

Critically evaluate the impact of outdoor recreation upon the health & well-being of a specific demographic group in your local area and make recommendations for the removal of barriers to participation.

For this paper I have chosen to look at young people in education, who have Special Educational Needs (SEN) and an Educational Health Care (EHC) plan in place, in particular those with autistic spectrum disorder (ASD), attention deficit disorder (ADD) or attention deficit hyperactive disorder (ADHD), as these are prevalent in the school I work in. I currently work in a special needs school in Brent, where all the students have SENs and the majority have EHC plans in place and are connected to Child and Adolescent Mental Health Services (CAMHS). SEN is covered by four broad areas of need: communication and interaction, cognition and learning, social, sensory and or physical needs, and social, emotional and mental health difficulties, while to have an EHC plan put in place, the young person will have more complex needs (Department for Education and Department for Health, 2015), which may be across multiple domains and include, but not limited to: high risk to self and/ or others, physical or mental health needs, learning disabilities, communication needs and substance misuse (HM Prison & Probation service, 2019). This paper will consider the statistics for special educational needs and educational health care plans in the UK using data from the Department for Education (2021), then will relate ASD, ADD and ADHD to the four broad areas of need, drawing on information set out from both the Departments of Education and Health (2015). It will move on, drawing on the work of Kristin Hardy and Robyn Watson, Dongying Li et al and Liz O'Brien to discuss some of the benefits that nature and animal therapy can have on students with these needs, and linking their finding to theories such as Kaplan's Attention Restoration Theory and Wilson's biophilia hypothesis, before finally discussing the barriers that this group of young people face and how we might overcome them.

Much of the literature on the impact of outdoor education and recreation focuses on neuro-typical children, but the number of children and young people diagnosed with SENs or put on to an EHC plan has been on the rise; in January 2020, the totals reached 1.37 million students (15.5%) and 294,760 students (3.3%) respectively. The dominant need identified for those with SENs was 'speech, language and communication needs' with 21.9% of all diagnosed students. For students with EHC plans the dominant need identified was ASD with 30.1%. ASD is one of the fastest growing developmental disorders in developed countries, and under diagnosis is

likely in countries such as China (Li, Larsen, Yang, Wang, Zhai and Sullivan, 2019). Gender, free school meal eligibility and ethnicity all play a role on whether a student gains SEN diagnoses (Department of Education, 2021). This paper will concentrate on the SEN and mental health needs of students with ASD, ADD and ADHD, but acknowledges that these needs interact with other aspects of identity, which influence the barriers individuals face and how best to try to remove them.

ASD is a heritable, prenatal disorder, that affects a person's ability to perceive and react to social information (Courchesne, Gazestani and Lewis, 2020). This means that people with ASD can behave differently, and it can be hard for them to express themselves in social situations (NHS, 2020). ADHD is a condition that also affects behaviour; these students can appear restless, may have trouble concentrating and may act on impulse. They may have additional problems such as sleep and anxiety disorders (NHS, 2021). ADD is a term used for people with excessive difficulties with concentration, without impulsiveness or hyperactivity, and a child with ADD may sometimes be so demoralised or anxious that these are seen as the key issues rather than the underlying concentration weakness (Lanc UK, 2016). ASD, ADD and ADHD interact with all four broad areas of SEN (Department for Education and Department for Health, 2015), which in turn interact with each other on a range of levels (Department of Education, 2021).

Young people who have *speech, language and communication needs* (SLCN) can have difficulty communicating with the world around them and this can be particularly profound for young people with ASD (Department for Education and Department for Health, 2015). This may be because they have trouble understanding what is being said to them or saying what they want to say. They may not understand or use the social communication rules used by those around them. Coales, Heaney, Ricketts, Dockrell, Lindsay, Palikara and Charman (2019) found that young people with ASD had poorer health-related quality of life than those with SLCN. *Cognition and learning* refers to where young people learn at a slower rate to their peers, including mobility and communication needs, which connect to ASD (Department for Education and Department for Health, 2015). *Sensory and/ or physical needs* involves visual, hearing and multisensory impairments and any physical disability that requires ongoing support or equipment (Department for Education and Department for Health, 2015). Sensory needs relate to students with ASD too, for example a student I teach who wants to put everything up his nose. This can make accessing everyday activities a challenge and it takes

more forethought when planning for the use of the outdoors. *Social, emotional and mental health* difficulties can include being withdrawn and isolated, or displaying challenging, disruptive and disturbing behaviours. These may be indicators of underlying issues, such as anxiety, depression, self-harm, substance abuse or eating disorders, which in turn can be linked to demoralisation and feelings of inadequacy for students with ASD or ADD/ ADHD (Department for Education and Department for Health, 2015). Individuals with ASD have high rates of depression and anxiety and this has been shown to be at its highest during late adolescence and early adulthood (Uljarevićx, Hedley, Rose-Foley, Magiati, Ying Cai, Dissanayake, Richdale and Trollor, 2020). This combination of communication and interaction issues, and social, emotional and mental health difficulties, is one of the main reasons many of the young people I work with have educational health care plans in place.

a) Impact of outdoor recreation on young people with ASD, ADD/ADHD

Byström, Grahn and Hägerhäll (2019) conducted a longitudinal study on the impact of nature and animals on young people with ASD, using a small farm. The participants took part in horse riding and playing games in the natural environment for 40 weeks with each session being two and a half hours long. There is compelling evidence that spending two hours, over the course of a week can improve health and wellbeing (White, Alcock, Grellier, Wheeler, Hartig, Warber, Bone, Depledge & Fleming, 2019). These sessions gave the participants higher levels of vitality and mental energy, and enabled them to better engage socially, reflect on conversations and engage in imaginative play. This led to the participants engaging in more affective based communication, which is difficult for people with ASD (Byström, et al., 2019). This utilisation of both the natural environment and animals is a strong model. It combines several theories, Wilson's biophilia hypothesis (Gullone, 2000), attention restoration theory (ART) (Kaplan, 1995) and stress recovery theory (SRT) (Ulrich, 1981). It may be this combination that allowed for the breakthrough in terms of affective based communication.

There have been many studies on the use of animal assisted therapy (ATT) for people with ASD (Hardy & Weston, 2020). This fits with Wilson's biophilia hypothesis, as it suggests that humans have an innate need to connect with other forms of life (Gullone, 2000). Dolphins (Griffioen, Van der Streen, Cox, Verheggen, Enders-Slegers, 2019), guinea pigs (Grigore & Bazgan, 2017) and dogs (Hardy & Weston, 2020) have all been used in ATT, but the evidence varies in terms of effectiveness and risk, depending on the animals used. The use of wild

dolphins introduces geographical barriers, or the use of captive animals introduces an ethical issue. The dolphins in either case are unpredictable, no matter how well trained they are, making this form of therapy challenging with risk of injury when putting two vulnerable groups together, both suffering from confinement and/ or disturbance (Candelieri, 2018). There is insufficient evidence that dolphin therapy has therapeutic value due to weakness in the research in this area (Marino & Lilienfeld, 2012).

Smaller, domesticated animals such as guinea pigs and dogs can also be used and while the use of guinea pigs has been seen to have positive effects on students with ASD, the research has looked at their introduction into a classroom setting (Grigore & Bazgan, 2017), which cannot automatically be translated to effectiveness in an outdoor setting. Dogs are the most utilised and accessible of the therapy animals (Hardy & Weston, 2020). Dogs have been shown to improve social behaviours, in a group (Becker, Rogers & Burrows, 2017) or individual settings (Fung & Leung, 2014) and there is evidence that the dogs do not necessarily need to be trained therapy dogs. Studies show that children with ASD who have bonded with a dog show more prosocial behaviours than those children who have not (Carlisle, 2015) and the need for walking a dog works to break down barriers to recreation outdoors, so this is the most accessible and relevant therapy option. Unlike the Byström, et al (2019) study with horses, where most people would have to go to a special stable/ farm, the dogs can be a family pet, they can accompany the young person to green spaces and this kind of engagement can lead to a strong bond between dog and child.

There is some evidence that environment factors may also contribute to ASD (Wua & Jackson, 2017). Wua and Jackson (2017) found that an increase of green space, including woodlands, grasslands, tree canopy and roadside trees could lower the prevalence of ASD by as much as 19%, in some cases, suggesting that exposure to these kinds of green spaces can have a positive effect. Tillmann, Tobin, Avison and Gilliland (2018) similarly suggest that exposure can be significant. If trees lined our streets, and there were green corridors to walk or cycle through, we could embed nature into everyday life. If we think of these kinds of natural spaces as infrastructure –“not simply the green infrastructure required for biodiversity and healthy ecosystems, but also the civic infrastructure that makes the difference between a good place to live and one that exacerbates the problems and stresses of urban life” (Dobson, 2018, p. 80), helping not only those with ASD and other neurological disorders and lowering their prevalence, but helping the general population as a whole.

O'Brien (2018) looked into community-based programmes at an arboretum, for groups of young people with ASD, psychosis, behavioural problems, emotional and self-esteem problems and learning needs. The groups were involved in woodland management and maintenance activities such as coppicing, tree planting and bramble clearance. There were also creative and sensory activities focusing on creating art and using senses to explore the site, and social activities which included preparing food (O'Brien, 2018). The adaptability and flexibility benefitted the participants as they took ownership of their time in the woods and developed skills in a chosen activity. Their results covered social engagement, woodcraft engagement and creative and sensory engagement and overall suggested that the combination of the three engagements is important, especially in a multi visit framework. Many of the skills performed gave an opportunity for an immersive experience and which can help with attention restoration (Pretty, Rogerson, Barton & Green, 2017) as laid out by Kaplan (1995). Both wood craft engagement and sensory engagement activities allow for involuntary attention (Kaplan, 1995), and the possible repetitive nature of leaf printing, carving a piece of wood, or coppicing allowing the participants to recover from direct attention activities.

There is strong evidence that nature can have positive effects on ADHD and ADD, as well as some of the associated issues such as anxiety and depression (Department for Education and Department for Health, 2015; O'Brien, 2018) which may also interact with how exposure to nature affects people with ASD (Bos, et al., 2020; Li, et al., 2019). Young people with ADHD, who went for a walk in nature were able to concentrate better than after a walk in a built-up area (Faber Taylor & Kuo, 2009; Van den Berg & Van den Berg, 2011). Faber Taylor and Kuo (2009) used parks set in urban areas, while Van den Berg and Van den Berg (2011) looked at wooded areas. While there is no assessment of the comparative impact of urban parks and wooded areas, these studies do show that green spaces, whether managed or not, can have a beneficial effect on a young person's levels of concentration and that the green space can be very local, and this is evidence of Attention Restoration Theory (ART) (Kaplan, 1995).

People with SEN needs, including ASD and ADD, are at a much greater risk of health problems including diabetes and mobility issues from excess weight (Public Health England, 2020) due to a sedentary life (Yarımkaaya & Esenturk, 2020). Gross motor skills such as walking can help to reduce systolic blood pressure and diastolic blood pressure; resting heart rate; body fat, body mass index, total cholesterol and statistically significant mean increases in VO2max and

reduction in depression scores (Hanson & Jones, 2015). During the Byström, et al (2019) study the young people played games, which has been found to help with emotion regulation and reduce behavioural problems in young people (Tse, 2020), which are linked closely to ASD and ADHD/ ADD. If a young person at the SEN school I work at needs time to regroup, they will often ask to go for a walk, so whether this is learnt or intuitive, they understand that a walk can help with their ability to regulate their emotions and behaviours. Exercise has also been found to have a positive effect on those with ADHD and ADD, in particular improvements to cognitive function, concentration levels, abilities to inhibit impulsive behaviour, reduces anxiety and depression related behaviour (Christiansen, Beck, Bilenberg, Wienecke, Astrup & Lundbye-Jensen, 2019). Christiansen, et al (2019)'s meta-analysis looked at short bouts of acute exercise, so exercising little and often might remove the barrier of time, especially for those students with ADHD.

b) Barriers to participation and recommendations for their removal

Research into barriers to the outdoors and nature on a recreational level are limited when looking at young people with SEN and even fewer use the views of the young people themselves. Li et al (2019) spoke to parents of children with ASD, and found that there were five categories for concern when taking their child out in nature. These were inappropriate behaviour, safety issues, phobias, social concerns, and others. *Inappropriate behaviour* was broken down into inappropriate social interaction, tantrums and odd behaviours. Many of these were more about how it makes the parent or member of the public feel rather than how the young person feels. Parents and carers are embarrassed by how the young person interacts with or doesn't interact with people they come into contact with. One parent said their 15-year-old with Asperger's "talked to people in an immature and funny way" (Li, et al., 2019, p. 75) which made her uncomfortable and although Li et al suggested specific areas in parks for those with SEN with high trees to dampen noise and limit embarrassment (Li, et al., 2019), specific SEN time slots can also be effective, for example as offered in Aldenham Country Park adventure playground. Some parents noted that their child did not understand the rules or could not control their impulses, which led to behaviour that is regarded as disruptive. Parents were scared that their child would have a tantrum and may lash out and hurt someone or themselves. From my own experience, it has taken two strong members of staff, who have been trained in positive handling, to stop a young person from hurting themselves or damaging property. It also made other young people in the group anxious about how members of the public were

looking at them. Odd behaviours were perceived to attract the attention of members of the public, especially repetitive behaviours such as hand waving (Li, et al., 2019). These kinds of interaction can make a parent/ carer or group member feel uncomfortable as well as the person on the other side of the interaction. As a parent, carer, mentor, or teacher we need to gauge each situation individually, and consider the needs of all concerned, balancing the young person's right to interact with nature and the world around them with the possible risk of negative reactions.

Safety issues for young people with ASD in the outdoors consisted of *traffic danger, wandering off, bullying as well as tripping and falling* for those with locomotion issues (Li, et al., 2019). In London we can access green space by walking, meaning that traffic can be a big hazard. Parents said that their child did not understand traffic rules and could not respond quickly enough to possible danger due to a reduced lack of awareness of their surroundings. This means that parents felt that they needed to supervise their child at all times (Li, et al., 2019). For young people with ASD this may create a barrier about how often, and how independently, they are able to access their local outdoor space. More green corridors may help to alleviate this kind of barrier but also flyover and underpass walkways, and I take these routes with my students with ASD, although this does not tackle the independence issue, as they are often (understandably) anxious about walking alone on these routes.

Phobias can cover a broad range of environmental factors which may increase affective arousal and sometimes lead to tantrums. Parents in the Li et al (2019) study said that their children were scared of noise from traffic and construction sites and that parks and green spaces could expose them to unexpected and uncontrollable environments, triggering these phobias. Jaiswal, Fraser and Wittich (2020) also suggest public transportation is a barrier for people with SEN due to intense audio and visual stimulation, and enclosed crowds. This could be removed by using private means of transport, but while this may mitigate the phobias, it can introduce socio-economic barriers. Animal assisted therapy is widely used with people with ASD. However, it is not appropriate for everyone, as animals can be themselves a barrier to use of the outdoors for those with phobias related to animals. One student with ASD at my school struggles with being in the same environment as dogs, birds and flies, asking to return to school when he sees them, showing the need for personalised therapy options, as some people with ASD find green spaces just as anxious-making as built up spaces (Larson, et al., 2018), but continuing to spend time in the outdoors can reduce the affective arousal, and the student

mentioned above has become gradually less anxious over time with repeated controlled exposure.

The arboretum community project was aware of these barriers and did well at mitigating them. Li, et al (2019) identified inappropriate behaviour, safety issues and social concerns. The project facilitated an autism awareness course for the staff running the workshop so that they were better able to understand how and why behaviours occur. The staff were already trained youth and community workers and had experience with dealing with students with emotional and social issues as well as substance abuse. The project had its own base camp, a safe space away from public view, but it also allowed for group members to take a time out when needed (O'Brien, 2018). This is a useful example of how outdoor spaces can successfully meet the requirements of students with SEN.

As established, students with ASD and ADD/ ADHD can struggle with depression, which can be a major disability especially linked to *Social, emotional and mental health* difficulties and can have multiple negative outcomes. Among these are poor social integration and loneliness, increased risk of psychiatric problems and substance dependence (Simblett, Matcham, Siddi, Bulgari, di San Pietro, López, Ferrã, Polhemus, Haro, de Girolam, Gamble, Eriksson, Hotopf and Wykes, 2019). These can be barriers to life in general as well as to the use of the outdoors. Poor social integration and isolation can lead to a lack of motivation, which is a real barrier to accessing the outdoor environment for its positive effect. I have found that accountability is key here, as students are more likely to attend outdoor sessions if they would be missed, and the use of school time for the outdoors can help lift their mood and facilitate emotional progress: the headteacher at my school has noticed that one student with ASD has become more open in his interactions in general since I started working with him in the outdoors.

Conclusion

Nature has been shown to reduce stress, enhance emotional resilience, facilitate functional and imaginative play and support cognitive function (Li, et al., 2019). The benefits of time in green spaces are wide-ranging and based on robust evidence. For students with ASD, it improves their affective based communication and, especially when combined with ATT, gives opportunities for prosocial behaviour, while also even lowering the prevalence of the condition

in wider society. For students with ADHD and ADD, walking in green spaces improves concentration, while also improving physical and emotional health.

Jaiswal, et al (2020) found that social attitudes towards disability and transportation issues are some of the biggest barriers to participation for those with SEN. This is partially confirmed by the discussion here, as parental embarrassment and fear of public reactions to tantrums reflects wider social attitudes (Li, et al., 2019), while difficulties with using public transportation limits access to London's green spaces, including parks in the centre and woodlands in the outskirts, such as Epping Forest, and tends to mean students with SEN are more likely to be limited to local parks, unless trips are facilitated by their schools. Two further barriers which have been significant for my students are phobias and depression associated with ASD and ADHD/ ADD, though a caring and long-term approach has had a positive impact on the students at my school.

Wordcount: 4753

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