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Abstract

This paper uses ethnography to explore young people's engagement with an intervention run by Feral Spaces which was designed to promote a meaningful connection to a disused space. Over the course of three sessions, each lasting two hours, seven young people aged between 11 and 12 years old took part in a range of den building activities in a semi-wild area which was local to them. The sessions were recorded using audio and video equipment and an inductive thematic analysis informed by a realist framework was used to analyse the naturalistic data collected. The analysis presents four themes - engaging with the environment, developing a sense of awe and wonder, respect and attachment to the space and a sense of belonging which map out the young people's growing connection to nature evidenced during the intervention. Within each of these themes the young people's experiences are discussed in relation to theory of biophilia and the pathways to nature model in order to evaluate their relevance for researchers and practitioners who seek to understand children's connection with nature and promote it. Furthermore, the positive relationships and emotions experienced during the intervention are explored. It is argued that the community-based intervention developed the young people's understandings of the natural world and their confidence to engage with it in a personally meaningful way. This had positive implications in terms of supporting the young people's wellbeing.

Keywords – nature connection, community, qualitative methods

Introduction

In recent years a disconnect between children and the natural world has been a cause for concern. In part, this is expressed in growing interest around the work of Louv (2006, 2010) and his concept of *nature deficit disorder*. Within this framework it is argued that children's ability to engage with wild, outdoor play is becoming increasingly limited as screen time and carefully managed indoor play activities dominate children's free time. For Louv this move is harmful because it prevents children from fulfilling an innate desire to connect with nature and therefore leads to problems linked to behaviour (e.g. attention deficit disorder), health (e.g. obesity), psychological wellbeing (e.g. depression) and physical development (e.g. myopia). This is significant because in a UK context, growing levels of childhood obesity (Health survey for England 2008) and rising reports of mental health issues in children and young people (Office of National Statistics, 2004) are well documented. In line with Louv's theory allowing children to connect with nature would go some way to addressing these issues by supporting children's wellbeing. In response, this paper explores the experiences of young people (aged between 11-12 years old) who participated in a nature-based intervention run by Feral Spaces a not for profit organization which aims to encourage people to discover disused green spaces in their local area and develop them into community spaces. During the intervention, which was funded by the Canal and River Trust, a UK based organisation which maintains water ways to support people's wellbeing, young people engaged in a range of child led activities designed to encourage them to

connect with a disused semi-wild space which was local to them. Within this paper there is a specific focus on understanding the growing connection to nature and a sense of wellbeing that was observed during the intervention. This is achieved through exploring the possible relevance of theories and models developed within adult populations may have for children.

The importance of nature contact

Chawla's (2015) comprehensive review of research literature exploring the benefits that nature contact has for children documents the ways in which nature supports all aspects of children's health and wellbeing. Broadly speaking the physical benefits of nature contact include decreased levels of stress (Markevych et al. 2014), improved general health (Aggio et al. 2015), increased levels of physical activity (Coombes, van Sluijs, & Jones 2013) and lower levels of asthma (Maas et al. 2009). Psychological benefits such as improved cognitive functioning, (Dadvand et al. 2015), better mental health (Wells & Evans, 2003) and increased opportunity for imaginative play (Luchs & Fikus, 2013) are also reported. When reflecting upon these findings Chawla (2015) argued that whilst this evidence base is extremely useful there are significant limitations to the quasi-experimental methods which have come to dominate this area of research. In line with arguments raised by Potter and Wetherell (1987) she suggested that such methods create an imbalance of power in which the adult researchers decide the specific area of interest and then select the variables, such as levels of physical activity or concentration, which are to be tested. Furthermore, nature becomes reduced to a quantifiable concept that can be measured by cataloging the bio-diversity of an area or the distance people live from a green space. This reductionism coupled with a focus on what adults consider to be important limits the

scope of this type of research because it prevents an examination of the rich experiences and the meaning that children find in nature. In response to Chawla's call (2015, p. 445) for research which "reveals what children are doing in nature" to "help explain statistical relationships" this paper uses ethnographic methods to develop a deeper understanding of children's experiences of nature connection, why it is important and how it can be supported.

Understanding a need for a connection to nature

Within the nature connection literature the theory of Biophilia has emerged as a useful framework which provides opportunity to investigate why nature is important to people and the differing experiences that nature provides. Biophilia is defined by Wilson (1984) as 'the connections that human beings subconsciously seek with the rest of life' (p. 350). Within the theory it is proposed that throughout human evolutionary history the landscapes that people were situated in played an important role in survival (Kahn, 2011). Through sustained interaction with the environment people learned how to read the landscape to seek out resources that promoted survival and avoid those that proposed a threat. Therefore, an enduring relationship between humans and nature served to shape people both cognitively and emotionally and established an innate need for a connection to nature (Gullone, 2000).

Building on this theory Kellert (1993) identified 9 values of biophilia, outlined in table 1, which aim to capture the different ways in which people experience nature. As argued by Richardson and Hallam (2013), each of these values can be connected to a particular purpose. More specifically, Utilitarian, Dominionistic and Negativistic values are aligned with survival; Ecologicistic-scientific and Symbolic values represent both survival and fulfilment whilst the

remaining values centre on fulfilment. Therefore, the values can be likened to a hierarchy which has survival at the base and personal fulfilment at the top. This presents a useful model that has been used successfully to map out and further understand changes that happen during an adult's long-term engagement with nature (Richardson & Hallam 2013).

Value	Description
Utilitarian	Material benefits gained from the natural world.
Dominionistic	A desire to control and master nature for functional advantage, increasingly destructive.
Negativistic	Antipathy, fear and aversion from nature, particularly threatening aspects.
Ecologistic-Scientific	The urge to understand nature and its interconnections through systematic study.
Symbolic	The symbolic use of nature reflected in the development of language and thought.

Humanistic	Deep emotional attachment expressed as love and care of individual elements of nature.
Naturalistic	Satisfaction from contact with nature. Encompasses the complexity and diversity of nature and the resulting fascination, wonder and awe.
Aesthetic	The beauty of nature and the natural landscape. Includes the awe of physical appeal.
Moralistic	Affinity and reverence for nature leading to ethical responsibility. Includes harmony, connection and spiritual meaning in life.

Table 1: The nine values of Biophilia, (Kellert, 1993).

In a separate piece of research Lumber, Richardson and Sheffield (2017) examined these biophilic values in relation a walking intervention in order to understand how the theory of biophilia could be used to map out the pathways through which adults experience a connection to

nature. As outlined in table 2 the findings of this research highlighted the importance of contact, beauty, meaning, emotion and compassion in developing a connection to nature. Furthermore, each of these pathways map onto a biophilic value thereby reaffirming this theory's relevance in promoting nature connection.

Pathway to nature	Definition	Biophilic value
Contact	The act of engaging with nature through the senses.	Naturalistic
Beauty	The perception of aesthetic qualities including shape, colour and form that please the senses.	Aesthetic
Meaning	Using nature of natural symbolism to communicate a concept that is not directly expressed.	Symbolic
Emotion	An effective state or sensation that occurs as a	Humanistic

	result of engaging with nature.	
Compassion	Extending the self to include nature, leading to a concern for other natural entities that motivates understanding and helping/co-operation.	Moralistic

Table 2: Pathways to nature and associated biophilic values, Lumbar, Richardson and Sheffield, (2017).

Lumber et al (2017) argued that the emphasis on emotional connection and beauty that emerged from their research is significant because it questions the effectiveness of traditional nature-based interventions. Typically, within these interventions nature experts such as park rangers seek to educate people about the environment they are located in through activities centred on the formal identification of plant and animal species. Dickinson (2013) is also critical of what she terms a rational approach to nature because it encourages a connection through science. She argued that this exclusive focus serves to limit a personally meaningful relationship with nature based upon emotion and spirituality. Lumber et al’s (2017) pathway model offers

further support for this position as it suggests that interventions should not be based upon knowledge and identification-based activities.

This body of research provides a useful framework and theoretical basis which can aid understanding of human connection to nature and also inform nature-based interventions. However, in line with the wider nature connection literature these studies and perspectives are informed by adult populations (Chawla, 2015). It is important to remember that children are not the same as adults and they do not share adults' concerns and perspectives (Kellett, 2005). As such a child centred approach advocated by Faulkner and Joubert (2006) is needed to further understand children's experiences of nature and explore the possible relevance that the theory of Biophilia (Kellert, 1993) and the pathways to nature (Lumber et al, 2017) may have for this group.

Challenges to connecting children to nature

In recent years rapidly increasing levels of urbanisation and declining access to nature have resulted in people from industrialised nations spending more time indoors and a growing disconnect from nature (MacKerron & Mourato, 2013; Matz, Stieb, Davis, Egyed, Rose, Chou & Brion, 2014). For children, issues surrounding access to nature are further restricted due to parental concerns relating to personal and physical safety (Hilman, Adams & Whitelegg, 1990). Given the reported benefits of a connection to nature and the importance of accessible nature this is a cause for concern (Natural England, 2009; Richardson, Hallam & Lumber, 2015).

In a UK context these concerns are reflected in recent campaigns and government policy surrounding the need to reconnect children with nature such as the department for environment, food and rural affairs (DEFRA) 25-year Environment Plan and Nature Friendly Schools, (2019); the Wildlife Trust’s “30 days wild” campaign where evaluation showed a positive impact of the intervention on mental health and wellbeing (Richardson et al. 2016; Richardson & McEwan, 2018); and the Royal Society for the Protection of Birds (RSPB) intervention for 10-11 year olds which linked nature connection with health, life satisfaction, pro-environmental behavior and pro nature behaviour (Richardson, Sheffield, Harvey & Petronzi, 2016).

These findings are encouraging and they point towards the value of nature based interventions for adult and child populations. However, it is important to note that these interventions were run at a national level and involved access to nature reserves. This in itself is not a problem, but it assumes that all people have equal opportunity to engage with nature. Therefore, wider issues which shape people’s ability to connect to nature, such as class and culture, are overlooked (Dickinson, 2013).

Feral Spaces

The current paper explores an intervention, funded by the Canal and River Trust, designed to connect young people from a socially disadvantaged area to nature and have a positive impact upon their wellbeing. The intervention was run by Feral Spaces an established group based in the Midlands (UK). Feral Spaces are known for running typically free of charge activities during the school holidays in order to give young people from a low SES area a safe

place to go and an opportunity to develop a local disused space into an area that can be used positively by local communities.

A specific focus on children from low SES backgrounds is significant because evidence suggests that people who live in areas of high social deprivation are more at risk of mental health issues (World Health Organization, 2014; Stafford & Marmot, 2003) and that children who grow up in these areas are particularly vulnerable to emotional disturbance which can result in poor mental health in their adult life (Caspi, Taylor, Moffitt, & Plomin, 2000). Furthermore, people living within these communities have limited access to locally based green spaces (Public Health England, 2014) and tend not to own a garden (Noonan, Boddy, Knowles, & Fairclough, 2015). This creates a situation in which disadvantaged communities who are in particular need of wellbeing interventions are unable to freely access nature and they also may not have the resources, in terms of time, transport access and money, to attend wild spaces, such as wildlife reserves, that interventions traditionally focus on (Harvey & Holland, 2017). Consequently, unless there is movement beyond a neoliberalist framework centring on personal choice, nature connection interventions could further contribute to social inequalities.

The specific intervention explored in this paper addressed this issue by working with an academised school based in Stoke. The school is situated within the 10% most deprived areas in the UK and half of the students attending the school are eligible for free school meals. The school is also located in an area where a number of criminal gangs operate. This means that there are limited safe public spaces for young people to socialise and children as young as 8 are at risk of being groomed for gang membership.

During the intervention three Feral Spaces facilitators and two teachers worked with seven young people aged between 11-12 years old. The intervention was delivered over the course of three weeks during school time. Each 2 hour session took place in a disused semi-wild space local to the young people involved. The site of the intervention was important, its locality meant that the children were able to return to it after the intervention should they wish. In this sense, the project encouraged the young people to engage with what Newman and Dale (2013) term the *mundane nature* that surrounded them. Sites of mundane nature, such as undeveloped areas surrounding river banks or abandoned spaces have an appeal to children and young people living in urban areas. As noted by Lynch (1977) children seek out these spaces because they evoke feelings of attraction and fear by offering them a place to be alone or spend time with friends. Therefore, the intervention's movement away from nature reserves broadened out the traditional conceptualisation of nature popular within mainstream interventions and ensured that the young people were in an accessible space which was familiar to them.

Feral Spaces entered the project with the aim of helping the young people involved gain skills, confidence and a connection with nature. It was hoped that experiences during the workshops would contribute to their wellbeing. Given these aims the research was conducted using a Community Psychology approach which focuses on understanding people in the context of their communities and pursuing social justice (Nelson & Prillettensky, 2010). Within this framework the researcher is positioned as a resource collaborator who works with a community to support them in telling their stories with a view to promote social change (Rappaport, 2005). This paper focuses specifically on the way in which the interventions developed a connection to

nature and links to wellbeing. Other important outcomes of the project such as developing relationships, skills and confidence are reported elsewhere.

Method

This study used ethnographic methods to explore young people's engagement with an intervention run by Feral Spaces which had been funded by the Canal and River Trust.

Ethnography is a method which centres on the researcher joining a community and using a range of data collection methods such as interviews and field diaries to explore and develop an understanding of people's lived experiences of the world (Burgess, 1984; Denzin, 1997 & Hammersley, 1990). In line with this approach the first author worked closely with the Feral Spaces leader (and second author) to collect a range of naturalistic data from each session of the intervention which ran for two hours every morning on the 20th June, 27th June and 4th July 2018.

Before each session started, the Feral Spaces team set up video cameras in unobtrusive points and attached microphones to their clothing to record the sessions as they happened. In addition to this a video diary area was set up where the young people could reflect on their experiences of the intervention. The young people were also provided with iPads, digital cameras and a paper-based journal which they could use to document the activities and record personally meaningful experiences. Finally, the first author adopted the position of participant observer and attended the last session of the intervention. In this role the first author supported the Feral Spaces team and worked alongside the young people.

After the intervention had finished the Feral Spaces team collated all the data and handed it over to the first author for analysis. All the audio recordings were transcribed verbatim and copies of the journals were taken before they were returned to the young people. During the transcription process any names and identifying information were changed to protect the identities of all participants.

Recruitment procedure and participant information

Feral Spaces asked the school involved in the intervention to select seven Year 7 students (aged between 11 and 12 years old) to participate in the intervention. This age group was selected because it represents a transition into the teenage years and a growing disconnection with nature and environmental concerns (Olsson & Gericke, 2015; Liefländer & Bogner, 2014; Uitto & Saloranta, 2010). No other selection criteria were specified by Feral Spaces but as outlined in table 3 the school put forward children with a range of needs and abilities.

Chosen name of young person	Gender	Reason for selection
Mia	Female	Academic high achiever
Indigo	Female	Academic high achiever
Latte	Female	Low in confidence and shy

Cabbie	Female	Low in confidence and shy
Omega	Male	Local to the area and had participated in Feral Spaces activities before
Carbide	Male	Local to the area and had participated in Feral Spaces activities before
Fortex warrior	Male	Local to the area and had participated in Feral Spaces activities before

Table three: Summary of participant information

Ethical concerns

Before any data collection started informed consent was obtained from the young people's caregivers and the young people themselves. All adult participants (teachers and Feral Spaces facilitators) also gave informed consent. As part of the consent and debrief process all

caregivers and participants were advised that their data would be anonymised, stored securely and given information on how to withdraw. No one chose to withdraw. The project was approved by the University ethics committee and complied with BPS code of ethics (2018).

Analytic approach

All the data relating to the live recordings was collected together to form a data corpus which was analysed using thematic analysis (Braun & Clarke, 2006). This analytic approach was useful as it enabled the data to be organised through the identification of “patterned responses or meaning within the data set” (Braun & Clarke, 2006 p. 82). Themes were identified using an inductive approach in which the data itself was used to guide the analysis rather than a predetermined hypothesis (Frith & Gleeson, 2004). This approach to data analysis fits in with a child centred approach because it allowed the analysis to be informed by the young people themselves and issues that are important to them, rather than the researcher approaching the data set with a fixed idea of what should be focused on.

Analysis was guided by the 6 stages of thematic analysis (Braun & Clarke, 2006). During stage one - familiarization - the first author transcribed the recordings re read the transcripts to fully immerse herself in the data. Analytic notes made during this process facilitated stage two – identification of codes. Extracts from the transcripts relating to each code were grouped together to gain a feel for each code and check the validity of the codes identified. The first author then used mind maps to guide stage 3 and cluster codes together into themes. At this point the second author (and Feral Spaces facilitator) helped guide step 4 and reviewed the themes to ensure that they fairly represented the data represented the varied experiences captured in the data. Once the

thematic structure was agreed the first author moved on to stage 5 and closely analyzed extracts which best represented each theme using a realist framework. This approach assumes that language reflects meaning and experience and therefore allows claims to be made about the internal state of the speakers (Braun & Clarke, 2006). Once all extracts had been closely analyzed the second and third authors assisted with stage 6 as the independently reviewed the commentary to ensure credibility and contributed to the write up of the research.

Results

Background context

The intervention took place in a semi wild, disused area which was local to the school that participated in the project (see figure 1). An area local to the young people involved was chosen specifically because it meant that the young people could easily return to the space should they wish to and the significance of this is discussed later. During each session the Feral Spaces practitioners took a child centred approach and guided a range of activities in response to requests made by the young people involved.



Figure 1: Image of the space captured by a young person

Broadly speaking the first session centred on the young people exploring the space and considering what they would like to do in the remaining sessions to develop the area into a place that they would like to return to with members of their wider community. At this point the young people decided to develop den spaces in three separate places that they identified. The young people then broke off into three smaller self-selected groups and each of these groups set about developing their vision for their den space. The remaining time of the first session was dedicated to clearing their chosen area to make way for construction. During the second session the Feral

Spaces facilitators worked with the young people to construct swings, hammocks and benches for their dens. The final session was dedicated to completing construction, collecting clay like mud from the site to make den creatures and using spray paints to create den signs.

Given the length of the project and the volume of data collected a wide range of benefits were observed. The following analysis focuses specifically on the growing connection with nature that was evidenced in the naturalistic data (outlined in table 4). Other outcomes, such as the development of practical skills and a growing sense of community and belonging, are explored elsewhere.

Main theme	Subthemes
Engagement with the environment	Learning about nature
	Engaging with nature together
	Feeling nature
Developing a sense of awe and wonder	Examining the landscape
	Observing animals
Respect and attachment to the space	Appreciation of nature
	Guardianship of the space
A sense of belonging	A sense of ownership
	A desire to return

Table 4: Summary of themes

Engaging with the environment

The den building activities required the young people to directly connect with nature and interact with their environment in several ways. The following section of the analysis examines this by focusing specifically on Mia and Indigo's experiences of building a swing located in the space shown in figure 2. This activity drew joint attention towards a tree as they examined it to decide where to hang the swing and consider any potential hazards in the form of branches. As evidenced below this sparked curiosity in the observed features of the tree.



Figure 2: Indigo climbs the tree and starts work on the den space

1. **Indigo:** Why is the tree different colours like someone has tried to peel this off? Some of
2. it is a light yellow and some of it is dark
3. **Feral Spaces facilitator 3:** What's under the bark? That is like erm
4. **Indigo:** I'm trying to get it off but it's stuck
5. **Feral Spaces facilitator 3:** That is kind of, like a fungus.

Within this extract Indigo initiates the interaction by sharing her observations and this highlights the child centred approach adopted by the Feral Spaces facilitator. The facilitator does not take the conversational lead and therefore does not adopt the position of a nature expert who seeks to formally educate Indigo about the tree through identification. Instead, the facilitator simply provides an opportunity for Indigo to connect to nature through *contact*. Indigo responds to this *contact* in line one with a question which points towards an internal motivation to develop a deeper level of understanding. However, in line 3 this question is met by direction to explore the tree further by looking under the bark rather than a direct answer. This encourages Indigo to find the answer for herself and prompts further sensory engagement with the tree. This is evidenced in line 4 with a move away from observing colour, towards a more tactile experience. Consequently, this interaction demonstrates the importance of *contact* with nature through sensory experience outlined in the pathways to nature model (Lumber et al., 2017).

As part of the swing construction Mia and Indigo explored the tree further by climbing its branches. This demonstrated a growing confidence in their ability to engage with nature.

1. **Indigo:** Guess who is up? Me! How do I get off?
2. **Mia:** Put that leg there. No, no, no. Which one is your strongest leg? Then put your foot
3. there
4. **Indigo:** Teacher! I'm tree climbing
5. **Mia:** And then you put your strongest leg there. Up, up go one up, up and then you hold
6. onto the tree

This extract captures a mix of pride and uncertainty as Indigo develops the skills needed to climb a tree. Indigo's use of a question in line 1 evokes a sense of disbelief and indicates that Mia would be surprised to see her friend climb a tree. This is quickly coupled with a sense of pride as Indigo excitedly exclaims – 'Me!' However, there is a sense of uncertainty as Indigo asks for help on how to get down. This suggests that Indigo has experienced limited opportunities to connect with nature and is therefore still developing the skills needed to feel confident in an outdoor environment. As such, *contact* with nature needs to be facilitated through collaboration and support with a more confident peer.

Mia's response to Indigo's request positions her as instructor and there is evidence of a bond developing between the young women as Mia works to support Indigo. This type of connection was observed throughout the intervention as the young people worked collaboratively to reach shared goals. Existing friendships were strengthened, and new friendships were forged. A benefit of this sort of bond is evidenced line 4 Indigo where seeks to involve the teacher in her

achievement. This indicates that Mia's support has improved her ability to climb the tree and explore it with confidence. Further consequences of being able to directly make *contact* with the tree is highlighted below

1. **Indigo:** Miss. I'm going to hug the tree
2. **Feral Spaces facilitator 1:** arr how does it feel being up there?
3. **Indigo:** Nice. I couldn't climb the tree. I can't climb trees
4. **Feral Spaces facilitator 1:** Well you look like you can from where I am standing

Within this extract there is a strong sense of affection as Indigo seeks to make a positive physical connection to the tree through the act of hugging it. This growing emotional connection to the landscape points towards the importance of *emotion* as a pathway to nature connection (Lumber et al 2017) and the relevance of the *humanistic* value in Kellert's (1993) biophilia model.

In line 4 the Feral Spaces facilitator encourages reflection on this experience and connection. Indigo's response draws attention to her feelings of happiness and peace state but also indicates that a lack of tree climbing ability has been a barrier to this type of connection in the past. A change of tense in this line from past to present suggests that confidence is still developing and serves to seek reassurance from the Feral Spaces facilitator. The facilitator's

response encourages Indigo to acknowledge her achievement in climbing the tree and invites her to feel proud of her personal development.

During the swing building activity positive emotion was not just directed towards the landscape; enjoyment also brought the young women together.

1. **Mia:** I'm going to push you
2. *Shared laughter.*
3. **Mia:** This is so fun. It's a fun swing. You don't like it?
4. **Indigo:** I don't. It depends. Yeah it's nice. It needs to be higher

During the intervention the young women shared experiences of fun, indeed the shared laughter evokes a sense of joy and enjoying the moment. The creation of the swing enabled the young women to play together free from the constraints of school and their everyday lives. Therefore, intervention was a space in which the young people involved could relax and enjoy their time together. Given the growing pressures that young people are under and growing concerns for mental health (ONS, 2004) this freedom is especially significant.

This section of the analysis has evidenced the importance that *contact* and *emotion* have in connecting young people to the environment. To a certain extent this highlights the relevance of Lumber et al's (2017) pathways to nature model for young people. However, whilst *contact* and *emotion* are important, the analysis suggests that they take on a different meaning for young people. For example, contact was linked to the *ecological-scientific* value captured in Kellert's (1993) biophilia model rather than the *naturalistic* value which Lumber et al's (2017) pathways

model proposes. Furthermore, this contact was active rather than passive and it required support from peers and Feral Spaces facilitators. In line with Lumber et al's (2017) model *emotion* was aligned with *humanistic* biophilic value. However, both *contact* and *emotion* were closely linked to wellbeing, as the young women had the opportunity to experience a positive emotional state, develop friendships, experience success and feelings of achievement.

Developing a sense of awe and wonder

During the intervention a connection established through *contact* and *emotion* was further developed and fostered. A walk through the semi-wild space, captured in figure 3, provided an opportunity for further exploration and discussion.



Figure 3: Exploring the space

1. **Feral Spaces facilitator 2:** So you know what used to be down there don't you guys?
2. **Collective response from Carbide and Fortex warrior:** A canal
3. **Feral Spaces facilitator 2:** A canal yeah
4. **Fortex warrior:** How did it over grow?
5. **Feral spaces facilitator 2:** Well it drained and then over time over the years this is just
6. how nature has taken it back
7. **Collective response from Carbide and Fortex warrior:** Wow

Within this interaction there is evidence of a growing appreciation and understanding of nature which reflects Kellert's (1993) *naturalistic* value. The child centred approach adopted by the Feral Spaces facilitator is key in this process. Rather than identifying areas of the landscape and explaining what they are the facilitator uses questions to draw attention to areas of potential interest and invites the young people to share their own understandings of the space. This approach sparks curiosity and leads to questions from the young people, evidencing a desire to know more. Use of the word 'wow' in line seven aligns this deeper understanding with a sense of awe and respect. A new understanding and relationship is being supported and developed.

Spending time in the wild areas that surrounded the den spaces also enabled the young people to encounter wildlife. During this time the young people encountered a plant covered in caterpillars. This was a source of great excitement as the young people took photographs of the plant and ran over to a facilitator to discuss the images they had captured.

1. **Feral Spaces facilitator 1:** You have never seen a caterpillar?
2. **Fortex Warrior:** There are so many
3. **Feral spaces facilitator 2:** They really, really love this plant
4. Yeah
5. **Feral spaces facilitator 2:** I wonder what type of caterpillar they are?
6. **Feral Spaces facilitator 1:** We need to find out don't we?
7. **Fortex Warrior:** Yes and what they turn into

The limited opportunities available for the young people to engage with wild spaces is evidenced in line 1 as seeing a caterpillar is presented as a novel experience. Furthermore, Fortex Warrior's observation relating to the number of caterpillars indicates a feeling of wonder. The Feral Spaces facilitators respond to this by working collaboratively with the young people to encourage curiosity and investigation. Through the presentation of questions – rather than answers - the Feral Spaces facilitators position themselves as novices who are seeking to understand their observations alongside the young people. This serves two important functions (i) it sends out a message that connection to nature is a lifelong journey in which adults learn new things and seek out answers and (ii) invites the young people to develop a personal understanding of nature. This invitation is accepted in line 7 as Fortex Warrior puts forward his own question and line of enquiry. Significantly, his request centres on identification and this highlights the continued importance of Kellert's (1993) *ecologistic-scientific* value for practitioners seeking to support a meaningful connection to nature in young people.

This theme has explored how a growing connection and understanding of the space was developed and fostered through continued *contact* during the intervention. There is a sense of a growing appreciation of nature and feelings of awe which were key in sparking curiosity. This ties into the *naturalistic* value within the Biophilia model (Kellert, 1993) and indicates sequential movement through the values, from *ecologistic-scientific*, to *humanistic* and the *naturalistic*. The next theme further explores the young people's journeys and the transition to *aesthetic* and *moralistic* values.

Respect and attachment to the space

During the intervention the young people demonstrated a growing appreciation for the *beauty* of the space and a respect for the habitat that surrounded them. This is evidenced in the extract below where Indigo relaxes in the hammock she has built. As she lies in the hammock light diffuses through the leaves above her.

1. **Feral Spaces facilitator 1:** It's so pretty though with the dabbled light
2. **Feral Spaces facilitator 2:** How did you describe this tree last week?
3. **Indigo:** Nice and puffy
4. **Feral Space facilitator 3:** Puffy. Yeah. So you find a puffy tree and it has got all kinds of possibilities hasn't it?

As Indigo enjoys the experience of the hammock; Feral Spaces facilitators use questions to draw her attention to the beauty of the tree and foster a different type of connection. Use of a statement in line 1 designed to draw attention to the tree and the questions in lines 2 and 4

encourage Indigo to reflect on the tree and develop a personal appreciation of the aesthetics she observes. In contrast to the previous extracts which focused in the excitement of discovery this interaction centres more on quiet reflection and the quiet calm this brings.

This highlights (i) the relevance of beauty as a pathway to nature (Lumber et al 2017) and (ii) the benefits of connecting with the same space over time. As evidenced earlier in the analysis, Indigo's initial observations and questions about the tree were aligned with the *Ecological-Scientific* value and focused on understanding the fungus she found on the bark. In this extract the *aesthetics* of the tree are explored, and this reframes the tree as a site for imagination and possibility rather than something to be understood through scientific classification. This illustrates Indigo's personal journey through the intervention and her movement through the values outlined in Kellert's (1993) biophilia hypothesis (from *Ecological-Scientific* to *Aesthetic*). The reframing of the tree could also influence the ways in which Indigo views and responds to natural environments in the future.

A growing awareness of the space was also reflected in respect for the environment. The following two extracts relate to the creation of the boy's den and the ongoing process of clearing the space in order to start construction.

1. **Feral Spaces facilitator 1:** They (the branches) are really well attached
2. **Carbide:** I swear it's a bird's nest. It's some kind of nest. Leave it. We don't want to spoil the habitat

1. **Carbide:** I have found two golf balls
2. **Teacher:** Don't throw them over there
3. **Carbide:** I'm getting rid of them they are plastic. It will ruin the earth
4. **Teacher:** Yeah but chucking it down there doesn't get rid of it does it ?
5. **Carbide:** Where's the recycle bin?

Within these extracts different types of *moralistic* value (Kellert, 1993) are evidenced. First, there is a growing awareness of the impact that human activity has on the environment. Carbide demonstrates respect towards the nest he observes and positions himself in the role of guardian. From this position he directs other people present to minimise their impact upon the wildlife present and continue construction in a respectful way. There is a growing sense of ownership in relation to Carbide's actions and a motivation to respect the environment and work in collaboration with nature to create a space that humans and animals can co-exist in. From the role of guardian Carbide also seeks to remove traces of human impact and reverse harmful waste. With support from his teacher, centring on promoting a pathway to nature based upon *compassion* (Lumber, 2017), Carbide finds a way to remove the waste in a safe way with a focus on recycling. As such the anti-environmental behaviour of others is countered by pro-environmental behaviour from the young people.

This theme has further examined movement through Kellert's (1993) biophilia values and the value of compassion as pathway to nature (Lumber et al, 2017). Furthermore, it has pointed

towards a growing attachment and relationship to the space. The final theme examines the attachment in more detail.

A sense of belonging

Towards the end of the intervention the young people had time to reflect on their achievements and the ways in which they had transformed the space (evidenced in figure 4). During these interactions there was a strong sense of belonging and attachment to the space.



Figure 4: Mia and Indigo's completed den space

1. **Indigo:** Now that looks so nice

2. **Feral Spaces Facilitator 2:** Mmm
3. **Indigo:** It looks like children have been here

Within this extract there is a feeling of satisfaction as Indigo views and reflects on the den space that she has created. This is significant because it gives Indigo the chance to feel proud of her achievements and this in turn could boost feelings of self-esteem and confidence. Furthermore, she conceptualises the space as child friendly, somewhere that young people belong. This indicates a change in her relationship with the space. As evidenced earlier in the analysis Indigo expressed limited confidence in engaging with nature and there was a sense that she had limited opportunities to engage with wild spaces. This appears to have changed as the young people are now very much aligned with the environment.

This experience was echoed by the boys as they worked on the final stages of their den space.

1. **Fortex Warrior:** Are you liking this?
2. **Carbide:** You've already asked me like a million times
3. **Fortex Warrior:** Yeah cause I want you to come next week
4. **Carbide:** I will because if we don't tidy this up where are people going to play?
5. **Fortex Warrior:** Exactly
6. **Carbide:** It's a good place
7. **Fortex Warrior:** Everyone can see it

Here, the impact of the intervention is widened to the community the boys are situated within as the space is conceptualised as a place for ‘everyone’. In line 4 this focus on the wider community provides motivation for the boys to return to the space and continue to make it a ‘good place’ (line 6). Therefore, a long-term connection and relationship to the space has been established which centres on working for the community and creating a space that can be used to encourage ‘play’. This further strengthens the development of an emerging identity centering on guardianship of the space. In contrast to the previous theme the emphasis lies in maintenance for use rather than protection of the environment. However, it still points towards a long term, bi-directional relationship between the young people and the space. When discussing future use of the space the emphasis on play is important as it presents the space as somewhere the young people can escape to and use to facilitate activities which promote wellbeing and meaningful personal development.

In their den, Mia and Indigo also discussed future plans for the space.

1. **Feral Space Facilitator 2:** Cause what would be nice was if you could just come down
2. and just play at the weekend
3. **Mia:** Yeah maybe we could organise some days at the weekend
4. **Indigo:** Yeah. Our parents could do that.
5. **Mia:** One day you could come mine or I could come your and we could come here and
6. just chill
7. **Indigo:** They could drop us off and say see you later and then in like 500 hours
8. **Mia:** Or maybe there could go over there with chairs, the parents

9. **Feral Spaces facilitator 2:** So what would you do if you came here just the two of you

10. **Mia:** We'd probably just sit here

Within this extract the community focus evidenced in the previous extract is replaced by a focus on maintaining and strengthening existing friendship bonds. In line 6 the space is viewed as a place that can be used to 'chill'. Emphasis on the need to relax further illustrates the pressures that young people are under and presents nature as an antidote to this. Therefore, an ongoing relationship with the space is valued in terms of supporting wellbeing in the long term. Indigo's use of an extreme in her suggestion that the young women could be dropped off for 'like 500 hours' maximises the need for this type of escape. It also highlights the importance of time with friends and presents nature as a place which promotes positive human relationships.

Within the discussion the requirement for parents to be present is evident. This points towards parental concerns relating to their children engaging with wild spaces unsupervised and the issues this could raise in relation to young people having 'free' access to nature. Within this extract, the presence of parents is not seen as a problem and the young women identify areas that parents could enjoy. This further reinforces a desire to return by directly addressing perceived parental concerns.

Discussion

This analysis has explored the experiences of young people who attended a nature-based intervention designed to support wellbeing. The qualitative methods utilised in the research gave

valuable insight into the growing connection to nature experienced by young people and raised important considerations relating to (i) the possible relevance of existing theory with nature connection literature for children, (ii) how a meaningful connection to nature can be facilitated by adult practitioners and (iii) the importance of acknowledging the wider contexts that constrain people's engagement with nature. Each of these issues are now discussed in turn.

Throughout the analysis there was evidence that during the intervention the young people moved through the hierarchy of values within Kellert's (1993) biophilia hypothesis. More specifically, the start of the young people's journey was defined by Utilitarian and Dominionistic values as they sought to use the natural materials round them to create den spaces, swings and benches. These activities encouraged contact with the environment and the Ecologistic-Scientific value was evidenced in the young people's interest species identification. The young people then moved through the Humanistic value (experiencing an emotional connection to the space), Naturalistic value (feeling awe and wonder), Aesthetic value (appreciating the beauty of a tree) and Moralistic value (caring for the space). Although some of the biophilic values (Negativistic and Symbolic) were not evidenced in the analysis the young people made the transition from values associated with survival towards values of fulfilment. This journey echoes findings presented in an adult case study (Richardson & Hallam, 2013) and indicate the value that Kellert's (1993) theory of Biophilia has for researchers who are seeking to understanding nature connection in young people.

The analysis also explored Lumber et al's (2017) Nature Pathways model and its possible relevance for practitioners who seek to connect children to nature. Within this intervention there

was evidence that the pathways centring on Contact, Beauty, Emotion and Compassion played an important role in supporting a growing connection to nature. However, the Meaning pathway presented in Lubar et al's (2017) model was absent in the analysis and values missing from the pathways model, such as Utilitarian, Dominionistic and Ecologistic-Scientific were relevant. Furthermore, the pathway of Contact was associated with the Ecologistic-Scientific value for the young people involved in the intervention and not the naturalistic value proposed by Lumber et al (2017). There was also evidence relating to physical engagement with the space (tree climbing and den building) which suggests that children's connection to nature is hands on and active. This contrasts to the more passive connection to nature documented in adult populations which centres on activities such as walking in nature and admiring what can be seen. Consequently, further research is needed in order to develop Lumber et al's (2017) pathways to nature model to ensure that it has relevance for children.

The development of frameworks which can help connect children to nature is important because nature-based interventions have the potential to impact positively upon children's mental health and thereby help tackle the reported mental health crisis (ONS, 2004). Throughout the analysis, links between nature connection and wellbeing were consistently evidenced. At the start of the young people's journeys simple contact with nature was aligned with positive feelings of stress release and fun. As the young people travelled through the biophilic values there was evidence of growing levels of confidence which could positively impact upon general feelings of wellbeing. It is important to note that the child centred approach adopted by the Feral Spaces facilitators and collaboration between the young people themselves was central to bringing about this change. In a time when access to nature is increasing limited and parental

concerns about safety are heightened many children lack the skills and confidence needed to develop a meaningful relationship with nature. Consequently, connection to nature in children needs sensitive, child-led scaffolding and support.

The collaborative approach taken by the Feral Spaces facilitators not only encouraged nature connection it also supported the development of positive relationships between the young people themselves and the space they were working in. Indeed, the space was reconceptualised as a place where the children could return to in order to feel good and continue to develop the positive relationships they had established. Discussions with the school confirmed that new friendships established during the intervention continued to flourish and increased levels of confidence carried over when the young people returned to their school environment.

This focus on human relationships and a community is an important outcome that is not usually addressed within nature connection research. Generally speaking this research adopts an individualist approach characterised by the experimental requirement to measure and assess nature connection and wellbeing within individual people. A strength of this intervention was the community approach it adopted and an attention to the wider contexts that shaped the young people's connection with nature. The intervention was specifically designed to promote a meaningful connection with nature for young people belonging to a low SES group. In order to be successful the intervention needed to move beyond the resource intensive approach and traditional views of nature popularised within the mainstream nature connection literature. Ensuring that the wild space was accessible to the young people was central in enabling them to

see the place as an area that they could return to in their own time. It also offered further opportunity for emotional connection to the space.

Conversations with Mia during the final session of the intervention revealed that she has returned to the space with her father and uncle to show them what she had built. During this visit her relatives shared their experiences of the space because they had played there regularly as they were growing up. Had the intervention taken place in a national park then this type of return visit may not have been possible and the opportunity for a cross generational discussion of the space would not have occurred. Further to this the Feral Spaces activities had been noticed by the wider community who reacted positively. During the summer holidays the Feral Spaces team returned to the space to run more free-of-charge workshops. During this visit a local family were using the space for a wild camping experience. They commented that they would be back and expressed an interest in maintaining the space for continued use within the wider community.

In summary, this analysis has demonstrated the value of a nature-based intervention for young people who belong to socially disadvantaged groups. It has further explored the ways in which nature connection can be facilitated and the consequences that nature connection has for wellbeing. Analysis pointed towards the relevance of Kellert's Biophilic (1993) values and the need for further research which investigates Lumber et al's (2017) pathways to nature model and the need to adapt it for children. It has also highlighted the importance and relevance of wider contexts identified by Dickinson (2014), which shape connection to nature and are currently unaddressed in nature connection research that conforms to a neoliberalist ideology. In order to be successful nature-based interventions must have meaning for the community they engage

with. Furthermore, the community must have the means to access the site of the intervention after it has finished for connections to the space and the benefits this offers to be maintained.

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