagement in natural environments allows for increased sustained attention, and provides a reduction of negative thoughts and increased relaxation (Hartig et al. 2003). Additionally, neighborhoods within the United Kingdom that had access to natural land showed higher levels of social cohesion (SDC, 2008). Such a mixed terrain in the outdoors also provides challenges that require higher executive mental functioning such as problem solving to determine appropriate means to safely navigate. This promotes self-efficacy and self-esteem when one is able to safely and efficiently navigate through unfamiliar

natural terrain (Priest, 2007). A natural setting can stimulate a multitude of different experiences among the individuals within the natural setting, thus creating a therapeutic environment that can be tailored to meet individual needs.

While a natural environment can have multiple advantages, the ability to experience these advantages is dependent on an individual's connectedness to nature (Cervinka, Roderer & Hefler, 2011). Connectedness to nature is a person's experience of connection to the natural world, and the more connection one has with nature the more positive effects nature can have on the person. In a study conducted by Cervinka et al. (2011), connectedness with nature correlated with physical, psychological and mental well-being. One of the highest correlations within this study was that individuals felt more socially connected and higher life satisfaction when they were connected to nature (Cervinka et al., 2011). Individuals indicated one of the main reasons that interrupted their ability to connect with nature was the prominence of urbanized areas, technological advances, and consumptive practices (Hansen-Ketchum et al., 2009). Having the opportunity to relate to and experience nature can also promote a positive reciprocal effect, providing multiple benefits to humans, as well as compelling humans to preserve and take care of the environment. One can be involved with nature in three ways: viewing nature through a window, incidental contact with nature such as walking or biking to work, and active participation such as planting a garden or picking up garbage (Hansen-Ketchum et al., 2009).

Being active and involved in nature not only provides multiple benefits to humans but also helps to develop care and responsibility for the world around them (Hansen-Ketchum et al., 2009). Everyday settings can either hinder or support different forms of

restoration and overall well-being. Regular access to restorative and natural environments can interrupt negative health effects in both the long and short term (Hartig et al, 2003). Therefore, incorporating the benefits of nature into occupational therapy services will enhance the positive holistic outcomes and experiences of the client. Utilizing nature in occupational therapy for individuals with psychosocial and physical disorders is an emerging practice area. Nature is currently being utilized minimally by therapeutic recreational therapists, occupational therapists and psychologists (Ewert, McCormick & Voight, 2001; Milton, 2009; Priest, 2007). OTs are highly qualified to incorporate nature into the therapy setting due to their innate ability to analyze activities and incorporate the affective, cognitive, spiritual and physical aspects of a human being (Strong et al., 1999). OTs are also well trained in adapting and modifying activities and environments to produce the best overall outcome for the client. Berger (2010) found that utilizing nature in therapy has several benefits and is a promising emerging practice area. One simple benefit of utilizing nature is that it is dynamic and allows an escape from the typical therapy setting that is a static and constantly controlled environment (Berger, 2010; Louv, 2011). Berger (2010) states that the dynamic therapeutic setting plays a significant role in shaping the process of therapy.

Limitations and Risks of Nature

Limitations that Berger (2010) found when fostering clients engagement in nature were: lack of a universal definition of nature therapy, lack of access to natural areas, lack of ability or resources to access a natural area and that the experience in nature is partially dependent on the OT and his/her own experiences. Difficulties accessing natural areas are a major limitation for therapeutic services located in urban areas and/or have lack of

resources to get to a natural setting. Berger (2010) indicates that the OT can also be a limitation due to his/her own opinions and past experiences therefore, he/she may not pick the most appropriate or beneficial activity for each client. Another limitation that is significant for therapeutic services and otherwise not noted in Berger's study is the lack of justification for billing and reimbursement. Since the incorporation of nature is an emerging practice area, the billing and reimbursement purposes are not clearly outlined. A few risks associated with rural and natural settings are fear of wildlife, lack of adequate lighting on pathways, safety, or fear of drug dealing in secluded areas (Hansen-Ketchum et al., 2011). Despite these limitations and risks, there are several benefits to utilizing nature in therapy.

The need for occupational therapy is prevalent within the adolescent population, especially with the continued reliance of technology. With the use of technology continually on the rise, the deficits of adolescents' engagement in healthy occupation will continue to increase. This is an appropriate and essential setting for occupational therapists to create and promote healthy occupations through engagement in activities and occupations within a natural setting. In hopes of decreasing potential mental health issues which occur among the adolescent population, OTs possess the skills to educate and engage children in healthy coping skills and social skills. Occupational therapists will aim to provide skills and abilities in a natural environment to this population to promote success throughout the lifespan.

CHAPTER III

METHODOLOGY

The concept of nature-based interventions for adolescents came to fruition based on an initial idea developed after reading Richard Louv's book, *The Nature Principle* (2011). This book was mentioned by an occupational therapy professor at the University of North Dakota during an occupational therapy course and peaked both authors' interests. Both students have a passion for outdoor life and activities and value occupations that can be completed within a natural setting. By combining this passion with the authors' enthusiasm for occupational therapy and service to others, the authors saw an opportunity for the development of a nature-based interventions approach within the occupational therapy setting.

In *The Nature Principle*, Louv (2011) addressed the current trends of today's population spending limited time outdoors and spending more time inside with technology. Louv focused on a term called "nature-deficit disorder" (2011, p.3) and the negative effects of having reduced nature in one's life. The authors found validity to this theory and further researched the effects of nature versus technology on the well-being of people, especially adolescents, who have grown up with the internet, cell phones and other electronic media. Furthermore, the authors researched how nature can be incorporated into health care, more specifically occupational therapy intervention. While there is research supporting nature-based health benefits there is limited research on

incorporating nature into the occupational therapy setting and therefore an opportunity was created for this scholarly project to be developed.

In addition to the content in Louv's book and the references he cited, the authors utilized resources online including Google Scholar, American Occupational Therapy Association and the University of North Dakota Harley E. French Library of Health Sciences. Through the Harley E. French Library of Health Sciences, search engines were used including PubMed, CINAHL, OT Search and Mesh to locate adequate resources. Search terms that were used included: adolescence, adolescents, evolution of technology, technology, benefits of technology, nature therapy, natural environments, benefits of nature, outdoor therapy, outdoor activities, ecopsychology, ecotherapy and occupational therapy. The variety of search terms was used in order to locate literature regarding both positive and/or negative effects of nature and the use of nature within occupational therapy. There was a limited amount of published literature that identified the relationship between the two. However, literature was readily available regarding the beneficial aspects of nature and the subsequent positive effects it has individuals. After an in-depth review of the literature, it was clear that a nature-based interventions manual for occupational therapists (OTs) would be beneficial for the adolescent population and the profession of occupational therapy.

The authors of this scholarly project completed a literature review of theoretical models to guide the development of this manual. The model of Person Environment Occupation (PEO) was chosen because of its focus on the transactional relationship between the three elements (Law, et al., 1996; Turpin & Iwama, 2011). The emphases of the PEO model are the interaction between the person-environment, person-occupation

and occupation-environment. These elements apply respectively to the scholarly project being the person is recognized as the adolescent population and the environment as a natural or nature-based setting; these combine with engagement in meaningful occupations (Law, et al., 1996; Turpin & Iwama, 2011). Throughout the entirety of the scholarly project the use of PEO as a guide was appropriate, important and evident. PEO was used when reviewing literature in order to assist with the identification and formulation of problem statements. The first problem statement developed from the literature review was the negative impact that technology can have on the adolescent population.

The authors found that through the adolescent years, there is a progression from a primary occupation of play to the exploration of other occupations as well as their social identity (Vroman, 2010). Occupational engagement and exploration of one's social identity can be influenced by engagement in various technologies. Although the use of technology is prevalent with the adolescent population it does not always promote engagement in healthy occupations. Not only are there physical drawbacks to increased involvement with technology, but psychosocial drawbacks as well (Divan et al., 2012; Fischer et al., 2012). Any and all of these effects can contribute to the development of mental illness within the adolescent population. These findings supported the authors' assumption that adolescents' increased reliance and dependence on technology has a negative impact. This led to a subsequent problem statement in which adolescents' engagement in nature and occupations within a natural setting has decreased due to the increased reliance on technology.

This problem statement led to further investigation where it was noted that adolescents are spending decreased time outdoors as the time they spend engaging in technology becomes more frequent. Several researchers have shown the benefits of nature on the development and overall well-being of adolescents (Berger & Lahad, 2010; Berman et al., 2008; Hartig et al., 2003). As it is evident throughout the reviewed literature, the benefits of nature influence the physical, cognitive and psychosocial aspects of humanity (Berger & Lahad, 2010; Berman et al., 2008; Hartig et al., 2003; Louv, 2011). Because the benefits of nature encompass all areas of a person, it coincides with the realm and scope of the holistic occupational therapy profession. OTs are skillfully trained to address various elements of a person along with the environment and occupations in which they engage in.

Unfortunately, while OTs are skillfully trained to address all aspects of a person, environment and occupation, there is a lack of literature directly addressing occupational therapists implementing nature-based interventions for adolescents to reduce the negative impacts of technology. This evolved into the authors' final problem statement. The authors made a conclusion in which the occupational therapy profession would be a driving force to implement nature-based interventions within the adolescent population to increase overall wellness, engagement in healthy occupations and quality of life. The review of literature and formulation of problem statements led to the development of the authors' product which addressed the relationship between adolescents, technology, nature and occupational therapy. This product is an OT's manual containing nature-based interventions for adolescents which can be found in chapter 4 of this scholarly project. When utilizing the product, there are instructions and recommendations on how

to apply the activities to an intervention session. The instructions that were formed take into account variations in geographical region and climate, safety elements and skill level of the adolescents. The body of the product was made to consist of two types of interventions, some specifically for group interventions and the remainder for either group or individual interventions.

CHAPTER IV

PRODUCT

The authors developed this product by conducting a thorough literature review and utilizing a guiding theoretical model, Person Environment Occupation. This strategy created a nature-based manual for occupational therapists to use to improve engagement in healthy occupations and overall well-being and quality of life of adolescent clients.

Occupational Therapy for Adolescents:



A Nature-Based Interventions Approach

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Intro/Purpose:

The purpose of this resource is to provide a variety of occupation based activities for occupational therapists (OTs) to be able to use with the adolescent population in a nature setting. As the prevalence of technology continually increases in the daily lives of the general population, especially adolescents, there should be a push for a balance with non-technology time. Ergo, this handbook was developed to provide occupation-based interventions in a natural setting. The interventions provided range in occupations, client factors, activity demands and performance skills addressed. This variety allows the activities to be appropriate for a range of adolescents rather than adolescents with a specific diagnosis. The second aspect unique to these interventions is the focus on the environment. The Person Environment Occupation (PEO) model focuses on the individual interactions between the person-occupation, person-environment and occupation-environment (Law, Cooper, Strong, Stewart, Rigby & Letts, 1996; Turpin & Iwama, 2011). Through the use of this model, the activity descriptions detail these interactions as well. The use of the PEO model provides a framework and guideline for implementing the activities in therapy that can be effectively utilized by skilled OTs.

Before Beginning Therapy in Nature:

Prior to implementing this resource it is important to gain some information about the area in which you are utilizing it. Things to be considered include but are not limited to:

- What natural areas are accessible within your surroundings?
 - Do you have a large space directly outside your facility?
 - What parks or nature areas for recreation are located within walking distance?
 - Will you need to travel?
 - Is it feasible to take the clients to these areas via public transportation?
 - How else could you transport your clients if natural areas are not within walking distance?
- What kinds of hazards are present within your community/ geographical region?
 - What are the poisonous plants, animals, insects etc. in your region?
 - It may be a good idea to put together a reference sheet of the poisonous species for you and/or your clients prior to starting the program.
 - Are you in an urbanized area full of traffic?
 - Is it a dangerous area for crime?

- What is the budget for your occupational therapy program?
 - Do you have the resources to implement the activities?
- Is it appropriate and safe for your client population to be outside?
 - Do you need to have additional staff with you?
 - Should clients be split into smaller groups?

Think outside the box! These activities are a guideline and should be adapted in order to fit your client population and your facility's needs.

Using the Nature Interventions:

Within this manual, nature-based interventions are color coded in order to identify which activities can be completed with an individual client or group of clients. The yellow titles of activities are designated for groups whereas the blue titles can be completed in either a group or individual setting. The group interventions were constructed in order to be the “activity” step of Cole’s Seven-Step Format for group intervention (Schwarzburg, Howe & Barnes, 2008). The seven step format includes:

Introduction/Warm Up: In this step, the OT must set the stage/ tone of the group. The OT should state the group rules and expectations. The purpose and outline of the group should also be provided.

Activity: The activity can be any of the chosen activities in the handbook. Activities should be chosen in order to meet the clients' goals of therapy.

Sharing: Each client takes a turn sharing what they completed during the activity.

Processing: Clients should process the activity focusing on things they did well and things that did not go as well. What coping skills did they use throughout the activity? How do they feel the activity went overall? What would they change?

Generalizing: The OT finds a common theme between the group members and generalizes thoughts/feelings to everyone. Commonalities between actions and thoughts are expressed.

Application: Group members and the OT should collaborate together in order to identify how skills used and things learned from the activity can be applied to daily life.

Summary: This step finalizes the therapy session. The OT (or group members as they become familiar with the process) should reiterate what everyone learned during the group and identify positive characteristics that were gained throughout the therapy session.

(Schwarzburg et al., 2008)

In this process, each step may not have a clear cut division before and after it. Multiple steps may seem to blend together such as the processing, generalizing and application.

However, each step should be addressed and the activities should not be completed on their own without being integrated into the seven steps whether the activities are completed individually or in a group setting. The steps facilitate the occupational therapy process and are important for the client's personal growth as well as for the OT to better understand each client and what they need from therapy. Without implementing the seven steps, the activity no longer has a strong therapeutic component. Through this process, the OT can work to facilitate achievement of goals which can be different for clients but potentially reached during the same activity. Do not forget to have fun!



Nature-Based Activity

Sensory Nature Walk

Purpose: To engage in occupations of leisure and social participation in a natural environment. This activity provides structured conversation in order for clients to feel more comfortable with face-to-face interactions.

Person-Occupation: Engagement in occupation requires a desire for relaxation, desire for social interaction and teamwork. Clients must possess client factors of communication, emotional stability and perception. This activity facilitates self-awareness and ability to express feelings and perceptions.

Person-Environment: Person-environment interaction promotes sensory stimulation/awareness, selective and sustained attention, proprioceptive functions and awareness of perception.

Occupation-Environment: An outdoor area with adequate weather, space for all clients to move around comfortably, and a group of clients is optimal for occupational performance.

Materials:

- Natural environment such as wooded area, a park, public walking trail, beach, an open field, etc. An environment is needed where multiple sensations may be experienced.
- A handkerchief or something to be used as a blindfold (optional).

Activity: Have two individuals walk together through a natural environment, taking turns having one person be the speaker and one person be the listener. The speaker is in charge of telling the listener everything he/she is experiencing such as sound, touch, smell, and possibly sight (depending on if blindfold variation is used). After both individuals have had a chance at being the speaker they can then discuss with the whole group which sensations they experienced, how they felt during the experience and how it might have differed among the group. The OT should intervene or assist any clients that may be having difficulty in order to facilitate therapeutic intervention.

Variation/Modification: Partners may walk around during the activity or stand still depending on physical ability and space for the activity. The speaker can be blindfolded and then guided by the listener to promote teamwork and to give the speaker a greater opportunity to focus on other sensations rather than the sense of vision.

Time: 20-40 minutes.



Nature-Based Activity

Narrative Expressions

Purpose: To engage in the occupation of social participation while addressing client factors of mental and sensory functions in a natural environment.

Person-Occupation: This occupation requires verbal expression of values, beliefs, perceptions and experiences. It facilitates the experience of spirituality within nature. This activity requires higher level cognitive thinking, abstract thinking and sustained attention. Experience of self is explored. It also facilitates awareness of others and positive social interaction including listening and providing feedback.

Person-Environment: The environment facilitates an experience of spirituality for the clients. It requires proprioception and sensory awareness as well as visual skills.

Occupation-Environment: The occupation requires a large natural area for all clients to spread out and locate natural media or object(s) that they are able to tell a story about.

Materials:

- Natural environment filled with media such as plants, trees, grasses, rocks, leaves etc.

Activity: Clients should be given 10-15 minutes to walk around the close vicinity to locate one to three items that they like, are attracted to or find meaning in. Clients should bring these items back to the group and then take turns describing what they found. They should state why they were attracted to the item and what they liked about it. They should also be challenged to use at least one item and relate it to themselves or an aspect of their life whether negative or positive. This should facilitate a narrative expression of something meaningful to the client. For example, one client may find a leaf that has turned red and can relate it to a major change in their life that they are struggling with. Another client may use a large rock and say how they have felt metaphorical rocks being thrown at them because they have been bullied, etc. There is no right or wrong answer. The group members should then take turns giving positive feedback and affirmations to the sharing client in order to reinforce strengths that were noticed throughout the story.

Variation/Modification: The OT must take into account ability to use abstract thinking and higher level cognitive thinking. The OT must use their skilled clinical reasoning to decide if this activity is appropriate for their clients.

Time: 30- 60 minutes (dependent on social skills and abilities of the clients)



Nature-Based Activity

Nature Stereognosis

Purpose: To engage in a healthy leisure occupation and social participation in a nature setting.

Person-Occupation: This occupation facilitates tactile/sensory awareness, stereognosis, emotional regulation, teamwork, communication, fine motor skills, following directions, and attention to task.

Person-Environment: The environment requires sensory/tactile awareness, proprioception, stereognosis, tolerance for varying tactile sensations.

Occupation-Environment: Adequate weather, lighting, sand, flour or similar media.

Materials:

- A flat container to place sand, flour or water/cornstarch mixture in
- Small objects or letters to place in the media
- Space adequate for containers and clients to be spread out and participate in the activity

Activity: Depending on the size of the group, the clients can be competing alone, in pairs or groups. The clients should

stand in front of their container which is full of the media being used and has small objects hidden in it. Any non-porous object can be used such as a key, bouncy ball, toy soldier, crayon, jacks, etc. as long as the clients are able to recognize them. Each bin should contain the same objects. Clients are then told to use their hands to find an object. They may be asked to close their eyes in order to make this task more difficult. Whoever is able to locate the object first wins. If the clients are in groups, the groups could be given a list of objects and must find them in order with each client taking turns. This facilitates direction following, attention to task and team work.

Variation/ Modification: For some clients with sensory aversions, the OT may need to allow extra time to get used to placing hands in the media especially if it is the water/cornstarch mixture because it is messy.

The letter shapes could be replaced with scrabble letters in order to increase the challenge of not only finding the squares in the media but then finding the correct letters in order to spell certain words.

Also, if clients find this too easy, they could be blindfolded. They could be asked to use only their non-dominant hand. Or if using flour as the media they could have to use their mouths to find the objects (each client would need their own tray in this case). In the flour, the objects could be hard candies.

Time: 20-35 minutes



Nature-Based Activity

Simon Says

Purpose: To engage in a healthy leisure occupation and social participation in a nature setting.

Person-Occupation: This occupation facilitates following directions, sustained attention, emotional regulation, behavior regulation, social interaction, and leisure exploration.

Person-Environment: The person needs appropriate clothing for the weather, proprioception.

Occupation-Environment: Adequate weather is required for this occupation and space for clients to move freely.

Materials:

- An area large enough for all of the clients to fit comfortably in order to complete the game.

Activity: Line up the clients in a straight, horizontal line across from the OT about 10-20 feet away. Instruct the clients on how the game works, that they are to follow the OT's commands if "Simon says" is said first. If the OT does not say "Simon says" and clients obey the commands then they must sit down. The OT may want to go through one practice round so that everyone can understand the rules if they have never

played before. Take turns letting the clients lead the activity, encouraging appropriate behavior, proper emotional regulation and rule following. As soon as everyone is “out” except for one person, they are the winner. The goal is to have the clients enjoy the game and laugh rather than focus on winning.

Variation/ Modification: Say, "Simon says, do this," and make the motion you want mimicked rather than speaking it, such as putting your hands on your shoulders.

To make it more difficult: say something like "Straighten up the line," in a casual manner. Again, several players will comply (and they will be out).

Time: 15-20 minutes



Nature-Based Activity

Compass Navigation

Purpose: To engage in the occupations of education and leisure in a natural environment while facilitating self-efficacy in a natural setting.

Person-Occupation: This activity facilitates self-efficacy, responsibility, planning, problem-solving, teamwork, interaction between clients. Client factors needed are physical ability to complete task, communication skills, higher level cognitive functioning and emotional regulation.

Person-Environment: The person must be able to travel across terrain that is safe for walking.

Occupation-Environment: A natural outdoor environment with adequate weather and large enough space to create a navigation path.

Materials:

- At least one compass but preferably a few
- Paper and writing utensil (a clipboard or hard portable surface to write on would be ideal)
- An easily identifiable object such as a colored cone or bucket

Activity: The OT should educate clients on how to use a compass. This education should be tailored to the learning style of the clients in order to ensure success. One client should be chosen as the leader and should write down directions on how to get to the colored cone. For example: from the door of the facility take ten steps north, fifteen steps west and three steps north east to locate the cone behind a tree. Once these directions are written down the other group members can read and follow them in order to locate the cone. Clients should take turns being the leader in order to work on their direction writing and problem-solving and to see how their peers are able to follow the directions.

Variation/Modification: If time allows, the OT could have pre-written instructions and the clients could each have directions to follow to get to their object/cone. This would help make the activity easier if there was not enough time for everyone to take turns being a leader.

Clients could also work in pairs depending on the size of the group.

The directions could be longer and more difficult depending on ability of the clients. This activity should facilitate success and self-efficacy when learning a new skill and therefore the OT should provide the just right challenge.

Time: 30-45 minutes



Nature-Based Activity

Shapes in the Clouds

Purpose: To engage in a healthy leisure occupation focusing on visual perceptual and verbal skills in a natural setting.

Person-Occupation: This occupation requires visual perceptual skills, abstract thinking, and verbal expression. Emotional regulation is required as well as acceptance of peers' thoughts and opinions in a respectful manner.

Person-Environment: The environment requires sensory awareness, specifically visual skills. It facilitates abstract thinking when looking at a familiar object.

Occupation-Environment: The occupation requires a place to sit or lay in adequate weather for being outside with clouds in the sky.

Materials:

- A large area enough for all of the clients to fit comfortably in order to be supervised; clients should be near each other in pairs

Activity: Clients will choose a spot in the outdoors. Clients should lay near each other in pairs. They should be instructed to take turns looking at the clouds and sharing with each

other what they see. Clients who are listening should try to see something from their peer's perspective and appreciate what others see, especially when it differs from their own point of view. Clients then switch roles; the other person listens while their partner describes the clouds.

Variation/Modification: Depending on the geographical location and climate, a different medium may need to be used such as locating shapes or patterns within wood grain, tree roots or beds of flowers/other plants. As long as clients are able to think abstractly, shapes can be found in many different types of outdoor media.

Time: 10-20 minutes



Nature-Based Activity

Scavenger Hunt

Purpose: To engage in a healthy leisure occupation in a nature setting.

Person-Occupation: Sustained attention, figure recognition, problem-solving, sense of accomplishment, self-efficacy

Person-Environment: Sensory/tactile awareness, visual perception, safety awareness, independence

Occupation-Environment: Easily accessible outdoor area is necessary with enough resources for all clients to be able to complete the scavenger hunt locating the items listed. Also, appropriate weather is necessary.

Materials:

- Outdoor area large enough for all clients to walk around and that provides opportunity to find all objects in scavenger hunt
- Basket/bag or other container for clients to place objects in
- Piece of paper with scavenger hunt items written on it

Activity: Clients will be given a variation of the list of items listed below along with a container to place their objects in. Clients are given time to find as many objects as they can independently and then have an opportunity to share what they found with the group.

Nature Scavenger Hunt:

- Something fuzzy
- A seed
- A piece of man-made litter
- Something straight
- Something round
- Something smooth
- Something rough
- Two different types of leaves
- Something that makes noise
- A beautiful rock
- Something you think is beautiful
- A pinecone
- Something green
- A stick

The OT should be aware of any and all environmental hazards in the area of the activity such as poison ivy or other harmful plants and animals. The OT should then educate the clients on these things prior to engaging in the scavenger hunt in order to promote safety awareness and reduce risk.

Variation/ Modification: Items on the scavenger hunt list may need to be added or removed depending on climate and geographical region at the discretion of the OT.

To grade the scavenger hunt and increase difficulty, items could be more specific and difficult to find or specifically placed/hidden by therapist prior to therapy session.

Clients could be given the opportunity to take a picture of their collection of items and then repeat the activity again during a different time of year in order to look at the variation of items in their environment and how things grow and change.

Time: 30-40 minutes



Nature-Based Activity

Raking Leaves - Jumping into Leaves

Purpose: To engage in the occupations of social participation, IADL's, leisure and/or work in a natural environment.

Person-Occupation: This activity facilitates self-efficacy, responsibility, planning, problem-solving, teamwork, physical exercise and social interaction between clients. Client factors needed are physical ability to complete task, communication skills and emotional regulation.

Person-Environment: To provide sensory motor input, proprioception, fresh air.

Occupation-Environment: A natural outdoor environment with adequate weather and a media that can be piled, moved around and touched such as leaves, sand, snow, wood chips etc. A group of clients can be utilized or an individual session can be completed.

Materials:

- Rake(s), large trash bags, gloves, an area with leaves, and permission from owner of the area with leaves.
- Depending on variation, may need brooms or shovels, warm/cool clothing

Activity: Give clients the task of raking an area and putting leaves into a bag to be disposed of. Have them organize the task to facilitate planning, problem-solving and teamwork. Task will be completed providing physical exercise, social interaction and community responsibility.

Variation/Modification: This activity could be done by sweeping sand/dirt from a pathway, raking leaves and/or shoveling snow. If clients wish they can jump into the pile of leaves or snow. If clients are lower functioning, the OT can lead the activity rather than the clients. OT must grade activity depending on number of clients and clients' physical ability.

Time: 30- 60 minutes (dependent on how many clients and size of area being worked with)



Nature-Based Activity

Gardening

Purpose: To engage in an education, work and/or IADL occupation in a natural setting.

Person-Occupation: This occupation facilitates self-efficacy, responsibility, physical activity and decision making. The person must learn about the task as they perform it.

Person-Environment: The environment provides fresh air, sensory/tactile awareness, and sensory motor skills.

Occupation-Environment: Room with several windows, or outdoor area with a garden space

Materials:

- potting soil
- watering can
- water
- rocks (for bottom of flower pot)
- plant seeds or small plant
- flower pot for each client

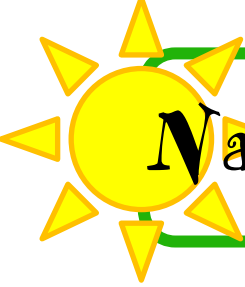
Activity: Clients are provided with materials to plant a flower pot. Clients must follow instructions to correctly plant their

vegetable/flower/plant that they desire. They are responsible for watering plant, taking care of it each day. Clients will be educated on proper planting and care taking techniques of gardening by the OT. Clients could each grow different vegetables in order to promote healthy eating.

Variation/ Modification: If climate and resources allow, clients can plant an outdoor garden that requires more care but can produce more plants. Plants can also be kept inside near windows.

Plants chosen for the task will depend on climate and geographical region. If resources are limited, the group can plant a few plants and share the responsibility of care taking.

Time: 20 minutes, 5 minutes for each day after initial planting



Nature-Based Activity

A Day On The Beach

Purpose: To engage in occupations of social participation and leisure in a natural environment.

Person-Occupation: Tactile/sensory awareness, stereognosis, emotional regulation, teamwork, communication, fine motor skills, imagination, creativity

Person-Environment: sensory awareness, proprioception, stereognosis, tolerance for varying tactile sensations

Occupation-Environment: adequate weather/lighting, sand or other similar media

Materials:

- An indoor or outdoor space where sand is abundant; preferably a beach so the clients can experience increased environmental stimuli with nature and natural surroundings
- If beach is not available, a large sand box or kid's swimming pool can be filled with sand outdoors

Activity: Have the client either in a team or independently (depending on what skills are to be addressed) create a sand

castle or a sculpture. If completed as a competition, the OT should split the group into teams or individuals and state a sand sculpture to be made. The team who finishes the specific sculpture in the shortest amount of time wins, and can choose the next shape.

Variation/ Modification: For some clients, simply completing the activity with sustained attention may be the appropriate challenge for their skill level. In order to grade the task, it can be adapted by adding a time constraint to promote productive play as well as sustained attention. This activity can also be performed as a contest, and the winner gets a small prize or the opportunity to pick the next activity. This also provides an opportunity for clients to demonstrate appropriate sportsmanship and teamwork. Instead of a castle the category could be changed to animal, food, super hero, etc.

If resources are not available to have as much sand as necessary to create sand sculptures for the entire group, the activity could be modified to individuals locating specific small objects in trays of sand: See **Nature Stereognosis** intervention.

Time: 15-60 minutes, this activity can be as long or as short as necessary to achieve the purpose.



Nature-Based Activity

Aerostic Poem

Purpose: To engage in educational and leisure occupation in a natural environment while increasing self-esteem.

Person-Occupation: This occupation facilitates self-efficacy and critical thinking skills. Also, the person must be able to grasp chalk and use it to write on the ground.

Person-Environment: The environment provides fresh air and freedom from enclosed space. The environment should have limited pedestrian traffic so that it does not cause unnecessary stress or anxiety by others walking through or around the activity space.

Occupation-Environment: The occupation requires enough cement or blacktop for all clients to have enough space to write legibly with chalk. It is ideal if the space is not a high traffic area so that it is easy to complete the task. It also must have adequate weather so that the sidewalk is clear and there is no precipitation.

Materials:

- Blacktop or cement area large enough for each group member to write on

- Sidewalk chalk
- May be beneficial to have a small group of clients in order for therapist to provide more one-on-one help if necessary

Activity: Clients will write their name on the cement in a vertical line. Clients will then be instructed to think of a positive adjective about themselves that starts with each letter of their name and write it down on the cement.

For example: the name Amie

Artistic

Motivated

Intelligent

Energetic

Clients should take turns reading their acrostic poem to the group. By saying the words from their poem aloud it will be reinforcing to each person. If resources are available, the OT should take a picture of each poem and print it for the clients to take with them.

Variation/Modification: In order to grade the task to make it easier, OT may provide clients with lists of adjectives to assist with writing their poems. There are several websites that provide lists such as:

- www.adjectivesthatstart.com
- <http://www.englishclub.com/vocabulary/adjectives-personality-positive.htm>

Be conscious to provide words that are understandable to your client population's reading level.

OT should assist clients who are having difficulty in order to reduce embarrassment and/or isolation.

If a camera and printer are not available, the therapist could write the poems on cardstock paper for each client to take with them.

A client could do this individually and use their first and last name. The client could then read aloud to the therapist.

Time: 20-30 minutes



Nature-Based Activity

Relaxation Techniques

Purpose: To engage in a healthy IADL of health management and maintenance focusing on emotional regulation in a natural setting.

Person-Occupation: This occupation requires self-awareness, emotional regulation, behavior management, sustained attention, and willingness to learn.

Person-Environment: The environment requires sensory awareness and proprioception. It facilitates a spiritual experience.

Occupation-Environment: The occupation requires a quiet, relaxing place to sit or lay, and adequate weather for being outside.

Materials:

- A large area for all of the clients to fit comfortably in order to be supervised yet locate their own relaxing environment; clients should be far enough away from each other so that they are not distracted

Activity: This activity is progressive and can be used several times with the same clients. The goal is for the clients to learn deep breathing techniques that they are able to apply in their everyday life when they are feeling an escalation in emotions.

The first time this activity is used, the OT should first ask the clients how they know their when their emotions are escalating or when they are having too much energy. It is important for them to have the self-awareness to recognize this. Then, the OT should ask what the clients do to relax. Facilitate an educational discussion on beneficial elements such as a quiet and comfortable space. Nature can provide a calm and relaxing environment for anyone to practice their deep breathing.

Then have all of the clients find a comfortable position and use the directions for deep breathing (p61) and speak the instructions softly and calmly. The OT should be facilitating the deep breathing for all clients. There are four different types of deep breathing that can be used. Teach one at a time. As clients learn the progression of the breathing techniques, allow them to find their own relaxing space within the outdoor area and practice the breathing themselves. The OT should then facilitate a discussion on what did and did not work for the clients in order to improve for the next time this activity is completed. Gradually, the discussion should focus on the clients' application of deep breathing within their home environments.

Variation/ Modification:

The modification for this activity may originate from the OTs skilled clinical reasoning and activity analysis of the clients. The OT should tailor this activity specifically so that the clients can learn this useful technique and apply it to their everyday lives. Other resources for deep breathing such as internet resources and text books can be used as well rather than the included instructions.

Time: 15-45 minutes, after this activity is taught and clients are more self-directed it can be used as a precursor to therapy if the OT feels it is appropriate for the clients. In this way, the time for the activity can be shortened.

How do you do breathing exercises?

There are many breathing exercises one can do to help relax. The first exercise; below-belly breathing-is simple to learn and easy to do. It is best to start there if clients have never done breathing exercises before. The other exercises are progressively more advanced. All of these exercises can help you relax and relieve stress. (Healthwise Staff, 2010)

Belly breathing

Belly breathing is easy to do and very relaxing. Clients can try this basic exercise anytime they need to relax or relieve stress.

Instruct clients to:

1. Sit in a comfortable position.
2. Put one hand on their belly just below the ribs and the other hand on the chest.
3. Take a deep breath in through their nose, and let their belly push their hand out. The chest should not move.
4. Breathe out through pursed lips as if one were whistling. Feel the hand on the belly go in, and use it to push all the air out.
5. Do this breathing three to ten times. Take time with each breath.

Next steps

After the clients have mastered belly breathing, the OT can teach one of the more advanced breathing

exercises. There are three additional exercises; the OT should pick the ones most appropriate for the clients.

- 4-7-8 breathing
- Roll breathing
- Morning breathing

4-7-8 breathing

This exercise also uses belly breathing to help clients relax. This exercise can be done either sitting or lying down.

1. To start, instruct clients to put one hand on their stomach and the other on their chest as in the belly breathing exercise.
2. Take a deep, slow breath from their stomach, and silently count to four as they breathe in.
3. Hold breath, and silently count from one to seven.
4. Breathe out completely and silently count from one to eight. Clients should try to get all the air out of their lungs by the time you count to eight.
5. Repeat three to seven times or until they feel calm.

Roll breathing

The object of roll breathing is to develop full use of lungs and to focus on the rhythm of breathing. This can be done in any position. It is best to have clients lie on their back with knees bent.

1. Instruct clients to put their left hand on their stomach and their right hand on their chest. They should pay attention to how their hands move as they breathe in and out.

2. Practice filling lower lungs by breathing so that their "stomach" (left) hand goes up when they inhale and their "chest" (right) hand remains still. Clients should be instructed to breathe in through their nose and breathe out through their mouth. Do this eight to ten times.
3. After the lungs have been filled and emptied eight to ten times, add the second step to their breathing: Inhale first into the lower lungs as before, and then continue inhaling into the upper chest.
4. As clients exhale slowly through their mouths, they should make a quiet, whooshing sound as first their left hand and then their right hand fall. They should feel the tension leaving their body and become more and more relaxed.
5. Have clients practice breathing in and out in this way for three to five minutes. The rising and falling of the chest and stomach are similar to the motion of rolling waves.

Clients can practice roll breathing daily for several weeks until they can do it almost anywhere. They can use it as an instant relaxation tool anytime they need one.

Caution: Some individuals get dizzy the first few times they try roll breathing. If clients are feeling light-headed, they should slow their breathing. Get up slowly.

Morning breathing

This exercise can be used when clients first get up in the morning to relieve muscle stiffness and clear clogged breathing passages. Then it can be used throughout the day to relieve back tension.

1. From a standing position, clients should bend forward from the waist with knees slightly bent, letting their arms dangle close to the floor.
 2. As they inhale slowly and deeply, they should return to a standing position by rolling up slowly, lifting the head last.
 3. Breath should be held for just a few seconds in this standing position.
 4. Clients then exhale slowly as they return to the original position, bending forward from the waist.
- (Healthwise Staff, 2010)



Nature-Based Activity

Sound Mapping

Purpose: To engage in a healthy leisure occupation focusing on sensory awareness in a natural setting.

Person-Occupation: This occupation requires self-awareness, emotional regulation in order to stay quiet, behavior management, sustained attention, auditory capabilities and ability to write.

Person-Environment: The environment requires sensory awareness, specifically hearing. It facilitates a spiritual experience.

Occupation-Environment: The occupation requires a place to sit or lay in adequate weather for being outside with some noise occurring.

Materials:

- An area large enough for all of the clients to fit comfortably in order to be supervised yet locate their own space to sit or lay. Clients should not be located too close to each other so that they are not distracted.
- A piece of paper and writing utensil

Activity: Clients will choose an individual spot in the outdoors. They will have a piece of paper and writing utensil. The OT will instruct them to sit very still and quiet and listen to all of the sounds going on around them. The clients will then be instructed to draw a star on their paper to represent themselves. They will then draw on the paper a symbol or write the word of the sound they hear. They should draw the symbol in relation to themselves in space. For example, if they draw themselves in the middle of the paper and think they hear a bird about 20 feet to their left, they should draw a bird or write the word bird on the left edge of their paper. Clients should spend time focusing on sensory sounds around them and write down where they think the sounds are coming from. This activity has no right or wrong answer but facilitates a calm, still person and heightened sensory awareness to the surrounding environment.

Variation/Modification: A simple variation is to have clients sit with their eyes closed while participating in the activity. Another variation if there are enough group members would be to have one group member sit somewhere in the outdoor area with their eyes closed. The rest of the group members would spread out in the area and have a designated sound to make. Members could take turns making their sound and the chosen client with their eyes closed could guess where the fellow group members are standing. This facilitates the same

sensory awareness yet group members have to be more aware of each other and work together.

Time: 10-20 minutes



Nature-Based Activity

Nature Snacks

Purpose: To engage in a healthy IADL occupation of health management and maintenance in a natural setting.

Person-Occupation: This occupation requires the ability to follow written directions, work with others, sustained attention and emotional regulation.

Person-Environment: The environment requires sustained attention to the task while in a natural environment.

Occupation-Environment: The occupation requires a table top surface to work on and adequate weather in order to complete the task.

Materials:

- A large flat table top area for all clients to fit around
- Recipe for granola bars/bites or trail mix, for example:
 - Trail mix (multiply each item by number of clients):
 - ¼ cup cheerios
 - ¼ cup peanuts
 - 2 teaspoons raisins

- 2 teaspoons semi-sweet chocolate chips
- Combine all ingredients into a large bowl, mix together and serve
- Measuring cups, mixing bowl, mixing spoons and container to store the granola bars/trail mix in for each client to take home
- Ask clients if they have food allergies prior to participation

Activity: The OT should involve clients in a discussion on healthy eating and nutritional value of the ingredients involved. The OT should then provide the clients with the recipe and they can work together to designate tasks to each member and successfully make the recipe and distribute it equally to each person. This activity should allow clients to feel responsible for their own health and to make decisions on being healthy. Based on skill and ability level, they can take more ownership for completion of the task rather than the OT directing the entire thing. The task can be completed multiple times with different recipes.

Variation/Modification: Any healthy recipe that does not involve cooking can be easily made for this activity. The focus is on nutritional value of the snack and how it is easily portable rather than eating a less healthy snack such as chips or candy. Clients could be split into multiple small groups and each make a different recipe for all clients to try.

Time: 20-30 minutes



Nature-Based Activity

Nature Navigation

Purpose: To engage in a healthy educational and leisure occupation focusing on problem-solving and following directions in a nature setting.

Person-Occupation: This occupation requires self-awareness, emotional regulation, sustained attention, problem-solving, memory and following directions.

Person-Environment: The environment must have adequate terrain in order to be walked across safely and a large enough for clients to practice navigational skills.

Occupation-Environment: The occupation requires a place to walk around and use natural landmarks to navigate as well as adequate weather for individuals to participate.

Materials:

- An area large enough for the OT to navigate the clients through

Activity: The OT should begin by starting all clients at a starting point marked by a bright object or stick stuck in the ground. The OT then will lead the clients down a specific path

(of the OT's choice) that includes twists and turns to a specific ending location marked by another bright object or stick. The clients must then work together in order to navigate back to the starting point following the exact path that they initially took. If completed in a group clients should be encouraged to work together. Clients who are more passive should be encouraged to take a leadership role. If the clients make an error the OT should give them time to identify the mistake. If the mistake is not identified, the OT should let the clients know and guide them to the point on the path that they were following correctly.

Variation/Modification: This task should be adapted to fit the clients' skill levels. For example, if clients have a hard time following directions they should have a simpler path to follow.

The OT may also place specific objects along the path such as cones, colored balls, or plastic animals for the clients to use as a reference when navigating along the path.

Time: 30-40 minutes

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CHAPTER V

CONCLUSION

The purpose of this scholarly project was to address current adolescent trends in relation to increased reliance on technology, decreased exposure to natural settings, and utilization of nature in adolescent occupational therapy care. Through the review of literature three problem statements were developed. The first problem statement was the increased reliance on technology for daily living. This being particularly evident in the target population, Generation Z, since they have grown up with an increased availability to various forms of technology. The second formulated problem statement was the decreased amount of time spent outdoors among the adolescent population. Decreased time spent in nature was concerning due to the abundance of literature supporting the psychological and physical benefits that can be experienced through engagement in nature and natural environments. The last problem statement was the lack of published literature which focused on the relationship between adolescents, nature, technology and occupational therapy. The majority of literature that was reviewed focused on each term as its own entity rather than the relationships between the terms. The formulated problems statements led to the development of the nature-based interventions manual for occupational therapists (OTs) working with the adolescent population.

The nature-based intervention manual is a unique guide for innovative OTs working with the adolescent population. The layout of the manual is easy to read, and

well organized which allows for OTs to spend more time implementing the activities rather than searching for them. The Person Environment Occupation Model was used as the foundation for the interventions and guides the OT in incorporating a model for therapy intervention. The relationship between the person-environment, person-occupation and occupation-environment is described for each intervention which allows the OT to examine the transactional relationships between each element to provide best fit for the client. Each nature-based intervention is described in detail so that a skilled OT reading it for the first time will be able to implement the activity with ease. The various elements that are addressed through each intervention have been documented as well as different variations that could be implemented based on available supplies, geographical region and client's skill level and abilities.

When incorporating a new and innovative therapy approach limitations and barriers must be addressed. Three main barriers that could be encountered while implementing nature-based interventions are: OT's resistance to change in trying a new and different approach to therapy, safety and appropriateness for clients, and reimbursement. Many OTs have often found different approaches and interventions that have worked in the past therefore continue to implement the same interventions throughout their career. The challenge is to gain support from OTs that work with the adolescent population. Advocating for nature-based interventions as well as marketing the product and encouraging therapists to use the interventions is an important factor in gaining support within the occupational therapy profession. OTs that utilize the nature-based interventions and see results may also assist with marketing by sharing information through word of mouth. Presenting the manual and research at the American

Occupational Therapy Association's annual conference is also another opportunity to advocate and market. A second identified barrier is determining when nature-based interventions are safe and/or appropriate for adolescent clients. For example, adolescents in an acute state may not be appropriate or safe outside of the secure therapy environment. As with any other intervention an OT needs to use their clinical reasoning skills to determine what is appropriate and the best fit for their client. The last and most challenging barrier identified was reimbursement. With reimbursement becoming increasingly stringent it may be difficult when determining what to bill for the provided services. In a majority of mental health settings where grouped billing is still implemented, nature-based interventions can be implemented and billed for with ease. However, when billing for nature-based interventions in other non-grouped mental health settings and physical disability settings, the OT may need to collaborate with management and/or other OTs to determine an appropriate billing process. This may be as simple as documentation that is descriptive and shows improvement in function and occupational engagement or as complicated as advocating to insurance agencies or legislation to include the nature-based services for reimbursement.

The nature-based intervention manual for the adolescent population can be implemented in various settings. An OT who is interested in implementing the interventions will need to review the manual like they would any other intervention manual and determine the materials needed as well as which activities are most appropriate for their adolescent clients. It is important to read the directions prior to implementing the interventions so the OT can adapt aspects of the activities as needed. The nature-based manual is meant to be a flexible interventions approach. The activities

can be used intermittently, in combination with traditional interventions or as a stand-alone continuous interventions approach. The manual provides the format and plan for the entire occupational therapy session and the lengths of the session are provided. The interventions are meant to be modified as each OT finds appropriate and a best fit for the clients.

Through implementation of the nature-based interventions OTs may discover different elements that they wish to include in the manual as well as more intervention ideas that would be appropriate and beneficial in natural contexts. As the number of therapists implementing these interventions rises, more information can be obtained by the authors to modify and or add elements to the manual to make the interventions more accessible and beneficial. In the future the manual could be adapted to increase the total number of interventions available for different natural settings. If OTs who have utilized the nature-based interventions see results, a future research study could be conducted to determine the effectiveness of utilizing nature in the therapeutic setting. The study could consist of the comparison of a control group receiving traditional therapy to a nature-based therapy approach, chart review and pre and post tests for measurements.

Overall, this manual is a beginning to incorporating nature-based interventions among the adolescent population within the occupational therapy setting. Nature-based interventions have the potential to become a prominent emerging practice area within the occupational therapy profession. Due to current societal trends involving increased reliance and dependence on technology and decreased amount of time spent within natural settings, the negative impacts of technology can outweigh the positive benefits of

nature. Therefore incorporating nature-based interventions into the occupational therapy setting can be an appropriate and beneficial means to promote psychosocial and physical wellness as well as increased engagement in healthy occupations for the adolescent population.

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