'My wood isn't one of those dark and scary ones': Children's Experience and Knowledge of Woodland in the English Rural Landscape.

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Abstract

Recent studies of children have argued that children are suffering from a deficiency in nature experience. Some argue that a lack of experience leads to poor affective relations which for wooded environments may be manifested as fear. This study investigates a geographical knowledge gap in understanding children's relationships with woodland. This interactive qualitative study included 21 junior age children living in a rural setting in Derbyshire, England, UK. Most were found to visit local woodlands regularly, though unsupervised visits were usually limited to woods adjacent to housing. The children demonstrated good levels of practical knowledge though explicit knowledge, such as tree names, was generally poor. The majority children had positive attitudes towards woodland, especially those with the greatest experience. Adventure, calm and freedom were identified as major themes. Fear was widespread but rarely dominated and was often associated with exhilaration linked to cultural imaginaries such as computer games and films.

Introduction

A number of empirical studies have reported a decline in outdoor play, especially unstructured and unaccompanied play (Soga and Gaston, 2016; Holloway and Pimlott-Wilson, 2014). Academics researching child development have linked such play with enhanced learning and improved physical and mental well-being (O'Brien and Morris, 2014; Bingley & Milligan, 2007). Conservation organisations such as the National Trust (Moss, 2012) and the RSPB (2010), aim to reconnect children with nature, citing research which links an '*extinction of experience'* with a decreased likelihood of children using and caring for natural environments in adulthood (Chawla, 2007; Miller, 2005, p. 430). Although the idea that modern children suffer from nature deficit is a matter for debate (Dickinson, 2013), the theory that attitudes to nature are closely linked with experience of natural landscapes has been supported by Eder and Arnberger (2016). In the UK organisations such as the Woodland Trust and the Forestry Commission have extensive programmes aimed at increasing children's engagement with trees and woodland. This

approach is backed by evidence that access to nature, including woodland, is important for health and well-being (Chalwa, 2015; Moore and Cooper, 2014). Binner et al. (2017) contextualise such benefits within an ecosystem services framework.

Moss (2012) argues that children's experience of nature is vital for both the children themselves and for the future of the natural environment. He describes a Britain where children are prevented from playing outdoors by a '*zero risk society'* quoting David Attenborough to support his argument: '*No one will protect what they don't care about; and no one will care about what they have never experienced*' (p.11). Some researchers stress the need to improve explicit knowledge through environmental education. The drive to improve knowledge about nature is not new. Nature trails, first developed in the USA in the 1920s to educate city children about nature, became popular in Britain in the 1960s (Matless *et al.* 2010). Feinsinger et al. (1997, p. 115) called upon ecologists to volunteer in schools, and described an ecologically literate public as '*the last best hope for a sustainable biosphere'.* A popular champion of this cause is Louv (2008) whose book '*Last Child in the Woods'* has been widely cited (Thompson, 2010; Monbiot, 2012).

Studies of children in woodland have concentrated on experiential familiarity, linking frequency of woodland visits in childhood to likelihood of visits in adulthood (Ward Thompson et al., 2004) and lack of childhood familiarity with negative affective relations (Milligan and Bingley, 2007). Milligan and Bingley linked familiarity with woodland through unsupervised play in childhood with positive feelings in young adults. They found that familiar young adults were able to keep any fears and anxieties in perspective and generally found woodland therapeutic. But young adults whose childhood play in near-by woodland was restricted typically found woodlands to be scary places. They also found the impact of news and creative media (such as, the 1999 film, The Blair Witch Project) to be strong and entirely negative influences.

Few qualitative studies of relationships between people and woods concentrate solely on children within rural settings (O'Brien and Morris, 2014). Burgess and O'Brien (2001) sought to summarise values attributed to urban woodland in social science studies, finding themes of universalism, morality and collectivism. Ward Thompson *et al.*'s (2005) paper on community use of urban woodland found that most adults and children were positive, with peace being the dominant theme. However, they also point out that children tend to be less fearful of woodland than adults. Pain (2006) reported on geographies of fear in an

urban landscape and found that adults were more likely to feel fearful in woodland and children more concerned about the antisocial behaviour of other children. O'Brien (2005), who investigated the attitudes of a range of social groups towards woodland, cited fear as important, while Burgess (1996), seeking to establish barriers to accessing woodland for adults, also found evidence of fear. Research has tended to treat fear and positive feelings as if they are mutually exclusive. However, Milligan and Bingley (2007), reported mixed emotions, where young people have kept fear balanced with more positive feelings. Less attention has been paid to how certain types of fear can be attractive to some individuals although Hart (1979) acknowledged that woodland can appear dark and dangerous, yet desirable.

Several papers argue the importance of natural environments in close proximity to homes and schools (Arandi *et al.* 2016; Islam et al. 2016; O'Brien 2006). Gill (2007) emphasised parental fears while Ska et al. (2016) highlight a more specific cultural shift from unstructured outdoor play to outdoor learning, provided by adults or institutions. This paper contributes to this debate by examining the experience and knowledge of children living in rural England who have ready access to local woodland and where both lived experience and environmental knowledge can be examined alongside affective feelings. The term 'woodland' is used because in Britain 'woodland' is usually taken to mean smaller areas of tree cover while 'forest' describes larger areas associated with medieval hunting or coniferous plantations (Watkins, 2014).

Research questions

This study considers children's connectedness to nature by engaging with pupils from two rural schools in Derbyshire. Both schools have trees and woodland nearby. Children's relationships with woodland are examined by undertaking a study of their lived experience (examined through familiarity and tacit knowledge), their explicit knowledge (for example, names of trees) and their affective feelings towards wooded landscapes. The main research questions are:

1) How are children connected with the wooded landscape? How is this demonstrated through their multi-sensory experience, familiarity and knowledge of woodland?

2) What affective feelings do children demonstrate and what role does fear play in their overall attitude to woodland?

3) Is there any evidence that familiarity (including tacit and explicit knowledge) affect children's affective attitudes towards woodland? What other factors arise from the research?

Methods

Two local authority primary schools, in adjacent villages, participated in the research (Figure 1). Both schools had a mix of working and middle class children. Both villages have small populations[1] and have a relatively low proportion of children (Table 1). Other socioeconomic indicators would suggest relatively affluent and well educated populations in both villages. As in most rural locations (Garland and Chacroborti, 2006), the population is predominantly White British in origin.

The research was based on interviews, focus groups and participant observation conducted with school children, parents and teachers. It involved direct working with children and acknowledges their agency as autonomous beings (Holloway, 2014) without regarding them as 'all knowing'. It took an inductive approach to capture lived experience and generate themes. This approach is endorsed by Scott (2002) who criticised expert-led approaches and their tendency towards irrelevance in every-day contexts. The methodological design process took place in consultation with the schools and the project followed the ESRC's ethics procedure.

All year 5 and 6 pupils (9-11 year olds) from both schools were invited to take part. This age group was chosen due to the likelihood of growing independence from parents (England Marketing, 2009). 21 pupils (12 girls and 9 boys) participated (Table 2) and all but one of the children lived within 1km of their school. Parents were recruited via school newsletters.

The three main methods used with the children were a draw and tell exercise; semi-structured interviews and woodland walk observation. First, children were given a drawing exercise to assess their experience by placing woodland in the context of their everyday lives. This provided a '*spring board for discussion'* (Harden *et al*., 2000 p.3), during the interviews. Yeun (2004) argues that drawing can be a powerful research tool in children of this age group and its effectiveness is improved if children participate in the analysis of their pictures (Veale, 2007). Each picture theme was accompanied by a few short written questions and the interpretation of drawings and questions was assisted by follow up questions in subsequent interviews. To avoid leading the children's interpretations no attempt was made to define woodland.

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[1] All names used in this study have been changed. The Rural Urban Classification defines areas as rural if they are outside of settlements with more than 10,000 resident population (DEFRA, 2016).

The semi-structured interviews were designed to mediate power imbalances. Story games were used as a pre-interview ice-breaker and children were interviewed as '*paired friends*' away from classrooms, (Greene and Hill, 2005). Questions addressed familiarity with woodland ('*What do you hear when you visit a woodland?*') and affect ('*How do you feel about trees*?'). Some dealt with both objectives simultaneously (*'If your little brother or sister asked you what a woodland was like, what would you say?'*) Woodland photographs and a sensory exercise using a box of woodland objects including conkers, feathers and moss helped in the assessment of children's familiarity with woodland (Harden *et al.*, 2000).

The third method was a woodland observation exercise (Cook, 2005) as children explored a nearby wood (Macpherson, 2016). Observing children in woodland, and noting how they interact with their surroundings and communicate their ideas, helped to consolidate earlier evidence on their familiarity and feelings. Children from Springdale were split into two mixed sex groups and taken on a walk in a neighbouring nature reserve. Following Linzmayer *et al*. (2014), children were allocated a task without over-prompting. The children were asked to take the researcher on a tour but were also informed that they were allowed to ask the researcher questions.

In addition to these three main methods, focus groups were held with parents and teachers. The adults were asked open questions such as '*What do you think affects the way children feel about playing in the woods?* and *'How do you feel about children playing unsupervised in the woods?*'. Transcripts from interviews, focus groups and observations were coded thematically (Boyatzis, 1998) under the overarching categories of experience, familiarity and knowledge.

Results

Experience, familiarity and knowledge

Most children's drawings of woodland were a collection of simply drawn deciduous trees (Table 3). Finlay's drawing (Figure 2a) illustrates the most common drawing style for trees. Rosy demonstrates a more careful observation of trees (Figure 2b), as does Olivia, who also includes bare trees and conifers. Jake's picture (Figure 2c), unlike the others, which concentrate on drawing a collection of individual trees, gives an overall impression

of a wood. Lucy's drawing (Figure 2d) is of a campsite in Sherwood. She considered the woods as '*a holiday treat'* saying that her family don't normally have time to take her and she's '*obviously not allowed to go there by herself.'* Attention to detail in some pictures offers clues as to how experienced children are with woodland while character trees and woods with fun features, such as tree houses, contribute evidence of the way some children think about woodland.

School settings and school based activities.

Grassmill School has an adjacent copse of trees but this is not used by the children on a regular basis. At Springdale School the three classes of children were named after tree species, there were two small copses of trees in the playground, and there was a wooded bank containing a footpath and climbing apparatus. One teacher commented that the children: '*are allowed up there in all types of weather throughout the whole year.'* The children were observed doing this during a lunch break. They were also observed building their own dens out of fallen branches and walking on large logs in the playground which also had wicker dens, a vegetable garden and a large 'mini beast hotel' made by children at an after-school club run by a local volunteer. The children had 'outdoor learning' every week in which activities range from meditation to building 'dream catchers'. The children also used the wooded nature reserve adjacent to the school for den and shelter building. In the past the school had run a 'school sleepover' which involved night walks in the woods.

Home setting and activities outside of school

The Woodland Trust's recommends that every home should have a wood of at least two hectares within 500m and a 20 hectare wood within 4km. All homes in both villages had large woods within 500m; the two woods bordering Grassmill were larger (99 and 44 hectares) than those near Springdale (35ha and 19ha). The woods in Springdale were generally situated closer to housing though only slightly more Springdale children lived directly beside the woods than those in Grassmill.

Table 4 gives a breakdown of children visits to woodland outside of school. The children were able to describe many local woodlands. Most children were restricted to visiting the woods within their own villages. However, Charlotte rode her horse in woods several kilometres away and could recall a large range of visited woodland.

For unsupervised playing in woods, the range shrank to woodland bordering their own houses and those of their friends. River was the only exception walking around 350m to his local wood.

Half of the children visited woodland without adults and Charlotte, Luke and Sabrina did so routinely. Sabrina used the woodland adjacent to her garden as a refuge where she could have her '*own little place'.* Half of the children visited woods with parents or as part of an organised group, such as Guides (Lucy). Jake's father owned a wood, Jake said: *'we go there and we've got dens and…, Luke, he goes on walks with us'.*
A contrasting example is Preston who said: '*my Dad makes me go and have a walk in the woods… in the summer he makes us take bags for raspberries and stuff.*' He went on to explain that he'd rather be inside. Around two thirds of children visited woodlands outside of school, some with parents only, others only unsupervised and some did both.

Tree climbing was the most commonly mentioned woodland activity. Others included den building, film re-enactment games, dog walking and camping. Interestingly nature related activities were not referred to by any child at any point during the interviews. Levels of familiarity were assessed using the themes arising from the research. A summary of these themes is set out in Table 5.

Explicit Knowledge

Evidence of the children's explicit knowledge included their understanding of practical uses of woodland objects and their grasp of vernacular nomenclature of woodland plants and creatures. Practical knowledge was often demonstrated during the exercise using the woodland props box. For example, Luke ate some of the wild garlic and many children threw the sycamore seeds in the air. Half of the children could name two out of the three 'easy species' in the woodland props box (Table 5) but only three could name any of the 'difficult' species. Only Olivia could name the beech nuts, none of the children could name the lichen or larch cones, some mistaking the latter for acorns or flowers (for example Erin, Peers and Finlay).

Observations from the woodland walk confirmed the children's inability to name woodland species. Only River could name any of the tree species, Luke knew a handful of invertebrates. However once the children realised the researcher was willing to answer their questions they showed enthusiasm for knowledge. Questions included:
Jake – '*Why do all the flowers that come up in the spring disappear?'*

Nancy – '*I absolutely love this flower, I've always admired it, what is it?'*

Their knowledge was largely practical, relating to construction activities such as den building. Parents and teachers remarked on the children's and their own lack of knowledge of species. For example the teaching assistant who accompanied the observation commented:

'*they're really enjoying this, it's a shame because none of us really know what things are '.*

The junior teacher at Springdale concentrated on practical activities:

'*they've built a little shelter, they've built, ah, .. weaving fences.*' Springdale school's mini-beast after school club was over-subscribed but apart from this there was no mention of nature trails, looking for creatures or any other activity that would improve tacit knowledge of species in any conversations with any of the adults or children during this study.

Table 7 demonstrates levels of knowledge and awareness among the children. Results were mixed with the top and bottom three scorers all coming from Springdale school where children interacted with woodland daily. This interaction was not translating into demonstrable familiarity and knowledge. The most experienced children were all playing in woodland unsupervised, with River and Charlotte allowed beyond adjacent woodland. By contrast none of the children with poor levels of familiarity and knowledge were playing in the woods unsupervised, though two did visit with parents.

Affective feelings

The three major themes appearing from the research are shown in Table 6. Major codes were assigned when mentioned frequently or when their level of affect was a dominating factor in at least one child's view of woodland.

Main themes

A place of adventure, nature, calm and freedom

The main positive themes were adventure, nature appreciation, calm and freedom. Adventure was the most prominent theme amongst the children, it was the dominant theme for eight children, including Rosy '*I feel like a pirate and nature is my sea.*'
A dominant theme for three children, nature appreciation, sometimes meant creatures in the woods such as Peers: '*I love listening to the birds'* or sometimes general aesthetics, such as Nancy who reacted to a woodland photograph (Figure 3): '*that's so beautiful…there's so many different things'.*

A sense of calm was a major theme for four children, words also used were peaceful, relaxing, and solitude. As in Milligan and Bingley's (2007) paper on young adults, some children liked to go to the woods to calm down when angry or stressed (Mathilda and Olivia). Freedom, which was sometimes articulated as exploration, was a major theme for two children. Jake and Mathilda had a lively debate about the degree to which people should be allowed to leave the path. Mathilda thought leaving the path '*ruins more landscape*', while Jake said he '*would go to a wood where it doesn't actually have a path.*'

The main negative concerns were associated with fear, including: Intangible fears; Woodland at night; Fear of Accidents; Fear of Strangers and Exhilarating Fear. Intangible fears included feeling surrounded, enclosed or watched. The most acute case of intangible fear was Finlay, who experienced woodland regularly with his parents. Finlay said he felt '*suffocated*' and '*surrounded*', his body language suggested a deep set fear, he wrapped his arms around his stiffened body whenever he discussed his fears. Finlay drew a tree in Sherwood Forest, his depiction appeared more threatening than Preston's version (see Figure 4). Preston, who was bored by woodland, rather than scared, gave his tree a smile. Some children, such as Rosy and Olivia differed, Rosy said: '*I prefer….feeling almost blocked in by them'.*

Fear of woodland at night primarily relates to children who have experienced night walks at Springdale school or night orienteering with guides. Charlotte described how a teacher tried to scare them on a night walk:
'*he jumped out of a tree…in front of us*'
All of the children that mention this fear were otherwise positive. Most of the children that mentioned accidents did so while predominantly discussing positive feelings. Nancy talked of taking a phone with her to the woods in case there's an accident but otherwise commented: '*I like the woods because it's calm…it makes me feel happy'.* Exceptions were Erin and Finlay. Erin mentioned accidents repeatedly, she discussed feeling scared of the steep slope in Sabrina's wood and described her overall feelings as '*not safe'.*

Fear of strangers was only mentioned by two children but was a major theme for Nicola who, like Finlay, showed defensive body language. For Nicola, fear of strangers interacted with other themes of fear such as being alone and the affect of the physical surroundings (intangible fear), she commented that in woodland '*you can't see whose around you.*'

Exhilarating fear was a major component of some children's experience of woodland. Luke stated that he liked being scared in the woods, he embellished stories and songs, singing:

'If you go down to the woods today

when it's misty you shall die'

He picked a favourite tree out of a woodland photograph describing it as '*like one of the living dead*'. Luke and River referred to horror films in relation to misty woods. River sang eerie music while Niamh was explaining her fears. River maintained that for him '*the woods are fun places'.* Jake's woodland picture was particularly evocative (Figure 2c), he said

'*I was going to draw a happy little wood and then I looked at it and felt scared*'.

During his interview he talked of how much he loved the woods, taking every opportunity to embellish his stories with talk of '*dead wolves'* and smells of '*dead rotting foxes'.*

Fear of getting lost was only mentioned in passing by two children, likewise being in the woods alone was mentioned by just two children, Nicola and Rosy. Rosy thought she heard noises but didn't take it too seriously saying: '*it's usually just a squirrel*.' Unlike Pain's (2006) urban study only two children mentioned concerns over anti-social behaviour and Katie was more concerned about the '*big teenagers in the park'.*

Most children acknowledged some fears but did not let them dominate their view of woodland and for some children fear was positive: '*fun*' or '*exciting*'. In contrast two children predominantly found woodland boring. Most children's feelings about woodland were, on balance, positive despite the numerous codes allocated to different types of fear.) Some children felt ambivalent with conflicting positive and fearful themes. Milo suffered from an intangible feeling of being watched but also found woodland adventurous. Peers argued that '*My wood isn't one of those dark and scary ones'.* His affective attitude to woodland was positive when he talked about his local woods but he knew there were other kinds of woods, possibly as depicted in creative media.

Overall most children had positive affective feelings towards woodland, the most commonly arising major theme being adventure. However, fear was widespread with its power and nature varying. Two children had a considerable fear of woodland which outweighed positive feelings, but most were able to dismiss any fears and enjoy

woodland. Some children showed signs that their fears were manifested in a positive way, enhancing their experience of woodland. Two children found woodland boring.

The influence of familiarity and other factors on affective feelings.

The two children who chose a tree or woodland as their favourite place also showed the highest levels of familiarity and positive feelings towards woodland (Table 7). However, many of the children who expressed indoor place preferences also demonstrated high levels of experience, familiarity and positive feelings about woodland. For example, River and Luke, who both drew games consoles, scored very well (Table 3) indicating that engagement with new media does not necessarily result in a neglect of the natural world. Though the origins of Luke's familiarity appeared to arise from unsupervised play, River was also influenced by knowledgeable grandparents.

Familiarity and affective feelings

Table 7 groups children by their familiarity and attitude Most children with high levels of familiarity are positive about woodland. In addition experience at school can be important. No children from Springdale School, had negative overall feelings although three were ambivalent. All four of the children that did feel negatively attended Grassmill School. Experience at home can be important. Lack of regular interaction with woodland at school does not prevent some children from demonstrating good levels of familiarity and knowledge, and feeling positively about woodland. There were four examples, including Sabrina, whose favourite place was woodland. Overall, the Grassmill children demonstrated equal if not better levels of knowledge or familiarity then those at Springdale. However, for some, this did not translate into a positive attitude. Familiarity is interrelated with the attitudes of others including parents, teachers and other children potentially influencing a child's affective feelings. This can be directly, where a teacher, parent or peer's attitude may influence a child's affective feelings and indirectly by influencing children's level of personal experience with woodland.

The influence of schooling

The parental focus groups emphasised the influence of schooling. Laura (a Springdale parent) commented on her daughter's former reluctance to walk in woodland: '*since going to school, they do all that fun stuff in the grounds, and now she loves it'.* The Springdale children were generally more positive about woodland. Springdale teachers

were exclusively positive and there was some evidence of like-minded thinking on specific issues. During a focus group the participant children's class teacher argued '*You should be able to explore where you want to, I don't think people should own that type of land [woodland]…when I go walking I don't often use paths, I go where I want…. I don't agree with people owning large amounts of land, that's not nature is it?*' In his interview Jake passionately expressed precisely the same view as his teacher:

'*I would go to a wood where…you make your own path, so it's basically not telling you where to go, where the forest is…. a natural place.*'

Attitudes among the teachers at Grassmill were mixed. For example the head teacher says she is '*petrified*' of the woods if she's alone, she demonstrated similar body language to some of the children showing intangible fears, her body stiffening as she spoke. During the teachers' focus group she appeared risk averse, for example, commenting on the woodland photographs she said that she '*might break my ankle there'*. The Grassmill teachers discussed rumours of anti-social behaviour in local woodlands. However the junior class teacher at Grassmill commented that he was '*fascinated by nature.*'

Influences outside of school – Landscape setting, parents, peers and siblings

Most children that play in the woods unsupervised do so next to homes and the location of woodland may be contributing to their familiarity, knowledge and feelings (Table 4). However, some children were not allowed to play in the woods regardless of its proximity, including Niahm whose mother remarked

'*I don't let the kids out. Things, sort of, creep into your mind'*.

The majority of the children in group 1 (Table 7) (the most familiar and positive children) were, playing outside unsupervised. Mathilda was the only child who wasn't allowed in the woods without adults, she did not live next to a wood. In her case her mother, whose primary safety concern was roads, said:

'*If I lived in Springdale I would be letting my kids walk to school through the woods'*.

This suggests that the children's personal freedoms and the attitudes of their parents to woodland are also important for this group of children.

Feelings from the parents' focus groups on allowing unsupervised play in woodland varied. Andrew said: '*I would positively encourage it'*, but Samantha (Nancy's mother) worried about how her children could be helped if something happened to them in woodland:

'I can't help them there [the woods]… I don't even know how to advise them but on the street I can.' Most parents, however, restricted their children's freedoms because of factors unrelated to woodland, especially traffic and strangers, which they considered more of a problem on the street than in the woods. This again highlights the issue of proximity: the journey to the woods was often more of a problem than the woods themselves.

Teachers cited parents as an important influence. Many parents were too busy to take their children to the woods. Lucy said:

'*I'm, not allowed in the woods by myself and my dad always goes to work,….and mum she's always busy with [baby sister]…. I don't really get many times.'*

Although evidence on the influence of peers and siblings was not substantial, some children visited woodlands with classmates outside school, for example Erin, who drew '*Sabrina's wood'.* Luke talked of playing in the woods with his older brother and going for woodland walks with Jake and his family.

The influence of culture

The interviews with children were full of modern cultural references, while traditional stories were limited to a single mention of S*now White*. The most common reference was *The Hobbit*. Paths were compared to 'Hobbit trails' and caves to 'Hobbit holes'. Luke and River talk about woods in scary films and computer games. Luke was captivated by fantasy woodlands from films such as *The Hunger Games* and *The Hobbit.* He insisted that the local woodlands were '*dark and misty'* despite his clear knowledge and experience of the woods. River was fairly rational about the subject, when comparing local woods with '*Horror woods'* he said: '*they're sometimes quite eerie, if it's foggy, but never scary'.*

The Gruffalo was also frequently mentioned. The story begins 'A *mouse took a stroll through the deep dark wood*' (Donaldson & Scheffler, 2012). With a chuckle Katie described how she told her little cousin that '*The Gruffalo will get you if you go in the woods*.' During both focus groups, parents compared notes on different '*Gruffalo trails'* they'd been on, including one at Sherwood Pines in Nottinghamshire, one of 15 Gruffalo sculpture trails (Forestry Commission, 2015).

In contrast to Milligan and Bingley (2007) all of the cultural references were discussed by the children in a positive light, even if they portrayed woodland as scary places. This was independently commented on by the parents at the Springdale focus group. Laura said:

'*for kids every media input they get probably is positive, even if it makes it more fun scary, …I think it's just as you get older the scary bit hits you.*'

The Springdale children's class teacher did not think his class took fictional culture too seriously but noted that it might be different for children with lower levels of familiarity with real woods:

'*it depends on what type of family they're from, if they're from a family who don't do much then all they've got is books and films then it's going to persuade them, for some of the children, that's their lives*'

Associated with culture was another major theme, tree personification. Common amongst the girls, who might compare them to 'Ents', the tree characters from *The Lord of the Rings*, (Lucy), tree personification was also evident in Finlay and Preston's tree drawings (Figure 4). One element of cultural influence that was largely missing was that of the news media, Erin talked about hearing a story of a man hanging himself but she was unclear as to where this story originated.

Conclusions

Children demonstrated good levels of experience and familiarity with woodland but knowledge was limited to tacit and practical knowledge. They were generally poor at naming woodland objects and species. Around half the children were allowed to play in woodland unsupervised. These rates are much higher than those reported in England Marketing's (2009) national survey. This points to a level of landscape-dependent geographical complexity in children's engagement with woodland.

Levels of general engagement were high, with only two out of 21 children not regularly experiencing wooded environments either in or out of school. This does not resemble the narrative of nature deficit put forward by Moss (2012). However, most of the children's play took place in woodland adjacent to homes, which is consistent with research by Wooley and Griffin (2014), Islam et al. (2016) and O'Brien (2006). However, some children still did not engage with nearby woodland independently, most because of parental restrictions (Ska et al., 2016) but a few through lack of interest.

The finding that children's explicit knowledge of species was poor, tallies with absence of activities such as bird watching or nature trails as main themes in children's experience of woodland. Evidence from the schools suggested that the children were learning *in* woodland but not *about* woodland. Experience inside and outside of school was largely practical, improving physical and team building skills. Springdale school based their outdoor activities on a forest school approach which is about outdoor learning and not necessarily environmental learning (O'Brien, 2009). However, from the point of view of those who advocate more environmental education, this is an opportunity missed. (Maynard, 2007).

Most children felt positively about woodland with the top themes being adventure, calm, nature appreciation and freedom. Fear was widespread among the children but was only a major theme for a minority, most children were able to keep their fears in perspective and continue to view woodland positively. These largely positive attitudes broadly concur with the findings of Ward Thompson *et al*. (2005) who identified positive themes with calm dominating rather than adventure. The results fit in with Milligan and Bingley's (2007) rural study of young adults which found affect to be mainly positive and that fears did not overshadow more favourable feelings. They also make links between unstructured outdoor play and positive affective feelings. However, unlike this study, young adults were found to be more afraid of being in woodland alone.

This paper suggests that levels of experience, familiarity and knowledge are tied to landscape setting, and a supportive framework of parenting and schooling. Those children most familiar with woodland tended to see it in the most positive light. No children at Springdale School, with its wooded playground and regular outdoor learning, had a negative attitude to woodland. In addition children whose parents allowed them to play in woodland unsupervised, were much more likely to show higher levels of familiarity and enthusiasm. In turn, close proximity to woodland made parental permission more likely. This supports the overall theory linking familiarity with positive environmental attitudes (Hunter et al., 2001) and specifically the role of unstructured outdoor play (Milligan and Bingley 2007).

The role of knowledge, especially explicit knowledge of species, remains unclear. The outdoor education some children received at school did not include this kind of knowledge, with teaching staff admitting they did not have the expertise. This contrasts

with Tranter and Malone's (2004) study which found that the school ground alone could improve environmental learning. Modern fictional culture was at the forefront of many children's minds and the evidence from this study suggests that it had a largely positive influence, inducing thrill rather than fear. The popularity of frightening woodland based folk stories, such as Red Riding Hood or Hansel and Gretel, has a long tradition (Konijnendijk, 2008) and exhilarating fear is used explicitly by the Forestry Commission (2015) and others to encourage children to explore woodland (Figure 5). Children's fascination with modern fictional woodland imagery seemed to enhance their positive attitude towards woodland which was, in a large part, explained by their ability to access and enjoy woodland very close to their schools and homes.

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Table 1 – Demographic summary statistics for Grassmill, Springdale, the East Midlands region and England. (Compiled from 2011 census data sourced from Office for National Statistics, 2016)

Category	Grassmill	Springdale	East Midlands	England
Children (under 16)	12.1%	15%	18.5%	18.9%
Aged 65+	25.7%	14.9%	17.1%	16.3%
Owner occupation	75.3%	69.5%	67.9%	64.1%
White British	97.5%	94%	85.4%	79.8%
Born in the UK	97.6%	94.2%	90.1%	86.2%
Qualified to degree or diploma	31.5%	42.8%	23.6%	27.4%
No qualifications	27%	14.2%	24.7%	22.5%
Unemployment rate	3.8%	4.5%	4.2%	4.4%
Work from home	18.5%	25.2%	10.2%	10.4%
Average commuting distance	17.6 miles	19.7 miles	15.4 miles	14.9 miles
Managerial or professional occupations	33.7%	43.8%	27.8%	28.4%
Unskilled or service occupations	25.4%	25.4%	39.9%	36%

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Table 2: Study Participants

	Springdale	Grassmill	Total
Children	12 (5 Male; 7 Female)	9 (4 Male; 5 Female)	21 (9 Male; 12 Female)
Teaching Staff	4	5	9
Parents	8	2	10

Table 3 – a summary of children's drawings of woodland

Drawings of woodland	Children	Notes
A collection of simply drawn deciduous trees	12 children (all except those mentioned below)	These drawings included few other features, some added bushes or birds. Example, Finlay
Woodlands with a more complex structure	Rosy; Jake	Rosy and Jake's pictures include an understory and a canopy, in Jake's case.
Woodland includes conifers and winter trees	Olivia	Olivia's drawing concentrates on animals but includes coniferous and bare trees.
Woodland includes caves	Erin, Sabrina, Preston	Erin's drawing is of the woods by Sabrina's garden
Woodland includes 'fun' items, e.g. camps and tree houses	River, Sabrina Lucy	River says his woodland is the way he'd like it to be continuing 'who would not want to be in a tree house?' Lucy's camp site woodland is in figure 2d

Table 4 – A summary of situational factors alongside children's overall feelings and familiarity with woodland. Most children had positive attitudes to woodland but those who were negative or not interested all came from Grassmill (GM) School and did not live in housing bordering woodland.   Children with High familiarity and experience scores were all from Springdale school (SD) and all played in woods unsupervised although River's nearest wood is a 350m walk from his home. River is the only child that travels any distance to play in a wood unsupervised, though Charlotte, another high scorer, walks to school through the woods. three out of the four children with low familiarity and experience scores came from Springdale school, with only one living in housing bordering woodland, none of them played in woodland unsupervised though two visited with parents.

Name	Gender	School	Home bordering woodland	Visits woodland with parents/ other adults	Visits woodland unsupervised	Positive attitude to woodland (outweighs fears)	Familiarity/ experience score
Charlotte	F	SD	Yes	Yes (parents)	Yes – Walking to school and bordering home	Yes	6/8 **High**
Erin	F	GM	No	No	Yes – bordering Sabrina's home	**No**	4/8
Katie	F	GM	Yes	No	Yes – bordering home	Yes	5/8
Lucy	F	GM	Yes	Yes (Holidays only)	No – not allowed	Yes	5/8
Mathilda	F	SD	No	Yes (parents)	No – not allowed[1]	Yes	5/8
Megan	F	SD	Yes	Yes (parents)	No – not interested	Yes	2/8 **Low**
Nancy	F	SD	No	No	No – not allowed	Yes	3/8 **Low**
Niamh	F	SD	No	No	No – not allowed	Ambivalent	2/8 **Low**
Nicola	F	SD	Yes	No	Yes – bordering home	Ambivalent	4/8
Olivia	F	GM	Yes	No	Yes – bordering home	Yes	5/8
Rosy	F	SD	No	No	Yes – bordering friend's home	Yes	4/8
Sabrina	F	GM	Yes	Yes (Brownies)	Yes – bordering home	Yes	5/8
Finlay	M	GM	No	Yes (parents)	No – not interested	**No**	3/8 **Low**
Jake	M	SD	Yes	Yes (parents)	Yes – bordering home	Yes	4/8
Luke	M	SD	Yes	Yes (with Jake's parents)	Yes – bordering home	Yes	8/8 **High**
Milo	M	GM	No	Yes (Holidays only)	No – Not interested	Ambivalent	4/8
Patrick	M	SD	Yes	Yes (parents)	No – goes elsewhere	Yes	4/8

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[1] Mathilda's mother cited crossing the busy road as the main reason for not allowing her to play in the woods

Peers	M	GM	No	Yes (parents)	No – not allowed	Yes	4/8
Preston	M	GM	No	Yes (parents)	No – not interested	**Not interested**	5/8
River	M	SD	No	No	Yes – approx. 350m walk	Yes	7/8 **High**
Timothy	M	SD	No	No	No – not allowed	Yes	2/8 **Low**

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Table 5 A summary of themes demonstrating children's familiarity with woodland.

Theme	Demonstrated by:	Example
Recognising locations from woodland photographs	Charlotte, Luke and River	Charlotte correctly names the coniferous woodland. '*Is that Bottom Moor?*'
Talking about locally abundant physical features or creatures. For example, caves or Jackdaws	Luke; Erin; Mathilda; Preston; Nancy; Katie; Lucy; Olivia; Sabrina; Rosy; Jake and Patrick	Preston describes visits to a cave . Luke describes Jackdaws[1] '*those birds that go around in massive packs, what are black and what look like crows.*'
Talking about identifiable and specific woodland locations.	Charlotte; Lucy; Mathilda; Megan; Nicola; Olivia; Finlay; Jake; Luke; Milo; Patrick; Preston; River; Erin; Katie; Rosy and Sabrina	River talks about and names the woods near his mother's house.
Making good sensory observations of woodland, e.g. attempts to describe the distinctive woodland smell.	Luke; Lucy; Mathilda; Peers; Katie; Sabrina; Rosy; Patrick; Charlotte and River	Mathilda says: '*You sometimes smell… the actual trees, the leaves and the bark. Cos when you go into a wood it smells different …but you never realise it cos it comes in really, like, adding on layers of smell.*'
Noticing local woods. Children usually notice the local woodlands and recognised that they lived in a well wooded location.	All children except Erin, Nancy and Lucy.	Patrick points to all the woods in spring dale '*they're here…all over! Up there…and over there.and there and down there.*' Lucy only goes in the woods at CenterParcs, so her concept of woodland may be defined by this experience.

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[1] The two villages have a large Jackdaw population

Table 6. An outline of themes arising from analysis on children's affective feelings.

Meta theme	Etic codes and sub codes	Major theme (no. children)	Minor theme (no.)	Example
Positive feelings	**Adventure**	8	1	This was the biggest single theme. Rosy says *'when I'm up a tree I feel like a pirate and nature is my sea'*
	Nature appreciation	3	6	Peers says: *'it's just nice to stand there and listen to the bird song'*
	Calm: Relaxing; Peaceful; Solitude	4	4	Mathilda says: *'It's very nice and relaxing and calm….I go into the woods when I'm upset'*
	Freedom: Exploration	2	3	Olivia says *'when I'm in the woods I feel free, nobody can tell me what to do'*.
Fear	**Intangible fear:** Feeling surrounded, enclosed or watched	3	1	Finlay talks of feeling *'surrounded'* and *'suffocated'*, his body stiffens and he puts his arms around himself as talks.
	Woodland at night: Fear of the dark	0	5	This fear was discussed in every Springdale interview and was linked to regular night walks with school. Lucy describes her night walk experience with guides: *'just so dark, it was horrible….the woods were casting shadows everywhere and it was scary.*
	Accidents: Falling trees or branches; falling down mine shafts or steep slopes	1	5	Erin warns of the dangers of climbing trees: *'You can, you can get splinters in you, you could scrape your hand or your leg on it if you're wearing shorts, you could fall off it and break your body, well your arms.'*
	Fear of Strangers	1	1	Although not mentioned by many children this was Nicola's biggest fear. Only a worry when she was alone but it was particular to woodland because *'you can't see whose around you'.*
	Exhilarating fear: Nervous excitement; mystery	2	3	Luke chooses the *'scariest one'* as his favourite in the woodland photograph exercise.
Boredom	Boredom	2	0	Katie *'when I'm in the woods I feel sad because it's boring'.*

Table 7.
Overview of children's experience, knowledge and feelings about woodland, arranged into groups. 1) Positive children with high levels of interaction, familiarity and knowledge on woodland. 1(a) Children who are positive about woodland but have slightly lower levels of interaction, knowledge or familiarity than group 1. 2) Children who are positive about woodland but their knowledge is limited and familiarity is limited to school. 3) Children with good levels of familiarity who are not positive about woodland. 4) Group of children with limited familiarity whose views are negative (including fearful). 5) Children moderate to high levels of familiarity whose views are either neutral or ambivalent.
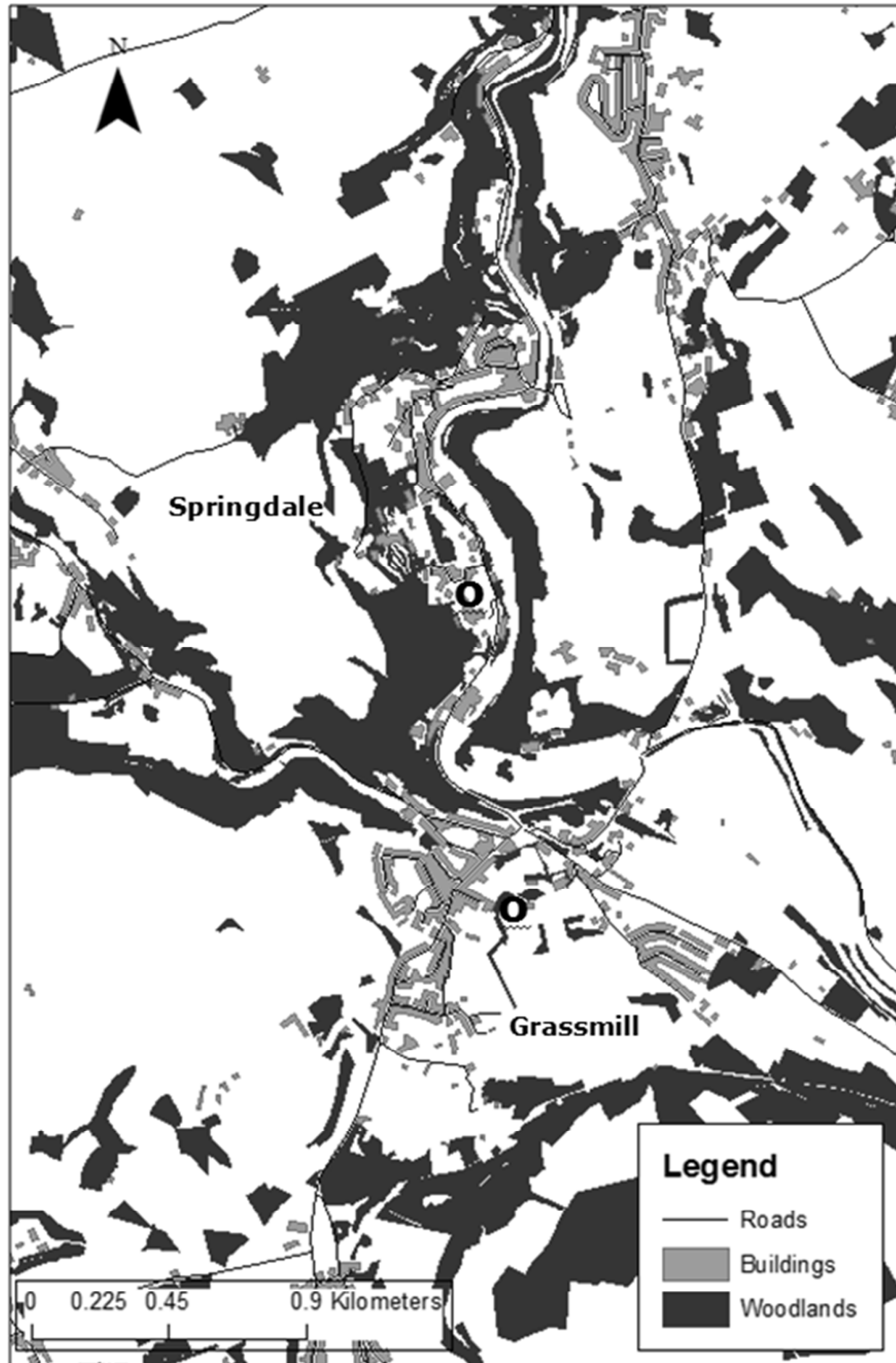
Key: Yes – Pale grey fill; No - Dark grey fill
+ River recognised the unmanaged deciduous woodland photograph: '*I... recognise that and I don't really like that [sic] woods…don't think it's big enough…and, it's all, like, on a hill'.*

Group	Name	Gender	Children's drawings		Experience, Familiarity and Knowledge			Affective Feelings		
			Trees in favourite place	Favourite place outdoors	4. High level of interaction with woods at school	5. Visits woods outside of school*	6. Good Familiarity and knowledge	7. Predominant theme positive	8. Unmanaged woodland photograph is favourite	Positivity outweighs fears
1	Charlotte	F						Adventure		
	Luke	M						Exhilarating fear		
	Rosy	F					Average	Adventure		
	Mathilda	F						Calm		
	Sabrina	F						Nature appreciation		
	Olivia	F						Freedom/ Calm		
	River	M						Adventure	+	
	Jake	M					Average	Exhilarating fear/ Calm/Freedom		
1(a)	Megan	F						Adventure		
	Peers	M					Average	Nature appreciation		
	Lucy	F				Holidays		Adventure	Least liked	

	Name										
							only				
2	Nancy	F							Calm		
	Timothy	M							Adventure/ Nature appreciation		
3	Preston	M							Boredom	Least liked	
4	Finlay	M							Intangible fear	Least liked	
	Erin	F						Average	Fear of accidents	Least liked	
	Katie	F							Boredom	Least liked	
	Niamh	F							Intangible fear/ Adventure		Ambivalent
5	Nicola	F						Average	Fear of strangers/ Calm	Least liked	Ambivalent
	Milo	M						Average	Intangible fear/ Adventure	Least liked	Ambivalent
	Patrick	M						Average	No strong themes	Least liked	

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Figure 1. Map showing study schools in their (anonymised) geographical context. All buildings within the villages are less than half a kilometre from woodland, most substantially closer. **O** symbolises the locations of the two schools. The map was generated using ArcMap 10.2.2, data is from Ordnance Survey vector maps downloaded from The University of Edinburgh's Edina website (2015).
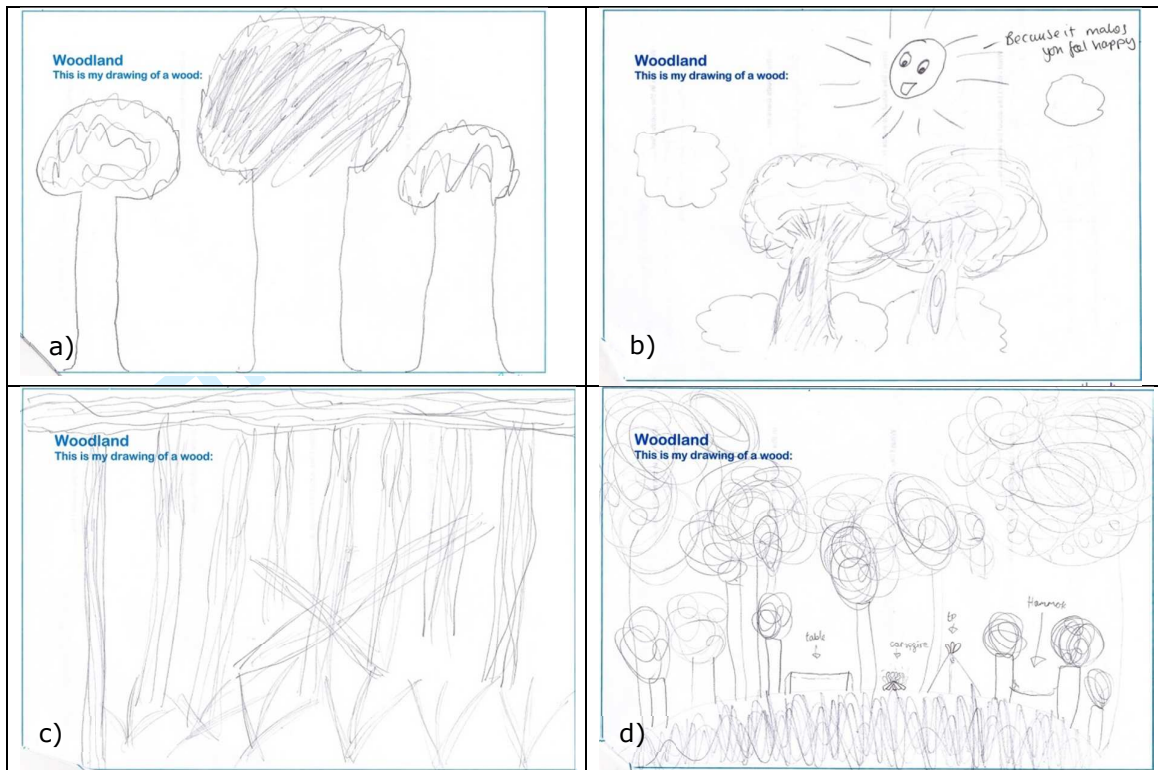
Figure 2. a) Finlay's drawing is typical of more than half of the children, a woodland of simple deciduous trees with no obvious branches or other vegetation. b) Rosy's picture of woodland includes more sophisticated trees, with branches and scars. She includes shrubs and a happy sun. Rosy says her favourite place is 'up a tree'. C) Jake's picture of a woodland concentrates less on individual trees and more on the woodland structure itself including fallen trees, grasses and a canopy. d) Lucy's woodland is of a campsite which she says is at Sherwood Forest. She has labelled a table, camp fire, tepee and hammock.

Figure 3 – Photograph of unmanaged deciduous woodland. Typical of local woodland this was by far the most divisive photograph. Children with positive feelings usually found it adventurous but others found it too muddy or enclosed. Photograph taken May 2015.
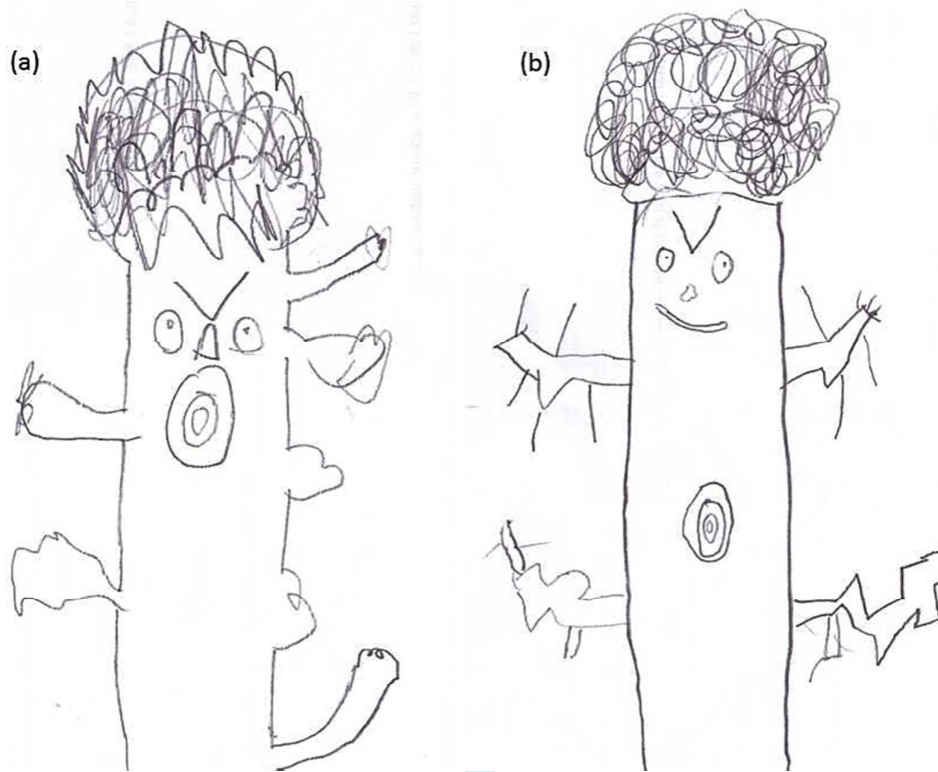
Figure 4 a) Finlay's depiction of the Sherwood character tree b) Preston's version included a smile. Finlay and Preston went on holiday to Sherwood CenterParcs, Finlay experienced fear in woodland while Preston described woodland as 'boring'.
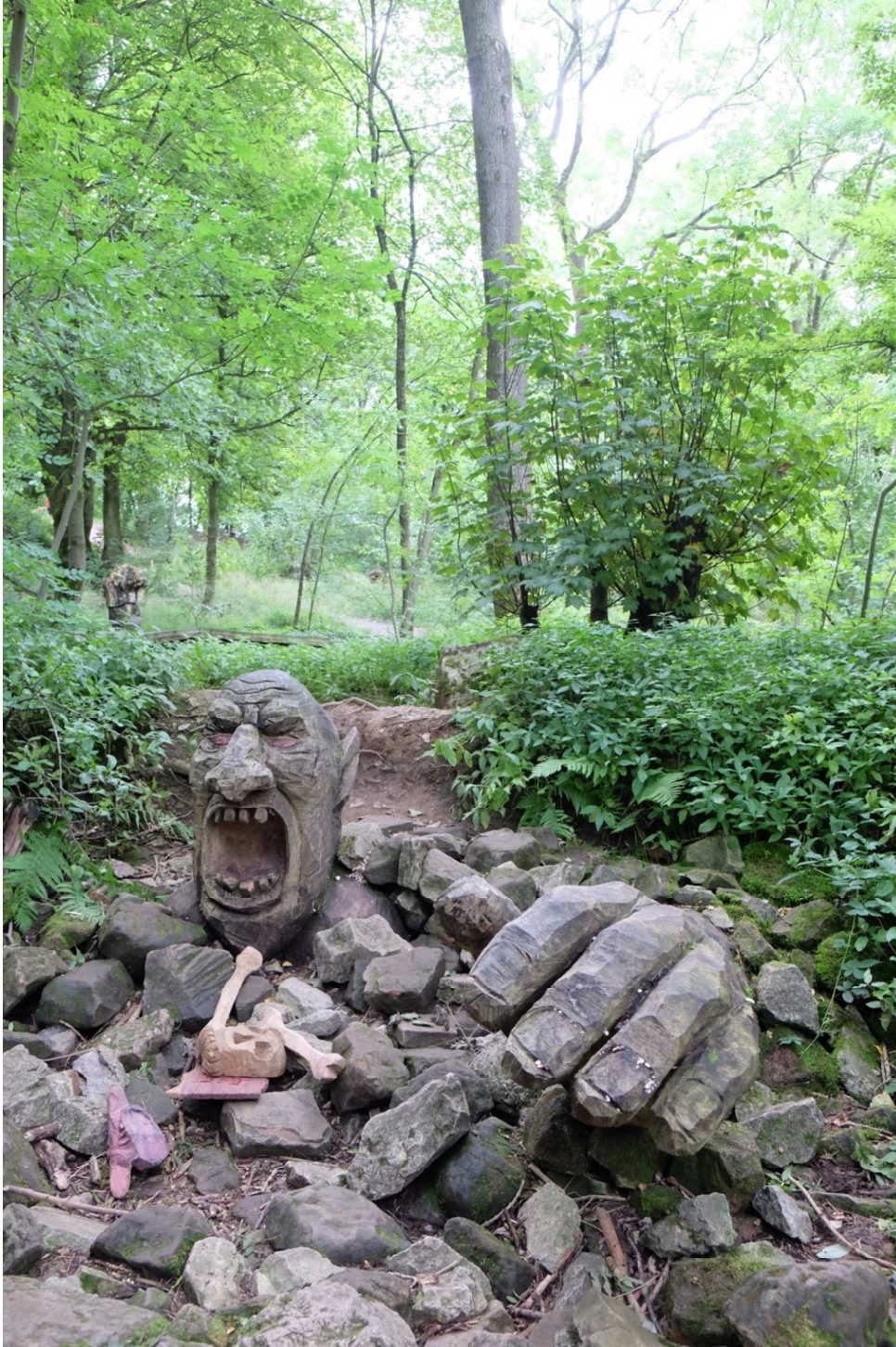
Figure 5. Troll wood carving, part of the Crich Tramway Village's managed woodland trail. Sculptures such as these use exhilarating fear to enhance the experience of visitors. Photograph taken September 2015.