

An Exploration of the Outdoor Play Experiences of Preschool Children with Autism Spectrum Disorder

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CARL Research Project
in collaboration with
COPE Foundation



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Date completed:	12 th May 2017

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**An Exploration of: The Outdoor Play Experiences of
Preschool Children with Autism Spectrum Disorder**

“Working from the theoretical perspective that children ‘inhabit’ a space, and through their actions the space becomes a place, we can consider the environment as a ‘habitat’. If this is to be a ‘good’ habitat for young children we need to find out what it feels like to be in this place (Hart, 1979; Clark & Moss, 2005), and what signals the characteristics of the environment send to them. What do they see in their environment? What does it do to them? How do they respond?” (White & Woolley, 2014, p. 30).

Acknowledgements

We would like to express our deepest appreciation to all those who contributed in any way to the development of this research paper. To those who agreed to participate in our study: parents, children and school staff - thank you for giving your time and sharing your stories and invaluable experience with us. In particular, we owe thanks to the staff of the school, and particularly the autism preschool unit, who came on board with our project from the start and supported us with such interest. We are extremely grateful to Maeve Coughlan who acted as gatekeeper for this study, for her valuable support and assistance. Finally, we wish to extend heartfelt thanks to Dr. Helen Lynch, our research supervisor, whose advice, motivation, enthusiasm and immense knowledge guided us through the research process and proved inspirational.

Abstract

Background: Outdoor play is seen as a crucial and valuable experience for all children. It is not an optional extra, but an essential component of a child's everyday life and environment. Nonetheless, the literature consistently demonstrates that children with disabilities participate less in outdoor play in comparison to their typically developing peers. However, little research exists with regards to the play experiences of children with Autism Spectrum Disorder (ASD) in outdoor play. Thus, establishing the outdoor play experiences of children with ASD is of utmost importance.

Aims: The purpose of this qualitative study was to explore and understand the outdoor play experiences of preschool children with ASD, as a means to better understand what play meant to them, how they experienced play, and to identify the supports required to facilitate their participation in outdoor play in their preschool setting.

Participants: Seventeen participants informed the findings of this study: six children in a special ASD class, five mothers, and six members of preschool staff.

Materials and Methods: A qualitative methodology was used. The study employed a multi-method approach combining one focus group, semi-structured interviews, playground observations, and projective techniques. First-person perspectives of the children were sought, a rarity in research, that their voices might further illuminate their needs.

Findings: Three core themes emerged: features of play (freedom to do my thing, being with others), opportunities for play (what is available, when it is available, why it is available), and power of play (how I feel about play, what play does to me).

Conclusion: The findings of this study support the premise that outdoor play is important to children with ASD, and necessary and valuable for them. In this study, outdoor play was highly valued by all participants and strongly supported by teachers and parents. The children with ASD had varied outdoor play experiences relating to affordances at school and home, including social, sensory and physical dimensions. While the children experienced challenges to their play, particularly in social domains, the outdoor context provided unique opportunities for these to be addressed and explored.

Keywords: Autism Spectrum Disorder, children, preschool, outdoor play

Introduction

Addressing play needs of young children is within the domain of occupational therapy (American Occupational Therapy Association, 2014). Exploring play experiences and factors which affect a child's play at this key developmental stage supports the delivery of holistic, family-centred occupational therapy (Coughlan & Lynch, 2011). Additionally, the need to research children at play falls within the priorities of the Occupational Therapy National Research Agenda (Association of Occupational Therapists Ireland, 2013) which recommends undertaking basic research to examine relationships among impairment, activity, and participation.

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social interaction, communication, and restricted, repetitive behaviours (American Psychiatric Association (APA), 2013). Recent dramatic increases in its reported prevalence (Boilson, Staines, Ramirez, Posada, & Sweeney, 2016) signify a need for expansion of services to serve these clients. Such developments will be shaped by the current Irish context where the progression of disability services for children is seeing the establishment of Children's Disability Network teams (Health Service Executive (HSE), 2009). This programme of change envisions health and education working together to support children to achieve their potential (HSE, 2015). At a time of such change, supporting research is crucial.

Although adults can intuitively identify play (Smith & Vollstedt, 1985), consensus on a formal definition has proved elusive (White, 2012). Parham and Fazio (2008, p. 448) describe play as a "spontaneous or organized activity that provides enjoyment, entertainment, amusement or diversion, and is the means through which children participate in the world". It is pleasurable, intrinsically motivated, process oriented, freely chosen, actively engaged, and non-literal (White, 2012). Its significance is reflected in national policy, for example the *National Play Policy: Ready Steady Play* (2004), and *Aistear: The Early Childhood Curriculum Framework* (2009). Indeed, to engage in play is a right of every child, as recognised in the United Nation's Convention on the Rights of the Child (United Nation's Committee on the Rights of the Child, 2013). Furthermore, to decrease a child's play opportunities constitutes a children's rights matter (Tremblay, Onywera, & Adamo, 2010).

Despite the gravity of this issue, the General Comment No. 17 on Article 31 reveals that states have given poor recognition to the right to play (United Nations, 2013). Outdoor play particularly is often overlooked and undervalued (White, 2011) despite the fact that playing outdoors meets "the way most children want to be, behave, develop and learn" (White, 2011, p. 1). It is not an optional extra, but an essential component of a child's everyday life and environment. Outdoor play merits equal status to indoors particularly in early years settings, when children are at a crucial stage of their development (White, 2011).

The development of a knowledge base is key to maximize the effectiveness of practice (Portney & Watkins, 2015). This research project explored the outdoor play experiences of preschool children with ASD, to understand better what outdoor play meant to them, how they experienced it, and in what ways it could be supported to facilitate the best experience possible. This research project aimed thus to ultimately support best practice.

Literature Review

A literature search was conducted using Ebsco, Cinahl, Web of Science, Medline, Psycinfo, Sciencedirect and Scopus electronic databases. The University College Cork library catalogue was accessed with key search words including “Children”, “Outdoor Play” and “Autism Spectrum Disorder”. Reference lists of selected articles were also reviewed for novel studies to ensure that relevant literature was identified through multiple means.

Play

Many aspects of play have received attention in the literature. This is reflective of its nature as an occupation, which according to occupational science, possesses individual features including *form*, *function* and *meaning* (Clark et al., 1991). It has been categorised into types (*form*). White (2012) described the categories: social, object, pretend, physical and media play. As a child develops so does their play, advancing from manipulative, to functional, to symbolic and representative play (Piaget, 1962). Parten (1933) proposed six styles of play: unoccupied, solitary, onlooker, parallel, associative, and cooperative. Play comprises of both the external performance and internal experience (*meaning*) (Parham & Fazio, 2008). These aspects are intrinsically linked: play activities (external performance) are complemented by the child’s playfulness (internal experience) (Bundy, Lockett, Naughton, Tranter, Wyver, Ragen, & Spies, 2008). Playfulness comprises four dimensions: internal locus of control, intrinsic motivation, suspension of reality, and framing (Bundy, Nelson, Metzger, & Bingaman, 2001). Experts have set forth a powerful argument for play (White, 2012). It is seen to contribute to a child’s development, socialization, communication, and creativity (*function*) (Bergen, 2002). It allows children to learn and practice new skills in safe and supportive conditions (Boucher, 1999). Given the inseparability of environment and occupation (Kielhofner, 2002), play must be considered in its context to be understood. The outdoor environment is a setting which offers a myriad of play opportunities to young children.

Outdoor Play

The importance of outdoor play is evident in the fact that health promotion position statements have been designed in relation to it. According to the Position Statement on Active Outdoor Play (Tremblay et al., 2015, p. 6476), “Access to active play in nature and outdoors—with its risks— is essential for healthy child development.” Studies support the premise of the value of outdoor play. For example, Bjørgen’s (2015) study demonstrated that the wellbeing of 3 to 5 year-olds was supported through their involvement in physical play which provided them with social relationships, freedom to act, challenges, and opportunities for variation, in the outdoors environment.

Most parents and educators agree that outdoor play is a natural and critical part of a child’s healthy development (Clements, 2004). Outdoors offers unique opportunities to children including: access to space

with opportunities to be themselves, fresh air, the experience of weather, and contact with natural things, freedom to be adventurous, discovery and play, stimulation of the senses, movement experiences, social interactions, and learning safety (White, 2014, p. 3).

Despite its recognised advantages, outdoor play is often neglected. A drift to increased time spent indoors has been identified in the lifestyles of children today, who play outdoors less than their parents did (Bassett, John, Conger, Fitzhugh, & Coe, 2014). Research posits this changing nature of children's lives as a major concern and suggests that the child-nature connection is under serious threat (Heritage Council, 2011). Considering that the prevalence of obesity is at its highest ever and increasing, it could be surmised that these two phenomena are not unrelated (Ng, as cited in Tremblay, 2015).

Outdoor play pertains not only to the child's home and community environment, but also their school environment. Indeed, in the UK, most children spend more than 2000 hours of their life in a school playground, probably more than in any other outdoor play environment (Grounds for Learning, 2012). In fact, the outdoors is a natural educational environment and some educators argue that it should be utilized in the provision of the school curriculum (White, 2012). It merits as much consideration as any other educational setting (Bilton, 2002) to ensure it is a rich and stimulating environment (Bassett et al., 2014). Such consideration could transform outdoor play environments in Ireland from the commonplace basic tarmacadam or grass spaces.

Numerous guidelines exist for developing a 'good outdoor environment' in which children may play. These include six interlinking concepts suggested by White and Woolley (2014): physically diverse, generous, supportive, secure, agency and connection. A systematic literature review conducted by Gill (2014) indicated that practitioners and policy-makers should focus not only on structured, educational interventions, but also on initiatives that allow for more open-ended, child-directed and playful experiences in natural environments. Herrington and Brussoni (2015) wrote about the Seven Cs to design natural play spaces: character, context, connectivity, change, chance, clarity and challenge. The 'Early Years Outdoors' Vision and Values (Learning through Landscapes, 2003) proposed 10 Values for high quality outdoor experiences for young children (see Appendix 6). Principles from Universal Design are applicable also to outdoor settings. This design approach has received increasing attention recently (Prellwitz, 2007), and assumes that the range of people's abilities is ordinary, not out of the ordinary (Ostroff, 2001). A well-designed playground using the principles of universal design can provide physical and social settings where children with disabilities become part of the overall play experience (Goltsman, 2001). Overall, these guidelines point to how outdoor play provision can be more inclusive and integrate natural with built elements.

Play and Children with ASD

Particular focus has been given to the play of children with ASD in research, particularly in the indoor environment. Certain studies have found little or no differences in play in children with ASD and typically developing children. Naber et al. (2008) found an absence of difference between play behaviours and levels of toddlers with and without ASD. Given the young age of participants however, a high level of symbolic play was not expected, and had they been tested at an older age greater deficits might have emerged. Lee et al. (2016) found that children aged 3 to 7 years with ASD used conventional toys in an elaborate, complex, organized way and attended to cuing, contrary to more basic ways described by other studies.

A number of studies have reported differences in the play of children with ASD and typically developing children. Differences were noted in the categories of symbolic and object play. Szabo (2014) found significant differences in object play between two preschool children. The typically developing child showed creative, spontaneous play, and demonstrated no difficulties in understanding object-use with new toys, in comparison with the child with ASD who demonstrated narrow attention, needed explicit information about the tools, and requested pictures. This may reflect the fact that children with ASD often learn best from visual cues. It has also been found that in performing symbolic play, the behaviour of the child with ASD may be more like learned routine than spontaneous play (Williams, Reddy, & Costall, 2001).

Typically developing children have been found to engage in play more often than those with ASD (Honey, Leckam, Turner, & McConachie, 2007). Expressive language, receptive language and repetitive behaviours have been found to be significant predictors of play - supporting the view that play is linked to language development (as proposed by Piaget, 1962). Given the communication difficulties inherent in an ASD diagnosis, this suggests implications for play for children with ASD. Honey et al. (2007) suggested a three-way association between repetitive behaviour, imagination and communication.

A study in Taiwan found that children with ASD aged 3-7 years differed in their play with typically developing children and children with developmental delay (Lee, Chan, Lin, Chen, Huang, & Chen, 2016). They relied more on others to generate novel ideas of how to play, which they then imitated. Strauss et al. (2014) considered whether an adult-directed highly structured approach versus a more flexible approach influenced the play of 30 preschool children with ASD. Key findings showed an increase in functional, constructive and symbolic play as well as higher persistence and increased joint attention with a flexible approach. This evidence suggests that children with ASD do best with peer and adult scaffolding.

In summary, the literature presents a variable picture of play behaviours of children with ASD. Contrasting findings indicate significant variance in the population. Play is clearly a complex issue for children with ASD. Equipped with this understanding, we must now consider whether the visions and guidelines around

outdoor play (outlined previously) are applicable and sensitive to the experiences of children with ASD.

Outdoor Play for Children with ASD

Limited research is available on the experience of children with ASD of outdoor play. Yuill (2007) investigated playground design and found that it influenced the playful peer interaction and social initiations of children with ASD aged 5-7 years. Another two studies addressed adult-led interventions outdoors involving children with ASD. Kern and Aldridge (2006) found that while a musical adaptation of the playground did not improve social interactions, it facilitated individual play of children with ASD through attraction to the sound and opportunity to use the instruments. This was facilitated by teachers at the setting. Martin, Drasgow and Halle (2015) demonstrated that the provision of specific training effectively enhanced teacher instructional interactions with children with developmental disabilities outdoors. For children with ASD, large undefined spaces such as playgrounds, lack of predictable and structured play routines, and play styles inherent in outdoor play, can make playground time a challenging experience (Nabors et al., 2001). Nabors, Willoughby and Badawi (1999) advised that researchers should consider the influence of child factors (e.g. gender, age, developmental functioning) and other context factors (e.g. types of materials and toys used in play, group size and composition, degree of adult involvement in play) when evaluating factors influencing inclusion on playgrounds. The above studies involved the use of observations to explore outdoor play of the children.

Conclusion

The presented literature points to the fact that play, in particular in the outdoor environment, is vitally important for children. Further, the outdoor environment can be designed to offer children a range of enjoyable and rich experiences. These benefits are predicated however on the fact that a child can engage in active free play in an outdoor setting. Given the significant impairments associated with an ASD diagnosis, we must ask how a child with ASD can engage fully in outdoor play? Can they attain these benefits that the outdoors potentially offers? Research into play and children with ASD has focused in the main on indoor play. Those few studies about outdoor play have not considered the preferences of children with ASD when evaluating play. Our research project aimed to address this gap by focusing on the individual experiences of the child.

Research Aims

- *Gain further insights into the childrens' play from parents and preschool staff members.*
- *Observe children with ASD at play in outdoor play spaces in a preschool setting.*
- *Obtain first-person perspectives of children with ASD on outdoor play.*
- *Consider how research findings may inform the design and development of future outdoors play spaces in ASD preschool settings in Ireland.*

Research Design

Methodology

This qualitative study drew from phenomenological and descriptive principles. The phenomenological approach focuses on the individual's lived meaning of the world, using terms of meaning constructed by the individual to develop understanding (Carpenter & Suto, 2008). Since our exploration of outdoor play was centred upon the experiences of children with ASD, this approach was appropriate. Descriptive studies aim to discover '*what is*' (Borg & Gall, 1989). Description of natural or man-made phenomena such as their form, structure, activity, change over time and relation to other phenomena, has been called for in research. Description often illuminates knowledge that we might not otherwise notice or even encountered (Borg & Gall, 1989).

Method

Various methods were selected to obtain data: a focus group, semi-structured interviews, observations, and projective techniques. A focus group with staff members was a means of gaining a large amount of rich data within a short timespan through the spontaneous exchange of ideas between group members (Sloan, 1998). Semi-structured interviews with parents provided unique flexibility, being structured enough to address specific aspects of the research question while also allowing participants to offer new meanings to the topic (Galletta, 2013). Observation provided a non-linguistic alternative to studying young children as occupational beings (Spitzer, 2003), thereby assisting researchers to bridge the gap caused by the children's language limitations. Projective technique classroom activities used with the children aimed to capture the child's own perspective since, without this, individual meaning can be lost (Spitzer, 2003).

Ethical approval

Ethical approval was granted by the Clinical Research Ethics Committee of the Cork Teaching Hospitals in January 2017.

Participants/ Sampling

Purposive sampling was used to recruit a preschool autism unit of 6 children attached to a mainstream school that was in a rural location, had an equipped playground, and was accessible by researchers. Selected participants were children with ASD, parents, and school staff. The primary focus of capturing the child's experience placed the children as our main participants. Parents of the children with ASD provided unique, intimate knowledge of their child and their home outdoor experiences. Staff members (teachers and Special Needs Assistants (SNAs)) were selected given their day-to-day experience and knowledge of the child and outdoor play at school, where the child spent a significant amount of time.

- *Inclusion criteria*

Child	Having diagnosis of ASD (as determined from being in the selected ASD preschool class)
Parent	One parent per child
Staff member	Being either a teacher or SNA in the school Having knowledge about the students in the class

- *Recruitment*

An occupational therapist working with autism units in schools in Munster acted as gatekeeper for this project. The selected preschool ASD class comprised 6 children. Two teachers and four SNA's involved with this class expressed interest in the study. Information letters were provided to these staff members, and parents of the preschool children. Parents were asked to provide consent on behalf of their child, given their young age and ability to understand and communicate consent. All 6 preschool staff members consented to participate, parents consented for all 6 children in the special ASD class to participate, and 5 mothers consented to participate; one mother opted-out of the parental interview. Although gender was not included as parent participant criteria, only mothers opted to take part in this study. All of the preschool children were male. All the preschool staff members were female.

- *Participants*

	<i>Children</i>	<i>Communication Level</i>	<i>Parent</i>	<i>Teacher</i>	<i>SNA</i>
1.	Ethan (5 years 1 month)	verbal	Nuala	Rachel	Addison
2.	Xavier (5 years 1 month)	verbal	Esther	Emily	Abbey
3.	Niall (3 years 7 months)	non-verbal	Evelyn		Ruth
4.	Liam (5 years 3 months)	verbal	Imogen		Noelle
5.	Noah (5 years 5 months)	verbal	Anne		
6.	Eoin (4 years 7 months)	non-verbal	Alice		

Data generation

Data generation proceeded in the following order: staff focus group, parental interviews, play observation, projective techniques. The focus group as a starting point afforded a broad perspective of the class' play experiences generally. This was carried out with staff-members in the school (see Appendix 4 for interview questions) and lasted 40 minutes. Next, parental semi-structured interviews provided focused information

about each child, which equipped researchers to recognise individual aspects of the child's play during the subsequent observation. These were undertaken by both researchers (one interviewed while the other audio-recorded and took field notes) in either the parent's home or school, according to their preference, and lasted 40 - 60 minutes. Play observations were carried out on two days at the preschool off-classroom garden and larger playground, when children from the ASD preschool class only were using these spaces. The projective techniques with the children (an image-selection exercise, colouring exercise, and playdough exercise) were tailored to be relevant to their preferences and experiences, as emerged from data already generated. Further, following consultation with the teacher, it was decided that the teacher was best placed to lead the activities due to her experience of communicating with the children. These took place during class-time and were supported by two SNAs. Nineteen colouring sheets with varied pictures depicting outdoor play were shown by the teacher to four children who chose to engage. Each child was required to select and colour their favourite one. They were also provided with playdough to create something related to what they liked to do outside. The final data generation included: 1 focus group, 5 interviews, 1 hour of video-recorded observation, 5 colouring sheets and 30 minutes of video-recorded projective technique activities.

Data analysis method

Data was analysed through thematic analysis, as described by Braun and Clarke (2006). This involved first becoming familiar with the data, transcribing audio-recorded interviews and video-recorded classroom exercises, cross-checking transcriptions, reading transcripts multiple times, and noting initial ideas. The video-recorded play observations were analysed. Play events formed the units of analysis, which were noted for each child, taking note of physical, sensory, communication, social, and cognitive affordances. The child's choice of colouring sheet during the projective technique exercise was noted, as was their use of playdough for that activity. Next, initial codes were generated by both researchers across all the whole data set, line-by-line, and considering the research question. Third, codes were collated to form potential themes which were reviewed to ensure they accurately reflected the data. Fourth, a thematic map of the analysis was designed. Fifth, a constant comparison method was used to compare data across participants and identify consistent and central themes. Finally, in-vivo codes were extracted providing key examples reflecting the themes.

Trustworthiness, Ethical Considerations, Reflexivity

Trustworthiness was established in this study in a number of ways including triangulation, peer review and thick description. Triangulation involves converging information from multiple sources, thus adding rigour, breadth, complexity, and depth (Denzin & Lincoln, 2005 as cited in Carpenter & Suto, 2008). This study used method triangulation (incorporating a focus group, interviews, observations, and projective techniques) as well as participant triangulation (involving staff, parent, and child participants) to establish credibility.

Themes were reviewed and confirmed by the research supervisor. Dependability was ensured through verbatim transcription of all audio-recorded interviews. Credibility was ensured through the use of in-vivo coding data analysis. Thick descriptions were used to provide depth and context to the play experiences of the children. See appendix 9 for a personal reflection completed in an effort to ensure reflexivity.

The use of pseudonyms protected the anonymity of participants. Consent was obtained from participants before study commencement, after they had received information letters comprehensively outlining the project, and were given the opportunity to contact researchers with questions or concerns. Child safety and protection were ensured through adherence to best practice guidelines for research with children, and the school's policy.

Findings

Three core themes emerged from our data. In keeping with the focus of this project, they are framed to foreground the voice and perspective of the child.

Play Features	Opportunities for Play	Power of Play
Freedom to do my thing	What?	How I feel about play
Being with others	When?	What play does to me
	Why?	

1. Play features:

The first theme that emerged was the play features of the children. From this, two subthemes emerged: freedom to do my thing, and being with others.

Freedom to do my thing:

A clear theme emerged regarding the children's sense of freedom in the outdoors. Xavier's mother spoke of Xavier "*ruling the outdoors*", referring to his desire to do what he wanted outdoors. Similarly Noah was praised by his mother for "*knowing his own mind*", while Niall was often spotted "*doing his own thing*". This became particularly evident during playground observations, where each child had different foci and engaged in different activities. For example, Eoin enjoyed bringing toys outside with which to play (his favourite being two Minion character figures), climbing, and watching the activity of others. Xavier meanwhile liked writing letters in the sand with his finger or with chalk on the chalkboard, climbing along the raised flower box edge, leaning into the flower box while swinging his legs, and spinning around in the spinning cup. Ethan liked playing with toy trucks and sand. Noah enjoyed playing with sand, using the slide, and being involved in games with others, particularly games with routines. Niall was fascinated with nature and spent time observing and playing with plants, leaves, water and trees. Finally, Liam liked making a tall tower out of coloured blocks and using playground equipment like the doughnut and rocker. Overall, these preferences emerged during their free play.

Staff spoke of the importance of their independence, saying "*it's their free time as well*" and "*this is what they might want to do*". It was pointed out also how the outdoors afforded more personal space, "*getting out there on his own at times, to have a break from the others*".

I like filling up
the mould with
sand



I like leaning into
the flower-box and
playing with my toy
car in the dirt



I like dragging
the sand along
the ground with
my feet



I like to write on
the chalkboard in
the playground



I like to run
around with my
toys



I like to climb on
the spring-rider
and play with my
friends



I like to look
out through the
fence








I like to play chase
with my friends



I like to look at and
touch the leaves on
the ground



The playground observations and caregiver interviews pointed to the children’s individual preferences. However, they were expressed most significantly by the children in the colouring and playdough exercises, of which four took part. Those items chosen are to be seen here:

	Xavier	Noah	Ethan		Liam
Image chosen for colouring	One child playing hopscotch 	People playing football 	A child playing with building blocks 	A child outside playing in a swimming pool 	Circle of people playing 
Playdough Activity	Made a hopscotch	Made a chocolate Easter egg basket	Made trucks and a car		Duck-duck-goose Game

The childrens’ play outdoors tended to be more active and more sensory by nature compared to indoor play. Ethan’s mother described Ethan going for walks and cycles, “*he’d hike Glendalough for you...the child would run for miles*”. Noah’s love of the trampoline was highlighted by his mother. Xavier loved the trampoline too, and his mother described him as a “*good climber*” and “*a runner*”; “*He is so fast*”. She reflected upon her son’s need to run, a means, she felt to vent frustration, to regulate himself. “*It could be just a sprint up and a sprint down and then back into the house again*”. At school then, the children were observed to climb, jump, slide, run, skip, hang, and crawl, over the course of the observations. Although Niall’s gross motor skills were perceived by the staff to be lacking, and placed limitations on his use of the playground equipment at school (it was “*a bit challenging*”), active play was nonetheless described at home as his mother reported him “*wrestling*” with his brother.



Eoin reaches for his Minion toy as he hangs from climbing frame



Liam climbs on the doughnut



Xavier leans into the spinning cup



Noah climbs up the slide



Niall leans over the seat of the three-seat spring rider



Noah hangs from top of slide

The children's play both at home and in school involved varied textures, shapes, sizes and weights of natural and commercial objects such as sand, water, sticks, stones, mud, and opportunities for wind and light. According to school staff, Noah didn't like getting dirty. In contrast to this, for Ethan and Niall, digging in the earth and dirt was a significant feature of their play. Ethan's mother reported how he loved to "make a mess in the muck". Niall's mother fondly described the particular feedback and enjoyment that Niall got from nature: "He puts his head up so that the rain goes on his face" and "loves watching trees blowing in the wind". Ethan's mother described Ethan going to the beach, and particularly loving "the heaviness of the rock, and throwing it and seeing it". During the play observations too, the children were noted to embrace sensory elements of play. For example, Noah ran the sand through his fingers, held his hand up and watched the sand fall in front of his face. Another example was Xavier feeling the bushes and dirt in the flowerbox.

Niall, who was fascinated with water, loved bubbles being blown near his face and clapped and waved his hands when this happened. Noah was also observed to run his fingers along the fence. However, teachers reported that there was a definite need for more sensory-based toys and equipment in the preschool playground. This was reflected too in the fact that, during our observation, Niall engaged more in those features that were not intentionally provided components of the built playground e.g. leaves blowing in the wind.



Eoin and Xavier playing at the flower-box



Ethan and Noah play with plants in the flower-box



Noah picks at wooden splinters from an old plaque on the wall



Noah and Xavier play with the sand in their hands

Individual routines played a significant role in some children's play. Niall's mother described Niall having his "little points" where he liked to go outside: "flick, he'll watch, he'll stim off it if it's blowing in the wind...he'll pull a leaf off (the bush)". Then Niall would go to the drain and later walk up the hill. Eoin's mother reported that going outdoors is "like a routine to him (Eoin)" and described how he wanted to go straight outside to play as soon as he arrived home from school.

However, outdoor play was not always free play and the outdoor play routine at the preschool was significantly informed by staff intervention. Staff scaffolded the children's play in an effort to promote skill development in using the equipment, turn-taking, chase games, promoting interactions, and language. Staff built on existing play (scaffolding), taught children new skills (modelling), and directed them to new activities (guiding). They joined their play and expanded it, e.g. "Oh, it's a construction site? What are we building today?" Staff aimed to promote motivation and interest by adding "a little twist" to games. Upon noticing a child with (as they perceived) nothing to do, staff tended to guide them towards particular games. Staff noted that the children "mightn't necessarily join in", and felt they played a necessary role in bridging this perceived gap and "joining up" the more solitary plays of children. Behaviour and relations among children required further mediation ("a bit of management - policing!") by adults. Staff also used outdoor play time to help children overcome fears ("I'd show him first"). Staff spoke of "seizing whatever moment" presented itself to promote good play, emphasizing how engagement in a particular game could be very short-lived.

Overall, when the children were left to "do their own thing", varied individual play preferences and routines emerged, and play tended to involve active and sensory elements. In contrast with this, staff intervened during outdoor play at preschool, and focused on joining up individual plays and promoting games for the social interaction element.

Being with others:

The second subtheme that emerged from the children's play features involved being with others. The children shared the outdoor preschool spaces with others of their own age. This included peers with ASD, as well as, at times, children from mainstream classes. Staff reflected that the children watched other children and learned from them. Parents reported noticing the same thing in their home environment. This on looking role was noted during our play observations at the school. While the children did not voluntarily engage with the other children, nonetheless they did appear, as one mother noted, "happy for them to be there". They were observed to engage in parallel play. One teacher commented on Niall's participation in group games: being present and watching on; he liked to see others clapping. While not the conventional way of being involved, it was nonetheless a participation and appreciation of others. Indeed, on occasion (and most particularly when supported by teachers) the children did engage with each other and demonstrated enjoyment in doing so. Liam selected a picture of people holding hands for the colouring activity, pointing to

his interest in engaging with others. Further, he identified the people in the picture as a SNA and classmate. During the playground observation then, he was seen to actively take part in a Duck-Duck-Goose game and jump and laugh with excitement during it.

Siblings and neighbouring children were playmates outdoors at home. Staff commented that *“you’d know which children had siblings”*, that their play skills were more advanced than those without. Ethan’s mother described how her sons played with water guns together. Eoin’s mother described his strong relationship with his brother and the games they played together with friends in the shared community play space of a basketball court. On the other hand, Niall’s mother described challenges to sibling play: Niall’s sister found she could not understand his play and struggled to find things to play with him. In contrast to the others, Xavier was an only child, and his mother felt that *“there doesn’t need to be kids around”* during his play. This suggests a certain independence or distance from other children. Our observation of Xavier confirmed a reluctance to initiate interactions with others. Nonetheless, with the teacher’s guidance, he did play games involving other children and did watch other children at play. Overall siblings were reported to scaffold play, to support and encourage play engagement outdoors. Not alone siblings, but neighbouring children were a key part of the social context of the outdoor play environment at home. For some, this occurred through organised *“play dates”* while for others, it was a natural and automatic extension of sibling play.

However, playing outdoors with others involved games that sometimes proved challenging. Staff expressed scepticism about their grasp of rules *“whether he (Eoin) understands catching, I’m not sure, but he loves seeing them all run around and he’ll join in with it”*. Xavier’s mother said that Xavier *“likes to be the one chased”*, but wouldn’t reciprocate as the game demanded. During the playground observation, the teacher took him by the hand to encourage him to *“chase back”*. Difficulties negotiating social boundaries also emerged, *“he (Ethan) didn’t know the boundaries of where to stop, he just didn’t understand, he thought it was OK.”* This was particularly evident in turn-taking, which children found particularly challenging. Staff identified certain pieces of the playground equipment as conducive to turn taking such as the spinning cup and the trike (*“the red one with the stabilizers”*). Using a timer was also cited as a means to support turn-taking.

Beyond peers and siblings, animals too featured commonly as ‘others’ who were part of the children’s out-of-school outdoor experience, despite none of them owning pets. Ethan went to the Care Farm twice weekly, and his mother warmly emphasized its positive on him. Niall too enjoyed going to the Care Farm. His mother described her son’s intriguing relationship with animals: *“they’re his people. He will look at the animals before he’ll look at people”*. Also, she noted how he loved to lie on the back of the goats. Noah’s mother described how animals were drawn to her son, and how gentle he was with them. Eoin’s mother described how Eoin liked to climb trees because of his interest in birds and how he loved to imitate their call.

His mother also fondly recalled how he liked looking after a neighbour's dog and would accompany them in going for a walk. These were certainly perceived as companions, albeit not human companions.

Overall, the childrens' play involved interactions with peer classmates, siblings, neighbours and animals. While being with others seemed to be a desirable aspect of their play, the children frequently needed a lot more help to be able to play socially and understand social rules.



Liam holds hands with a girl from the mainstream class as they play on the doughnut



Liam plays on the doughnut with his friends and teacher

2. Opportunities for play:

The second theme that emerged was the opportunities for play for the children. From this, three subthemes emerged: what is available, when it is available and why it is available.

What is available:

At the preschool there was available both an outdoor garden (accessed via the classroom) and an outdoor playground (see figures 1-8). Staff reported allowing children access to outdoor play on an individual basis, if it was deemed that they “*needed it*”. However in the main, the children accessed the outdoors as a group and at certain scheduled times.





The outdoor play spaces at the preschool provided a wide range of affordances in terms of: social, physical, sensory, communication, and cognitive factors. For example, the sand-table in the garden offered opportunity for group-play, use of fine and gross motor skills, opportunity to share ideas and a variety of textures and colours. In the playground, the slide offered opportunity for crawling, sliding and climbing, cooperative play (pushing someone else down) as well as space for developing spatial awareness and planning. During the observation, it became evident that different children used the same piece of equipment for their own, different purpose. For example, Eoin like to pull his toy train down the slide, Noah liked to slide down it himself, whereas Niall like to lie on and climb up it.

Staff noted also unique affordances in the outdoor environment that had a positive effect on the children: fresh air, a change of environment, and a quieter setting. Parents acknowledged these also. Ethan's mother felt the quiet was a particularly significant factor.

Each child participated in outdoor play in settings apart from school and this data provided an interesting comparison to the school experience. Locations identified by parents included their own garden, housing estate or neighbourhood, the gardens of relatives, local playgrounds, a Care Farm, the woods, and the beach. All participants lived in rural areas and had outdoor gardens, commonly featuring grass, a trampoline, a slide, and a sand-pit, as well as various other toys. Generally speaking, play at home tended to be less structured, with less adult involvement, whereas a greater number of adult-led, instructed play activities took place at school.

When it's available:

Outdoor play opportunities both at home and school depended upon when outdoor play was scheduled or made available. This was closely linked with weather, which parents and teachers identified as a factor influencing access to the outdoors. In frosty weather, teachers deemed outdoor activity “*out-of-bounds*”. Certain children were also deterred by weather; Xavier’s mother said his motivation to go outdoors would “*depend whether it’s a dry day or not*”. However, other children were undeterred and determined to go outside in spite of the weather. They “*will always go out, rain, hail or snow*”. In addition to the impact of weather on access to the outdoors, it influenced the activities undertaken once there. Water-play was reserved for finer weather for example.

Temporal aspects significantly shaped the children’s outdoor experience. Again, data from home provided useful information to help understand this aspect. Weekends were identified by parents as times for family outdoor activities such as hikes. Many parents made reference to the summer holidays when interviewed, seeing it as an opportunity for more outdoor play than was currently the case. Issues around the length of time spent outdoors emerged in relation to some children. Ethan for example, would “*be out all day*” according to his mother. This proved problematic since it was not feasible to be outdoors all the time - coming indoors was necessary for mealtimes and other indoor occupations. In another scenario, Noah wanted to go outside in the middle of the night. However, his mother deemed this an inappropriate time to go outside and locked the doors to prevent access. In relation to Noah again, his mother described how he did not like returning from a walk. The idea that this time of enjoyment was finishing was upsetting for him. His mother reported taking circular routes to allow the excursion come to a natural end. Acknowledging the significance of temporal factors, teachers spoke of efforts to “*keep the routine going*”, and engage in the same outdoor play activities on a number of consecutive days.

Why it's available:

Family values in relation to the outdoors influenced their child’s exposure to outdoor experiences, e.g. “*We’re definitely more outdoorsy people*”. Parents who valued it highly tended to engage in active outdoor pursuits such as walking and hiking, and exposed the child to these experiences. Beyond a personal propensity for the outdoors, parents recognised play as a natural and important part of childhood and encouraged outdoor play for this reason. One mother spoke of its cultural significance, “*in Nigeria they play outside all the time*”. Further, some parents felt that their child, having ASD, had particular need of going outside. Suggested needs included behaviour-regulation and play skill development. These parents made special efforts to accommodate such play such as “*going for five-mile walks every Saturday*”. Ethan’s mother emphasized this, “*we’re doing everything we can*” and “*we just want him to reach his potential*”.

Parental commitments also shaped access to the outdoors. Parents spoke of the challenge of balancing their

desire to cater for the individual needs of their child with ASD, while simultaneously addressing the needs of other children, and family commitments. Ethan's mother mentioned time challenges, and the pressure of having only *"an hour to spend"*. Niall's brother also having ASD added further complexity to the situation for their mother. Parents acknowledged that at times, the child's individual's needs were focused upon at the expense of the rest of the family. Noah's mother facilitated activities that were *"boring for the other kids"* because they were beneficial for Noah. Ethan's mother spoke in a similar vein, *"It's not as if we want to go to the woods every weekend. But we do it for Ethan"*. However, at other times, the broader priorities of the family were focused upon, and Noah's mother noted *"there is a certain amount of him having to fit in"*.

At school, outdoor access was made available by staff. This was shaped by obligation (legislation, policy and best practice in education encourage and dictate it), but more powerfully from their personal observation and experience of its impact on the children. The staff perceived outdoor play as necessary for the child's development of skills in a range of domains. They made efforts to respect the child's own interests in the choice of toys made available, in the structuring of activities and setting up of games. Outdoor play was incorporated into established routines of the daily schedule, with the added benefit of offering *"a sense of the time of the day"*. Beyond the set timetable, movement breaks were used as necessary throughout the day.

Issues around stereotyping and stigma emerged as a factor influencing parent's decisions around making outdoor play available to their child. Some parent's perceptions of the *"abnormal"* play behaviours of their child and how this was perceived by others, caused them to limit access to or avoid public spaces such as playgrounds at times. Xavier's mother said that Xavier being *"bad around people"* (by pinching particularly) was holding her back from bringing him out and about. Perceptions around 'appropriate play' influenced what the children were allowed and encouraged to do. The perceived necessity of supervision emerged from parental reports. Xavier's mother felt *"you have to watch him the whole time, even in the playground"*, primarily on account of his behaviour. Niall's mother also felt Niall *"needs to be watched"* because otherwise he would *"just wander and lick things, and do things he shouldn't be doing"*. Such things as eating and licking objects were deemed inappropriate, though a number of the children were observed to do exactly this. Xavier's mother felt her son should not run around in circles in the path of the grass in the playground, as he liked to do. According to her, he should rather be using the playground equipment. Even his running did not fit in with the *"normal"* parameters of running, she felt, recounting how he would never take part in a race. Ethan's mother felt Ethan *"shouldn't be interested in the lines he makes with the cars"*. Niall's mother spoke of how Niall wanted to watch the ball roll down the hill rather than playing with it. Some parents revealed a desire for their child to *"fit in"*. Ethan's mother wanted him to play typically *"so he could have friends"*. Eoin's mother reported how she felt joy watching him play with others, a demonstration of typical play, and something he had not done previously. Not alone did these societal norms have a

psychological impact in terms of what play was considered socially acceptable by parents, but they manifested in a physical sense: underpinning the design of playgrounds and environmental provisions. Parents expressed dissatisfaction with the suitability of public playgrounds for children with autism. Niall's mother proffered a range of possible solutions to improve playgrounds which she felt did not cater to Niall's needs. This points to societal misunderstanding and lack of awareness about ASD and how children with ASD could be included and enabled to participate in society.

That the children would learn play skills was a focus of the teachers, and this motivated them to make outdoor play available. Being equipped with play skills was seen as a means for the children to tackle and make use of their environment, and further, to engage in society. One teacher reported how outdoor play offered many opportunities for development, *"It's social development, it's physical development you know"*, *"playing more with them offers huge opportunities to develop their language."* The issue of play development also emerged from interviewing parents, many of whom described positive progression of their child's play skills over time. Ethan's mother reflected on advancements in terms of her son's physical strength, and ability to participate in and enjoy active play, *"(before) Ethan would not have gone on the swing for you. Whereas now he's like "push me higher, higher" "*. A number of parents acknowledged the school as contributing to their child's development, *"school has helped. School has brought him on."* Further, parents demonstrated pride in recounting such improvements. Niall's mother enthused *"it's great to see him engaging"*.



Niall bounces on the spring rider with the help of the SNA



Noah and Liam play *What Time is it Mr Wolf* with two SNAs



Noah plays *Duck-Duck-Goose* with the help of his teacher



Xavier and Noah play chase with help from their teacher

3. Power of Play:

The final theme that emerged was the power of play for the children. From this, two subthemes emerged: how I feel about play, and what play does to me. The value of play for the children was evident from their demonstrated behaviour observed by the researchers, and also from reports by school staff and parents.

How I feel about play:

Findings highlighted how, in general, the children particularly enjoyed outdoor play. Several mothers reported that their child “loves” the outdoors. Ethan’s mother described him as “*being in his own world and being relaxed*” when engaged in an activity outdoors. Noah’s mother reported how Noah loved being in wide open spaces and this was apparent during our observation as he was often observed smiling and laughing in the playground. Similarly, Eoin’s mother described her son’s “*obsession*” with the outdoors. Niall’s mother reported that her son would get easily bored inside. His motivation to go outside tended to be determined by his mood. While his teachers reported that he could be “*quite lost*” in the preschool playground which primarily featured built play elements, his mother described him being “*in his element*” outdoors at home, where he would take initiative to “*go off and do his own thing*”. She highlighted his fascination with the natural environment in which he would become immersed, “*he can be in a trance*”, “*stimming*” and “*hyper*”. In apparent contrast to most of the other children who showed motivation to go outside, Xavier’s mother commented that “*it wouldn’t bother him (Xavier) if he didn’t go outside*”, and that he would much more prefer to be inside on a screen, “*But if he had the choice, now, he’d actually be on the ipad.*” However, during our observation, and without the competing distraction of technology, Xavier did not demonstrate any reluctance to go outdoors when the teacher announced it was break time. Quite the opposite, he took the hand of the researcher, pulled eagerly on the door handle, and proceeded to skip down to the playground, counting his steps as he went. This was reflective of the preschool class generally, who demonstrated excitement as they prepared to go to the playground. While playing outdoors a number of the children were observed smiling and they engaged, to various extents, with interest in their surroundings.

What play does to me:

The impact of outdoor play on the children’s mood emerged strongly from this study. Teachers noted how the children would “*be a lot calmer*”, “*less impulsive*”, “*(more) tolerant of each other*” and “*in better form*”, having had the opportunity to play outside. The effects of the outdoors extended to the classroom, promoting an atmosphere which was “*nice and calm*”. The school staff valued this means of creating an environment conducive to learning. The outdoors was seen to provide things of interest to the children, and, “*(as) they get more interested... the behaviours are going to dissipate*”. The staff recognised how the children had “*lots and energy. Lots and lots and lots*”, and how outdoors offered space for this to be channelled productively and with the staffs’ approval. In contrast, negative effects were described to result

when the children did not get to go outdoors, “(it has) taken its toll on him”, “he finds life a little bit harder”. The emotional consequences were highlighted particularly by parents: “getting aggressive”, “agitated”, “cranky”, “becoming violent”, and “frustrated”. In the preschool classroom lack of outdoor play was reported to cause widespread disruption and destruction, “toys are everywhere, the place is turned upside down, they are like whirlwinds”. Preschool staff recognised academic implications also “concentration is gonna be way down”. Outdoor play then was deemed not merely useful, but necessary.

Discussion

This study explored the outdoor play experiences of children with ASD in a preschool setting, at home and in the community. All child participants of this study engaged in outdoor play on a daily basis (weather-permitting) at school, and outside school in a range of environments. Overall these experiences involved using playground equipment, engagement with animals, engagement with nature, playing with peers (siblings, classmates, neighbours) and adults. The children in this study showed certain outdoor play preferences: they played with toys, trucks and diggers, climbed, used the slide, wrote with chalk, played hopscotch and used the trampoline. Play has been defined as a means in which children participate in the world (Parham & Fazio, 2008), and the present study found this to be true; each child was seen to actively participate in their outdoor world through play.

The free play of the children in this study resembled most often solitary (independent) play, onlooker play, or parallel play, as described by Parten (1993); findings reflected similarly in the study of children with ASD undertaken by Kangas, Maata and Uusiautti (2012). Further similarities emerged as the children in both studies exhibited sensomotoric practice play and simple functional play when playing alone. However, Kangas, Maata, and Uusiautti’s (2012) study involved children up to the age of 16, while the children in this study were preschool age. The fact that findings were similar across different age groups would seem to suggest a certain stability of these play characteristics over time. However, in our study, parents and school staff reported development of the children’s play over time. They attributed this particularly to being in the (supportive) school environment and exposure to play opportunities with peers. Perhaps such opportunities were not available to the children of the 2012 study. This seems to support the argument that play can be effectively nurtured. Thus the play environment is critical. Further, it seems to support the value of early intervention in supportive outdoor play environments to develop play skills.

Another interesting point emerging from these findings was the extent of freedom in the ‘free play’ of the children with autism, for it was often influenced by what was seen as acceptable or appropriate play by adults present. Delaney (2016) challenged the approach of teachers in ignoring, restricting, dismissing, and devaluing a child’s chosen form of play when it was deemed unacceptable, thereby making the child powerless. She recommended that adults give due consideration to how they frame ‘unacceptable play’.

Parents in our study felt they had to supervise outdoor play, to intervene to prevent unacceptable play occurring. How this added adult supervision impacted the child's play, choices and preferences must be considered. For example in a study conducted by Must, Philips, Curtin and Bandini (2015), where 60% of parents of children with ASD reported that the child required 'too much' supervision, this was found to be a barrier to physical activity. Prellwitz (2007) considered this issue of adult-involvement from the child's perspective and found that children with disabilities felt the presence of adults hindered their play.

Ultimately, play is the means through which children make sense of their lives, and is undertaken by the child for a reason. It has been pointed out that we must "be aware that there may be a logical pattern or story" to the play of a child with autism, from which they may be deriving comfort (Middletown Centre for Autism (MCA), 2016, p. 11). Perhaps the autistic characteristics of play as described by Kangas, Maata, and Uusiautti (2012) such as routine, provide a sense of order, security, and helps the children make sense of their environment, in which case it should be acknowledged for its own merits.

A positive finding from our research was the availability of the outdoors to the children, and the high value placed by parents and teachers in general on outdoor play. This is in line with the vision of the Position Statement on Active Outdoor Play (Tremblay et al., 2015). White and Woolley (2014) recommended designing outdoor play environments that are: physically diverse, generous, supportive, secure, agency and connection. Outdoor play spaces both at home and school afforded diverse opportunities for play. The school playground offered opportunity for climbing, hanging, sliding, jumping and running in an enclosed and familiar environment while it appeared that home and community environments seemed to offer more space and movement opportunities such as long walks, cycling, jumping on the trampoline and running in the woods or on the beach.

In this study, several situations were observed when a child appeared to be captivated with the sensory characteristics of an activity. Children with ASD have been shown to have different sensory preferences (Piller & Pfeiffer, 2016). Niall particularly appeared fascinated by the wind blowing, leaves on the ground, and rain on his face. Piller and Pfeiffer (2016) discovered that in a variety of situations, preschool children with ASD avoided activities due to the sensory components (eg. tactile components or environmental noises). By contrast, in situations where unique sensory opportunities are supported in activities, children's participation has been seen to increase (Dunn, Cox, Foster, Mische-Lawson, & Tanquary, 2012 as cited in Mische-Lawson & Foster, 2016). Interestingly, the children in this study were not noted to demonstrate sensory-avoiding behaviours while at outdoor play at home or in school, rather they sought sensory experiences when they were available, in particular, for example, the sand-pit and flower-box. These findings suggest the need to afford this sensory element of outdoor play to facilitate participation for children with ASD, particularly at school. This is in line with Piller and Pfeiffer's (2016) emphasis on the necessity of

including sensory activities as part of the routine of children with ASD. This also draws attention to the sensory experiences naturally available in the outdoor environment, and not indoors, such as the wind and rain. Indeed, such elements likely make outside a more sensory experience than inside, making it an environment in which the children are aroused, alert, and able to engage (Schneck, 2000, as cited in Joosten, Bundy & Einfeld, 2012). The value of this must be recognised, although it does not take from the fact that making available of particular sensory activities would encourage motivation and engagement of the child in particular types of play. It has been posited that the malleability of the environment is greater than the capacity to improve a child's skills (Colver et al. 2012; Law et al. 2007; as cited in Sterman, 2016, p 933). Therefore, a greater emphasis on understanding and implementing changes to the environment rather than the child should be targeted.

Another significant aspect from the research regards the social dimension of play, and how this is particularly relevant for children with autism. Friendships and play are intrinsically linked - friendship development for children is very much predicated on being able to play with others (MCA, 2016). Parents in this study strongly desired that their children develop play skills, not so much for themselves, but so that they could play with others: for inclusivity. Automatic playmates were afforded in the preschool outdoor play environment. While the preschool children with ASD were met with a range of social challenges in playing outdoors (e.g. turn-taking, understanding and complying with game rules, social boundaries and expectations), they were nonetheless observed to interact with peers at school with guidance from teachers and SNAs. These results are similar to the findings of Locke, Shih, Kretzmann and Kasari (2016) who found that children with ASD were not entirely isolated socially, but did in fact frequently interact in school with their peers.

School, then, provided a safe environment in which the children could play. The spaces were familiar and predictable, being routinely made available. Further, the children played in the main among their peers with ASD. This issue speaks to the long-standing debate around inclusion of children with disabilities in play. The children, in the context just described, were not labelled as 'different', nor was their play undervalued because it didn't fit in with the norm. Further, more staff were available to attend to individual play needs and to support the development of play around their individual preferences. Baker (2000) found that encouraging children with ASD to incorporate their own individual and ritualistic behaviours into a play theme increased social interaction in play. She suggested that, because engagement in rituals sustained the child's motivation and background knowledge, this supported their engagement with playmates (Baker, 2000). Considering this, the individual attention that preschool staff in this study could provide in promoting their interests was key to the motivation and engagement they demonstrated outdoors. At other times, typically developing peers were brought to play in the playground also (for reverse integration) and were

encouraged by staff to integrate. Vygotsky (1978) suggested that children learn to imitate adults or children with more skills until they can handle tasks by themselves. For the children in this study, integrated play with typically developing in the playground allowed for imitation thus encouraging play progression and development of skills. Similarly, research into play partnerships of among children with ASD found that integrating children with ASD with typically developing older or younger children appeared to lead to improved social interaction (McConnell, 2002). These findings highlight the value of the 'safe space' that the ASD preschool unit in a mainstream school can offer with opportunity for highly supported play in the unit but also integration with typically developing children.

Implications

The findings of this study support the premise that outdoor play is important to children with ASD, and necessary and valuable for them. The playground in this study catered well for physical play such as running, spinning, sliding, yet focussed less on other types such as sensory play. This is representative of many playgrounds nationwide. This study suggests that those other types of play should be recognised and facilitated through playground design (e.g. opportunities for sensory play). This study has noted complex challenges to outdoor play for children with ASD particularly in terms of their social engagement. Such challenges merit further research and consideration to illumine how they may be tackled. The fact that the outdoors played such a significant part of the children's routine, and may do also in the lives of other such children, highlights how it must be acknowledged by occupational therapists; it deserves recognition as a sensory experience, a valuable part of routine, and place for play and opportunity. Equipped with this understanding, occupational therapists are well positioned to educate parents, teachers, and other caregivers to ensure these opportunities are being made for the children, and, further, that their play is adequately supported so that they can gain the benefits that the outdoors has to offer. This study also highlighted the value of having a preschool unit in a mainstream school; it allowed for specific support from teachers and special needs assistants as well as the development of skills from integration with typically developing children.

Limitations

Several study limitations should be noted. First, the sample size of 6 children, 5 parents and 6 preschool staff was small. Additionally, including a group of typically developing preschool children might have provided a useful benchmark for comparison of the outdoor play experiences at preschool, home and in the community. As both playground observations were carried out within one month, they captured only the outdoor play experiences at one particular season. Furthermore, the school playground where the observation was conducted was newly-built and well-equipped. This range of equipment and play and sensory affordances it

offered may not be representative of other school playgrounds. Finally, due to the young age and condition-associated impairments in communication, obtaining first person verbal perspectives from the children yielded limited responses.

Recommendations for future studies

There is potential for future studies to undertake observations in a variety of outdoor play locations apart from the school (eg. the home, local playgrounds, farms, beaches). This study was conducted with children attending a rural school. Studies involving urban-based participants might reveal very different outdoor experiences, and would add greatly to the subject.

Conclusion

The children with ASD in this study had varied outdoor play experiences relating to affordances at school and home, including social, sensory and physical dimensions. Nature very evidently played a part in this experience, perhaps more so than toys and constructed playground components. Balancing ‘acceptable play’ with free play emerged as a consideration for caregivers. The preschool setting appeared to be uniquely positioned to provide for both. While the children experienced challenges to their play, particularly in social domains with elements such as turn-taking, the outdoor context provided unique opportunities for these to be addressed and explored. Considering ASD from a positive perspective has been called for by researchers (e.g. Kangas, Maata, & Uusiautti, 2012). Focusing on the problems and negative aspects of ASD has been deemed unilateral, yet has been the predominant focus of literature to date (Kangas, Maata, & Uusiautti, 2012). The findings of this research project revealed children’s individual strengths and unique characteristics cherished by parents and teachers alike. Play is powerful, and focusing on it for what it was rather than what it lacked proved a powerful means to elicit intriguing narratives from participants. Further, the progress children had made in terms of their play was celebrated by parents in this study. Stories recognising such achievements and progress have not often been acknowledged in literature, despite the fact that such stories of optimism may offer great hope and support to other parents.

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doi:10.1007/s10803-006-0241-8

Appendix 1: Ethics Approval



UCC

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Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

COISTE EITICE UM THAIGHDE CLINICIÚIL
Clinical Research Ethics Committee

Lancaster Hall,
6 Little Hanover Street,
Cork,
Ireland.

21st February 2017

ECM 4 (aa) 10/01/17 & ECM 3 (pp) 07/03/17

Dr Helen Lynch
Lecturer and Supervisor
Department of Occupational Science and Occupational Therapy
University College Cork
Brookfield Health Science Complex
Cork

Re: The outdoor play experiences of preschool children with Autism Spectrum disorder.

Dear Dr Lynch

The Chairman approved the following:

- Information Letter to Parents/Guardian Version 3 dated 25th January 2017
- Parental/Guardians Letter of Consent Version 3 dated 25th January 2017
- Semi-Structured Interview Questions for Children Version 3 dated 25th January 2017
- Garda Clearance.

Full approval is now granted to carry out the above study.

Yours sincerely

Professor Michael G Molloy
Chairman
Clinical Research Ethics Committee
of the Cork Teaching Hospitals

The Clinical Research Ethics Committee of the Cork Teaching Hospitals, UCC, is a recognised Ethics Committee under Regulation 7 of the European Communities (Clinical Trials on Medicinal Products for Human Use) Regulations 2004, and is authorised by the Department of Health and Children to carry out the ethical review of clinical trials of investigational medicinal products. The Committee is fully compliant with the Regulations as they relate to Ethics Committees and the conditions and principles of Good Clinical Practice.

Appendix 2: Sample Information Letters



Department of Occupational Therapy
and Science,
Brookfield Health Science Complex,
University College Cork.
College Road,
Cork city.

INVITATION TO PARTICIPATE IN A RESEARCH STUDY:

You are invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

RESEARCH STUDY: 'What are the outdoor play experiences of preschool children with Autism Spectrum Disorder?'

WHAT IS THE PURPOSE OF THE STUDY?

The aim is to explore the personal experiences of children with autism of outdoor play to get a better understanding of what it means to them, how they experience it, and in what ways it can be supported or facilitated to make it the best experience possible.

WHY HAVE I BEEN INVITED TO PARTICIPATE?

You have been asked to take part in this study as you fit certain participant criteria for this study (such as age, ASD diagnosis and preschool student in the North Lee area). Participants are needed in order to gather the necessary information to successfully carry out this research study.

DO I HAVE TO TAKE PART?

It is your choice whether you take part or not, but your agreement to do so would be greatly appreciated. If you consent to participate, you are free to withdraw at any time.

WHAT WILL HAPPEN IF I TAKE PART?

As a parent in this study, you will be asked to engage in an interview about your child's play preferences and behaviours. The interview will be recorded on an audio tape to ensure accurate data collection. The location of this interview will be of your choice, for example your home or at your child's school, and will last for approximately 40 minutes to an hour.

As a member of school staff in this study, you will be asked to engage in a focus group with other members of staff to discuss the children's play preferences and behaviours at school. The interview will be recorded on an audio tape to ensure accurate data collection. The focus group will take place at the school and will last for approximately an hour.

It is also intended to carry out observations of your child's play outdoors, both at their own home and at school. Video and photos will be used to ensure accurate data collection. This will involve the researchers observing the children during outdoor play time. It will also include the researchers observing your child engaging in outdoor play either at home or an outdoor community play space.

The children will also be invited to express their perspectives on outdoor play through a number of creative means including an interview and colouring exercise.

WILL THE INTERVIEW BE KEPT CONFIDENTIAL?

All information regarding your personal details is confidential, and any information collected will be kept securely under lock and key, which will only be accessed by me. Your name will be changed and a pseudonym used on any written material in reporting the study. Any data recorded via email or online will be password protected.

WHAT WILL HAPPEN TO THE RESULTS OF THE RESEARCH STUDY?

You will have access to the results of the study if you so wish. The study will be written up and presented to University College Cork (UCC), Occupational Therapy Department. The results may also be used for educational purposes, at conferences for example, or published in professional journals.

WHO IS ORGANISING THE RESEARCH?

The research study is being organised through the Department of Occupational Therapy, UCC, and conducted by a final year Occupational Therapy student.

WHO HAS REVIEWED THE STUDY?

It has been approved and reviewed by the UCC Ethics Board, who has given permission to proceed with the study.

IF YOU'RE INTERESTED

For parents interested in participating in this study, please complete the attached contact slip and return it to school. We will then be able to make contact with you, discuss any questions and arrange the interview and observation.

Thank you,
Yours sincerely,

Julie Sexton and Aine Blake
Date: 14th September 2016

CONTACT FOR FURTHER INFORMATION:

You are invited to discuss any issues which you may have with research supervisor and researchers. Contact details are:

Researchers
Julie Sexton - 113367126@umail.ucc.ie
Aine Blake - 113318416@umail.ucc.ie

Supervisor - Dr.Helen Lynch
E-mail: h.lynch@ucc.ie
Phone: 021-490-1535

Appendix 3: Consent Forms



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

RESEARCH PROJECT: 'What are the outdoor play experiences of preschool children with Autism Spectrum Disorder?'

Name of participant: Parent: _____ Child: _____

This is to confirm that I _____ have been fully informed of the research project.

I also confirm (please tick the box):

- The researcher has invited my child to take part in this research
- I understand what is in the letter about the research and have a copy to keep.
- I understand that I will have a copy of the consent form to keep
- I have had the chance to talk and ask questions about the research
- I know what my child's part will be in the research and how long it will take
- I know that the research has been approved by UCC Ethics Board
- I understand that personal information will be treated as confidential and that my name, my child's name, our address and personally identifying details will not be used
- I am aware that I will see a copy of the research results
- I am aware that I can withdraw my consent at any time
- I am aware that the outcomes of this study may be published or used for educational purposes
- I understand that if I have any questions concerning the research that I can contact the researcher

I _____ give my consent for my child to participate in the clinical observations assessment

Signed: _____ Date: _____

CONTACT FOR FURTHER INFORMATION:

You are invited to discuss any issues which you may have with research supervisor and researchers.

Contact details are:

Researchers

Julie Sexton - 113367126@umail.ucc.ie

Aine Blake - 113318416@umail.ucc.ie

Supervisor - Dr. Helen Lynch- E-mail: h.lynch@ucc.ie Phone : 021-490-1535

Appendix 4: Parent Interview Guide



- How would you describe your child's experience of outdoor play?
 - Would you describe your child's play outdoors as active or passive?
 - Does equipment feature in their outdoor play

- Tell me about your child's play preferences...
 - Favourite game/ toy to play with
 - Does your child prefer to play alone or with others?
 - Does your child prefer certain locations to others (eg. in grass / playground)

- Has their outdoor play behaviour and preferences changed in the last year

- What influences their outdoor play?
 - Does weather have an impact for example, do you they like rain, sun, hail, snow?
 - How motivated is your child to play outdoors

- Do they have particular routines or rituals when playing outdoors
 - How much time does your child spend playing outdoors

- What impact does outdoor play have on your child?
 - Is their behaviour changed as a result?
 - How does outdoor play affect them for the rest of the day?

Appendix 5: Sample Coded Transcript

Interview 4: 24/3/17 10.00am. Mother: Evelyn, Child: Niall. Total: 43.09 mins

being sensory having issues with transition

E: He likes it and he doesn't. He's very sensory and we have issues with transition as well. So, eh, trying to get him outside sometimes is hard. And trying to get him back in is hard. So, eh, because he's non-verbal and he doesn't really understand. I can't, d'you know. I can't really decipher what the issue is, whether it's cold or... But when he is out, he loves playing. It's like all, like, he loves the wind, he loves the rain...ehm...he loves watching the trees blowing in the wind, he loves the bushes, playing in the bushes, eh, like he's very sensory. Everything is like, anything to do with water. Ehm, if there's kids playing with a ball, he'd watch it rolling down the hill. Ehm, swings, he likes the swing and the slide. Now he won't bring you to put him on them unless you...you actually, you've to physically put him on first and then it's a repetition kind of thing, he'd ask me to do it again. But when we go to the playground initially he's just stimming off things like the fence. (See you later - to husband as he leaves). It's like eh, shades and designs and patterns and stuff he loves. So he'd still love the fence, and he goes, he just walks around, now different textures on the road or steps and stuff like that he can have issues with at times. We thought it was to do with his eye-sight, but turns out it's sensory as well, d'you know, a step can be like a ten-foot wall to him. Sometimes he can't come down off it without help. And sometimes different textures or colours on the road or footpath, he can stop. D'you know even just to look at them or he finds it hard to kind of move onto the next... depth/height

R1: Ok. sensory interest in numbers what this means for each child.

E: What else? Yeah, he has the road there now he loves like number-plates on cars. He loves touching the cars and the grass...amm...and the wheels. It's all...like basically he doesn't play with toys, it's all more what's around him when he's outside, d'you know so, he'll touch everything. And he doesn't interact with the other kids at all. like he doesn't really watch them either. choosing to not interact natural affordances

R1: Ok. observer what's around him

E: He's more interested in what's around him, d'you know, that's not human, d'you know. (laughs). Anything except humans or toys he'll just run around touching everything.

R1: And does he spend a lot of time outside? running touching

E: Ehm...well you see the weather is hard, but I know in school they take him down to the playground once a day, eh...so... We try to get him out as much as we can, but with the weather being so hard... And then sometimes he has to be, see you've to constantly watch him when he's outside. It's not like another child, three or four year old child where they can go out and they can play ball with the others. Cos he'll be licking the car, and he'll be just doing things like that he shouldn't be doing. So, eh... it can be hard, but we try and get him out as much as we can. learning to understand

perceived need for supervision

social rules determining the play "normal play"

her efforts
learning to understand

a lot about her own journey

choosing to watch

Meaning of staining

Asking where these things are at school and here.

thinking the weather is too hard in Ireland

Cultural perspectives about the outdoors

Home vs School
what doesn't understand

play potential

won't investigate knowing his style

Entering/Initiation?

outdoor play space at home

- E: Yeah, we've a good - I patioed our back garden as well last summer so at least... He hasn't had much time to be out there cos it was kind of late in the summer, so this summer we have that. Cos we had the grass and it was just a swamp. When it rained d'you know. So ehm, but we have that out there, and we're hoping to kind of get a canopy so he can go out when it's raining as well.
- R1: Ok. *can only go out at the moment when it's dry* *sensory/grassy* *weather influencing*
- E: Cos he does like being outside, and it's good for him as well. He gets bored in here as well. D'you know. *likes it* *perceived benefit* *how he is indoors*
- R1: Mmm-huh. And do you have... So say, what's in the back garden? Is it the patio alone? *activities with sand and water*
- E: Patio, and I have a like a sand and water-table that's kind of after falling apart in the wind! Ehm, and I had like herbs and stuff out there. But he was pu...he... I can't have flowers or anything so I put herbs out there cos he'd eat them. *eat plants* *naval vegetation*
- R1: Ok. *, pulling plants*
- E: But he kind of destroyed them, he pulled them out of their roots and everything. But that's what I kind of have out there. Just like home chives and stuff, d'you know, stuff that he can look at. Ehm, he's desperate for taking things off, d'you know, pulling things apart. So, I've put stuff out there just that are sturdy that wouldn't...cos he puts things into his mouth as well like but. Like I'm kind of limited at the moment cos he does eat everything. *pulls apart* *eat things/puts in mouth*
- R1: Ok. *development over time*
- E: But he's getting, as he's getting older that's kind of stopping. But ehm, the sand and water table, and just balls and stuff, And bubbles, he loves bubbles as well. So we play bubbles out the back as well. Anything to do with water. So it's just his, his play is fairly eas-, d'you know, easy-going like. He doesn't like toys or anything. But anything I have inside, as well, we bring outside if it's good. If the weather is good. *water and bubbles*
- R1: Ok. *bring out indoor things* *"easy going"*
- E: D'you know, so. He likes those beady things as well, so. *(points to bead game in sitting-room)* *beady games and things to pull*
- R1: Oh, yeah! *nuclear plan for sensory board*
- E: My plan is to kind of do some kind of sensory-board outside eventually, d'you know. That he can just...ehm... Cos, as I said, he loves those kind of things, d'you know, so. *loves sensory things*

weather influences outside is easier for him to manage
 water, when the weather is good it's actually easier when you're outside to find things to distract him. Amm...so the bubbles and the water and the sand and stuff like that, so. But he's very, he's very like, in his own world. And it's like his own way, d'you know what I mean. So you start playing with him, and then he'll just go off and do his own thing, d'you know. So, that's the way he is. *in his own world does his own thing*

*Bubbles
water
sand*

R1: And do you think that's something about the outside? That there's always different distractions or things that he likes? That, like, I'm imagining inside maybe there's not as much movement, or not as much input, kind of.

stimulation

E: Stimulation. He's not getting the stimulation inside def-. Yeah, that's definitely it. Because even when it's windy he loves, like when he comes out of the car and it's windy he's like, you can see him, and he's like stimming off the wind nearly. And he's, like, in his element. And even the rain, he puts his head up so that the rain goes on his face, d'you know. So he's definitely getting feedback from nature, like d'you know. And like even the bush that the neighbours have down there, that's the first place he'll go when he comes out around the door. And the drain, he likes looking down the drain as well. I'd say it's just a reflection off the water, d'you know the sun and stuff. But ehm, definitely, it's definitely more stimulating to be outside than inside.

*loves wind
enjoy nature
stimulation outside*

*enjoys
enjoys the rain
plants and bushes
looking at reflection*

drain outside

R1: And apart from your back garden and the playground in school, are there other places that he goes to play?

E: Yeah, there's a playground down the road.

access to local playground near home

R1: Is that the one we passed.

E: Yeah, yeah, yeah, you just passed that.

R1: What's that like?

not great for him movement

E: It's, for small kids it's not great. It's ok, d'you know they've got a swing for small kids and they've got ehm, things that you twirl in, and stuff like that. And they've got a small slide... It's actually ok. Ehm, but he isn't really into playgrounds. Like you have to, you have to put him on, and then it's just a matter of repetition - he'll want you to do it all the time then, d'you know. But most of the time he goes down he stims off the fence, cos the fence is like one of these steel things...

needs encouragement/support to - we equipment

*reads assistance from steel fence
he is not interested in playgrounds gets stimulation from steel fence*

R1: Ok

patterns and designs

E: He just stims off the design of it then. Or the posters, there's some posters on the fence as well like you know. But ammm. It's ok, it's kind of an older kids playground.

playground more suitable for older kids

**Appendix 6: 10 Values for High Quality Outdoor Experiences for Young Children from
The ‘Early Years Outdoors’ Vision and Values (Learning through Landscapes, 2003)**

1. Young children should be outdoors as much as indoors and need a well-designed, well-organised, integrated indoor-outdoor environment, preferably with indoors and outdoors available simultaneously.

2. Play is the most important activity for young children outside.

3. Outdoor provision can, and must, offer young children experiences which have a lot of meaning to them and are led by the child.

4. Young children need all the adults around them to understand why outdoor play provision is essential for them, and adults who are committed and able to make its potential available to them.

5. The outdoor space and curriculum must harness the special nature of the outdoors, to offer children what the indoors cannot. This should be the focus for outdoor provision, complementing and extending provision indoors.

6. Outdoors should be a dynamic, flexible and versatile place where children can choose, create, change and be in charge of their play environment.

7. Young children must have a rich outdoor environment full of irresistible stimuli, contexts for play, exploration and talk, plenty of real experiences and contact with the natural world and with the community.

8. Young children should have long periods of time outside. They need to know that they can be outside every day, when they want to and that they can develop their ideas for play over time.

9. Young children need challenge and risk within a framework of security and safety. The outdoor environment lends itself to offering challenge, helping children learn how to be safe and to be aware of others.

10. Outdoor provision must support inclusion and meet the needs of individuals, offering a diverse range of play-based experiences. Young children should participate in decisions and actions affecting their outdoor play.

Appendix 7: Sample of Transcript of Projective Techniques Exercises

Rachel: Do you prefer to play with the truck in your bedroom or the garden?
Ethan: Garden.
Rachel: On the grass or on the ground?
Ethan: Grass
Rachel: And do you do any digging with them?
Ethan: Yeah and the dumping with the big digger.
Rachel: And what colour is your big digger?
Ethan: Yellow.

Ethan, during the colouring activity, states that he would prefer to play outside with his toy of preference than indoors. Ethan's mother further expanded on his play saying how he liked to make lines in the grass with the digger. During the observation he was noted to make lines with the digger in the sand. During the playdough activity he asked for a truck to be made.

Rachel: Look, there's Emma. And is that Aoife? Is Edel there?

(Liam looks up from his colouring at Eimear).

Where's Emma?

There's Liam. *(Eimear points to picture)*

Liam: Addison! Xavier!

Eimear: Is Addison playing too? And Xavier? Wow! *Liam holds up the picture and looks around.*

Eimear: You're playing with your friends!

Liam, during the colouring activity corrected the teacher who identified the people in the picture holding hands as his family members. He said that they were the SNA and a classmate. Perhaps he was showing how he more often plays these kind of activities at school than at home.

Noah places his head in his hands and looks at the tree with consideration, then picks it up, turning it around in his hand. Ethan takes it back.

Rachel: It's a tree, Noah! Are you unsure? I've never seen a tree like that before either!

Noah reaches towards Ethan's toy tree and feels its prickly top. Ethan pushes Noah's hand away.

Rachel gives the model back to Xavier who moves it along the numbers. Rachel claps.

Rachel: Now look, Xavier. And this is it Ethan, or Colin or Liam?

Xavier: Nana.

Pointing to the model.

Rachel: Oh, is that Nana? It's Nana. Nana's really good at hopscotch. Well done Nana!

Xavier: Six, seven, eight, nine...

In this, Xavier identifies his grandmother rather than a playmate playing the hopscotch game. Perhaps he would consider his grandmother a better playmate than his peers. During the activity, Noah takes a long piece of and swings it like a pendulum, watching it swing. Later, he looks skeptically at the SNA's making of a model tree for Ethan.

SNA: Duck, duck, duck, duck., duck... *SNA moving items around models of duck-duck goose game*

Liam: Goose!

SNA: Run! *Liam picks up a piece of playdough and moves around the circle. Smiling.*

Liam: Liam's turn!

SNA: Liam's turn.

Liam: Duck, duck, duck.... Goose!

Makes figures jump up and down on the table. Liam watches on. Ethan watches on also. Noah makes a piece of playdough jump on the table towards and into the duck-duck-goose circle. Noah takes a piece of Liams's spare playdough.

Liam: Noah wants to play duck-duck-goose.

Rachel: Noah is playing too!

Liam picks some playdough and throws into Noah's hand. Noah makes a small shape with the playdough.

Liam repeats the performance, looking to the SNA during the 'chase' part. SNA laughs.

Liam excitedly engages in an imaginary game of duck duck goose with playdough pieces. He demonstrates familiarity with the game and enjoys the idea of the game. He is proud of having engaged in this game and permits Noah to join in the game.

Rachel: Right. Let's make Xavier and go jumping on the numbers. There's Xavier's head. Xavier's belly. Here's your...

Xavier: Hand.

Rachel: And here's your....

Xavier: Legs. Hopscotch.

Rachel: Hop on number one, two three, four...

Xavier bounces character on all the numbers starting at the bottom. Ethan watches as an onlooker.

Rachel: Hip hip hooray! Jump on five....seven...one...

Xavier takes the character in hand and jumps it on each number as it's called out

Rachel: My turn! You tell me, jump on... Where will I jump Xavier?

Xavier repeatedly leans forward over table and flaps his arms. He doesn't respond for some time.

Here, Xavier identifies hopscotch game himself when she mentions going jumping on the numbers. He moves it along to each number as it's called out. He appears excited by this task, flapping his arms and leaning closely to look at the numbers. This is something that his mother said during the interview that he liked doing, "he would kind of do the little hopscotch, just because it has the numbers on it on the ground".

Appendix 8: Play Affordances Table: Playground

	Play affordances	How children use it
Doughnut	<p>Social</p> <ul style="list-style-type: none"> ● Opportunity to help others or to support others ● Offers group/ cooperative play opportunities <p>Physical</p> <ul style="list-style-type: none"> ● Running, crawling, lying down, jumping off, balancing, sitting, pushing, hanging, <p>Sensory</p> <ul style="list-style-type: none"> ● Different colours (blue with 7 orange (and one green) line dividing it into segments, bubbled surface, and ridged edges. ● Sloped ● Opportunity to explore balance, coordination, strength, spatial awareness, dynamic movement <p>Communication</p> <ul style="list-style-type: none"> ● Opportunity to socialise with peers ● Opportunity to socialise with adults ● Opportunities to say and negotiate <p>Cognitive</p> <ul style="list-style-type: none"> ● Shapes and colours ● Opportunity to practice skills ● Planning and spatial awareness ● Space for imagination 	<p>Xavier:</p> <ul style="list-style-type: none"> ● Climbing on at the top, kneeling (crawling), while someone else is on it. ● Sitting astride, and propelling it around using feet to push off the ground. ● Joining others already on it. <p>Noah:</p> <ul style="list-style-type: none"> ● Pushing it around while others sitting on it. ● Lying on it alone, doughnut remaining stationary. <p>Eoin:</p> <ul style="list-style-type: none"> ● Sitting briefly astride it, while looking around the playground. ● Stepping on it and walking the whole way around/ running while the others are playing Duck-duck-goose. <p>Liam:</p> <ul style="list-style-type: none"> ● Standing upright on it and walking to propel it around for himself. ● Sitting on it. ● Pushing another boy on it. ● Engaging with teacher teacher while on it (looking towards teacher, teacher approaches, walking towards the top and reaching out to hold hand) ● Lying on the doughnut. ● Hand-holding with peers walking around alongside the doughnut. ● Tumbling/ throwing himself off the doughnut.
Slide	<p>Social</p> <ul style="list-style-type: none"> ● Turn-taking (only one can go at a time) ● Pushing someone else down (peer/ teacher helping) <p>Physical</p> <ul style="list-style-type: none"> ● Crawling ● Sliding ● Climbing <p>Sensory</p> <ul style="list-style-type: none"> ● Smooth texture of plastic slide ● Uniform colour of slide (blue), but the top is yellow and multi-coloured climbing frame ● Pattern of <p>Communication</p> <ul style="list-style-type: none"> ● Opportunity to socialize with peers and adults ● Opportunities to have a say - how they are going to go down <p>Cognitive</p> <ul style="list-style-type: none"> ● Space for imagination ● Variety of shapes and colours ● Opportunities to learn and practice skills 	<p>Noah:</p> <ul style="list-style-type: none"> ● Coming down the slide, feet first, on his tummy. <p>Niall:</p> <ul style="list-style-type: none"> ● Attempting to crawl on all-fours up the slide. ● Lying face-down in the slide, at the bottom of it, kicking his legs. ● Picked up by SNA, placed at top of the slide and then pushed down. <p>Liam:</p> <ul style="list-style-type: none"> ● Climbing up the slide on all-fours.

	<ul style="list-style-type: none"> • Spatial awareness and planning 	
Spinning cup	<p>Social</p> <ul style="list-style-type: none"> • Cooperative play opportunities • Opportunities to help each other <p>Physical</p> <ul style="list-style-type: none"> • Sitting • Spinning • Pushing • Climbing • Hanging • Balancing <p>Sensory</p> <ul style="list-style-type: none"> • Looking up at the sky • Visual blurring due to movement • Exploring movement and balance, dynamic movement, strength, coordination <p>Communication</p> <ul style="list-style-type: none"> • Opportunity to socialize with peers and adults <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities to learn and practice skills • Spatial awareness and planning 	<p>Xavier:</p> <ul style="list-style-type: none"> • Leaning his upper body into the cup, spinning himself around, taking steps with his feet on the ground to push himself around. • Seated in the cup. Teacher pushing the cup around, asking “Stop or Faster?”. To which Xavier replies “Faster”. Xavier is seated, with eyes closed at times and head down towards chest. Also putting his head back. <p>Eoin:</p> <ul style="list-style-type: none"> • Briefly sits into the cup, swaying himself gently, watching others play. <p>Liam:</p> <ul style="list-style-type: none"> • Briefly sits in during a game of duck-duck-goose when he was supposed to return to the circle. <p>Niall:</p> <ul style="list-style-type: none"> • After having been upset (crying and stamping while the Duck-duck-goose game is going on and children are chanting) the SNA picks him up and puts him in the cup. He is seated with his head back and legs outstretched, and is being spun by SNA.
Three seat spring rider	<p>Social</p> <ul style="list-style-type: none"> • Cooperative play opportunities • Opportunities to help each other <p>Physical</p> <ul style="list-style-type: none"> • Sitting • Bouncing • Balancing <p>Sensory</p> <ul style="list-style-type: none"> • Exploring movement and balance, dynamic movement, strength, coordination <p>Communication</p> <ul style="list-style-type: none"> • Opportunity to socialize with peers and adults <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities to learn and practice skills • Spatial awareness and planning 	<p>Noah:</p> <ul style="list-style-type: none"> • Sitting on it on the yellow seat, bouncing himself a number of times, viewing the playground. <p>Eoin:</p> <ul style="list-style-type: none"> • Bouncing on red-seat, looking at Niall leaving the playground, one hand on the handle-bar as he has toys in the other hand. <p>Niall:</p> <ul style="list-style-type: none"> • SNA put him on it. His legs are extended, he is flapping his legs, and letting go of the handles at times to flap his hands. He vocalises at times during it, and looks to the SNA who is giving him some food treat. Banging the handlebars and crying. Reaching down and touching the metal bar to which the handlebars are attached. • Standing at and then leaning over seat alone. <p>Liam:</p> <ul style="list-style-type: none"> • Bouncing on it alone during a chase-game. • Standing in the centre of the rider as

		three other children bounce on it.
Rope climbing frame	<p>Social</p> <ul style="list-style-type: none"> • Opportunity for more than one child to use at the same time. <p>Physical</p> <ul style="list-style-type: none"> • Climbing, jumping down, hanging, balancing. • Whole body movement at varying heights <p>Sensory</p> <ul style="list-style-type: none"> • Opportunity to explore square shaped pattern of rope structure. • Tactile experiences of rope • Opportunities to explore movement and balance: exploring balance, coordination, strength, spatial awareness, and dynamic movement. <p>Communication</p> <ul style="list-style-type: none"> • Opportunities to socialise with peers? • Opportunities to socialise with adults? <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities for children to learn/ practice skills • Opportunities for children to develop spatial awareness and planning skills 	<p>Xavier:</p> <ul style="list-style-type: none"> • Climbs one rung, leaning over. <p>Eoin:</p> <ul style="list-style-type: none"> • Stepping onto the rope climbing frame from the tower.
Tower ladder	<p>Social</p> <ul style="list-style-type: none"> • Turn-taking - only one can use at a time. <p>Physical</p> <ul style="list-style-type: none"> • Climbing, jumping down, hanging, balancing. • Whole body movement at varying heights <p>Sensory</p> <ul style="list-style-type: none"> • Exploring sight/ visual experiences - having a view of the playground from the top. • Opportunities to explore movement and balance: exploring balance, coordination, strength, spatial awareness, and dynamic movement. <p>Communication</p> <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities for children to learn/ practice skills • Opportunities for children to develop spatial awareness and planning skills 	<p>Eoin:</p> <ul style="list-style-type: none"> • Climbing one-handed up and down. Using the side handle to reach the top of the tower. Others are present at the top.
Upright ladder	<p>Social</p> <ul style="list-style-type: none"> • Turn-taking - only one can use at a time. <p>Physical</p> <ul style="list-style-type: none"> • Climbing, jumping down, hanging, balancing. • Whole body movement at varying heights 	<p>Xavier:</p> <ul style="list-style-type: none"> • Climbing and stopping and looking <p>Eoin:</p> <ul style="list-style-type: none"> • Climbing one-handed (toys in the other

	<p>Sensory</p> <ul style="list-style-type: none"> • Opportunities to explore movement and balance: exploring balance, coordination, strength, spatial awareness, and dynamic movement. <p>Communication</p> <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities for children to learn/ practice skills • Opportunities for children to develop spatial awareness and planning skills 	<p>hand) to the top, vocalising at top, stands on top rung, balancing, looking around, and returns to the ground.</p>
Fence	<p>Social</p> <ul style="list-style-type: none"> • Peaceful play opportunities to play alone or in groups, private spaces to play. <p>Physical</p> <ul style="list-style-type: none"> • Leaning, touching <p>Sensory</p> <ul style="list-style-type: none"> • Visual experience of green mesh fence, able to see beyond the fence • Tactile experience of closely-set wire bars • Sound of contact with bars • Opportunity of dynamic movement <p>Communication</p> <p>Cognitive</p> <ul style="list-style-type: none"> • Freely selected - choice of wanting to participate 	<p>Xavier:</p> <ul style="list-style-type: none"> • Trailing his hand along the fence <p>Niall:</p> <ul style="list-style-type: none"> • Standing at the fence, holding the rails, looking out of playground at the ground.
Duck Duck Goose	<p>Social</p> <ul style="list-style-type: none"> • Group or cooperative play opportunity • Game played by both mainstream children and children of An Cuan (creating an atmosphere of mutual respect and acceptance to foster friendships and understanding) <p>Physical</p> <ul style="list-style-type: none"> • Running, sitting on the ground, getting up from the ground, catching. <p>Sensory</p> <ul style="list-style-type: none"> • Watching the movement of other children • Tactile experiences of catching other children • Opportunities to explore movement, balance, coordination, strength, spatial awareness, dynamic movement <p>Communication</p> <ul style="list-style-type: none"> • Opportunity to socialise with peers • Opportunity to socialise with adults • Children invited/ instructed to play game <p>Cognitive</p> <ul style="list-style-type: none"> • Opportunities for children to learn/ practice skills of turn-taking • Choice of activities, they can determine whether or not they want to participate • Opportunities to develop spatial awareness and planning skills 	<p>Xavier:</p> <ul style="list-style-type: none"> • Approaches the circle when they children are chanting. Teacher takes his hand and brings into sit down and join the circle. Very slowly responds to being chosen as goose, changing position to get up from the ground and stand. Teacher takes by the hand and runs with him to catch other child. • When he is the selector, walks around the circle, does not announce duck for each person, but chooses goose and runs away, slowing down to stop near the fence, and is caught. Returns with his 'catcher' to the circle. <p>Noah:</p> <ul style="list-style-type: none"> • Calls 'duck' as he touches each child's head and walks around the circle. Chooses goose, but when the 'goose' does not immediately respond, he pauses, and does not run away until teacher directs him to to. • Upon returning, stands up in circle and attempts to tap other's heads saying duck although it is not his go. • Jumping on the spot. • Lying down on his back in the circle, pointing at the sky <p>Eoin:</p>

		<ul style="list-style-type: none"> ● Sits in spinning cup, watching the activity. ● Stands in circle, but does not sit down. Is not part of the game, but more observing. Runs around the playground. ● Goes on doughnut while others are playing game. ● Occasionally runs over to stand in/ near the circle and then away. <p>Niall:</p> <ul style="list-style-type: none"> ● Walks towards the group activity but flaps his hands and vocalises loudly, appearing upset. SNA puts him in the spinning cup. <p>Liam:</p> <ul style="list-style-type: none"> ● Sits in circle and joins in chanting for other children ● Appears to be excited and laughs and flaps hands as others go around and select child as 'goose' and chase them. ● Then tries to choose children himself, reaching for Eoin and Niall (neither of whom are in the game) and other children even though he is not 'on'. Then has to be physically held by teacher and made to sit down and calm down.
Free Space	<p>Social</p> <ul style="list-style-type: none"> ● Group or cooperative play opportunities - space for group games <p>Physical</p> <ul style="list-style-type: none"> ● Space allows for: running, skipping, jumping <p>Sensory</p> <ul style="list-style-type: none"> ● Limited access to natural materials <ul style="list-style-type: none"> ○ Soil at perimeter of playground ○ Petals and leaves from trees ○ View of grass outside playground area ● Multi-coloured synthetic surface underfoot with different patterns (yellow, blue and green, coloured splashes/ circular areas/ stars around pieces of equipment) ● Cement footpath running around one edge ● Cement-block wall provides rough texture ● Light and shade - shade available near the cement wall and also near the school building <p>Communication</p> <ul style="list-style-type: none"> ● Opportunities to socialise with peers (either classmates or also mainstream peers) ● Opportunities to socialise with adults (Teacher and SNAs) <p>Cognitive</p> <ul style="list-style-type: none"> ● Open space for imaginative games together without equipment ● Variety of shapes and colours ● Multiple opportunities for children to learn/ 	<p>Xavier:</p> <ul style="list-style-type: none"> ● Running (leaning forwards and flapping arms) for a couple of steps. ● Running away from teacher. ● Running during chase game with two others. ● Running while teacher holds his hand to guide him to run after another child. ● Taking a splinter from the wooden structure on the wall and using it to make shape on the wall and then on the doughnut. <p>Noah:</p> <ul style="list-style-type: none"> ● Jumping on the spot. ● Greeting other children coming into the playground. <p>Eoin:</p> <ul style="list-style-type: none"> ● Picks up petal from the ground and runs around. ● Holding his toys (Minion toys) <p>Niall:</p> <ul style="list-style-type: none"> ● Standing alone at the green fence looking out at the ground. ● Stamping his feet. ● Picking up petals on the ground.

	<p>practice skills</p> <ul style="list-style-type: none">● Choice of activities - they can determine whether or not they want to participate● Opportunities for children to develop spatial awareness and planning skills	<ul style="list-style-type: none">● Runs to and from SNA
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Garden

Name	Play affordances	How children use it
Sand pit	<p>Social</p> <ul style="list-style-type: none"> ● Group play and cooperative opportunities ● Opportunities to help and support others <p>Physical</p> <ul style="list-style-type: none"> ● Rocking, hanging <p>Sensory</p> <ul style="list-style-type: none"> ● Access to natural materials: sand ● Opportunities to explore sound experiences ● Opportunities to explore scent ● Opportunities to explore tactile experiences ● Opportunities to explore coordination, spatial awareness and strength <p>Communication</p> <ul style="list-style-type: none"> ● Opportunities to socialise with peers ● Opportunities to socialise with adults ● Opportunities to share ideas and feelings with others <p>Cognitive</p> <ul style="list-style-type: none"> ● Incorporates a variety of shapes and colours ● Opportunities to learn and practice skills ● Opportunities to develop spatial awareness and planning 	<p>Ethan:</p> <ul style="list-style-type: none"> ● Throwing sand in the air alone ● Putting sand on to other equipment: building blocks and flower box ● Carrying it around in bucket ● Eating and spitting out sand ● Rubbing sand on the ground with feet ● Rubbing in hands ● Putting sand up close to face and letting it go ● Filling toys with sand and emptying it back out ● Carrying sand in hands to other places in the playspace ● Filling sand with moulds ● Making lines in the sand with toys cars and trucks <p>Xavier:</p> <ul style="list-style-type: none"> ● Rubbing sand in hands alone ● Rubbing sand in hands alongside peers ● Patting sand ● Leaning on side of sand pit <p>Noah:</p> <ul style="list-style-type: none"> ● Throwing sand in the air ● Filling sand mould and throwing it in the air to let sand fall ● Putting sand on to of other toys ● Patting sand in the sand pit ● Bringing sand from sandpit to flower box ● Filling moulds with sand ● Making lines in the sand with trucks and cars ● Leaning on sand pit ● Letting sand fall through fingers <p>Eoin:</p> <ul style="list-style-type: none"> ● Patting sand ● Bringing sand from sandpit to muck and flower box ● Filling sand moulds with sand alone, alongside peers and with SNA ● Leaning on the sand pit ● Letting sand fall through fingers ● Emptying mould of sand in the middle of yard <p>Niall:</p> <ul style="list-style-type: none"> ● Eating sand

		<ul style="list-style-type: none"> ● Patting sand ● Leaning on sand pit
Building Blocks	<p>Social</p> <ul style="list-style-type: none"> ● Opportunities for group and cooperative play ● Opportunities to help and support others <p>Physical</p> <ul style="list-style-type: none"> ● Allows for whole body movements including manipulation of loose parts and at a variety of heights <p>Sensory</p> <ul style="list-style-type: none"> ● Opportunities to explore sound experiences ● Opportunities to explore visual experiences: colours and patterns ● Opportunities to explore tactile experiences: smooth and bumpy building blocks ● Opportunities to explore movement and balance: balance, coordination, strength, spatial awareness and dynamic movement <p>Communication</p> <ul style="list-style-type: none"> ● Opportunities to socialise with peers ● Opportunities to socialise with adults ● Opportunities to share ideas and feelings with others <p>Cognitive:</p> <ul style="list-style-type: none"> ● Incorporates a variety of shapes and colours ● Opportunities to learn and practice skills ● Opportunities to develop spatial awareness and planning 	<p>Ethan:</p> <ul style="list-style-type: none"> ● Putting sand on them ● Stacking blocks on top of each other ● Knocking over box full of blocks ● Knocking over tower block <p>Xavier:</p> <ul style="list-style-type: none"> ● Taking blocks out of box ● Stacking blocks on top of each other <p>Noah:</p> <ul style="list-style-type: none"> ● Stacking blocks on top of each other with SNA ● Knocking over box full of blocks <p>Eoin:</p> <ul style="list-style-type: none"> ● Stacking blocks on top of each other alone <p>Niall:</p> <ul style="list-style-type: none"> ● Stacking blocks on top of each other with guidance from SNA ● Standing in front of tower of blocks at eye level ● Hugging the tower of blocks <p>Liam:</p> <ul style="list-style-type: none"> ● Taking blocks out of box alone ● Stacking blocks on top of each other with peer ● Stacking blocks on top of each other with SNA ● Standing on building block ● Knocking over tower of blocks with SNA alone, and with peer ● Hugging tower of blocks
Flower box	<p>Social</p> <ul style="list-style-type: none"> ● Opportunities for cooperative play ● Opportunities to help and support others <p>Physical</p> <ul style="list-style-type: none"> ● Allows for crawling, climbing, rocking, swinging, hanging, balancing <p>Sensory</p> <ul style="list-style-type: none"> ● Access to natural materials: plants and muck ● Opportunities to explore sound experiences ● Opportunities to explore visual experiences: colours, textures and shapes, contrast ● Opportunities to explore tactile experiences: range of materials; mucks, stones, plants, flowers 	<p>Ethan:</p> <ul style="list-style-type: none"> ● Feeling flowers ● Carrying sand over to the muck in the flower box in hands <p>Xavier:</p> <ul style="list-style-type: none"> ● Leaning on flower box and kicking legs ● Climbing up on top of flower box and walking along the fence ● Writing on edge of flower box with chalk ● Rolling toy cars along edge of flower box <p>Noah:</p> <ul style="list-style-type: none"> ● Climbing on flower box

	<ul style="list-style-type: none"> ● Opportunities to explore movement and balance: balance, coordination, strength, spatial awareness and dynamic movement <p>Communication</p> <ul style="list-style-type: none"> ● Opportunities to socialise with peers ● Opportunities to socialise with adults ● Opportunities to share ideas and feelings with others <p>Cognitive:</p> <ul style="list-style-type: none"> ● Incorporates a variety of shapes and colours ● Opportunities to learn and practice skills ● Opportunities to develop spatial awareness and planning 	<ul style="list-style-type: none"> ● Bringing sand from sandpit to muck in the flower box with sand moulds ● Leaning on sand pit ● Bringing small toys: minions, car, trucks into the muck ● Rolling toy cars against edge of window sill <p>Eoin:</p> <ul style="list-style-type: none"> ● Bringing sand from sandpit to muck in the flower box with sand moulds ● Leaning on sand pit ● Bringing small toys into the muck <p>Niall:</p> <ul style="list-style-type: none"> ● Feeling bushes ● Eating leaves from bushes
Fence	<p>Social</p> <ul style="list-style-type: none"> ● Peaceful play opportunities to play alone or in groups, private spaces to play. <p>Physical</p> <ul style="list-style-type: none"> ● Leaning, touching <p>Sensory</p> <ul style="list-style-type: none"> ● Visual experience of green mesh fence, able to see beyond the fence ● Tactile experience of closely-set wire bars ● Sound of contact with bars ● Opportunity of dynamic movement <p>Communication</p> <p>Cognitive</p> <ul style="list-style-type: none"> ● Freely selected - choice of wanting to participate 	<p>Ethan:</p> <ul style="list-style-type: none"> ● Running hands along the fence ● Running towards fence and grabbing bars <p>Xavier:</p> <ul style="list-style-type: none"> ● Climbing along the flower box holding on to fence <p>Eoin:</p> <ul style="list-style-type: none"> ● Leaning against fence observing others <p>Niall:</p> <ul style="list-style-type: none"> ● Running hands along fence ● Looking out past fence ● Standing facing fence
Free Space	<p>Social</p> <ul style="list-style-type: none"> ● Group or cooperative play opportunities - space for group games <p>Physical</p> <ul style="list-style-type: none"> ● Space allows for: running, skipping, jumping <p>Sensory</p> <ul style="list-style-type: none"> ● Access to natural materials <ul style="list-style-type: none"> ○ flower box with muck, grass, flowers and bushes ○ View of grass outside playspace ● Cement path running around play space ● Smooth synthetic ground surface ● Cement-block wall provides smooth texture ● Light and shade - shade available near the cement wall and also near the school building <p>Communication</p> <ul style="list-style-type: none"> ● Opportunities to socialise with peers ● Opportunities to socialise with adults (Teacher and SNAs) 	<p>Ethan:</p> <ul style="list-style-type: none"> ● Running alone ● Skipping with peer ● Observing peers ● What time is it Mr.Wolf game ● Crashing into peers and SNA <p>Xavier:</p> <ul style="list-style-type: none"> ● Running alone ● Crashing into peers ● Following peers <p>Noah:</p> <ul style="list-style-type: none"> ● Running alone ● Running with toys in hands ● Skipping alone ● Observing others ● Jumping up and down on the spot ● What time is it Mr.Wolf game ● Stamping feet

	<p>Cognitive</p> <ul style="list-style-type: none"> ● Open space for imaginative games together without equipment ● Multiple opportunities for children to learn/ practice skills ● Choice of activities - they can determine whether or not they want to participate ● Opportunities for children to develop spatial awareness and planning skills 	<ul style="list-style-type: none"> ● Playing with toys in hands <p>Eoin:</p> <ul style="list-style-type: none"> ● Running with toys in hand alone ● Running towards sandpit ● Observing others ● Sitting on the ground ● Jumping up and down on the spot ● Stamping feet ● Lying on the ground ● Playing with toys in hands ● Following someone ● Carrying toys around ● Putting face up to the sky <p>Niall:</p> <ul style="list-style-type: none"> ● Watching bubbles being blown by SNA ● Stamping feet <p>Liam:</p> <ul style="list-style-type: none"> ● Running alone ● Running towards SNA ● Skipping alone ● Walking around in circles ● Walking around sandpit ● Jumping up and down on the spot ● What time is it Mr.Wolf game
<p>Window Sill</p>	<p>Social</p> <ul style="list-style-type: none"> ● Peaceful play opportunities to play alone or in groups, private spaces to play. <p>Physical</p> <ul style="list-style-type: none"> ● Leaning, touching, hanging <p>Sensory</p> <ul style="list-style-type: none"> ● Visual experience of glass and reflection, able to see into the classroom ● Tactile experience of glass ● Sound of contact with glass window ● Opportunity of dynamic movement <p>Communication</p> <p>Cognitive</p> <ul style="list-style-type: none"> ● Freely selected - choice of wanting to participate 	<p>Xavier:</p> <ul style="list-style-type: none"> ● Rolling toy car along window sill ● Rolling toy car along window in lines <p>Noah:</p> <ul style="list-style-type: none"> ● Rolling toy car along window sill <p>Liam:</p> <ul style="list-style-type: none"> ● Leaning against window sill observing others <p>Niall:</p> <ul style="list-style-type: none"> ● Working on activity sheet/stickers on window sill with SNA

Appendix 9: Reflection on Assumptions

Reflexivity is key to qualitative research (Carpenter & Suto, 2008). This involves considering the impact of the researcher on the research process - the involvement of the 'knowledge producer'

With the intent of adopting a reflexive approach throughout the research process, when we began this project we considered our own assumptions and personal beliefs which, as researchers, we brought to this project. One of the assumptions we discovered we held was that outdoor play spaces generally posed a significant barrier to children with ASD. We also anticipated that children with ASD would have particular difficulty engaging in games outdoors with other children. On the other hand, and seemingly in conflict with this was our own perception of the importance of social play for child development. Indeed, our whole understanding of play was, we recognised, shaped by own personal experiences of play as children. While we came from different backgrounds (one from a rural area and the other from urban area), we shared fond childhood memories of freely and happily playing outside. Some of the findings of our research project surprised us and challenged our initial assumptions. For example, we thought that the children with ASD would play very differently to typically developing children. We were surprised to discover that their play was, in very many ways, comparable to what we thought was 'normal' play – they too were interested in playing with others, and active play like running and jumping. They too had their favourite toys and favourite places to play. Further, many of them appeared to really enjoy play. This contrasted with the perhaps stereotyped perceptions we had held that outdoor play would be disruptive, with plenty of behavioural issues and shouting. Instead, our observations revealed a more peaceful atmosphere with the children immersed in their chosen game. Our findings challenged us not to focus on lacking play skills, but the meaning of play for the child – for this is their real experience.

Also, our approach to the projective techniques involved presenting outdoor play images to the children that we had preselected. We had hoped that these would be relevant to the children, having used data gathered from the parents and teachers to inform our choice. However, it must be acknowledged that the exercise was, as a result, significantly shaped by our perspectives of what they might like.

During the observations, despite our intentions to remain inconspicuous, some of the children clearly recognized us as adults and approached us and engaged with us, wanting to show us their favourite toys. As researchers, we chose to engage with the children, since they had invited us, and clearly wished to demonstrate to us some aspect of play that was important to them. While not an 'objective' approach perhaps, this certainly led to the development of a greater understanding of the subjective meaning of play to the children.