Nature and Physical Activity at Camp: A Qualitative Ecopsychological Study

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Abstract

Contact with nature and physical activity have more recently been understood through ecopsychology and exercise neuroscience as having strong impacts on children's mental health and learning. The present study investigated the role of contact with nature and physical activity in a camp for children with ADHD, learning disabilities, and autism spectrum disorders. An interpretive phenomenological analysis was used with transcriptions of audio interviews of 7 camp staff from the summer of 2011 and 5 caregivers whose children attended the camp during the same summer. The analysis revealed the following meta-themes: 1) Encouraging Mental and Physical Benefits and Fostering a Connection to the Environment for Youth from the City through Outdoor Activity, 2) Promoting Greater Levels of Physical Activity at Camp in Order to Encourage a Healthy Lifestyle, Reduce Frustrations, and Control Behaviour, 3) Promoting Social Skills Development for Youth with Social Deficits through a Supportive Environment and Group Experiences, and 4) Encouraging Youth with Exceptionalities to Learn by Trying New Things, Discovering Strengths, and Challenging Themselves in Physical and Artistic Activities. The results are discussed in terms of implications for issues related to health and education using the insights of exercise neuroscience along with the theoretical perspectives of Wilson's Biophilia hypothesis, Kaplan's Attention Restoration Theory, Ulrich's Psycho-Evolutionary Theory, and Gibson's Theory of Affordances.

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Introduction

In the past three decades we have seen dramatic changes in youth and adult lifestyles resulting in a general disconnection from nature (Louv, 2005). This disconnection can be seen through decreases in physical activity (U.S. Centres for Disease Control and Prevention, 2002; Nader, Bradley, Houts, McRitchie, & O'Brien, 2008), time spent outdoors (England Marketing, 2009; Pergams & Zaradic, 2006; 2008), and ecological knowledge (Balmford, Clegg, Coulson, & Taylor, 2002; Bebbington, 2005), along with increases in media use (Roberts, Foehr, & Rideout, 2005; Vandewater, Rideout, Waretlla, Huang, Lee, & Shim, 2007), physical ailments (Troiano, Flegal,Kuczmarski, Campbell, & Johnson, 1995; Ogden, Carroll, Curtin, Mcdowell, Tabak, & Flegal, 2006; Lovasi, Quinn, Neckerman, Perzanowski, & Rundle, 2009), psychological diagnoses (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007; Collins, Westra, Dozois, & Burns, 2004), and prescription medications (Mayes, Bagwell, & Erkulwater, 2008). Richard Louv has recently described this inter-related phenomenon as the "nature deficit disorder," (Louv, 2005) a title purposefully aligned with attention-deficit hyperactivity disorder (ADHD).

Theories on the effects of contact with nature have emerged (Wilson, 1984; Kaplan & Kaplan, 1989; Ulrich, 1983) along with research on the benefits of exposure to natural settings for both child and adult populations. Along with research on contact with nature, developments in understanding how exercise affects mental facilities (Ratey, 2008) warrants a new look at camp environments from the lens of ecopsychology and exercise neuroscience. Residential camps may be an ideal solution for youth, parents, educators, and policy-makers to combat the

disconnection from nature and by extension other childhood disorders including ADHD, as these places incorporate a variety of programming with both physical activity and contact with the natural environment. The purpose of this research therefore is to determine how camps could support children's development in terms of contact with nature and physical activity.

Physical Activity

A study by the U.S. Centers for Disease Control and Prevention (CDC, 2002) asked 4,500 children and their parents about after-school and weekend activities. Their results showed that 61.5% of children ages 9-13 do not participate in organized physical activity, and another 22.6% do not participate in free time physical activity. Another study by Nader et al (2008) examined physical activity patterns in youth age 9 – 15. Researchers found that youths spent significantly less time engaged in moderate-to-vigorous physical activity as they got older, from an average of 3 hours a day at age 9 on weekdays and weekends, to an average of 49 minutes a day on weekdays and 35 minutes a day on weekends at age 15. Almost all youths age 9 met the recommended daily level of moderate-to-vigorous physical activity (60 minutes), but only 31% of youths age 15 met the recommendation on weekdays and only 17% on weekends.

Time Spent Outdoors

One indicator of the decrease in time spent outdoors comes from studies of children's play spaces. A study by England Marketing (2009) asked 1150 parents

and 502 children 7 – 11 years old about their play spaces. Results showed that although 40% of adults played often in natural places when they were kids, less than 10% of children do today. In terms of play spaces 42% of adults indicated the streets, 29% near home, 16% indoors, and 15% natural places, while for children 62% indicated indoors and 17% in the garden. While 75% of adults claimed to have an accessible natural area near their home growing up and over 50% of these adults visited at least once a week, only 62% of children claimed to have access to such places and only 25% of these children visited at least once a week. These numbers are striking, considering that these patterns have shifted so drastically in only one generation's time.

Another indicator of the shift from outdoors to indoors is highlighted through the per capita visits to national parks. Pergams & Zaradic (2006) compared per capita national park visits in the U.S. with a host of related factors. Their analysis showed that an increase in hours of television, video games, home movies, theatre attendance, internet use, oil prices, and foreign travel accounted for the vast majority of the decline in park visits over the past 2 decades. Income was significantly correlated with foreign travel and negatively correlated with national park visits, suggesting that wealthier families travel abroad while poorer families go to national parks. A later study by Pergams & Zaradic (2008) showed similar decreases in both national and state park visits in the U.S. as well as national parks in Japan and Spain. Researchers calculated an estimated long-term decline in nature-based activity of between 18% and 25% which started between 1981 and 1991, and continues to decline at -1.0% to -1.3% per year. The authors suggest

humanity may be facing a fundamental shift away from E.O. Wilson's 'Biophilia' (Wilson, 1984; see below) to 'Videophilia,' which suggests that we have become so tied to media technologies that it is starting to affect our evolution as a species (Zaradic & Pergams, 2007).

Ecological Knowledge

Indicators of the loss of ecological knowledge come from studies of identification of wildlife. Balmford et al (2002) asked children to identify pictures of local plants and animals, and pictures of Pokemon characters. While identification of wildlife increased by 21% from 32% at age 4 to 53% at age 8, identification of Pokemon characters increased by 71% from 7% at age 4 to 78% at age 8. A related study by Bebbington (2005) asked 800 16-17 year old advanced biology secondary school students to identify as many pictures of local wildlife as possible out of ten. None of the 800 students could name all ten, and 86% couldn't name more than 3. The emphasis within the educational setting that is placed on molecular biology at the cost of local ecological knowledge is another way that nature has become an abstraction to youth.

Media Use

Roberts, Foehr, & Rideout (2005) investigated correlates of media use in youths ages 8 - 18 and children ages 6 months to 6 years. For the youth group, 1 in 4 came from a 'high TV orientation' home, where there are no rules about TV and the technology is turned on a large majority of the time. Those in the youth group were

shown to have an average of 6.5 hours a day with media use regardless of 'TV orientation,' which included 3 hours a day with TV and 1.75 hours a day listening to music. For the child group, 1 in 3 came from 'high TV orientation' homes, and they spent an average of 1.5 hours a day using media.

Vandewater et al (2007) investigated media use in children 0 – 6 years old and their families. They found that 98% of families surveyed owned at least one TV with an average of 2.5 TVs per household, and that 18% of children 0-2 years old and 43% of children 3-4 years old had a TV in their room. Sixty-eight percent of children 0-2 years old did not meet the AAP recommended guidelines of no TV, while 44% of children 3-4 years old and 30% of children 5-6 years old did not meet the AAP guideline of less than 2 hours of TV a day.

Physical Ailments

According to data from Statistics Canada, 26% of children and adolescents in Canada were considered 'overweight' or 'obese' in 2005 as compared with 15% of youth in 1978/1979, a 70% increase in 25 years. Those youth most at risk were 12 to 17 year olds, whose 'overweight' and 'obese' population more than doubled from 14% to 29%, while the 'obese' population tripled from 3% to 9%. These results are alarming given the physical and mental impacts of youth obesity, and given the evidence of even stronger related trends in the U.S. (see Troiano, R., Flegal, K., Kuczmarski, R., Campbell, S., & Johnson, C., 1995; Ogden, C., Carroll, M., Curtin, L., Mcdowell, M., Tabak, C., & Flegal, K., 2006).

Lovasi et al (2009) examined children 4-5 years old and children under 15 who were hospitalized for asthma and were living in New York City. Children 4-5 years old living in areas with higher street-tree density had a significantly lower prevalence of asthma, which held true after controlling for sociodemographic characteristics, population density, and proximity to pollution sources. Researchers were able to make an adjusted estimate that an increase in 1 standard deviation (343 trees / km^2) equated to a 29% lower prevalence of early childhood asthma.

Psychological Diagnoses

ADHD is a condition characterized by inattention and impulsivity, which can often lead to behavioural issues or problems at school. One of the main problems with ADHD is that its symptoms are usually first seen by educators and diagnosed by primary care physicians, both of whom may not be adequately informed about the child's life context, may not have enough time to diagnosis accurately, and may not have the knowledge base to understand alternative treatments (Mayes, Bagwell, & Erkulwater, 2008). Complicating the problem is that a diagnosis of ADHD involves a large degree of subjectivity (an estimate of prevalence rates ranges from 2% to 18% among U.S. communities), and also that stimulants are Schedule II drugs, effective in helping individuals *with or without* ADHD. This latter point is especially important, as caregivers may be easily convinced that stimulants are effective in helping their child, regardless of whether these chidren require a diagnosis (Mayes, Bagwell, & Erkulwater, 2008). A study by Polanczyk et al (2007) assesses the prevalence of ADHD and Hyperkinetic Disorder (HD; the World Health

Organization's diagnostic equivalent of ADHD) among youths worldwide, finding that of 102 studies comprising 171,756 subjects, the current incidence of diagnosis is 5.29%.

According to Collins et al (2004), anxiety disorders are the most prevalent of all mental health problems. For children and adolescents specifically, the prevalence of anxiety disorders has been estimated at approximately 10%, and the prevalence of MDD has been estimated to be between 6% and 8%. The prevalence of depression is thought to be increasing, and it is estimated that by 18 years of age, 25% of adolescents have had at least one depressive episode. These numbers may be an underrepresentation of the actual prevalence, as the prevalence of subclinical anxiety and depressive symptoms is much higher and may constitute a risk factor for the development of related disorders (Collins et al, 2004).

Prescription Medications

Prescription stimulants have been in use for psychological disorders since 1937 under half a dozen diagnostic labels with similar core symptoms as ADHD. However it was not until the mid-1990s that prescriptions for these medications increased substantially owing to an amalgamation of clinical, political, economic, and educational trends, an alignment of incentives, and the growth in scientific knowledge (Mayes, Bagwell, & Erkulwater, 2008). One of the main problems with these medications is their side effects, which most commonly include decreased appetite, sleep problems, stomachaches, and headaches, but may also include other

side effects such as the development of tics or flattened emotions (National Institute of Mental Health, 2008).

Along with the rise in stimulant medications comes a rise in other psychotropic medications given to children. The side effects of psychotropic medications lack research with child populations, may produce more negative side effects, and have been shown to adversely affect development through animal studies (Abdulrahman, Costello, Deguzman, Al-Khamees, and Geller, 2011). Side effects of anti-depressants vary depending on the type of medication, but may include nausea, fatigue, anxiety, restlessness, or even increased suicidal thoughts (Smith, Robinson, & Segal, 2011). According to Mayes, Bagwell, & Erkulwater (2008), there was a fourfold increase in prescription and use of stimulants and over a threefold increase in antidepressant use between 1987 and 1996, and antidepressant use continued to rise significantly between 1997 and 2002. Increases in the prescription of antipsychotic medications increased nearly five times, from approximately 0.275% between 1993 and 1995, to approximately 1.4% of the school-age population in 2003.

An indirect problem with prescription medications has arisen because of the money and power given to the pharmaceutical companies that produce them. According to a lecture given by David Healy (2000), the pharmaceutical industry is fraught with problems including inventing patients during clinical trials, ghost writing, failing to report trials that sponsors do not agree with, and flooding the research literature with over-trials to make meta-analyses more complicated. Healy argues that the popularly portrayed era of “evidence based medicine” should be

more appropriately termed the era of "evidence biased medicine," in that clinical trials show treatment effects, which is not the same as showing that the drug works, and in many trials these 'significant effects' found in actuality are minimal.

A study by Lexchin (2008) highlights pharmaceutical corporations' spending in terms of drug promotion and research/development. The study found that pharmaceutical companies spent $57.4 billion on promotion as compared with $31.5 billion on research and development in 2004. This point suggests that corporations are more concerned with selling their products than testing them and developing alternatives. In light of this understanding of the motivations behind many pharmaceutical corporations, contact with nature and physical activity seem that much more pertinent and empowering solutions to the nature deficit disorder than pills for children, parents, and educators.

Ecopsychology Theories

According to Louv (2005), despite the negative trends, there is a solution through understanding our evolutionary and cultural roots as a species within natural environments. The fields of environmental psychology and ecopsychology have begun to explain the mental effects of contact with natural areas through studies of viewing of natural landscapes, living in close proximity to natural areas, and activities in natural areas. Several theories have been helpful in guiding this field, most notably Wilson's Biophilia (Wilson, 1984), the Kaplan's Attention Restoration Theory (Kaplan & Kaplan, 1989), and Ulrich's Psycho-Evolutionary Theory (PET; Ulrich, 1983).

Wilson's (1984) Biophilia hypothesis proposes that humans have evolved with a genetic necessity to interact with other living organisms, and that this need has been linked to our species owing to both biological and cultural ties to nature. Biophilia implies that as we disconnect increasingly from nature we lose the ability to benefit from contact with other living organisms, and that this loss manifests in negative physical and mental health consequences (Besthorn & Saleebey, 2003). One of the tenets of the Biophilia hypothesis is that rules for learning that have been honed over years of evolution are not adequately replaced by man-made simulations of these same rules. These fragmented simulations of learning are handed down over generations, resulting in a negative impact on both individuals and groups as they become more out of sync with natural learning processes (Penn & Mysterud, 2007). Biophilia stands in contrast to Pergams & Zaradic's 'Videophilia' hypothesis, a term that has recently been used in a negative context to describe our species' increasing connection to electronic media (Pergams & Zaradic, 2007).

Stephen and Rachel Kaplan's Attention Restoration Theory (ART) has been arguably the most influential theory in guiding empirical research on environmental psychology and ecopsychology through studying the effects of nature on attention. ART suggests that we all engage in directed attention when concentrating on work, a state that requires mental effort and can be fatigued by overuse. Overusing directed attention manifests in an inability to focus, performance errors, social incivility, and irritability. ART posits that directed attention may be restored by settings that have each of four key properties: fascination (focusing attention without mental effort), being away (different from one's usual environment), extent

(mentally engaging and promoting exploration), and compatibility (activities a good fit for the setting). Based upon these four properties, natural settings have been proposed as high in restorative capacity. The Kaplan's theory describes the effects of nature on attention as restoring directed attention, allowing the individual to maintain focus and reduce mental stressors (Herzog & Strevey, 2008).

Ulrich's Psycho-Evolutionary Theory (PET; Ulrich, 1983) views stress as a physiological response to any situation that threatens one's well-being, including negative emotions and physiological arousal. Settings that engender a moderate level of interest, pleasantness, and calmness allow recovery from stress in three ways: positive affect replacing negative affect, inhibition of negative thoughts, and reduction in autonomic arousal. Settings that allow stress recovery include those with moderate object depth and complexity such as having trees or bushes, a focal point like the top of a mountain, and the presence of appropriate content that fits with the scenery. Many natural settings score at a high level on these features, which in turn allows for a substantial recovery from stress. This theory has been scientifically validated and remains significant in influencing current research (Hartig, Evans, Jamner, Davis, & Garling, 2003; Herzog & Strevey, 2008).

Ecopsychology Research

The majority of studies involve adults, however there are many studies also involving children that look more closely at the nature deficit disorder. Both studies of adult and child populations can be seen in those that examine proximity to

natural areas and activity in natural areas. Several studies also examine the influence of childhood experiences in natural areas on environmental preferences.

Adults: Proximity to Natural Areas

A review by Velarde, Fry, & Tveit (2007) investigated the effects of viewing natural landscapes on indicators of health among 31 studies conducted between 1979 and 2006. Half of the studies used images of landscapes, while the other half used real landscapes. Their analysis found that viewing landscapes allowed for short-term recovery from stress, increased recovery from physical illness, and reduced incidence of physical illness. Viewing landscapes also influenced long-term behavioural change and overall improvement in well-being, mostly through increased social interactions and decreased aggressive behaviour. Results from several studies also suggested that the presence of open water benefitted health, although this was not directly studied and remains in need of further research.

A review by Kaczunski & Henderson (2007) examined environmental correlates of physical activity in 50 studies. Researchers found that in 40% of the studies, all or most of the relationships between natural areas and physical activity were positive, while 40% of studies reported mixed findings, and 18% of studies reported non-significant relationships. The authors concluded that physical activity and proximity to parks or recreation spots were unrelated, despite mixed evidence.

A study by Herzog & Strevey (2008) investigated contact with nature, sense of humour, and aspects of psychological well-being by administering questionnaires to over 800 undergraduate students at a mid-west U.S. university. Researchers

found that contact with nature was most significantly associated with effective functioning (r = .26), followed by personal development (r = .13). Although it is possible that high functioning people may be more inclined to seek natural areas, the results from these studies indicate that proximity to natural areas has short- and long-term positive effects on adults, including increasing physical activity and effective functioning while reducing stress and illness.

Adults: Activity in Natural Areas

Hartig, Evans, Jamner, Davis, & Garling (2003) studied the effects of environmental restoration during a 20 minute walk on 112 university students in California. Participants were divided into 4 groups by environmental condition (park vs. urban downtown) and pre-treatment task condition (task vs. no-task; the task group also completed two stressor tasks given before the walk lasting for 50 minutes). Instruments included a blood pressure monitor and a battery of psychological tests to measure affective states and attention. The researchers found that there was a higher initial decline in blood pressure as well as a slightly lower blood pressure overall during the park walk as compared to the urban walk. Participants in the park condition had a greater overall happiness during the walk and performed better on an attention task after the walk as compared to individuals walking through the urban zone. Those in the park condition also had increased positive affect and decreased anger/aggression between the beginning and end of the walk, while the opposite pattern was shown for those walking in the urban area.

Pretty, Peacock, Hine, Sellens, South, & Griffin (2007) studied the effect of

exercise in natural environments on self-esteem and mood disturbances for 263 participants from 10 case studies across the U.K. Participants were measured on general physiological and psychological health, as well as asked general information about their level of physical fitness and lifestyle before taking part in each study. Self-esteem and mood were measured before and after the time spent performing a specific physical activity. Exercise in the studies lasted from 2 to 10 hours and included walking, boating, fishing, mountain biking, horseback riding, woodland activities, and conservation activities. Results showed significantly improved self-esteem and an improvement on 4 of 6 of the mood subscales: anger-hostility, confusion-bewilderment, depression-dejection, and tension-anxiety. An overall mood disturbance score was calculated using each of the six mood subscales, for which the improvement in overall mood was significant. The results from these studies suggest that activity in natural areas lowers blood pressure, increases attention, and benefits several mood states.

Children / Adolescents: Proximity to Natural Areas

Wells (2000) examined the effect of exposure to nature on the cognitive functioning of children from low-income families in a housing environment in Michigan. Children's cognitive capacity was assessed before and after moving into a new home environment which included significantly more natural elements than the previous home environment. Children whose homes improved the most in natural elements tended to have the highest levels of cognitive functioning after

moving, and the level of change in natural elements was found to significantly predict a change in attention capacity after moving.

Wells & Evans (2003) studied the beneficial effect of nature on well-being in acting as a buffer for the impact of stressful life events. Participants included rural children from New York State who were assessed on psychological distress by maternal reports and on self-worth by child self-report. The presence of natural areas helped to moderate the effect of stressful events, and those in highly natural areas were found to experience distress less than those in minimally natural areas.

Cohen, Ashwood, Scott, Overton, Evenson, Staten, Porter, McKenzie, & Catellier (2006) investigated the influence of proximity to parks, park type, and park features on physical activity with a nationwide cohort of teenage girls. The number of parks and the type and features of these parks within a half-mile radius around the home influenced girls' metabolic equivalent-weighted moderate/vigorous physical activity (MW-MVPA) outside of school. Researchers were able to calculate an increase in girls' MW-MVPA outside of school hours of 2.8%, or 17 minutes over 6 days, for each park within a half-mile radius of their home.

Scott, Cohen, Evenson, Elder, Catellier, Ashwood, & Overton (2007) examined weekend accessibility to school grounds, body mass index (BMI) and physical activity among the same nation-wide cohort of teenage girls used in Cohen et al (2006). Results showed that each park within a half-mile radius of the home increased MW-MVPA by 3% on weekends.

Babey, Hastert, Yu, & Brown (2008) studied the effect of proximity and access to safe parks had on adolescents physical activity. Participants included over

4000 urban and rural adolescents ages 12-17 taken from the California Health Interview Survey (2003). Researchers found that adolescents who had access to a safe park participated in more regular physical activity than those who did not have access (71.8% vs. 67.3%), and that less adolescents with access to a safe park did not engage in regular physical activity than adolescents without access to a safe park (10.3% vs. 6.4%). Urban adolescents with access to a safe park were more likely to be regularly active if they were living in apartments (but not houses), neighbourhoods perceived as unsafe, and lower-income families.

Rose, Morgan, Ip, Kifley, Huynh, Smith, & Mitchell (2008) investigated physical activity, outdoor activity, and near- vs. mid-distance activity for two populations of youth ages 6 and 12 years old. Near-distance activity included homework, reading, and handheld computer use, while mid-distance activity included watching television, playing videogames, and using computers. Parents estimated 6-year olds' activity behaviours, while 12 year olds reported their own levels of activity. Researchers found that those who spent more time outdoors had a more hyperopic mean spherical equivalent refractive error, and thus a less myopic mean eyesight than those who spent less time outdoors for 6 year olds, and for 12 year olds without parents having myopic difficulties with eyesight. The association between near-distance activity and mean SER was only significant for those without myopic parents. After adjusting for hours spent outdoors excluding sports, this trend became even more significant, suggesting that being outdoors, not physical activity, may be the crucial factor in proper ocular development.

Children / Adolescents: Activity in Nature

Kellert (1998) studied wilderness-based programs and their effect on adolescents' well being. Both retrospective and longitudinal studies examined three national outdoor education organizations, the Student Conservation Association (SCA), the National Outdoor Leadership School (NOLS), and Outward Bound (OB). Many youths and adults who were taking part or had previously taken part in these programs reported aspects of personal and intellectual growth, and some experienced aspects of spiritual development. Many improved their self-esteem, self-confidence, independence, autonomy, and initiative, the effects of which remained several years later.

Taylor, Kuo, & Sullivan (2001) examined the influence of natural areas in alleviating symptoms of ADHD for 96 youths age 7-12 with a diagnosis of ADHD. Parents were asked to describe their children's activities, their ADHD symptoms after these activities were finished, and their child's regular environments, along with providing diagnostic and demographic information. Researchers found that the more natural the child's play setting, the greater the reduction found in ADHD symptoms, although this was not found for neighbourhood or household settings. Windowless settings had an opposite effect as compared to natural settings and tended to exacerbate ADHD symptoms.

Kuo & Taylor (2004) advertised in major U.S. newspapers and on the website of Children and Adults with ADHD (www.chadd.org) in order to recruit parents of children with ADHD to complete a survey. Parents rated the severity of their child's ADHD symptoms an hour after common activities in a range of contexts. Outdoor

activities in natural areas significantly reduced ADHD symptoms regardless of social context, as contrasted with outdoor activities in man-made areas and indoor activities done alone or in pairs. The effect of outdoor activities in natural areas remained significant for 54 of 56 sub-samples across age groups, household income brackets, different U.S. regions, community types, symptom severities (excepting those with 'very severe' symptoms), those with co-morbid disorders (excepting those with oppositional defiant disorder), and those with learning disabilities. Analysis by setting indicated that the same activities reduced ADHD symptoms significantly more in outdoor natural environments than in outdoor man-made environments or indoor environments.

Taylor & Kuo (2009) studied the effects of walking in 3 different environments on impulsivity and attention for 7-12 year old children with a diagnosis of ADHD. Fifteen boys and 2 girls completed the study, a ratio similar to U.S. national norms. Children completed three walks in a random order through an urban park, a downtown area, and a residential area, in areas matched on potential confounding environmental variables. Children solved several mental puzzles in an indoor facility, then were driven quickly to and from the walk sites. Tests of impulse control and concentration were given before, during, and after the walk. Walks were set for 20 minutes at an easy speed, and children were escorted by a guide who attempted to refrain from talking. Researchers found that children's concentration levels were significantly better following the walk in the park than either of the other two locations. The researchers were able to compare effect sizes on one of the tests used, the Digit Span Backwards (DSB) test, to the reported results of a similar

test to the DSB for two methylphenidates. The effect size of the advantage of the park walk over the downtown area was .52 and over the residential area was .77, compared to the effect sizes of .59 and .54 for Metadate CD and Concerta, respectively.

A review by Burdette & Whitaker (2005) investigated the effects of unstructured free play in natural areas on childhood development. The authors found that unstructured free play in natural areas promotes cognitive, social, and emotional growth in children. Cognitive growth included increases in creativity, problem-solving, focus, and self-discipline, while social growth included increases in cooperative skills, flexibility, and self-awareness. Emotional growth included a reduction in both stress and aggression, along with increased happiness.

A review by Hinkley, Crawford, Salmon, Okely, & Hesketh (2008) examined correlates of preschool children's physical activity in 24 studies published between 1980 and 2007. Half of the studies reviewed showed that more time spent watching TV and engaging in sedentary behaviours was correlated with decreased levels of physical activity, while half of the studies showed no association between these variables. Those who spent more play time outdoors also tended to engage in increased levels of physical activity.

A review by Bell & Dyment (2006) investigated natural play areas in schools and their effect on children and local communities. The authors found that natural play areas in schools support a wider variety of play opportunities promoting more physical activity, and encourage participation in more light-to-moderate physical activity. Natural school play areas encourage more physical activity by providing

children with non-competitive, open-ended play spaces. Such spaces also provide opportunities for the community to participate in maintenance of greenspace, bringing individuals of all ages together and strengthening the community. This latter point may be especially important according to Shields (2008), who found that a sense of belonging to a community was related to increased self-perceived levels of general and mental health. These studies show a number of measurable benefits for youth associated with activities in natural areas including personal, social, cognitive, emotional, and spiritual growth, reductions in ADHD symptoms, and encouraging collaborative social interactions.

Childhood Experience in Natural Areas and Environmentalism

A study by Bixler, Floyd, & Hammit (2002) examined childhood play in natural environments and its effect on adult environmental preferences among almost 2000 adults in the United States. Researchers found that individuals who reported playing in wild environments had more positive perceptions of natural environments, participated in more outdoor recreation activities, and were involved in a greater number of natural environment-based occupations. The authors concluded that childhood play in natural environments may be related to environmental competencies and preferences, but not necessarily an intellectual interest in environmental science or environmentalism.

Wells & Lekies (2006) investigated childhood attitudes and environmental attitudes and ecological behaviours in over 2000 adults. Researchers found that children who spent time in 'wild' nature (hiking, camping, etc) had significantly

increased environmental attitudes and performed significantly more ecological behaviours. Children who spent time in 'domesticated' nature (picking flowers, planting seeds, etc) had significantly increased environmental attitudes. These studies indicate that childhood experience in natural areas encourages later interest in environment-based activities, and may be involved in promoting environmental attitudes and encouraging ecological behaviours.

Exercise Neuroscience

According to author John Ratey in *Spark: The Revolutionary New Science of Exercise and the Brain* (2008), recent developments in neuroscience have radically changed the notion of separation between body and brain. In addition to the research done with human participants, studies of rats are forming an intellectual framework through which neuroscientists can explain the effect of exercise on consciousness, development, and ultimately survival. While researchers have long known about the neurotransmitters glutamate, gamma-amino butyric acid (GABA), dopamine, norepinephrine, and serotonin, along with the hormones atrial natriuretic peptide (ANP), and human growth hormone (HGH), the more recent discovery of a class of hormones termed 'growth factors' has deepened scientific understandings of neurogenesis, neuroplasticity, and neurodegeneration. Of these growth factors, brain-derived neurotrophic factor (BDNF) is vital to understanding how powerful physical activity can be in strengthening learning and alleviating mental health issues. Along with BDNF three other growth factors help to understand this 'new science': Insulin-like growth factor (IGF-1), vascular

endothelial growth factor (VEGF), and fibroblast growth factor (FGF-2), all of which contribute to building neuronal connectivity.

Eighty percent of neuronal signaling occurs through a combination of glutamate, which stimulates neuronal firing, and GABA, which hampers neuronal activity. Glutamate is essential to the learning process as it delivers signals between neurons when they first start binding. Dopamine can play various roles in the brain, and is involved in learning, reward, attention, and movement. Norepinephrine regulates behaviour and influences mood, attention, motivation, and arousal. Serotonin helps keep brain activity under control, and is involved in mood, impulsivity, anger, and aggressiveness. ANP is released by heart muscles to combat the stress response by reducing neuronal signaling and dampening distractions. HGH has recently been under scientific study due to its ability to substantially increase neuronal growth. High-intensity physical activity has been shown to promote the growth of HGH in the brain, which has huge implications for executive functioning and neuronal development (Ratey, 2008).

Ratey describes BDNF as 'miracle-gro for the brain,' as it helps new dendritic growth, mitigates the flow of ions at the synapse to increase neurotransmission, and activates genes inside cells to make more BDNF, serotonin, and proteins. BDNF increases the functional capability of neurons, and is crucial to learning, anxiety, mood, and attention. IGF-1, VEGF, and FGF-2 enter the blood-brain barrier and work with BDNF to increase neuronal blood flow and functioning. IGF-1 is a growth hormone released by muscles when they need fuel, which delivers glucose to neurons with the help of insulin. BDNF increases the uptake of IGF-1 during physical

activity, allowing heightened blood flow and increasing neuroplasticity, neurogenesis, and long-term potentiation (LTP; see below). VEGF helps to build blood capillaries in the brain, and changes the blood-brain barrier to allow other growth factors into the brain during physical activity. FGF-2 helps tissue grow, and is important to the process of LTP through its role in expanding the neuronal vascular system. In addition to reducing stress, these growth factors help to naturally regulate levels of serotonin, dopamine, and norepinephrine (Ratey, 2008).

LTP is the process involved in creating memories and learning, and is key to understanding the science behind the growth factors and their effects on the brain. LTP involves increasing a connection between neurons, and after some neuronal communication the link between them becomes stronger and form the basis of memory. The concept that we can increase neuronal growth through exercise has many wide-reaching implications. Along with LTP, exercise helps to relieve general anxiety and symptoms of stress by releasing GABA and ANP to dampen their adverse effects, increasing the stress threshold at which point feelings of anxiety are experienced (Ratey, 2008).

Along with increasing learning and resistance to stress and anxiety, the increase in dopamine, serotonin and norepinephrine helps to naturally improve attention, decrease impulsivity, and balance mood. By building the connections between synapses and increasing blood flow to the brain, the attention system becomes more finely tuned, able to both reduce the influence of distractions, and allow conscious thought to focus on the task at hand. Along with increasing attentional capacity, the release of the many neurotransmitters, hormones, and

growth factors has a balancing effect on mood. While prescription medications may try to balance the formula, exercise releases everything in proportion to our genetic makeup just like individualized prescriptions, helping to balance our mood and change negative thought processes (Ratey, 2008).

Camp Environments

Given the trends describing a disconnection from nature and in light of the evidence from ecopsychology and exercise neuroscience, there is ample reason to investigate the camp environment as children participate in many physical activities integrated with the natural environment. According to Fine (2007) camps are an ideal place to experience outdoor activity, develop positive eating habits, and improve social interactions, all of which contribute to improving overall well-being. Campers often leave the camp environment with increased self-esteem and independence, greater social competence, new friendships, and a heightened sense of exploration. Many camps also help develop leadership skills, environmental awareness, and spirituality, and may also be influential in engendering strong values and decision-making (Fine, 2007). These settings provide an important environment that may better assist children in learning appropriate behaviours and having a more holistic development designed to fit their evolutionary needs.

Seal & Seal (2011) investigated the influence of a wellness summer camp on eating habits, physical activity, and self-perceptions of competence for 18 children ages 8 - 12. The camp is a 10-day nutrition and physical activity intervention given to small groups at a university in the United States. Results showed a change from

pre-test to post-test such that children significantly improved their behaviours and knowledge of eating habits, as well as their perceptions of self-competence. However, children were not seen to significantly improve physical activity behaviours or knowledge of physical activity during the 10 days.

The movement to camp environments is also more closely aligned with the Paleolithic rhythm, a concept that suggests our ancestors experienced a lot more daily physical activity than we do (Ratey, 2008). Since changes in genetic makeup occur over an evolutionary time-scale, and as the problematic understanding of the disconnection from nature is only recent, it is increasingly more imperative that we recognize our need to surround ourselves with natural environments and take part in more physical activity. While most of the population now live and work in cities and mostly behind desks in relatively sedentary jobs, the pattern of work was much different for most of our evolution in that almost everybody lived and worked in direct physical interactions with the natural environment. Summer breaks in school were originally designed for this purpose: youth were to go help their parents farm during the summer work and harvest period, then get schooling the rest of the year (Louv, 2005). Since our lifestyles have changed so quickly and our genetics haven't, we need to increase the potential to get our youth outdoors and being active, another vital reason that camps are an ideal place for childhood development. The purpose of this study then is to investigate staff and parents' perspectives of the role of a camp in children's development primarily in terms of contact with nature and physical activity.

Method

Rationale

One of the issues with the multi-dimensional nature of the problem of the disconnection from nature has to due with the reductionist lens typically used in modern scientific approaches. As Capra (2008) explains there is a need to go beyond reductionism to systems thinking, and start thinking of problems "in terms of relationships, patterns, and context." Qualitative research provides a more integrated, contextual approach to the scientific method that attempts to explore and describe phenomena rather than being predominantly hypothesis-driven. The qualitative research method employed in the current study, interpretive phenomenological analysis, attempts to understand the contextual aspects of individuals' experiences while recognizing that the researcher can never directly access them. Interpretive phenomenological analysis aims to identify the elements of language and interpret them with an awareness of both personal and epistemological reflexivity, or in other words incorporating an awareness of both personal understandings and theoretical biases as a researcher (Willig, 2008).

Study Context

The camp under study is located in central Ontario, and provides a camp experience for youth with diagnoses of ADHD, learning disabilities, or autism spectrum disorders. The summer includes 4 camp sessions for children, each lasting 10-14 days during the months of June to August. Each year there are approximately 30 staff members, including cabin counselors, activity counselors, and support staff.

During each camper session there are approximately 35 campers, most of whom are male due to the prevalence of these diagnoses.

Participants

Participants included 7 camp staff (2 male, 5 female) who worked for the camp in the summer of 2011, as well as 3 mothers and 2 grandmothers serving as the most informed caregiver for children who attended the camp in the same summer. Most staff had previous experience as a camper, all staff had previous experience as a camp counselor, and most had worked with individuals with exceptionalities. Aside from the camp executive director and the current camp director who were employed the entire year by the camp, all staff were in their early 20's and were currently attending different universities in Ontario. Most caregivers had professional experience working with youth and with individuals with exceptionalities, and most had previous experience as both a camper and counselor at other camps.

Interview Protocols

All participants were informed about confidentiality and their right to withdraw from the study until its completion. The researcher informed participants of consent verbally, and gave them consent forms to sign in order to indicate permission of their involvement. Camp staff members and caregivers were given different interview protocols designed with open-ended questions, and the conversation was recorded with a digital voice recorder. Most interviews lasted

between thirty and forty-five minutes, although some lasted for up to eighty minutes.

Both the camp staff interview protocol and the parent interview protocol consisted of 12 major questions, including one exploring life history in terms of camp experience. Questions were designed to allow participants a minimal amount of restriction when providing answers, such as "could you please give me a brief overview of camp-related life experiences you've had?" If the participant was unable to answer then more specific questions were asked, such as "what experiences as a staff member have you had at residential or day camps including [this camp]?" The researcher concluded the interview by asking participants if there was anything else they were interested in sharing.

Procedure

Camp staff were notified of the general intent of the study by the researcher during the staff training session in June 2011, and were asked to provide any contact information to be recruited in the fall semester of 2011. Participants were recruited by emails forwarded from the researcher to the camp executive director, who were asked to contact the researcher directly to participate. Interviews were conducted in Southern Ontario at participants' homes, the researcher's home, the camp office, and at libraries. One staff interview was also conducted with a staff member in Northern Ontario with the aid of the communication computer program Skype. Interviews were conducted between early January and early March, 2012.

Data Analysis

The researcher recorded notes throughout the interviews and took notes shortly after the interview was conducted when the participants were finished. Digital audio recordings were made, transcribed, and then analyzed by discovering themes and integrating them into meta-themes according to the method of interpretive phenomenology. The analysis of the interview transcriptions are intended to be understood as the participants' views of their experiences and children's experiences at camp. Responses were coded into themes for each interview, and themes were compared and contrasted across interview groups in order to develop meta-themes. These themes and meta-themes help to explain staff and parents' views of the camp experience.

Results

Four meta-themes emerged through a detailed analysis of the transcriptions of the interviews, and will be discussed from the perspective of the staff followed by the perspective of mothers and grandmothers. Quotes taken directly from the interviews are used in the analysis, in which the letter "I" is used to describe the interviewer and the letter "P" is used to describe the participant. Quotes are taken from staff and caregiver interviews, and are referenced in the order in which the interviews took place, for example "(S2)" refers to the 2nd staff member interview, and "(C4)" refers to the 4th caregiver interview.

1. Encouraging Mental and Physical Benefits and Fostering a Connection to the Environment for Youth from the City through Outdoor Activity

Staff noted that most campers were from the city, and that many campers weren't accustomed to being in the natural environment. While a few campers remained uncomfortable outdoors, the majority of campers warmed up to the natural environment and became more appreciative of natural things during their time at camp. Participants described the natural environment as more calming, as well as allowing more options for physical activity. Most caregivers discussed positive changes regarding their children's appreciation of nature, and some caregivers mentioned increases in environmental knowledge attributed to the camp experience.

1.1. The Natural Environment for Youth from the City

Several staff mentioned that most campers were from large cities, and that many had very little experience being in the natural environment at camp. Most participants felt that being in nature was especially important for youth from the city. As one staff member described,

> "Eighty to eighty five percent of our campers are from um, uh, cities and or towns and or suburbs of a large city like uh like Toronto or Ottawa um, so a lot of them have have either have never been exposed or or have had very little exposure to um uh nature, and so for them to come to to camp… is a major a major thing for them" (S4; 269-274).

Most participants believed that the natural environment was especially helpful for these youth owing to the peacefulness and calmness of nature in comparison to the over-stimulation of the city. One staff member described the camp experience as "a good opportunity for them to like just kinda take in the surroundings rather than feel like overwhelmed by the surroundings" (S1; 154-155). A mother described the city as compared with the natural environment in terms of stimulation saying that

> "the city is designed to be over-stimulating… [when you're] put into more of a natural environment, you're not, you're you're stimulated but on another level it's not so, overwhelming everything is you know calm and cool" (C1; 208-216).

While most staff felt that the majority of campers were comfortable outdoors and enjoyed the experience, several campers were uncomfortable outside and preferred to be doing indoor activities. Several staff described campers' difficulties

in the natural environment in terms of the bugs, the smells, or the heat on some days. As one staff member described, "those same kids that like were freaking out at eco all the time were fine in pottery because it's inside and they could just sit at a table" (S3; 170-172).

1.2. Mental and Physical Effects of Outdoor Activity

Participants described being outdoors as allowing more options for physical activity. Several participants noted the importance of having a balance of both indoor activities and outdoor activities, as they both helped to accomplish different components of the program. As one staff member described,

> "when you're confined to a building… generally the um, the emphasis will be more on uh conversation and and uh the you know that sort of contact whereas when you're out outdoors it opens up the whole sort of, uh spectrum um, you know so, you run around you play you uh you do the activities" (S4; 290-294).

Several staff described most campers as being happier outdoors and wanting to engage in more physical activity in the natural environment. As one staff member described,

> "kids who in the city are indoors all the time… what we see most often is kids getting outside and they're not even wanting to be in their cabin they're wanting to be out there running and jumping and you know at rest hour when they need to be in their cabins they're

> bursting out of the seams they want to get out they wanna go running around" (S2; 360-365).

Several staff also noted the element of open space and the ability to move more freely as being important to campers' desire to be physically active outdoors. One staff member described the drama program in that

> "a lot of the kids hated being inside, like they *hated* it…they were ten times happier outside… because they were enclosed inside and it was sort of a wider, like freer area outside" (S5; 286-289).

Several staff noted that the outdoor environment was more conducive to youths' levels of frustration. As one staff member described, "I felt that like sometimes being indoors you felt stuck whereas being outdoors there was um a release and they felt more free" (S6; 170-171).

Several caregivers described the natural environment as being more calming, and mentioned its effect on symptoms of ADHD. One parent described her daughter's need for time outdoors, in that

> "She has to have that twenty minutes of outside just to, unwind and burn off some steam otherwise she's so hard to handle, and she becomes very moody and you can tell she starts stressing, about something that happened and she can't process it… so we've developed you know: go take twenty minutes… just go outside and come back… and it works for her, you don't do it, and you can tell the difference… she needs that outside time, it really really makes a difference" (C1; 273-283).

Another grandmother described her daughter's calming in the rural environment of their current home, in that

> "being surrounded by trees and uh just, out in open spaces with high grass and, all that stuff I think is just very calming, I find it calming and I know [my granddaughter] does… before we moved up this way we lived in Kitchener… and I think um, moving from this wild environment into an area where there was all this open space and nature… I think it kind of calmed her right down like it it helped to calm her or sooth her" (C3; 68-77).

One grandmother described her grandson's calming and slowing down owing to his early childhood experience in the natural environment, in that

> "because of [my grandson] and moving to farm country with him when he was small, his enjoyment of all things natural, snakes, spiders, flies, plants, fish frogs, that was his whole, life for a long time, moving here to the suburb, he misses that and I think he was happier with that, I think he was more, um he was calmer with that than he is now that he doesn't have that… he's always looking at things that look a little different sticks stones whatever, he's much more interested it seems so calm him, as opposed to, he's always a little, he's always on the edge he's always, peripatetic he's always moving fast, when he does those kinds of things he slows totally slows down… even his speech slows down" (C2; 88-99).

Another parent mentioned the camp's role in her daughter's appreciation of nature and its ability to calm, in that "it's kind of awakened, um, kind of a new appreciation, for the environment and nature and how it works and just, she finds it very calming now" (C1; 376-378).

1.3. Connection to Nature and Interest in the Environment

Many staff described changes in campers' appreciation of the environment during their time spent at camp, especially in those campers who had little contact with nature. Many campers were apprehensive when the camp session began about being in the natural environment, but became more comfortable within it and interested in natural things after spending time at camp. As one staff member described,

> "I think a lot of them, were scared of a lot of things outside and over the course of the week got so much more comfortable with nature and I think that's the first step in, yeah in like loving the environment and like wanting to protect it" (S1; 278-281).

Several staff mentioned how the youth that didn't get much contact with nature seemed to gain a stronger connection from their time spent in the natural environment at camp. One staff member mentioned that "the kids it has like a different effect on especially for the ones that haven't been out like in it before it seems to have a bigger ef- like effect" (S3; 181-183).

Several staff noted campers' interest of the environment, and how it was important to allow campers to be curious in discovering the natural environment.

As one staff member described, "kids being out in nature and observing it gets and their curiosity taking over it gets them thinking about the land that they're living on and how they live and how we impact um, nature" (S2; 329-331). Several staff stressed the importance of fostering an appreciation of nature by having experiences in it. As one staff member described,

> "they don't have the opportunities to get out into nature… this camp really offered the opportunity to work through and experience uh all that nature has to offer… the respect of nature and the, understanding that um some things die and other things grow I feel all gave a a overall appreciation of nature to the children um at such such a pivotal time in their lives" (S6; 119-125).

Several staff believed that the wilderness tripping experiences were particularly useful in fostering a connection to the environment. One staff member described her previous experience on a wilderness trip as "what made me decide I wanted to major in environmental science or like an environmental field so I think my wilderness trip had a huge impact on my life" (S1; 302-304). Another staff member described a campers' connection to nature fostered through wilderness tripping, in that

> "this one kid and he was such like an inner city kid… he'd never really been in nature before and he was having he he ended up going on an out trip… when he came back from that trip he was like at one with nature like he loved it" (S3; 153-157).

Several caregivers described their children's increased interest and connection to the natural environment owing to the camp experience. As one mother described,

> "I: How does the camp experience, affect your child's or [your daughter's] um, environmental preferences?
>
> P: She now likes to go hiking, we find you know there's a lot of trails around here 'cause we're not far from the Rouge, so now she likes to go hiking she likes to go, wandering and exploring where she didn't before" (C1; 357-361).

Another grandmother described her grandson's interest and knowledge in nature, in that

> "he seems to have acquired a great deal of knowledge about these things now I know he c- where he got the snakes from, but where he got the knowledge about the uh, mushrooms and sticks and other things that he picks up I don't know, but he's, he seems to be very knowledgeable and very interested" (C2; 102-105).

2. Promoting Greater Levels of Physical Activity at Camp in Order to Encourage a Healthy Lifestyle, Reduce Frustrations, and Control Behaviour

Staff described campers' high level of physical activity at camp, while most caregivers mentioned that campers engaged in significantly less activity during the school year. Many participants described better sleep as a direct outcome of campers' increased physical activity at camp. Physical activity was also seen by

some staff to contribute to better eating habits, as well as by some participants for being able to self-regulate frustrations and control behaviours. Several staff noted that campers were more happy when active, and that they were easier to handle when they were engaged in regular physical activity. Staff noted their goal to keep campers active during the day in order to allow everyone at camp to sleep better.

2.1. Levels of Physical Activity at Camp Compared with Home

Most participants suggested that campers were significantly more active at camp than they were at home or in school. Staff described campers' level of physical activity at camp as high, with estimations of strenuous physical activity being between 5 to 9 hours daily. Several staff noted the overall level of physical activity being best described by the campers' being constantly active. As one staff member described, "their day never stops from the moment they're up in the morning until they go to sleep" (S4; 389-390). Another staff member described the activities as mostly active, saying that "the whole day I mean like all the all the activities require some kind of movement" (S5; 329-330). Most staff seemed to think that this high level of activity was important for campers, and that the environment was conducive to increasing physical activity. One staff member described the opportunity for physical activity at camp as "there's a lot more opportunity for them to get more physical activity if they want to" (S3; 210-211). Another staff member described their own experience as a camper as "when I was a kid that was the most exercise I got 'cause it's twenty four seven just running around jumping up and down" (S2; 264-265).

While one caregiver described their child as participating in a lot of physical activity at home, most caregivers described relatively lower levels of physical activity undertaken by their children. Most caregivers estimates of physical activity ranged from between 2 hours a week to 9 hours a week, although one mother described her son as participating in 2 to 8 hours of physical activity daily. As one mother described,

> "I: what activities do you think he benefits from the most?
>
> P: He'll tell you, that it's pottery and the the, the arts stuff, I'll tell you that it's any time you can get him in a swimming pool, and moving physically… [my son] will be lazier to choose a physical activity like walking movement anything that requires, actual physical exertion and far more likely to go for a sedentary, um activity" (C5; 159-164).

While several staff described the majority of youth as wanting to participate in physically active programming, several participants described some children's aversion to physical activity and difficulties in getting them to be physically active. As one staff member described,

> "for like the few that are essentially just like lazy or aren't used to physical activity I think a few of them it made their behaviour a little bit more difficult it took it was hard to get some kids motivated to do physical activity" (S1; 216-219).

One mother suggested that disguising the physical component of games and important activities was useful in getting her son to be physically active, saying that

> "I generally find that if I, if it's in the form of a game he does not realize that he's doing something physical… the fact that he has to walk the dog the fact that he has to, you know go out and go and get something for me forces physical activity but if I said to him: hi let's go for a run just for the sake of a run? No way it's not gonna happen" (C5; 217-224).

2.2. Physical Activity Improves Sleep and Eating Habits

Many participants believed that physical activity was important for campers' sleep. As one staff member suggested, "I find there are definitely some kids who need that physical activity who need to be r- running around so that they can you know go to sleep at night" (S1; 199-201). Several participants described physical activity as being important for both sleep and eating habits. As one staff member suggested,

> "a lot of kids are pooped by the end of the day you know and they're tired and uh you you see them eating more or eating healthier at you know during meal times like their appetites seem healthier and you know a lot of them are sleeping better at night too" (S2; 471-475).

Caregivers also believed that physical activity directly benefitted their children's sleep. As one grandmother described, "the more activity she has the better she sleeps at night" (C3; 105).

Several staff noted that one of the counselors' implicit goals were to tire campers out so that they will sleep at night. As one staff member described,

> "we don't want to admit it but the goal of every counselor is to get them tired enough at the end of the day that they'll just fall asleep because when it's like ten o'clock and they're still riled up like it's a *long* night uh if they don't fall asleep" (S7; 414-417).

Another staff member described their role in tiring campers out and campers' adjustment in sleeping habits at camp, saying that

> "they go to bed right away because they're so tired, I mean the trick is to just tire them out all day… just to get them tired enough that they'll go to sleep… the first night is always the hardest, but the second day, they're like, they're all like give them five minutes and they're all out" (S5; 97-102).

Staff mentioned swimming and running as being two physical behaviours that were effective in making campers tired, suggesting that "running's good 'cause kids have way too much energy it'll burn them out" (S3; 201-202) and that "a lot of swimming I think that's, a big tirer-outer" (S1; 182-183).

2.3. Reduction in Symptoms of ADHD through Physical Activity

Several participants suggested that physical activity was important to campers' self-regulation of difficult behaviours, with some reference to symptoms of ADHD. As one staff member described,

> "you read a camper who has uh you know on their teacher reports or their family reports is that they are so fidgety and all over the place and inattentive during the school year but we see that they are you

> know being at camp and being able to run around and play and be physical that suddenly you know they're they're not considered hyperactive they're just considered active… they're more focused um you know generally and you see that um they can engage in a conversation without being distracted because they're getting that energy out with you know running around… it kinda helps kids regulate themselves a bit more if they have excess energy… whether that's dealing with people socially or focusing on whatever listening to instructions" (S2; 456-468).

Another staff member described the importance of activity in managing ADHD symptoms, in that

> "generally kids feel better when they're a bit active and uh they've expanded some energy and and whatnot, particularly the the, the children that we serve are for the most part have ADD or ADHD attention deficit disorder uh and a lot of them have hyperactivity as well and so for them it's important to have an opportunity to uh to be active in a in a sort of structured kind of way in a productive kind of way" (S4; 414-420).

As one staff member mentioned, "you definitely notice if they're not getting enough activity like even some kids by the end of pottery like they needed to get up and run around a little bit kids get really antsy and hyper" (S3; 225-227). Another staff member described physical activity as helping campers to maintain calm and focus, suggesting that

> "campers' behaviour was often more calm or relaxed if they had uh if they were tired because they were in the archery field and had to walk all the way to arts and crafts, or if they had swam a whole bunch of laps they were often more centered and able to focus" (S6; 211-214).

Several caregivers described physical activity benefitting youths' symptoms of ADHD at home. As one mother described,

> "I: How do you think physical activity affects his behaviour at home?
> P: If he doesn't do that then we have a child that's, highly strung highly agitated um mouthy um non-compliant, um on edge, um he needs to release" (C4; 160-162).

Another mother described physical activity in benefitting her son's sleep and control of frustrations, leading to better attendance at school, such that

> "if I can get him to do a physical activity and if he's sleeping better, then I generally find he has better control over, his frustrations in the morning, so his morning attendance in class is better" (C5; 251-253).

3. Promoting Social Skills Development for Youth with Social Difficulties through a Supportive Environment and Group Experiences

Participants mentioned social skills as one of the most important benefits campers gain from their camp experience. Participants described campers' social deficits and felt that the camp encouraged social development through a supportive environment. Participants discussed how the campers gained a variety of social skills including self-confidence, relationship building, and cooperation. Several

participants described strong changes in social development as being especially important for these youth. Social skills were seen to develop through cabin group activities, morning activity groups, and interactions within the wider camp community.

3.1. Participants Views of Campers' Social Difficulties

Most participants described how many campers were lacking in various social skills, and as a result many participants described the importance of developing campers' social skills. One staff member described how "a lot of the kids they don't interact with like their peers that much or, other kids in general like it just some of them are kind of anti-social and reserved" (S3; 262-264). Several staff described the importance of "social knowledge and social interactions uh at camp… [which are] important because a lot of these kids are ostracized at school (S7; 449-451).

Several staff described the need for social skills for campers' with differences suggesting that "it helps develop um social skills of children that are are different and yet they promote difference as such a positive and good thing that you should embrace" (S6; 81-83). Several staff mentioned drama as being helpful to encouraging social interaction among campers. As one staff member described,

> "you wouldn't think that you know campers who were s- who have social issues would want to participate in stuff like [drama] but I guess when you've realized that everyone at camp has the same issues

> that you do, it doesn't matter and so you just have fun with it (S7; 256-259).

Another staff member mentioned the importance of the staff being able to relate to the campers in order to connect with them, suggesting that

> "you need you need to relate to kids in some way… if you actually have something that's going on in your life that they can relate to I found that sort of helped a lot because it makes them feel: oh yeah he's going through something too, we can sort of, relate"

Several staff described the importance of music in communication for campers with social difficulties. As one staff member described,

> "we've had campers who their English isn't really good we've had campers who are selectively mute we've had campers who you know can't really, talk to have a hold up a conversation without stuttering the whole way through… singing dancing listening they're part of the group they're com- kind of communicating you know with other people" (S2; 738-745).

Several staff also described the importance of music in communication, in that it is a "different form of communication that appeals to a lot of our kids and campers" (S2; 723-724). One staff member also mentioned the role of music for children with exceptionalities, in that "particularly the kids that have that exception-exceptionalities that ours do uh I find that they gravitate to music generally very well and very easily" (S4; 607-609).

Most caregivers described social skills development as the most important and profound benefit to their children gained through their camp experience. As one grandmother described, "I think the most important thing would be, to be able to interact with his peers according to his age and what is expected of his age group if he were a quote normal child" (C2; 22-23). Several caregivers suggested that the camp helped encourage equality among campers with exceptionalities and promote acceptance and celebration of these differences. As one grandmother described,

> "for children with problems… there is a sense of equality, and the problems are all different... because you have a problem you're equal to the person next to you who may have a bigger and different pro-problem than you its an equalizing thing I think" (C2; 53-58).

3.2. The Supportive Environment at Camp

Participants described the camp as being very supportive, an element that greatly increased their ability to foster social skills in youth in need of more social development. As one staff member described,

> "it plays a more significant role in a lot of their lives because camp for all kids is a very very positive place and you're almost always like positively reinforced at any kind of camp you go to especially at camp like [this camp] where we really strive for that" (S3; 107-110).

Several staff mentioned the importance of the supportive nature of the camp environment. As one staff member described,

> "camp is a little more of a nurturing and supportive environment I find our camp specifically we make sure the kids can act any which way and be supported no matter what so for me I think that's the biggest thing about summer camps" (S2; 224-227).

Several staff described the importance of developing a bond with counselors for campers with exceptionalities. As one staff member described, "you really get to know your counselors and you can really be confident with them and sort of place trust in them which is something that a lot of those kids need at camp" (S5; 28-30). One staff member described the importance of 'closing circle' or 'shout-outs' in encouraging a supportive environment through positive reinforcement. As one staff member described,

> "closing circle… it's our way to end the day together… that's when the kids give shout outs to each other um or to the staff or the staff giving it to the kids… when it's just kind of open say what you want the kids I think it really hits home for the kids that wow, this person didn't need to say anything or they could have talked about anyone but they they noticed me today or they noticed you know um I did this" (S2; 88-96).

Caregivers described camp as supportive and important for their children's and their own development. As one mother described, "I was always in that sort of that outsider crowd it was nice to have a place where, being a little odd or different was ok" (C5; 59-61). Another mother described the supportive nature of the camp experience, saying that

> "they really take a look at what the child can do to feel successful and not a loser, I hate to use that word but, you don't want them thinking: oh well I can't do it I'm not good enough I I'm stupid I'm um I'm retarded or whatever and you know some of those words come from [my son] so that's why I can use those words, um but he never ever used those words coming, from camp" (C4; 84-88)

3.3. Campers' Development of Social Skills

Participants described the social skills that are developed at camp mostly in terms of self-confidence, relationship building, and cooperation. One staff member described his own camp experience building social skills by allowing him to "gain a lot of self-confidence and allowed me to uh to s- to learn social skills that otherwise I wouldn't have uh it gave me the the you know the skills that I needed to make it through life" (S4; 167-170). Another staff member described the importance of making friends and being away from parents in impacting confidence and independence, saying that

> "camp's a place where kids like make friends and they're away from their parents taking a lot of independence and for kids at camp kids who attend [this camp] I think that they don't get those things as much in normal society as other kids might so it's more special for them to receive that more at [this camp] so I think that those things can have a really big impact on kids' confidence and their level of independence" (S3; 110-115).

Most caregivers described the camp having a profound influence on children's self-confidence and self-esteem in terms of social development. As one grandmother described, "they've really helped [my granddaughter] with boosting her self-esteem and actually even her social skills have, really drastically changed from the first year she went to last year" (C3; 42-44). Another mother described her son's confidence in approaching high school, in that "you could see the development that he was ready to go into high-school and and be challenged with high-school skills because he was given an opportunity to be a leader at camp" (C4; 331-333). Another mother described her son's change in self-confidence and social skills in that

> "where [my son] used to sit by himself eating lunch, and not with the clusters of kids all talking, [my son] is far more likely now to be, closer to the cluster, or have conversation with the cluster and then kind of move away from it so, I think [this camp] has taught him, better socializing skills more so than any other" (C5; 440-444).

Several staff described campers' social skills development in terms of relationship building and making friends. One staff member described the importance of campers making friends in that "they learn how to make friends is like a really important one" (S3; 259-260). Another staff member described the importance of camp and the relationships that are developed there, in that

> "you can learn canoeing you know down at waterfront here in Toronto you know you can go to an archery club here and learn... what sets that apart from from the the camp experience is is the human

> side… and the the relation or uh, uh the relationships that are developed" (S; 4645-651).

Several caregivers mentioned their children's increased efforts towards building relationships and making friends. One mother mentioned staff building relationships with campers, in that "the relationship that the staff build with the kids they get to know the kids they know their ins and outs they provide opportunities for um expressing their concerns" (C4; 77-79). Several caregivers described changes in children's development of relationships at home, such as one mother who mentioned that

> "he didn't know how to step forward and engage people necessarily that well in conversations, or to include them and now he's coming to me going: yeah I found so and so can also talk about this or: yeah just got this new computer game and so and so plays it too and so we've started having conversations at lunch" (C5; 434-438).

Another mother described her daughter's change from being recluse to being more social, in that "where she used to be very recluse… coming back from camp she's turned into a social butterfly… she wants to be with her friends now, and she wants to do whatever they're doing" (C1; 239-243).

Several staff described campers' social skills development in terms of cooperating with others. As one staff member described, "having patience and like skills with dealing dealing with other people I guess like social skills a lot of the kids learn at camp" (S3; 267-269). Another staff member described social development and awareness of others, in that the camp experience

> "gives you the bigger picture it just, uh it it it allows you to see and understand the wherefores and the whys um in a variety of, types of individuals… I think it makes you wiser I think it makes you able to um, make better decisions um not just for yourself but for other people" (S4; 198-207).

Several caregivers also mentioned dealing with others as one of the lessons that campers develop through their camp experience. As one mother described,

> "today you're gonna learn how to deal with, you know the social problems that you usually have a problem with bullying and, not being able to get along and how to deal with you know they took that time, to learn how to deal with that, and that was the core focus, of, you know the skills and developing them" (C1; 330-334).

3.4. Activity with the Cabin Group and Wider Camp Community

Participants described the influence of participation in group activities, both in cabin groups and within the broader camp community. Staff described the cabin groups as helpful in encouraging cooperation and group bonding. As one staff member described, "I would say the number one like experience that you get from it would be being in a cabin with four other people or like five other people um your age and kind of in the same situation as you are" (S1; 244-246). Another staff member described the cabin group like a family, in that "you sleep with your cabin you eat breakfast with your cabin you eat lunch with your cabin like, your cabin becomes your family" (S7; 157-159). Staff described cabin group bonding, in that

"the highs are so high and the neg- the lows are so low that you become very bonded to those that you are with because they are all experiencing the same thing with you" (S6; 237-239). Another staff member described the importance of time in cabin group bonding, as "you need that co- that length of time to form that kind of bond and that relationship and you need that time and space to to kind of observe someone and have those discussions" (S2; 573-576).

Many staff described cabin group bonding through wilderness tripping. As one staff member described, "to just stuck to be in a canoe and talk to someone for a couple of days like you don't have any choice but to talk to these people so they're forced to learn more social skills" (S3; 328-330). Another staff member described wilderness tripping as being especially important to cooperation on trip, in that "it just highlights the fact of the importance of, being able to work as a team and that that's when you put your differences aside and you say ok you know, what what do we need to achieve here and how are we gonna do it" (S4; 577-580). One staff member described group bonding and inside jokes, in that

> "*literally* everything on a canoe trip was with your cabin 'cause there's no one else really… it was really good for them uh and they definitely came back to camp like, you know they would have like these little inside jokes or whatever that happened on trip that, would carry through the rest of the session" (S7; 549-554).

Several staff described the social environment of the broader camp as fostering a sense of community. As one staff member described, "it's a small camp and that small camp environment is really important 'cause it fosters a sense of

community among everyone" (S7; 613-614). Another staff member described knowing campers' names, in that "every staff knows every campers name… there's only thirty six campers so I would learn all their names in two days" (S3; 359-362). Several staff described the outdoor pool as being important to allowing community integration, as "the whole camp if they wanted to could be at the pool um and again that interaction between the whole camp" (S7; 250-251). One staff member mentioned the idea of community at camp as being influenced by First Nations culture, in that "being in a community um living having that extended time to live with people and have that social er action social interaction… that is very much First Nations knowledge" (S2; 626-629).

Many staff described the influence of having a mix of ages and sexes in groups at camp as being particularly beneficial to campers' social development. As one staff member described,

> "you're building friendships that aren't based in school and you get, a wider variety… you could be, you know meeting people from… different parts of the city, um and different ages… there's always camp wide events where you're you know with younger kids or older kids" (S7; 163-169).

Staff described the organization of morning groups as being effective for developing social skills, in that

> "for the morning periods… we divide the whole camp into… three different groups which means that campers… will be mixed ages of and mixed sexes uh boys and girls mixed and so on that way the kids

> get to know kids from other cabins and um uh it just increases their their social uh, territory a little bit" (S4; 85-91).

Another staff member described morning groups in that "morning program's… good because they get to meet more people than just the six people who their, they sleep with and who they're around" (S5; 70-74). Several staff described their encouragement of social interaction beyond cabin groups, in that "even if they don't know the other camper in the end that they wanna play with: oh can I play I mean like: yeah we encourage you to" (S7; 606-608).

Participants discussed the importance of music in encouraging larger group participation and a sense of community. As one staff member described,

> "Music is like so important at [this camp] it I think just brings everybody together… kids can go home and sing songs that remind them of camp all year… it has su- such a like togetherness feeling when we're all in a circle or we're all, in dining hall and there's music… it makes it feel like homey" (S1; 307-313).

One staff member described music as influencing the social environment, in that "through the sing-a-longs through the um the reflection song and through the campfires it created such a a warm environment" (S6; 335-336).

Participants described the sing song after dinner as particularly important to social development, although some staff believed that the staff appreciated these experiences more than the campers. As one staff member described, "after dinner we have sing song… it's a, a bonding time I guess with the camp I think it's difficult because [the camp executive director] used to be amazing at kind of bringing

everyone together" (S2; 74-77). One grandmother described her grandson's enthusiasm for sing song, in that it is "an activity that everybody gets together and has a good time… I think he enjoys that because, the fact that he sings badly and he sings loudly, the enthusiasm is what counts" (C2; 210-214). The same grandmother described sing song as being particularly effective in allowing her grandson to feel part of a group, in that

> "I can stand up, and sing in front of everybody I think he had a different, feel about what he was do- he was part of a group and I think [my grandson] is never part of a group he's always on the other side of the group, because the groups he really doesn't fit" (C2; 81-84).

4. Encouraging Youth with Exceptionalities to Learn by Trying New Things, Discovering Strengths, and Challenging Themselves in Physical and Artistic Activities

Participants described the importance of campers being able to try new things and learn at camp for children with exceptionalities. Several staff described the camp promoting experiential learning that was child-driven and informal and compared learning at camp to learning at school. Participants described the camp encouraging campers to try new things, discover strengths, and challenge themselves in order to develop campers' self-esteem and self-confidence. Physical and artistic activities were both seen as important to promoting trying new things, discovering strengths, and challenging themselves.

4.1. Learning at Camp for Youth with Different Learning Styles and Fears

Participants described the experience of learning and trying new things in terms of campers exceptionalities and learning styles. Several staff described the importance of learning at camp for campers with learning disabilities and different learning styles. As one staff member described,

> "a lot of our kids because they have learning disabilities 'cause they learn differently… the way they learn the way they understand the world the way they a hear listen or see is not th- the way, does not match up with the teacher's doing so I think camp… a lot of the way that kids learn… is more likely to match up with the way a child might learn or especially kids with learning disabilities" (S2; 513-522).

Another staff member described experiential learning in camp as important to teaching campers with differences, in that

> "the kids that we serve at [this camp] because of their their uh uh differences or or whatever you wanna call it um, oftentimes they learn best in that sort of an environment where it's it's uh experiential and uh so, [camp's] a great tool to to learn and to teach" (S4; 447-450).

One staff member described the experiential component as adding to comprehension of lessons learned by campers with learning disabilities, in that

> "learning in the camp environment is almost uh is a lot more, uh realistic or it's it's taught in a different way so that kids can learn differently through experiential… in a camp setting we teach the kids

> by showing them and I feel like especially with uh children with learning behavioural disabilities that that extra step of teaching um allows them to further comprehend what whatever it is that they're learning" (S6; 219-224).

Several staff also described the importance of music in communicating lessons to campers with different learning styles, in that

> "in mainstream schools it there's one main form of communication and that might not match up with the best you know the way they we learn or a lot of our campers learn, music is one of those forms of communication that does match up a bit better" (S2; 727-730).

Several staff mentioned the influence of campers' fears in preventing them from learning and trying new things, as well as their successes at camp in helping campers conquer some of their fears. As one staff member described,

> "I did a reflection about, uh fear of failure… so I said with this reflection I'm gonna get over my fear of failure and I played uh guitar… at the end of the day at shout- um closing circle when we had the shout-outs um so many kids said you know I got over my fear of failure today" (S2; 167-186).

Another staff member described her experience of helping a camper get over his fear of water, in that

> "a child, about eight who wasn't very verbal… and he did not want to swim, he had a fear of water but he loved to pretend he would stay around the pool and walk around it… he's like: oh do you want to go

> swimming [staff member's name] and I'm like: oh I'd love to he's like I'm like: do you want to go swimming, he's like: oh yeah I love to swim, and he said this quite often and never actually gone in the pool and I said: well if I go swimming will you go swimming, and he's like: yeah so I knew if I left and changed that he wouldn't be on the same page so I actually went in the water with my jeans and all my clothes on, but I got him in the water and after that a couple days, uh he had continued to go in the water so he almost got over his fear" (S6; 63-76).

4.2. Experiential Learning at Camp in Comparison to School

Participants described learning at camp in terms of experiential and informal learning, mentorship, fun, and in being in contrast with school. Many staff noted the experiential nature of learning at camp and contrasted it with learning at school. As one staff member described, "I think [camp is] one of the best environments that a kid could learn I think it's such a different environment from school where it's such like forced learning I find whereas camp it's more experiential learning" (S1; 229-231). Another staff member described learning at camp in contrast to learning at school in that

> "the kids learn so much from the programs, from the staff… but because it's in a different environment than school where they're forcing something on you, it makes you more open to learning… I mean there's art in school but, you're forced to do something right

> you're not really allowed to do whatever you want and create what you want, so I mean with opportunities like that you're actually being able, you're able to learn about something that you actually you want to learn about" (S5; 377-387).

Several staff described being outdoors as helpful for learning, such as in "it takes a lot out of you to be in the sun all day but it's also good for you know educational purposes and teaching them about sunscreen and wearing a hat and drinking lots of water" (S7; 381-383). The same staff member described learning at camp as

> "generally informal it's not um you know like a formal lesson I mean you do there's a lot of you call it in teacher's college like incidental learning where you're you know you'll come across something and you'll you'll just: oh go from there and learn about it uh in that way" (S7; 444-447).

Several caregivers described the informal nature of learning at camp as being particularly helpful to their children's learning process. As one mother described,

> "it was such a relaxed atmosphere (pause) she was more you know prone to accept it, than the rigid school you know: you have to do this and it was just like: this is how it is and we're gonna play and we're gonna do you know, but she was picking up those tools you know they were, presented to her in a more gentle a- you know aspect and they were, more taken in on her by her" (C1; 333-338).

Another mother described an abundance of opportunities for informal learning at camp in that

> "I think it's like, one of the best places to learn for a child, in a non-structural classroom setting um because there's just so much to learn 'cause you can learn about your own self you can learn about nature, you can learn about new people, uh new kids, you can learn tolerance um you can be exposed to situations where you've never been exposed before" (C4; 198-202).

Several staff described the experience of being in the natural environment at camp as being integral in learning environmental awareness. As one staff member described,

> "it becomes a little like closer to heart when it's something that you have actually experienced like many of the kids could sit in class and learn about you know things going on like global warming but if they're never outside why do they care like I think it makes it a little more personal" (S1; 284-288).

Another staff member described the importance of learning environmental awareness at camp, in that

> "it's very important for the kids to learn about these things and to be given the opportunity to uh um acclimatize I guess to what mother nature is is offering us and and learn about uh respecting um all of these gifts that we've been given" (S4; 277-280).

The same staff member also believed that the ecology program needed to be guided by campers' interests, saying that

> "I like to see the kids uh, you know um, be given a chance to use their imagination and and uh rather than us telling them what they need to know, we need to listen to them and say what do you want to find out what do you want to learn and why you know what what's your interest uh, you know um so I think that's one of the one of the key factors is when you're facilitating you know an act- a a an ecology program or a natural sciences program or whatever you wanna call it I think it's uh very important that you sort of let the student guide you along because we all have our own style of of learning and we all have our own uh level of curiosity" (S4; 318-327).

Several staff described the importance of allowing campers to guide their own learning at camp. As one staff member described,

> "having a curiosity drive them and being able to turn to someone who might have a bit more experience and feel comfortable asking with that person you know what's this about and kind of having questions drive them… those informal interactions with someone who has slightly a bit more of uh you know experience turning to someone and saying hey what's this about and that person kind of saying giving them their knowledge… that's such a powerful way to learn and I think it's a natural way to learn and that happens at camp every single day" (S2; 524-547).

Another staff member described campers' learning opportunities at camp in contrast with schools in that

> "a different kind of like authority is good too like, all of the staff there are there to support the children rather than like our main focus isn't to discipline or, to like force learning onto anyone which I think is so different from schools but, I think kids learn more on their own at camp than we teach them" (S1; 234-238).

Several participants described mentorship as being an important method of learning at camp. As one staff member described,

> "mentorship's built on rapport and it's built on interaction social interaction… something that camp provides beautifully it gives you that opportunity to interact with people different types of people and it allows… those mentorship relationships to form because you have the time you have the social interaction" (S2; 553-559).

One mother described the influence of mentors in keeping contact with her daughter during the year to her educational interests, in that

> "even you know six months later, she's still talking to a couple of the camp counselors that, you know she created a relationship with, and it's been positive: oh you know we're at school and we're doing this and I got to see this to you know and I'm studying this right now from the camp counselors… the rapport is still, really there which I was surprised… she's learned you know, these ones are studying for their doctorates and maybe I wanna do that and you know like just the educational-wise like it's broadened her, thoughts of what she already wants to do… the education is still going on and she's learning about

> new things without you know just from, keeping those communications" (C1; 292-322).

Several participants mentioned the importance of having fun at camp in learning. As one staff member described, "it's a recreational setting so it's it's fun and it's important that it be fun" (S4; 236-237). Another staff member described making learning fun in that "I think that there's a lot of opportunity for kids to learn at camp but you have to sneak it in and make it fun" (S3; 247-249). One grandmother described her grandson's learning and enthusiasm for camp, in that "it's a very good place for learning… I think he partook of everything practically 'cause he was very enthusiastic… I think he learned quite a bit" (C2; 164-170).

4.3. Trying New Things, Discovering Strengths, and Challenges

Participants described the influence of camp activities on campers' willingness to try new things. Several staff mentioned the abundance of opportunities to try new things at camp, and the relative importance of trying new things in campers' learning. As one staff member described,

> "for campers I think [camp's] a good opportunity for them to try things that they don't get the opportunity to try at home… it just, provides opportunities for kids to try new things and to discover things that they're maybe good at" (S1; 102-109).

Another staff member discussed how the safe environment allows children to open up to trying new things, in that "there's just a lot to learn and I think the kids know that and know that it's a safe place and are more open to learning new things and

trying new things" (S1; 239-241). One staff member described the importance of trying new things in the context of refreshing children over the summer, in that

> "if you have a child who spends the two months just sitting at home… you're not giving them anything that they can look back on in later life or you're not giving them the opportunity to branch out and try new things, um and I think that camp from that stand point it refreshes everyone" (S7; 175-179).

Several staff members described the influence of campers trying new things on their self-confidence. As one staff member described,

> "we use the activities simply as tools to uh teach the kids um how to feel better about themselves… but in the process uh you know every activity uh gives the kids a little bit more uh of of self self-confidence and self-worth and and knowledge" (S4; 235-239).

Another staff member described the experience of wilderness tripping in building a campers' self-confidence and learning, saying that

> "there was this one particular camper that was really having troubles integrating um into their cabin… he was put on a trip and he became the leader he developed a lot of self-confidence and he was able to, um be seen differently through his campers so I felt that that experience as well as some other ones through [this camp] has really offered an opportunity for the for the campers to grow and learn about themselves to know um what they can do and to realize that they can do a lot more than they they previously thought" (S6; 325-332).

Several staff mentioned the positive influence of having strong musically inclined staff in getting children to try music. As one staff member described,

> "one of the L.I.T.'s had become very very good at his musical instrument because he wanted he was inspired by [the camp executive director's] role model um playing the guitar so well and so inspiring that he too uh became a role model for other campers" (S6; 343-346).

Another staff member described how having musically-inclined staff was important to changing campers' views and getting them to try music, in that

> "because, they people may think they're, not cool or just sort of weird because they play an instrument… they just don't feel confident bringing it out, but because a lot of the staff are really good musicians, it sort of helps uh, helps bring them out" (S5; 573-578).

Most caregivers described their children's increased willingness to try new things resulting from their experiences with staff at camp. As one mother described,

> "I: what do you think [your son] learns from camp staff?
> P: From camp staff? Um I think he learns (pause) he learns to be more open about trying something, I do know that I know that the camp staff were able to convince him to try some stuff" (C5; 287-290).

Another grandmother described her grandson's experience of camp and his willingness to try new things in that "it was very positive, he was a little more, um, willing to try (pause) other things he was a little more willing to um, go places" (C2;

61-62). Another mother described her daughter overcoming her fears and being more willing to try things due to the ropes course and ecology, in that

> "she's always had a fear of heights: I don't wanna do that don't make me do that, well darn it all she got up on the ropes and she was doing the rock climbing and was the first one to finish the um old course on the ropes and, to do the rock climbing… bringing it home she's kinda gone well, she's willing to try new things and test her limits at how far she's willing to actually go now, which is big for her 'cause normally she likes her little box and we stay in our box and, that's just the way we like it… she loves wildlife but from a distance some days like we have our house pets but otherwise she was the first one and the only one to catch a snapping turtle, that session and she was so proud of it 'cause she was the only one that caught this huge turtle… I was like: you actually touched it I am so pr- (laughs) because you can't normally get her to touch like 'cause of the tactile sensitivities and stuff, you can't get her to touch slimy stuff or any of that and she was in it like nobody's business and I was like: *wow*, that's awesome so now you can you know, think well: I didn't wanna do it but ok I tried it and if you didn't like it that's great but at least you tried it, so she's trying now you know new little things" (C1; 162-182).

One mother described the sensitivity and creativity of the staff with the zip-line in avoiding her sons' building up an aversion to trying new things, in that

> "instead of saying to kids who do not necessarily have the physical coordination because of their A.S., S.D. or whatever… to get to the child in order to enjoy the pleasure of the zip-line, the simple intervention of: hi let's bring a large ladder, let's climb up to this platform we'll click you in and then we'll pull you up so you can enjoy it we're like: *thank you…* for finding, a straightforward, bypass past what the initial frustration is 'cause when you're banging your head against that, no amount of *cheering* is gonna get you there, and it actually ends up making you feel, so much worse and, so defeats the purpose and then they just set up these like: I don't even wanna try I don't even wanna look at it no thank you" (C5; 104-118).

Staff described the importance of having a variety of activities in getting children to try new things and discover strengths. As one staff member described,

> "having such a variety of activities, really had an advantage for the camp for the campers because if they weren't so good at one activity maybe they're not a very strong swimmer maybe they excel at archery, or at or swimming or at a different activity so um the different activities really gave an opportunity for um the campers to find their strengths" (S6; 97-100).

Another staff member described the importance of having a variety of activities in discovering strengths, such that "we're trying to ex- er trying to let the kids discover their strengths and saying you need a kind of a range and that includes a range of different environments too right and different activities" (S2; 355-358). One staff

member described her own childhood experience in discovering strengths at camp, in that

> "it gives you the opportunity to uh try new things and to act a bit bit differently than you would in your normal life I think or at least that's what it did for me and suddenly I found that you know um I had a funny side I found out that I had a dra- you know I was good at drama I found um that when I spoke my mind people listened" (S2; 210-214).

Several participants described the influence of discovering strengths and learning life skills. As one staff member described,

> "the values you can learn at camp and the skills that you can gain at camp… are the skills that down the line are gonna save your butt they're the they're the skills that are going to allow you to pull through and to be the and and or become the best that you can be" (S4; 178-182).

Another staff member described the ability of skills learned at camp in transferring to other situations, in that "these kids can go home and like show their dad like hey this is this bug or like the the skills that they learn are transferable to wherever they go" (S1; 163-165). One mother described learning practical skills in terms of enjoying activities at camp, in that "there's an enjoyment factor um, and the flip side of it is you learn cool skills you learn, stuff that while seems weird turns out to be incredibly practical" (C5; 331-332). One mother described her son's ability to discover his strength in leadership at camp, in that

> "because they gave him more opportunities to um be a leader, he was able to really shine so there were some kids that were having difficulties particularly the younger kids, and he was able to go over to them and say: hey you know I know how you feel um you know why don't you try this or let's go take a walk or let's go play basketball or let's go over here and play a ball so he was able to utilize that like which he doesn't do and hasn't the opportunity to do that at home" (C4; 274-280).

Several staff mentioned the influence of challenging campers in various activities. One staff member described the importance of morning reflection in which a staff member tells a story followed by a quiet song to encourage contemplation, in

> "thinking about a message for the day focusing the kids on one aspect that you kind of want them to have in their minds so maybe that's challenging themselves for the day and how to do that whether it's physical challenges or emotional" (S2; 47-50).

Another staff member described her experience in challenging kids in pottery, in that

> "the kids who were like really good you could like challenge them sometimes and they would come up with some pretty interesting things like one kid made a a pokeball I remember and I told him like that's a huge lump of clay it will definitely explode in the kiln you can't

> do that so I told him like what if you made it hollow and he actually did it like I didn't know I didn't think he would" (S3; 125-130).

Several caregivers described their children learning to challenge themselves in various ways at home as a result of their challenges at camp. As one grandmother described, "[my granddaughter has] um learnt to challenge herself more, um for a lot of things like um, things that you have to do but you really don't wanna do and you know like, like passing your grade or (laughs), doing your homework" (C3; 129-132). Several staff described the importance of campers challenging themselves in terms of being away from home and learning independence. As one staff member described,

> "I think that living away from your parents even for a short period of time like ten days, uh is a big deal especially for like all kids to you know be able to, get away from home for a little but it's scary for a lot of them but it's definitely a learning experience of having to, survive without your parents" (S7; 457-460).

Several staff described challenge and independence as especially important to youth with exceptionalities. As one staff member described,

> "they're away from their parents taking a lot of independence and for kids at camp kids who attend [this camp] I think that they don't get those things as much in normal society as other kids might so it's more special for them… those things can have a really big impact on kids' confidence and their level of independence" (S3; 111-115).

While most staff believed that the camp encouraged independence, one staff member suggested that there were some restraints to encouraging independence at camp, in that "we say: oh yeah we make these kids independent but we do so many things which totally proves the opposite, like we don't allow, we don't allow them to make decisions on their own" (S5; 650-652). One staff member described the importance of being away from home and developing independence as integral to youth as well as her own childhood, in that

> "staying by themselves, staying away from their parents that growth um um that personal growth and sense of pride that comes from accomplishing uh a goal of being at camp, is so rewarding for the children that they remember it for the rest of their lives as I had remembered my camp experiences, from when I was a small child" (S6; 85-88).

Several caregivers described their children learning independence as a result of enjoying their camp experiences. As one grandmother described, "I think that being away from home being on his own with strange, strange kids 'cause he didn't go quote with friends um he had a very good time" (C2; 164-166). Another mother described the independence gained from the challenge of being at camp for children who may be more sheltered at home, in that

> "if you've lived in a sheltered home and your parents are… doing everything for you you're put into a position where you have to do it yourself or you see other people doing it… you're encouraged to be part of the group so um it gives you opportunities that a home

> environment may not necessarily because caregivers they wanna be overprotective" (C4; 202-208).

4.4. Physical Activities and Challenges at Camp

Many staff discussed the importance of physical activities in challenging campers and encouraging them to be active. One staff member described discovering strengths in physical activities and how that impacts campers when they go home, such that

> "giving kids the opportunity to do things physical which maybe they don't during the school year um gives them opportunities to explore strengths so I think that's a huge thing so maybe a kid didn't realize that they were really good at running or that they're really good at climbing… they realize that they you know have an athletic build or that they're good swimmers or um just that they like the feel of exercise it's kinda discovering strengths I think that kinda puts them on a path you know or it can put them on a path when they go home to the city" (S2; 481-489).

Another staff member described campers' improvements at rock climbing and ropes, in that "you see a lot of improvement usually, um at like the rock climbing wall or at any of the uh ropes elements because it's really taking them out of their comfort zone" (S7; 221-223).

Several caregivers believed that the physical challenges at camp were important to their children's challenging themselves. As one grandmother

described, "I think some of the challenges this she's had there like the zip-line and the rock climbing and all that have really kind of pushed her to, look at herself and say: hey I can do this, those things are important" (C3; 23-26). Another mother described the triathlon as being a particularly helpful challenge such that "the um triathlon which you know um helps them, challenge themselves gives them a goal" (C4; 75-76).

Most staff believed that the wilderness tripping experiences were very physical and consequently influential to campers' development. As one staff member described,

> "I got to see a lot of campers and staff come back from trip just looking so different… realizing they had an experience that they've never had before and it's changed them it's kind of they felt like they accomplished something and you always see people come back from trip looking a bit different… the reason for that is that trip gives you kind the opportunity to take physical risks or to push yourself physically doing new things carrying a canoe on your back and walking however many kilometers" (S2; 684-692).

One staff member described the physical aspects of wilderness tripping experiences as being particularly helpful in building self-esteem and a sense of accomplishment for youth at this camp, in that

> "you're gathering firewood, you're lifting packs, you're carrying canoes… I know after the trip that I did like I was just: wow I actually did that and I can see like I can do other stuff now, and, I mean that's

> me, but for kids who don't have any self-esteem or self-confidence like it does so much, it does so much more for them than it did for me, I mean I was, I mean my self-esteem wasn't very, like the highest it could be but it wasn't as low as some of these kids are, so I can see how it had, it would have a drastic effect on a lot of the kids" (S5; 185-194).

Another staff member described hearing from parents about wilderness tripping boosting their children's self-confidence, in that

> "one of their main things that kids talk about when they come home uh I did this trip I carried this canoe or you know I we ate over a fire they the parents recognize that it's done something to their child they don't exactly know what but it's done something it's boosted their self-confidence you know for a child to go out there and do something they haven't done or take those challenges they see that it's having a a benefit by kind of i- just increasing their self-confidence overall" (S2; 701-707).

4.5. Artistic Activities and Creativity at Camp

Several participants described the experiences learning and trying new things in artistic activities and in their ability to encourage campers' creativity. One staff member described drama being helpful in encouraging creativity and acting, such that

> "with, *drama*, like a lot of the kids, didn't think they had any creative, like a creative bone I guess, like they thought they were just, they weren't they wouldn't be good at acting and that kind of thing and I found that by the end a lot of kids were really into drama" (S5; 210-213).

Another staff member described learning in pottery such that "I saw a lot of them learning and progressing in pottery and almost all of the kids could like learn on some level" (S3; 242-244).

Several caregivers described children's existing creativity being better expressed and encouraged through artistic activities at camp. As one grandmother described, "she's learned how to challenge her artistic talents 'cause she is *very* talented artistically, so she's like I, she's very creative and I guess with having the camp experience she's been able to express that creativity" (C3; 134-137). Another mother described building creativity through artistic activities that remained in her daughter's life at home, such that

> "she's come back and, she's kinda kept up with her drawing and her sculpting and she st- kind of still has some of the artistic stuff she did at camp, and it's just now she's it's kinda trickled into her every day now, so I again I see that more as a positive she's you know finding other outlets, and more creative ways to deal with things" (C1; 198-203).

Discussion

The purpose of this qualitative study was to investigate staff and caregivers' perspectives of youth experiences at camp in order to understand the role of contact with nature and physical activity in their development. The four meta-themes that emerged from the analysis of the interviews were "Encouraging Youth from the City to Benefit from Contact with Nature and Foster a Connection to the Environment," "Promoting Greater Levels of Physical Activity at Camp in Order to Encourage a Healthy Lifestyle, Reduce Frustrations, and Control Behaviour," "Promoting Social Skills Development for Youth with Social Difficulties through a Supportive Environment and Group Experiences," and "Encouraging Youth with Exceptionalities to Learn by Trying New Things, Discovering Strengths, and Challenging Themselves in Physical and Artistic Activities." The following sections will explore these meta-themes in more detail.

1. Encouraging Mental and Physical Benefits and Fostering a Connection to the Environment for Youth from the City through Outdoor Activity

Participants described how a majority of campers lived in larger cities or suburbs and were not accustomed to spending time in the natural environment. This finding is line with Louv's "nature deficit disorder" (Louv, 2005), describing a general trend in the disconnection of humanity from nature, especially worrisome in relation to children who grow up in increasingly more urbanized environments. According to the nature deficit disorder, modern children are less connected than older generations to the natural environment, which is linked to a rise in

psychological and medical diagnoses. The idea of a nature deficit disorder makes sense in human evolution, in that our species has evolved alongside the natural environment and our cultures have revered aspects of nature for thousands of years. It is only within the past hundred years that we have moved most of our population to urbanized environments, and only really within the past thirty years that we have embraced technology so profoundly with personal computers, television, and other media (Louv, 2005).

Participants described natural settings as being more calming and stimulating in a different, less overwhelming way than those of the city. As many campers at this camp suffer from ADHD, autism, or other disorders in which overstimulation can lead to negative outcomes, this finding may be especially important to the ecopsychology literature. The Kaplan's "Attention Restoration Theory" (1989) describes natural settings as being restorative of directed attention, and allowing more focus when in need of using directed attention capacities. The results from this study support the idea that the natural environment has a restorative capacity linked to attention, although most participants tended to describe mental benefits from nature in terms of stimulation and calmness rather than attention. Future research might attempt to incorporate the concepts of stimulation and calmness into the theoretical basis of ART in order to understand the benefits to attention derived from being immersed in the natural environment.

It is interesting to note participants' descriptions of nature in comparison to the city in terms of stimulation. Gary Snyder discusses the notion that "our bodies are wild" (Snyder, 1990; as cited in Stevens, 2009) in that many modern stressors

may be attributed to our species inability to adapt fluently to a modern lifestyle, especially in terms of the city. This notion is in line with that of DeLongis, Folkman, & Lazarus (1988; as cited in Stevens, 2009), who suggest that many individuals in modern urban industrialized societies spend most of their time in a state of 'fight or flight', a human capacity traditionally intended to allow quick reactions to rare, but very dangerous situations. The multitude of stressors in modern life release many neurochemicals and hormones into our brain than the para-sympathetic nervous system was ever designed for, while heightening blood flow to muscles, inhibiting digestion, and increasing arousal in "an evolutionary regression to a more immediately life-threatening existence" (Tsigosa & Chrousos, 2002; as cited in Stevens, 2009). An urban over-stimulated life has serious implications for even well balanced populations and so the problems faced by children with these diagnoses loom all the larger in comparison. This regression has many implications for youth suffering from diagnoses that often involve difficulties with stimulation in particular, as they may not be able to deal with modern stressors appropriately and have more need to escape the overstimulation of the city. The natural environment then may have implications in combating this evolutionary regression, alleviating the symptoms of a constant bombardment of stimulation in the city.

One aspect of the camp environment for city youth that was not explored directly by the current study was the element of technology in campers' daily lives and the effect of being away from media during their time at camp. Several participants made reference to those campers spending a fair amount of time at home with electronic media including video games, and television, which are

passive activities generally devoid of any physical activity. While such devices are used only minimally at camp, their relevance to the current study may be significant. An article by Stevens (2009) discusses this relevance in terms of the field of bio-electromagnetics and ecopsychology. The field of bio-electromagnetics deals with the interaction between electrical fields and living organisms on relevant frequencies. Although there are many small natural electrical fields that impact our species, the strongest natural field is that of the Earth's core, which has a strength of approximately 40 micro-teslas (μT). In comparison, many artificially created electrical fields are present in modern society that vary strength from approximately 0.5 μT to 2,000 μT, ranging in frequency typically below 100 Hertz (Hz). The strongest of these fields includes power lines, electric trains, household appliances, lighting, and mobile phones. Urban magnetic 'noise' has been found to be operating usually at a strength of 0.5 μT and above and frequencies of 50 - 60 Hz, while natural environments have 'noise' of less than 0.1 μT with frequencies of less than 20 Hz. The evidence from the field of bio-electromagnetics would thus suggest that urban environments may be more appropriately described as detrimental to mental health and functioning rather than natural settings being described as restorative (Stevens, 2009).

Evidence is accumulating on differences in performance on tasks of attention during the presence or absence of 50 Hz magnetic fields (a regular frequency for power lines; see Crasson, Legros, Scarpa, & Legros, 1999; as cited in Stevens, 2009). The scientific understanding for this phenomenon is that these magnetic fields stimulate regions of the frontal and parietal cortex, specifically during tasks of

executive functioning (see Cook, Thomas, & Prato, 2002; as cited in Stevens, 2009). Evidence from a separate set of studies in bio-electromagnetics have also shown affective changes in response to different electromagnetic fields interacting with human functioning (Stevens, 2009). These bio-electromagnetic studies on attention and mood align with the results of the current study in that the natural environment was reported to be more calming, and that the urban environment was seen as over-stimulating. An interesting and highly profitable direction for future research may be to further investigate the link between electromagnetic fields, natural environments, attention, and mood.

Several results from the present study are in line with Ulrich's (1983) Psycho-Evolutionary Theory (PET), in which stress is conceptualized as a physiological response to situations threatening one's well-being. PET suggests that natural environments allow recovery from stress by means of positive affect replacing negative affect, inhibition of negative thoughts, and a reduction in autonomic arousal. As the urban environment was seen by several participants as being "overstimulating" and "overwhelming," perhaps the natural environment allowed recovery from the stresses of daily social interactions and more generally from the overstimulation of both the city life and technology. As many campers had social difficulties and difficulties with stimulation, these results could suggest that PET may be particularly important in understanding the impact of contact with nature for children with exceptionalities such as ADHD and autism.

While some campers were afraid of aspects of the natural environment or anxious about being in natural settings, most campers enjoyed these experiences

and were enthusiastic about spending time outdoors. This finding is in line with Wilson's (1984) Biophilia hypothesis, which describes our species' innate biological human connection to other living organisms. Most participants described strong changes in many campers' interest in nature, both at camp and coming home from camp. While it was observed that several campers had fears and anxieties and that some remained happier indoors, the finding that most campers enjoyed the experience and were interested in the natural environment may lend support to the notion of such an evolutionary link to nature as is described in the Biophilia hypothesis.

The alignment of the results from the present study with Wilson's (1984) Biophilia hypothesis has other important implications. A general trend observed is that most adults enjoyed the natural environment and thought it important to preserve, and that most had spent time at camps during their youth. Another related trend observed was that several caregivers described their children as having early childhood contact with nature coupled with an interest and enjoyment of the environment. Many children also warmed up and became more interested in the natural environment during their camp experience. Taken together these findings are in line with Wilson's Biophilia hypothesis in that they describe an innate predisposition to seek out nature. Presumably the adults in the study had discovered and fostered this connection, allowing it to be expressed more fully within their phenotype.

Another supporting theory may be useful in understanding the present results. Gibson's (1977) Theory of Affordances views interactions between

'environment' and 'agent' in terms of opportunities for events, such that some agents are afforded different opportunities depending on the interaction with their environment. Gibson's Theory of Affordances describes the evolutionary argument that posits the inter-relationship of organisms and their environment and the dialectical mutually interactive development as a holistic system. If individuals' physical and socio-cultural attributes have developed over millennia in mutual interaction with the natural environment, it is only reasonable to expect that a sudden change to an industrialized urban environment over the last 150 years (a blink in the evolutionary time-scale) would heighten problems within human culture and physiological functioning. In the Gibsonian understanding, the organism (children with ADHD, learning disabilities and/or autism spectrum disorders) is more rightly re-situated in an environment that creates less stress. The present study suggests that the camp environment affords many opportunities for contact with nature and consequent reductions in stress and stimulation, as well as affording opportunities for developing a deeper understanding and appreciation of the natural environment. In other words the organism will do much better when re-integrated into an environment suited to its evolutionary development, or as Gibson coined the concept, "niche."

Many participants described the increased physical activity that campers participated in when outdoors. These results are in line with existing research by Cohen et al (2006), Scott et al (2007), and Babey et al (2008), in which researchers found that teenage youth engaged in more regular physical activity when they live in closer proximity to safe parks and natural areas. While there are methodological

differences in comparing the results from the current study to the findings from these three studies, these results add to the existing literature showing that youth in closer proximity to the natural environment participate in higher levels of regular physical activity. These results are particularly important, as many modern youth have been shown to participate in lower levels of outdoor physical activity than previous generations (see England Marketing, 2009; Pergams & Zaradic, 2006; 2008) and as the profound mental benefits of regular physical activity are starting to be explored and understood through insights gained through neuroscience (Ratey, 2008; see meta-theme 2).

Many campers were seen to have developed a greater awareness and appreciation for nature during their time at camp, which had particular relevance in terms of wilderness tripping experiences. Childhood experiences in nature have been linked to environmental preferences (see Bixler, Floyd, & Hammitt, 2002; Wells, 2006) but studies have not yet been able to show a direct link between childhood experiences in nature and environmentalism. While there was only one staff member who cited the direct influence of her wilderness tripping experience on her decision to study environmental science, the results from the present study lend minor support to the notion that youth experiences in nature, especially wilderness tripping, promotes environmentalism.

The link between furthering exploration into the development of environmental stewardship in youth may be explained through results from a study by Cintron-Moscoso (2010), in which a critical ecological approach was used to understand the cultivation of environmentally conscious behaviours in youth

participating in a program in Puerto Rico. In this program, teenagers took part in teaching environmental education for younger children. While the program was successful in that many younger children were found to gain environmental knowledge, the study focused on youth in environmental educational leadership and the cultivation of environmentalism during the teenage years. Many older youth leaders were seen to cultivate strong levels of environmentalism through the need to deeply understand the knowledge in their role as teacher, along with the need to act as role models for younger children. While the present study did not investigate environmentalism directly, it is interesting to note that most staff and caregivers had spent time in leadership roles at camp, and that most felt that it was important for themselves and youth to be concerned about the environment. Future research could investigate the role of older youth leadership positions in comparison with older adult teachers in fostering environmentalism on both the teacher and student.

Perhaps a two-stage model of the development of environmentalism for nature is more appropriate to describe the phenomenon. While the link between early childhood experiences in nature and environmentalism has not been established, such experiences have been shown within psychological research literature to be linked to environmental preferences (Bixler, Floyd, & Hammitt, 2002; Wells, 2006). Perhaps the development of environmental preferences during childhood is important to encouraging older youth to consider employment at camp during late adolescence and young adulthood, at which point they may more easily develop environmentalist attitudes and behaviours due to their involvement with teaching such knowledge. An interesting direction for future research would be to

investigate childhood experiences in nature and environmental preferences among older youth in environmental leadership roles.

Although it was not directly discussed in the present study, the role of animals in connection with psychology is growing. The field of animal assisted therapy has been shown effective in helping individuals and youth with disabilities and emotional issues, establishing techniques such as equine-assisted psychotherapy (see Schultz, Remick-Barlow, & Robbins, 2007). Although the animal contact at camp mentioned in the present study did not include domesticated animals, the experiences mentioned by participants about children's interest in other wild animals such as beavers and frogs suggests that there may be need of further enquiry into more 'wild' interactions with animals in the natural environment. Furthermore, my own perspective as a researcher at camp of being in contact with 'wild animals' such as moose, deer, loon, or beaver suggests that these experiences could have psychological implications as well. Future research could aim to explore the meaning of animal-human interactions in their natural habitat, and the ability of youth at camp to be in contact with such animals in a context more geared towards ecopsychology and animal assisted therapy.

2. Promoting Greater Levels of Physical Activity at Camp in Order to Encourage a Healthy Lifestyle, Reduce Frustrations, and Control Behaviour

While one caregiver indicated that their child engaged in high levels of physical activity at home, most caregivers indicated that their children engaged in much lower levels of physical activity at home. In contrast most staff described

campers' high levels of physical activity at camp. These results point to the efficacy of the camp environment in providing opportunities for physical activity to youth. While it is important to mention that the health benefits of regular physical activity are helpful in the overall development of an individuals' lifespan, these results are particularly important for mental health in the context of new understandings of the neuroscience involved in exercise. According to Ratey (2008), regular physical activity has profound benefits for individuals of all ages that have been linked most importantly to improvements in learning, anxiety, attention, and mood. The implications of some of these more recent discoveries in neuroscience have particular importance in many ways to children such as those at this camp who have diagnoses of ADHD, learning disabilities, and autism spectrum disorders. Considering the larger needs of such youth to develop these psychological capacities, these results support the notion that camps are an ideal place for youth to get higher levels of regular physical activity in order to gain more from benefits to learning, attention, anxiety, and mood.

Many participants discussed the impact of physical activity on children's sleep behaviour, and several participants suggested a link between having better sleep and having better self-control of frustrations and socially inappropriate behaviours. While there are potentially many influences on these behaviours at camp including medications, eating habits, and outdoor space to name a few, the influence of sleep cannot be discounted and remains important to understanding the phenomenon of camp. A recent study by Noble, O'Laughlin, & Brubaker (2011) investigated parental reports of children's sleeping problems in comparison to their

ADHD symptoms. Results from the study suggest that the establishment of a regular routine for sleeping patterns may be especially helpful in helping youth with ADHD control their behaviour. As the sleeping schedule is highly structured at the camp, the results from this study support the notion that physical activity helps to improve sleep, which in turn helps to alleviate ADHD symptoms.

While not directly mentioned in the study results, several participants indicated that many campers took medications while at camp. While many of these medications may be necessary for medical complications or other problems, the neurochemical effect of physical activity must be taken into account for those children who are taking daily medications, especially those for attention, anxiety, or mood. As physicians prescribing pharmaceutical interventions for behaviour may not be aware of the benefits of physical activity and contact with nature, those campers who remain on their medication during camp may have excessive amounts of several neurotransmitters, most likely dopamine, norepinephrine, and serotonin. On the other hand if children go off their medication while at camp they may suffer from withdrawal symptoms that could impact their experience of camp. An interesting area of investigation for future research could determine the role of medications at camp in light of the benefits gained through contact with nature and physical activity, in order to allow an appropriate transition between home life and camp in terms of pharmaceutical interventions.

One of the most profound implications of John Ratey's *Spark* (2008) to educators is that regular physical activity boosts capacity for memory and consequently improves learning. Ratey describes the discovery of a major growth

hormone, Brain-Derived Neurotrophic Factor (BDNF), which he calls "miracle-gro for the brain," as it helps build neuronal connections and increase cerebral blood flow. BDNF is released into the brain after physical activity, but it is not until physical activity is more regular in an individuals' lifestyle that they are able to experience the full benefits of the flow of BDNF in their brain. BDNF has been shown to help build connections in several psychological systems including those of attention, anxiety, and mood, but the largest implications to the education system come from its role in memory, in that many learning and memory tasks are performed better after regular physical activity. Although limited conclusions may be drawn, studies of rats show that BDNF can last up to 4 hours after physical activity has stopped, suggesting the need to tailor existing learning systems such as schools to more of a highly active, camp-like experience. As the physically active component of camp is that of 'always moving' and spending most of waking time engaged in physical activity, it stands to reason that the potential of camps to boost learning capacity to form more solid memories is profound and in need of further scientific exploration. Indeed many participants in the present study indicated a great amount of learning at camp, which could in part be due to the ability of BDNF released through physical activity in allowing campers to solidify their memories formed while in the camp program.

As many of the youth at camp do not get as much physical activity when they're at home as compared to when they're at camp, it may be more important for these youth to have physical activity experiences in order to foster an appreciation for the role of physical activity in their lifespan. While it is important to relate the

more immediate mental health benefits of regular physical to the camp environment for the present study, the more long term effects of regular physical activity include slowing neurodegeneration and reducing the risk for alzheimer's, as well as more well-documented physical benefits such as combating obesity and reducing the need for medical intervention (Ratey, 2008).

3. Promoting Social Skills Development for Youth with Social Difficulties through a Supportive Environment and Group Experiences

While the promotion of social skills for all youth is important, the ability of the camp to promote strong development of social skills for youth with exceptionalities may be especially significant. Many of the youth at camp have difficulties related to their social skills, and as such many are in need of the development of these skills. In this context, many staff discussed strong changes in campers' social skills that were observed from the beginning of camp to the end of camp, a change that caregivers reiterated and suggested was one of the most important parts of the camp experience to their children.

Many participants indicated the differences between the camp environment and the school environment in terms of social situations, highlighting the more supportive environment at camp. As many youth with exceptionalities face issues of separation and exclusion as well as bullying and negative social contact, the camp environment can be especially helpful to encouraging youth with exceptionalities to feel more comfortable learning and making friends. Several participants mentioned the sense of equality between individuals at this camp as being especially important

to allow campers to relate to each other and accept responsibility for their actions within the group. Indeed one staff member mentioned the importance of relating and being transparent about their own problems to campers as being helpful in allowing a stronger bond to form between campers and staff. This bond was seen to help the staff control campers' behaviour more effectively, make campers happier, and motivate youth to learn more effectively.

Although there were many aspects of the camp encouraging social development, the role of having a supportive environment cannot be underestimated. Many staff expressed the strong value placed in being supportive to campers and other staff, and in developing a bond with campers. The supportive environment was strengthened by fostering positive reinforcement techniques such as closing circle and shout-outs (where campers recognize and compliment other campers' daily achievements at the end of the night), while also refraining from the use of more critical learning strategies. As many of these youth have exceptionalities that often include self-esteem and self-confidence issues, the use of such strategies at this camp may an especially important component of the social environment. Several participants mentioned the small size of the community and the high staff-to-camper ratio at camp as being particularly important to the supportive environment. Indeed many campers spend a long time with staff and some form strong bonds, suggesting that the high ratio of staff to campers benefits these youth by allowing them to have older role models, mentors, and ultimately friends.

Many participants described campers gaining social self-confidence and self-esteem owing to the social interactions at camp. Along with the supportive

environment, many options exist for a variety of social interactions, and along with the many opportunities to accomplish challenging tasks such as wilderness tripping or rock climbing, many campers become happier, proud, and confident in their abilities and skills. As these interactions occur in group settings where staff encourage a supportive environment, perhaps campers' perceptions of their ability to engage in social activities and cooperate with others reinforces a more positive understanding of their ability to engage in social activities.

The implications of the present study results in terms of social development may be considered in light of Wilson's (1984) Biophilia hypothesis, which suggests that our species has evolved a genetic predisposition to seeking out and interacting with other living organisms, including other people. While the Biophilia hypothesis deals more directly with contact between people and the natural environment, it can be argued that the ability of the camp to encourage social interaction of young people further enables the development and expression of such genetic traits. As many of these young people have a need for the development of social skills and could benefit from an evolutionary trait that encourages them to seek out others, the social implications of the Biophilia hypothesis may be especially important in the context of the youth at this camp.

The results from the present study may also make sense in terms of Gibson's (1977) Theory of Affordances, which describes the mutually interactive relationship between organisms and their environment. The camp environment provided many opportunities for social interaction in a variety of different contexts, which led to the development of several important social skills. As many of these youth face barriers

to social interaction in their lives, the camp may be especially important in allowing as many options for social interaction as possible to these youth, who may not be able to benefit from more common forms of social interaction.

Many participants mentioned social skills development in terms of building relationships and making friends. As many youth had difficulties in doing these tasks, the ability of the camp to engender such development may be integral in promoting healthy transitions throughout the lifespan. The experiences of school, work, and everyday life require that we make friends and build relationships, and also suggest that if we do not do these things we will have related difficulties in our lives. The present study reinforces the importance of relationship building and making friends for youth with exceptionalities, suggesting that camps such as these may be helpful in promoting a variety of friendship-related social skills for these youth.

Participants discussed the role of more intimate cabin groups on social learning. Many staff described the group bonding that occurred in cabin groups much like familial interactions, and these groups' importance in teaching campers about cooperation. This sense of family may be especially important to some of these youth, as they may not get the benefit of more positive familial interactions. Several staff pointed out that many campers needed to learn the value of sharing and working with others, suggesting that the ability of the cabin groups to foster such learning is important. These values may be especially important to campers' future, in that many situations in life require the ability to work with others to accomplish shared goals.

The role of mixed groups at camp was also seen as useful in promoting social learning, in that many campers were able to learn with campers of other ages and the opposite sex. As schools and many other organizations tend to organize youth by age and sometimes also by sex, the ability of the camp to foster situations where youth of all ages and sexes learn together may be more important, especially as youth who learned together were not traditionally separated by age and sex for most of our species' evolution. Along with gaining insights into individuals that are different from each other, this type of mixed group learning may also engender an interest in heterogeneity of a circle of friends, as well as a tolerance of people with different abilities and backgrounds. As the world is moving towards more inclusive practices for different disabilities and ethnicities, this ability of the camp to promote an awareness and acceptance of others may be especially important in looking towards the future for these youth.

Another thing participants indicated was that the camp promoted a sense of community, something that many individuals lack a connection to in an increasingly individualist and competitive industrial economy, such as Canada. According to a study by Shields (2008), the role of feeling connected to community and having a sense of belonging has many implications for both physical and mental health outcomes over the lifespan. There are two current hypotheses on why this occurs. One suggests that a sense of belonging to a community increases health owing to the promotion of mutual respect between individuals and groups, which in turn increases self-esteem. Another possibility is that healthy behaviours are modeled by others through the establishment of community social norms, encouraging those

within the community to adapt these behaviours (Berkman, Glass, Brissette, et al., 2000; as cited in Shields, 2008). The study describes the profound implications for health in community, such that those with a 'very strong' sense of community had almost double the odds of having 'very good' or 'excellent' general health, as well as having over double the odds of having 'very good' or 'excellent' mental health (Shields, 2008).

According to Shields (2008), approximately one in four Canadians described feeling a 'somewhat weak' or 'very weak' sense of belonging in 2005, and the lowest rates across Canada were from large urban zones. In Ontario, the lowest numbers serving as indicators of feeling connected to community were for the cities of Toronto and Ottawa (Shields, 2008). The majority of campers were seen to come from these two areas, and as many are often on the outside of groups it remains that much more important for them to feel connected to a community. The implications of feeling part of a community to both general health and mental health are also particularly important for the youth at this camp, as many are in need of a strong support network.

Many participants in the present study indicated that music brought people together, and that it encouraged the transmission of musical skills between individuals at camp. Of interesting note is that during the winter of this year, the camp executive director has taken music and community one step further and has started to promote a weekly sing-song for the camp community, in which he records a digital video of himself playing a camp song and posts it to a social media site. While there are many possibilities for future research involving many related

questions in the role of music in cognition, the role of music in community along with the advent in technology has much potential for future exploration.

The similarities between traditional First Nations ways of life and the community of camp suggest that the social values of community, learning from elders, and being connected to others could be an interesting topic for future exploration. A move to understanding such traditional knowledge and embracing it in the camp environment with enthusiasm and value would be a logical step in understanding the connection to nature as well as offering recognition for traditional ways of life of First Nations people in North America.

An interesting result from the present study concerns the role of music in communication. Several participants mentioned the importance of music to youth with exceptionalities, in that some may have issues with communication or learning difficulties but music gets past these difficulties allowing a medium of language connection even for those with language barriers. As Levetin (2007) describes in *This is your Brain on Music*, the anthropological evidence suggests that humanity evolved the ability to make music before language, and that consequently we derive a lot of meaning from music as a communication tool. While the origins of music in our species evolution are not clear, several hypotheses suggest its role in communication. One hypothesis suggests that music may have been naturally selected as it promotes social bonding and cohesion. A second hypothesis is that music may have evolved to promote cognitive development, more specifically speech communication. A third hypothesis is that music may have evolved to prepare a developing child for the demands of language and social interaction.

While it may be unclear exactly why music became naturally selected, it is clear that it has an adaptive function that is highly related to speech and communication (Levitin, 2007). The results from the present study are in line with several of these hypotheses as they suggest that music has a vital role at camp especially for these youth in helping communicate ideas, encouraging group interactions, and encouraging learning of musical skills. As many campers have barriers to various forms of communication and language, the role of having musical influences at the camp may be especially important to helping some campers develop their social skills and conquer social fears.

4. Encouraging Youth with Exceptionalities to Learn by Trying New Things, Discovering Strengths, and Challenging Themselves in Physical and Artistic Activities

As this camp provided for youth with exceptionalities including ADHD, learning disabilities, and autism spectrum disorders, it is important to discuss the difficulties many of these youth have with their education. While there are many such youth that are able to do well in school, and many supports that exist to help these youth through school, many find school very difficult and may even drop out. Unlike the traditional classroom ideal, a large proportion of these youth do not 'learn' the same way as others. As a result many develop fears and aversions to trying new things as well as a need for a much greater versatility of instructional methods. The social environment of the classroom can be an especially difficult place for these youth, who tend not to be given recognition owing to their strengths but rather to their weaknesses. The participants in the current study described the

process of learning at camp as being particularly well suited for the campers owing to the variety of opportunities for learning as well as the natural environment and the context of the learning experiences in general.

Many participants described learning at camp as fun and informal, as well as mentioning it in contrast to the more 'forced' learning of school. While it may be obvious that children would rather learn through fun activities than traditional rote techniques, perhaps these youth need that element of fun in order to quell their anxieties and frustrations. As many experience anxiety with learning in school, it may be more important to disguise learning through more fun activities in order to encourage less pressured learning experiences. Indeed the concept of play is gaining support in research literature owing to advances in neuroscience, and has long been seen as being especially important to cognitive, emotional, and social growth (Ginsburg, 2007).

Another strong method of learning at camp seen by staff was the role of mentorship, in learning from older role models in various positions of responsibility. As many youth from this camp face challenges relating to their diagnoses and may need more guidance in some areas, it is important for the camp to engender a community in which role models can impact campers' learning. Many of these role models also display behaviours indicative of leadership, and consequently several caregivers indicated that their children learned leadership skills while at camp. As the staff are attempting themselves to learn more leadership skills, it may be that campers see the staff desire to learn such skills as an important part in engendering an interest in leadership.

A study by Mastropieri, Scruggs, Mantzicopoulos, Sturgeon, Goodwin, & Chung (1998) used qualitative and quantitative methods to compare an experiential learning technique to traditional instructions for a 4th grade inclusive class. The experiential lesson involved creating ecosystems from basic material and measuring the effects of acid rain on their ecosystem in individual and group biochemical experiments, while the control lesson used traditional textbook learning involving the same experiment. Their results showed that students in the experiential category outperformed those in the traditional category on both written tests and performance measures. In addition, all students in the experimental group said they enjoyed the lesson and consequently the science class in which it was taught. The results from the present study align with this study on the importance of experiential education and learning as fun, suggesting that those with learning disabilities and other exceptionalities may benefit more greatly from fun experiential learning.

The experiential nature of learning at camp was seen to be particularly important to educating campers about the natural environment. Many participants mentioned the need for campers to be surrounded by nature in order to gain a connection to it, and in order to care more deeply about protecting it. Several staff mentioned the importance of allowing children's 'natural curiosity' to take over in guiding their learning of the environment, a concept in line with the innate connection to nature described by Wilson's (1984) Biophila hypothesis. An interesting avenue of research would be to determine the role of curiosity and child-

driven learning in nature and its relationship to environmentalism and environmental preferences.

Many participants mentioned the importance of campers discovering strengths while doing activities at camp. As many have fears and issues with self-confidence, the ability to engender learning of a new skill or strength can be life-changing. Indeed one staff member mentioned a camper discovering music at camp and consequently following through with a post-secondary program related to music, and how that made a drastic impact on his life. Having a variety of opportunities at camp for attempting activities that most children do not get to do regularly in the city was seen to be particularly important to youth at this camp in allowing them to discover new strengths.

Many staff mentioned the importance of challenging oneself in building self-esteem, self-confidence, and trying new things. The element of challenge was viewed as especially important at camp, both in terms of physical and artistic activities. Participants discussed the importance of the wilderness tripping experiences, the rock wall and ropes course, and the zip-line as being especially useful physical challenges in helping campers discover their strengths and improve their self-esteem and self-confidence. As some of these youth have aversions to challenges and may lack self-confidence, the ability of the camp to challenge campers safely within a supportive environment is likely one of the most important aspects of the camp experience.

Of particular importance to the idea of challenge is the notion of risk. Although risk was not directly mentioned in the study most challenges carry a risk,

such as social embarrassment owing to failure of a task. The appropriate understanding of risk may be especially important for youth at this camp as they may have difficulty in transitioning from youth to adulthood. Many adolescents may not be ready to cope with many risks that the world poses to adults, such as drugs and gambling, which makes an appropriate understanding of risk during childhood important to understanding risk in adolescence and adulthood. As the camp is able to challenge youth safely within a supportive environment, many campers are able to take minor risks and discover strengths while being able to avoid more serious negative consequences.

As Levitin (2007) explains in *This is your Brain on Music*, the role of music in emotion is leading to a new understanding of musical learning. Memories involve neurochemical tags, many of which are encoded through emotional centres of the brain. As music engages the cerebellum, a cerebral structure highly linked to the emotional centers of the brain, it is possible that memories encoded during music listening are strengthened by the emotional connection generated by music (Levitin, 2007). If so, then certain practices in the camp in the present study, such as reflection in which a story is told followed by music, may be more effective owing to the role of music in engaging the brain in learning.

It is interesting to note several participants' views of artistic activities at camp and their influence on campers' creativity. Several staff described situations in which campers would express their creativity through artistic activities such as pottery, and several caregivers saw these traits continuing into their children's everyday lives at home. Perhaps there are aspects of the camp environment, such as

in being supportive, surrounded by nature, or encouraging lots of physical activity, that aid in developing the creative expression of campers. As creativity is increasingly important in an ever-more-quickly changing world, these artistic activities may have a very important place in preparing these youth for changes in the future.

Limitations & Conclusions

While there are many interesting results found in this qualitative study, there are many limitations that must be taken into account when drawing conclusions. First, while the strength of the qualitative approach lies in collecting participants' views through open-ended questions such that participants may more accurately describe the phenomenon in their own terms, there were only 12 participants and so generalizing participants' views to that of the many others in similar situations becomes a problem. Second, while approximately one fifth of the potential staff participants gave an interview, it is possible that only those who enjoyed their camp experience or felt comfortable divulging information about their experience participated. Third, the potential participant pool for caregivers was much larger than staff, such that only 5 in likely over 200 potential caregivers gave an interview (estimated based on number of campers), which involves a greater potential to only have sampled from those who enjoyed involving their children at the camp. However while there were 5 caregivers who gave an interview, there were another 4 caregivers in contact with the researcher about participation. Fourth, while interpretive phenomenology attempts to gain participants views of a phenomenon,

it is unable to verify these with participants, to which a grounded theory approach may be more effective in maintaining accuracy of participants' views of reported results. Nonetheless, many staff and caregivers agreed on many themes and meta-themes, suggesting a common consensus especially among issues related to social skills development, trying new things, and learning. Finally the nature of the methodology requires an understanding of subjectivity, and as such this study does not attempt to be objective as within the phenomenological paradigm 'objectivity' is merely a poorly understood concept linked to the socio-cultural and economic bases of an industrial class society. The researcher's involvement with camps, qualitative research, and ecopsychology have lent him to believe that the camp in the present study works very well and is in need of more recognition within social scientific research literature.

While the interpretive phenomenological method requires an acknowledgement of the impossibility of objectivity, it approaches subjectivity transparently and drives the involvement of both personal and epistemological reflexivity. Personal reflexivity refers to the nature of a participants' own experiences influencing researcher biases. To that end, the researcher has been a camp counselor for 12 years at 7 different camps, and he believes wholeheartedly in the camp environment being a profoundly positive experience for youth. Epistemological reflexivity refers to the researchers' theoretical bias in approaching the study. To this end, the researcher believes that the Biophilia hypothesis and the nature deficit disorder offer solutions for understanding the impacts of the apparent

disconnection from nature, as well as the larger global issues of environmental destruction and climate change.

The results from the current study must be taken as a description of a phenomenon from the point of view of the participants, and as such does not have a hypothesis-driven design. As there were many interesting results that came out of the research, including understanding the role of nature and physical activity in the camp environment, music in communication and learning, and the role of wilderness tripping, this study aims to open the box of scientific inquiry in order to help aid future avenues of potential for research. Those working within the social sciences, and particularly those working with youth or in the field of education may find insight and ideas with which to better allow camp experiences to help change children's lives, and perhaps more specifically those with exceptionalities, who may not feel as connected to social groups and the community at large.

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