We don't play that way, we play this way: functional play behaviours of children with autism and severe learning difficulties

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We don't play that way, we play this way: Functional Play Behaviours of Children with Autism and Severe Learning Difficulties

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Highlights

- Play is important for all children, including children with autism and SLD.
- Research has focused on the deficits in play skills for children with autism.
- There are gaps in the evidence regarding content and structures of play.
- Precise categories of functional play are presented.
- Functional play is far more complex than currently recognised.

Abstract

Background

Research on play for children with autism and severe learning difficulties (SLD) has been limited; instead, much of the research focuses on higher levels of play, such as symbolic play. Those studies that present details regarding functional play are focused on examining the extent of the play deficit and limited in depth with respect to the precision of the categories presented. Therefore, the current understanding, the tools available to support, plan and measure play are not sufficiently detailed or focused on children with autism and SLD.

Aims

The aim of the research was to analyse the functional play actions and establish precise functional play categories through direct observations of children aged 3–11 diagnosed with a combination of autism and SLD.

Methods

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Free-play observations of children diagnosed with autism and SLD (N=27) were conducted in a natural play situation across three special schools in England.

Outcomes and Results

The results reveal four key areas of functional play: interacting with one object; interacting with two (or more) objects; interacting with self; and interacting with the environment. In addition, seven subcategories were established as additional components related to functional play.

Conclusions and implications

The results suggest that functional play for children with autism and SLD is far more complex than currently recognised. Through the depth and detail established, the categories provide greater understanding of the play characteristics and the most detailed account of the functional play characteristics for this group of children. The analysis provides sensitive measurement scales to support accuracy and precision when planning, supporting and measuring small increments of progress in play.

What this paper adds:

Functional play, which is considered a valuable precursor of symbolic play, is rarely the subject of focused research for children with autism. Additionally, children diagnosed with autism and severe learning difficulties (SLD) are seldom considered across play research. This research adds a detailed analysis of the content and structure of the functional play presented by children diagnosed with autism and SLD. Through the precision established, this research enables small steps in functional play for children with autism and SLD to be identified, supported and measured, something that is not possible with the other research available. Additionally, other studies have created frameworks about play and functional play, but they have not been developed based on direct observations of children with a

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diagnosis of autism and SLD. This research moves away from the identification of deficits in play to focus on what play children are engaged with in order to create a precise category of functional play.

1. Introduction

Since Kanner's (1943) original findings, the general lack of imagination or limitation in play actions for children with autism has been well researched (Baron-Cohen, 1987; Barton & Wolery, 2012; Jarrold, 2003; Ungerer & Sigman, 1981; Williams et al., 2001). Historically, the empirical research surrounding play for children with autism has focused on symbolic or pretend play with an emphasis on establishing a deficit in comparison to typically developing children. This focus has meant less attention has been given to the actual play characteristic presented by children with autism and there has been little engagement with play outside the classification of symbolic play, leaving gaps in the evidence regarding content and structures of play for children with autism (Dominguez, Ziviani, & Rodger, 2006; Libby, Powell, Messer, & Jordan, 1998; Thiemann-Bourque, Brady, & Fleming, 2012; Williams, 2003). Additionally, children with a diagnosis of autism and SLD are rarely the participants involved in play research yet often require the greatest level of support. Without a clear and precise understanding of the play presented by children with autism and SLD across early stages of play development, it is possible that inconsistencies in research results will remain and effective provision for play will be limited.

There are currently only broad or minimal descriptions of functional play for children with autism and even less emphasis on autism and SLD, which limits the ability to measure and support learning (Imray & Hinchcliffe, 2014; Lifter, 2000). Research has shown that holding a high degree of specificity promotes greater progress when supporting and teaching play skills (Lifter, Cannon, Anderson, 2005). However current frameworks are generally more focused on broad categories or 'global groupings' which are not suitable for demonstrating or measuring small steps in progress (Lifter, 2000 p.230). Therefore, the aim of the research was to analyse the functional play actions and establish precise functional play

categories through direct observations of children aged 3–11 diagnosed with a combination of autism and SLD. Through the development of precision within the categories of functional play, the research provides a tool to increase accuracy when planning, supporting and measuring small increments of progress in play; specifically, for children identified with restricted and repetitive play patterns and behaviors.

1.1 Autism and SLD

A diagnosis of autism and SLD (or Intellectual Developmental Disorder, as it is termed by ICD-10: World Health Organization, 1992), or learning disability (as labelled by the National Health Service England), presents unique characteristics that are not identical to a diagnosis of autism (Jordan, 2013). The comorbidity of these classifications suggests that children need support in all areas of the curriculum and that they also present characteristics associated with autism. There is currently very limited research directly on play for children with a diagnosis of autism and SLD, although some studies on play do include children with low cognitive ability (Thiemann-Bourque et al., 2012; Williams, Reddy, & Costall, 2001). This is likely because the research has tended to focus on symbolic play, whereas children with a diagnosis of autism and SLD are more likely to be in the early stages of play, such as the stage of functional play.

1.2 Autism and functional play

Functional play is frequently defined as using an object as its function denotes and develops approximately 9–24 months after children have begun exploring an object to discover its properties (exploratory play) and before actions such as pretending (Libby et al., 1998; Ungerer & Sigman, 1981; Williams et al., 2001; Zelazo & Kearsley, 1977). Although the specific age and characteristics are reported differently across studies, typical descriptions of functional play involve actions such as building with bricks, rolling a car on a track,

bouncing a ball, or using a toy brush (Libby et al., 1998; Ungerer & Sigman, 1981; Williams et al., 2001).

Throughout the literature, the terms functional play, constructive play, sensorimotor play, and relational play are often used interchangeably. In a systematic review of the literature on play, Barton (2010) commented that the definitions regarding functional play are diverse, suggesting that at times functional play has been considered under the heading of pretend play and at other times as a separate category. This is possibly the result of an ongoing meta-representational debate regarding the thoughts the child holds during the play actions they complete (Jarrold, Mansergh, & Whiting, 2010; Leslie, 1987; Meini & Voltolini, 2010; Stich & Tarzia, 2015). Within the current study there is recognition that some meta-representation may be necessary to engage in some higher characteristics of functional play. However, the focus is on the structure and content of the play; this study does not, therefore, intend to examine the thoughts or reasoning behind the actions. Overall, the contrasting definitions of specific aspects of functional play cause conflicting results in the research, because studies observe different types of play (Sayeed & Guerin, 2000). To ensure clarity, comparability, and the widest spectrum of play actions, this study adheres to the following definition of functional play: “using an object as its function denotes, even if it is a miniaturized version of this object, for example, pushing a toy car along the carpet making a ‘brmmm’ noise” (Libby et al., 1998, p. 487).

Research results specifically investigating the presence or ability to present functional play for children with autism are diverse, but their emphasis is on comparison or the identification of a deficit. Some studies have indicated that children with autism have some level of deficit in their functional play (Holmes & Willoughby, 2005; Ungerer & Sigman, 1981; Williams et al., 2001), while other studies have found no significant differences or more similarities than differences in functional play in comparison to matched ability or age

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counterparts (Baron-Cohen, 1987; Dominguez et al., 2006; Libby et al., 1998; Naber et al., 2008; Thiemann-Bourque et al., 2012).

The differences in results could stem from the variation in the definitions used, from methodological concerns, or from a general tendency to focus on multiple stages of play (Dominguez et al., 2006). For example, different results emerged when a study focused only on functional play (Williams et al., 2001), in comparison to studies that looked at a range of play, such as symbolic, exploratory, and social play (Dominguez et al., 2006; Libby et al., 1998; Naber et al., 2008). Additionally, different results occur when the coding schemes used to measure the play are broken down into small increments to measure the functional play. For example, Libby et al. (1998) used only two subcategories related to functional play (Functional Play: conventional objects and Functional Play: junk objects) and did not find differences in functional play, whereas Ungerer and Sigman (1981) using four functional play categories (self-directed acts, doll directed acts, other-directed acts and object directed acts) and Williams et al. (2001), identified two core categories (Simple and Elaborated functional play) and five subcategories (Functional association; Functional use of a single object; Functional use of multiple objects: Functional act supported by appropriate vocalization/gesture and Doll-directed functional acts) under functional play, both suggested some difference in functional play. However the results are not always consistent, since Thiemann-Bourque et al. (2012) used a wide range of categories that are directly linked to functional play (Level 2- Functional play/object use: Discriminative actions on single objects, takes apart combinations; Level 3-Functional combinatorial: Presentation combinations, General combinations, Pretend self, Specific combinations physical, Child as agent, Specific combinations conventional) but did not identify difference in functional play compared to control groups. It is likely, therefore, that greater specificity in coding schemes could provide a more accurate account of the play that children with autism and SLD present.

1.3 Autism, SLD and Functional Play

Considering the research directly discussing functional play, there are few studies that focus specifically on play for children with SLD (Corke, 2012). Most studies on functional play for children with autism have involved research with primary children with a mental age of over two years old; however, each study has used a different tool to measure mental age (Baron-Cohen, 1987; Dominguez et al., 2006; Libby et al., 1998). This suggests difficulties when comparing studies and, more specifically, one of the most vulnerable groups of children is rarely included as part of the sample groups within functional play research.

Generally, the children involved in autism and play research are more able than typically described as SLD and slightly over the prime age when functional play typically develops (9-24 months). This can be identified in early research from Libby et al. (1998), who studied children of the chronological age of ten and an expressive and receptive ability of approximately 2.4 years, and the research of Baron-Cohen (1987), which studied ten children with a mean chronological age of 8.1 years, a verbal mental age of 2.5 years and a non-verbal mental age of 4.9 years. More recently, Dominguez et al. (2006) conducted their research with 24 children diagnosed with autism with a chronological age of 5.5 years and a developmental age equivalent to 3.2 years.

It is possible to speculate about the reason for selecting children with a mental age of over two years. Multiple studies examine a wide variety of play levels within one study (Dominguez et al., 2006; Libby et al., 1998; Naber et al., 2008). Researchers have apparently aimed to select a sample of children who might be presenting some exploratory, functional, and symbolic play. Another reason might be the increased complexity of conducting research on children with limited language and ability. This group of children needs support in all areas (Frederickson & Cline, 2009), so their ability to actively engage or participate might be

considered limited in comparison with children functioning at a higher cognitive level.

However, some studies have included children with a lower developmental age or limited communication ability in their functional play research.

Thiemann-Bourque et al. (2012, p. 871) stated that all the children in their study expressed fewer than 20 words and had “severe communication impairments”. The children with autism had a mean chronological age of approximately 4 years old and the expressive and receptive language ability of a 1.3 year-old. A similar sample group was used by Williams et al. (2001), whose study was conducted with children aged 4 years old but with a developmental age of 1.4 years old. This included younger children with a large degree of variation between actual age and cognitive ability. However, although both studies used children of similar abilities, their results were in conflict. If research is to fully understand functional play for children with autism, then it needs to examine functional play with a wider range of children. Research could examine the most vulnerable children, or those children frequently labelled with SLD.

1.4 Current recommendations

Alongside the limited focus on SLD there are unresolved yet repeated recommendations that emphasise a need for the current study, as well as future studies, to be conducted around the content and structure of play. An early study by Libby et al. (1998, p. 494) argued that further research to understand play for children with autism is needed, and it also clearly articulated the need for additional “subtyping of functional play” so that greater understanding of the differences in play can be examined and understood. More recently, Thiemann-Bourque et al. (2012, p. 871) emphasized the importance of examining current play frameworks to ensure they are able to measure “subtle developments in play”. More specifically, Williams et al. (2001) also articulated the limited knowledge that is currently available regarding early play skills for children with autism and the necessity of

comprehensive coding schemes that cover all levels of play. It is evident that the research recommends the need to scrutinise and specify the content and structure of functional play for children with autism, and the limited focus on SLD demonstrates a gap that needs to be filled to ensure effective support and provision.

2. Methods

2.1 Participants and procedures

There are diverse perspectives when considering how to measure or view a play behaviour (Leslie, 2002). Play might be examined at the level of the context in which the action occurs, the observable behaviours, or the physiological disposition (Rubin, Fein, & Vanderberg, 1983). Within the present study, behaviour is considered to be “the action and reactions of whole organisms” (Martin & Bateson, 2015, p. 7) that are observable without reference to any underlying (physiological, psychological, or neurological) mechanism. The internal states that may occur during play are not a focus. Although the underlying or associated constructs are undoubtedly valuable, the content and structure of play is limited within play research, thereby limiting the focus of the study (Williams, 2003).

The sample size for the study was based on using all available children aged 3–11 across three primary special schools (12 classrooms) in England who met the basic and specific selection criteria. The process of maximum variation sampling (Cohen et al., 2011) was adopted to encourage teachers to include participants who were at the furthest ends of the selection criteria. Therefore, the intention was to ensure a diverse yet focused sample group within the given criteria unlike other studies which often focus on a wide range of play categories without a specific focus on functional play (e.g. Naber et al. 2008). The criteria for inclusion of the participants were: ethical consent provided by parents/carers; a clinical diagnosis of autism; and a description of SLD or global developmental delay, as identified by a general pediatrician in their educational statement of special educational needs. In addition

to these basic requirements, pupils were required who presented specific play skills surrounding the category of functional play to ensure focus and the greatest opportunity to view functional play within a classroom setting. Therefore, the additional criteria for inclusion were: presents very limited or no symbolic or pretend play; will hold an object and complete/attempt an action; and working in or around the Pre-National Curriculum level four (Department for Education, 2014). Thirty-one children were put forward by class teachers as meeting the basic and specific criteria and twenty-seven children (23 boys and four girls, ages 3–11, with an average age of 6.75) consented to participate in the study.

The ability of the children within the study was defined by a nationally (England) recognised and commonly used assessment system (Pre-National Curriculum or P-scales). The focus was on the play abilities that children with autism and SLD present during everyday classroom situations rather than on the assessment of cognitive ability of the children or a comparison with mainstream norms that is typically presented in functional play research (e.g., Thiemann-Bourque et al., 2012; Williams et al., 2001). Teachers put forward children working in and around the Pre-National Curriculum level four (Department for Education, 2014). At this level children are identified with the expressive language skills to “repeat, copy and imitate between 10 and 50 single words, signs or phrases or use a repertoire of objects of reference or symbols. They use single words, signs and symbols for familiar objects [for example, cup, biscuit], and to communicate about events and feelings [for example, likes and dislikes]”. Their receptive language skills at Pre national Curriculum level four “demonstrate an understanding of at least 50 words, including the names of familiar objects, Pupils respond appropriately to simple requests which contain one key word, sign or symbol in familiar situations [for example, ‘Get your coat’, ‘Stand up’ or ‘ Clap your hands’] (DfE, 2014 p. 12-13). Additionally, all children in the study were identified as SLD and therefore it is noted that they needed support with everyday tasks such as toileting, eating, and dressing. Overall it is suggested that Pre-

National Curriculum level four is similar to a mental age of a 12-24 months old therefore children within the study were at the ability of which is most frequently identified directly with functional play (Libby et al., 1998; Ungerer & Sigman, 1981; Williams et al., 2001; Zelazo & Kearsley, 1977).

Observations were conducted in a natural play situation in the child's classroom as part of a larger investigation into functional play. Specifically, all children were recorded twice, on separate days for a total of 10 minutes during free-choice time periods. This was a period of time that was not a structured lesson and during which the children were free to choose an activity. Children were working alongside and within a busy classroom but did not choose to engage with other children or staff. Engagement with staff only occurred in instances of health and safety. This completely naturalistic approach is unlike research that claims a naturalistic or unstructured play environment, but which, by using specific objects or contrived play settings, actually implements procedures more closely linked to semi-structured observation (Dominguez et al., 2006; Libby et al., 1998; Thiemann-Bourque et al., 2012). The aim was to view the play of children with autism in their most familiar and natural environment without specifying the play objects or locations.

2. 2 Materials

The study considered the use of specific toys/objects similar to those featuring in other research studies (Baron-Cohen, 1987; Dominguez et al., 2006; Libby et al., 1998; Ungerer & Sigman, 1981), but it was decided to conduct naturalist observations similar to the free-play classroom observations conducted by Holmes and Willoughby (2005). This approach allowed the children to select their own object or toy of choice and then interact. Considering that previous research has suggested that children with autism have a preferred object of interest (Dominguez et al., 2006) or require motivation to engage with an object (Harrop, Green, & Hudry, 2017), this study took the view that the use of designated toys

could potentially limit the play variation and restrict natural play actions. A full choice of objects was provided based on those available to the children on a daily basis in the individual classroom settings. The objects selected to use varied from traditional toys such as cars, books, play dough and trains to non- traditional objects such as pasta shells, plastic bottle and string of beads. Largely, all classrooms resembled each other, but with differences that recognise the characters and styles of the individual teachers and schools. By including a range of toys, classrooms, and a focus on naturalistic observations the diversity included within the sample is viewed as an asset to ensure an authentic sample of play behaviours.

2.3 Ethics

Ethical approval was granted for this study by the University of Bedfordshire ethical committee as part of a larger investigation into functional play for children with autism. Particular attention was given to the guidance for conducting research with vulnerable children (Dobson, 2008). Although written opt-in consent was given by parents/carers, throughout this study there was an ongoing attempt before and during the observation also to obtain consent from the children involved in the study. The child's individual communication method was used throughout the process. For some children, this involved the use of sign language or visual aids. Additionally, the person most familiar with the child (support assistant/teacher) was always present to support interpretations of consent from the child.

3. Analysis and Results

The initial process of analysis involved using Observer XT 8.0 software to examine the videos and describe the actions at 30-second intervals, with the intention of breaking down behaviours into "fixed action patterns" (Archer, 1992, p. 15). Two different coders were used to strengthen the inter-observer reliability and to optimise accuracy in the

observations. Overall, the inter-observer percentage agreement was calculated (agreement/disagreement x 100) for Coder 1 as 82.5% and Coder 2 as 90%. Point-by-point “discrepancy discussions” were held regarding any differences (Yoder & Symons, 2010, p. 141).

Analysis of the data was conducted by using the key components from classic grounded theory (GT), which provided an iterative process of systematic coding that builds theory from the data collected, rather than through a deductive process of verification of prior theory (Glaser & Strauss, 1967). The current study selected the GT coding procedure for three core reasons: first, GT has the potential to recognise precise and detailed categories; second, GT stays closer to the data than do other approaches (Charmaz, 2014); and third, GT enables the development of theory (or frameworks) to be tested in the future (Newby, 2010).

In the first stage of coding, line-by-line open coding from the transcribed observations was completed to assign words or short phrases to reflect the actions that were presented (Holton, 2010; Charmaz, 2014). In addition to line-by-line coding, a further code was given for each incident. The use of incident-by-incident open coding allowed for a greater and more holistic context for the actions that occurred than did line-by-line coding. The incident-by-incident coding connects the action, whereas the line-by-line coding breaks up the behaviours. Both were necessary to ensure a holistic yet highly specific description of the play.

The next process of the initial open coding procedure saw the development of core categories. The codes moved from descriptive codes to conceptual codes through a process of constant comparison (Holton, 2010). Codes at this stage were viewed as provisional and subject to change to further fit the data (Charmaz, 2014). This was not always a top-down approach of dividing major categories into subcategories; instead, it involved a process of “find[ing] major categories by carefully comparing the initially found categories (which may

later become subcategories) and integrating them into a larger structure” (Kelle, 2007, p. 194). This process can be seen in Table 1, which demonstrates some of the codes that moved from small ideas to larger ideas and were then broken back down again.

Table 1: Process of developing core categories

<u>Original Child 4 codes:</u>	<u>Two codes merged to become:</u>	<u>All three codes merged to become:</u>	<u>Final position</u>
Moving away from object	Changing location	Positional	All original codes are seen again separately under Body Position category
Walking with object	with object	movement related to	
Returning to object	Returning to object	the object	

Each of the core categories developed from the individual line-by-line and incident-by-incident codes per child were added in groups of five children to combine the separate cases in order to develop the core categories across the individual cases. This involved combining the open codes for groups of five children at a time, then continuing by adding the groups of data together until core categories were developed.

The next stage of the substantive coding process involved selective coding. This was a process of reducing the categories available (Holton, 2010). However, this did not involve selecting one core category to use, because this study had an understanding that the current categories on functional play are too narrow and that greater precision is needed to support research and the needs of children with autism and SLD. The aim, therefore, was to develop a range of core key actions, but the selective coding allowed for repetition and overlap to be reduced. This process was completed over a six-month period to allow for reflection on the categories. It should be emphasised that this was not a linear process; rather, it was a process of constant comparison of data.

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The final categories developed from the observations were identified as outlined in Figure 1.

Figure 1: Descriptions of functional play for children with autism and SLD

1 PLAY OBJECT		2 OR MORE PLAY OBJECTS	
☐ Accidentally touching object		☐ Randomly using 2 objects that are not related	
☐ Attempting action with the object		☐ Using two objects separately in each hand	
☐ Touching and maneuvering object with intent		☐ Relating 2 non-related objects	
☐ Using part of the object		☐ Attempting to combine 2 related objects	
☐ Using the whole object		☐ Combining 2 related objects in the designed purpose	
☐ Using the object for the designed purpose		☐ Combining 2 or more related objects with variation	
☐ Using the object for the designed purpose in a different way		☐ Repeating action with 2 related objects	
☐ Repeating same action or repeating a variation of action		☐ Combining a range of related objects together	
☐ Using the object as designed on first attempt		☐ Switching between related actions with related objects	
☐ Switching between different actions		☐ Completing a string of related actions with related objects	
WITH SELF		WITH ENVIRONMENT	
☐ Moving 1 or more body parts		☐ Leaning body against classroom environment	
☐ Touches, taps, flaps, bangs own body with hands		☐ Touching classroom environment with hands	
☐ Body movement near and/or around object		☐ Moving between classroom equipment	
☐ Using object(s) against body randomly		☐ Using play object(s) randomly against classroom equipment	
☐ Using object(s) against body with intent		☐ Using 1 object to interact with classroom environment	
☐ Repeating movement with body		☐ Using 2 objects to interact with classroom environment	
		☐ Repeating action	
OTHER AREAS THAT CAN BE CONSIDERED ALONGSIDE PLAY WITH OBJECTS, SELF AND THE ENVIRONMENT			
<i>Eye contact</i>	<i>Selecting</i>	<i>Body position</i>	<i>Facial Expression</i>
☐ into distance	☐ given object	☐ constant	☐ constant
☐ in the direction of the object	☐ with adult support	☐ change in position	☐ brief change in expression
☐ towards 1 part of the object	☐ 1 object	☐ change in location	☐ related to action
☐ changing/fleeting focus	☐ from a range of object	☐ leaning towards/away	
☐ at their own body part	☐ multiple related objects	☐ moving position	
	☐ multiple unrelated objects	☐ or location with object(s)	
	☐ the same object again	☐ returning to object	
<i>Problem Solving</i>	<i>Vocalisation</i>	<i>With Peers</i>	
☐ attempts correction	☐ sounds unrelated to play	☐ notices	
☐ stop and restart action	☐ sounds related to play	☐ brief contact	
☐ repeatedly attempts incorrectly	☐ words/phrases unrelated to play	☐ working alongside	
☐ immediately corrects	☐ words/phrases related to play	☐ giving and taking objects	
	☐ repetition in sounds/words/phrases		

The final stage involved theoretical coding and was a process of reviewing the connections and relationships between the substantive codes (Kenny & Fourie, 2015) and integrating the developed memos into a cohesive theory. This was a process of ensuring connections and relationships between the various core categories that had been developed through open coding and selective coding; it involved creating order among the data and a form of “conceptual sorting, not data sorting” (Holton, 2010, p. 36). The use of memos was pivotal during this process. Through the process of memoing and constant comparison, the connections and relationships between the established categories were further scrutinised. The core areas were identified as:

1. Interacting with one play object
2. Interacting with two or more play objects
3. Interacting with self
4. Interacting with environment.

The other areas identified in Figure 1 were considered as components that could each extend or develop further the play presented in the core areas. Overall, the current study defined four key areas of functional play and each of these categories was further defined, with six to ten additional descriptions of actions under the main headings (see Figure 1). This challenges the assumptions that presume, or even classify, functional play for children with autism as interacting with only one or two objects and occasionally self, but rarely ever the environment. Alongside the four key areas identified, seven subcategories were viewed within the observations and established as additional components related to functional play. The identified areas were: eye contact; selecting; body position; facial expression; problem solving; vocalisation; and functional play with peers.

4. Discussion

The findings from the free-play observations within this research identified that functional play is more complex than simply using an object as its function denotes or than the simple differentiation identified in current frameworks (Ungerer & Sigman, 1981; Williams et al., 2001). Functional play for children with autism is generally defined as using an object as its function denotes (Libby et al., 1998). Occasionally, research differentiates functional play into smaller classifications that describe actions related to functional play (Lifter, 2008; Williams et al., 2001). This research challenges the assumptions that presume, or even classify, functional play for children with autism as interacting with only one or two objects and occasionally self, but rarely ever the environment. Through the depth and specificity of the play actions established the research provides the most precise categories of functional play that can be used to baseline, measure and assess small increments of progress specifically for children with autism and SLD. The core and sub categories are discussed in detail below to further explore the precision and depth provided from the naturalist play observations.

4.1 Interacting with one and two (or more) objects

The category of “interacting with one object” consisted of actions related to behaviours observed with one object, such as a traditional toy (e.g., a toy car) or a non-traditional play object (e.g., a piece of string). “Interacting with two (or more) objects” encompassed actions presented when children demonstrated engagement with two or more play objects that resembled having one object in each hand. The diversity of actions identified across the observations suggested ten further subcategories for interacting with one object and ten for interacting with two (or more) objects, which are outlined in Figure 1.

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The subcategories suggest that the children presented a diverse range of actions related to using one and two (or more) objects. It was evident from the observations that when children interacted with an object they did not simply 'use an object as it's function denotes' as typically described in functional play but they used the objects in different ways which were accounted for in the developed categories. For example, within the observations a child used different parts of the object during the different periods of the observations. Sometimes this related to using the whole object and sometimes this was just part of the object. Therefore, within the developed functional play categories there is a direct subcategory that states 'using part of the object' and also 'using the whole object' This example demonstrates the specificity that was established and provides small increments in progression to be noted. An additional example of interacting with two objects which can demonstrate the specificity established would be when a child used an object such as a toy car alongside a block ("randomly using 2 objects that are not related"). During the observation, the child used the car to spin the wheels and then repeated this action with each wheel ("repeating same action or repeating variation of action"). Sometimes the child would complete the action on the first attempt ("using the object as designed on the first attempt") or occasionally the child began moving between different actions ("switching between different actions"), such as rubbing the wheel back and forth. The child would then collect another object such as a block in their other hand ("randomly using 2 objects that are not related") and would then bang the block on the table while holding the car or haphazardly wave the block and car around the air ("randomly using 2 objects that are not related"). The child would then begin banging the block onto the car ("relating 2 non-related objects"). Therefore, within the observations children were conducting multiple actions with single and multiple objects which in other frameworks would all be lumped in as 'functional play: object directed' (Ungerer and Sigman 1981) or possibly 'functional play with conventional objects'

(Libby et al. 1998). However as can be identified from the above example, children were engaging in small but significant and varied actions that have been accounted for in the developed categories.

The research overwhelmingly maintains that functional play relates only to using one object as its function denotes (Baron-Cohen, 1987; Holmes & Willoughby, 2005; Libby et al., 1998). Occasionally, this is differentiated into recognition of combining objects (Lifter, 2008; Williams et al., 2001). For example, Williams et al. (2001, p. 71) functional play framework specifically recognised the processes of combining two objects under “simple functional play” and additionally within “elaborated functional play” by mentioning “two or more objects appropriately together”. This was not a discrete and separate recognition by Williams et al., but within each category there was identification that the object is used alongside or in conjunction with potentially related objects. Williams et al. provided a definition and examples of the movement expected within this category, but the results of the present study identify greater specificity within and around the movement of using one or two objects as their functions denote. The specificity noted in the current research provides precision that can support planning and developing play interventions or comparability when examining play abilities.

4.2 Interacting with self

In addition to interaction with one object and interaction with two (or more) objects, the observations identified play activities that are identified as play with one's self. This was not in relation to solitary or collaborative play but instead related to the use of one's body as a play object. Multiple children completed actions that suggested that part of their body might be the toy or play object; for example, tapping of fingers on different parts of the body and watching fingers in front of their face as they touched their fingers together. Additionally, children were observed using objects against their own body. For example, a child is

identified in a video holding a toy truck, and throughout the video he uses the truck against his body; at certain points, the child placed the truck on his foot, drove the truck across his stomach, or placed the object inside his shirt. The child in this example and multiple events across the observations demonstrated that they were using their own body as the other play object. Based on the play observed across the observations the category of interacting with self was further divided into six subcategories, as outlined in Figure 1.

The category identified as interacting with self demonstrates some relationship with the early predefined play measurement categories of Ungerer and Sigman (1981). Under the heading of functional play, they identified one category as self-directed, providing the example of brushing one's hair. However, based on the current observations there was much greater precision to be noted when a child was using oneself as a play object as noted in the six sub categories. Additionally, Lifter (2008) and Thiemann-Bourque et al. (2012) identified self within the play categories; however, this was only in relation to pretend actions and it did not recognise the numerous actions identified in the observations where the child used themselves as the play object. It is evident that functional play can be directed at one's self and that, unlike in Lifter's (2008) Developmental Play Assessment, it is not specifically related only to pretend or symbolic play. This greater specificity explained within the current research identified what type of self-directed actions were completed by the children, which is more detailed and complex than those actions captured under previous research (Ungerer & Sigman, 1981; Lifter, 2008; Williams et al., 2001).

4.3 Interacting with the environment

The observations also established the category "interacting with the environment". This category, which does not currently feature in existing functional play categories, emphasises the relationship with the wider environment, such as chairs, walls, or classroom

equipment. The observations demonstrated that children used large and small parts of the environment to interact or play with. One particular instance involved a child moving between different walls and completing a tapping action against the wall when they arrived at it. This action was repeated, and it is plausible to suggest that the child was using the wall as a play object. Another example consisted of a child passing a car under and over a large classroom table. A common example seen in multiple observations was a circular movement around a part of the classroom environment, such as a table; the observation suggested, therefore, that the table within the environment was the play object.

Within play research, there is an emphasis on the importance of the play environment (Trudell, 2010), but reference is not specifically identified within functional play frameworks to suggest children use the environment as a play object. Increasing the scope of objects to include the environment recognises that play for children with autism and SLD is not always as about using traditional toys in a traditional play manner. Through the natural observations it was evident from the observations that when children were moving about the classroom that they were using the classroom environment as a play object. Through this diversity and recognition of the environment as play object, teachers and researchers can precisely identify movement and interactions within the environment as a part of functional play.

4.3 Additional subcategories

From the observations, a total of seven additional areas (see Figure 1) were identified as components that could be considered alongside play. Each of these can be related to one of the four main categories. They were added to demonstrate the range of additional features identified throughout the data collection and establish greater precision than currently available for examining or supporting play. For example, a variety of different forms of eye contact were recorded during the observations: into the distance; at the object; at one part of

the object; changing focus; and at their own body. This was observed when, for example, the child was passing a toy block back and forth from one hand to another while looking into the distance. This might then change, so that the child would look directly at the block. The child might be using the object in the same manner, but at times there was not direct focus on the object, implying, therefore, a slight yet important variation in what they were doing. This precise detail can provide opportunities for detailed discussions about the actions that children engage with during play, thereby enabling individualised support and greater accuracy in comparison studies.

These additional features further highlight the complexity involved in examining functional play. There is very little recognition of the majority of the categories in the functional play literature. The individual components can be identified within separate investigations of the literature (e.g., Yakubova & Taber-Doughty, 2017, whose study focused on problem solving), but they are rarely related to literature on play or the specific topic of functional play. Williams et al. (2001) acknowledged vocalisation within their functional play categories, but the other areas, such as body position, problem solving, selecting or eye contact, do not feature in their functional play categories for children with autism. Through the identification of the additional subcategories, a holistic yet specific approach to functional play is presented. By identifying these additional components, a more complete understanding of functional play is described, and one that could inform future studies or intervention development.

Overall, throughout all of the four main categories it could be argued that some actions or movement are not specifically functional play and could be defined as stereotypy or self-stimulatory movements. This would depend on how an individual defined functional play; in this study, it is suggested that these are the observed actions that were identified in the behaviours of those children working in and around the defined category of functional

play, or in and around the Pre-National Curriculum level four. Therefore, the actions were seen as related to functional play and included as a component of the functional play descriptions. Self-stimulatory or repetitive behaviour in play is a well-documented characteristic of play for children with autism (Schertz et al., 2016; Wolff et al., 2014), yet within the current available resources for functional play it appears to be absent. This may be because many frameworks or categories are created based on observations of typically developing children, who frequently do not present the same extensive repetition as children with autism, or because there is sometimes a desire to remove or change these repetitive behaviours (Ventola et al., 2016). Libby et al.'s (1998) categories are one of the few frameworks which acknowledge repetition within the subcategory identified as sensorimotor play; however, this is not directly related to functional play. The framework in the current study extended functional play categories by acknowledging repetition of play actions and actions such as flapping or repetition were viewed across the play sessions and therefore accepted as components of functional play for this group of children.

5. Conclusion

The current study has prioritised the analysis and discussion of the play that children with autism and SLD engage with instead of a deficit or comparison approach to play. The research provides a highly specific category of functional play that has been developed to understand and support the specific needs of children with autism and SLD. Depth and specificity in the categories are important because, by identifying smaller steps, educators and researchers can plan specific targets and measure small (but very important) incremental progression. While there is evident overlap with Lifter's (2008) and Williams et al.'s (2001) categories regarding the main heading of interacting with one object, this study has observed and reported on extensive detail regarding the engagement with one or two objects, something that the research of these earlier studies did not do. The actions presented during

the observations reveal a complex and dynamic set of actions in relation to the way the children engaged with objects, self, and the environment. Continuing to build up precise descriptions of the play that children with autism present will further develop our understanding of how to specifically support this group of children. The direct observation and specificity in the categories will allow researchers and practitioners an opportunity to baseline and measure play with greater accuracy; therefore, it will not only enhance the current understanding of play, but it will also support the wellbeing and development of children with autism and SLD.

5.1 Limitations

This study recognises that there are limitations or potential criticisms of the research process or results of the study. First, the exclusivity of the categories presented in the framework might be open to criticism. Mutually exclusive categories suggest that only one label can be provided for an action presented (Archer, 1992). Within the current framework, it is recognised that there is overlap across categories and occurrences when more than one label might be applied to an action. However, it can be argued that one stage does not end and the next begin (Johnson et al. 2005), so at times overlap will occur as children learn, develop and progress in development. Additionally, the study did not use additional standardised measures to confirm the ability or diagnosis of autism and SLD but relied on teachers knowledge and previous diagnosis within the child's personal statement of special educational needs. This could impact comparability. Furthermore, testing was not completed with novel groups to assess the reliability of the framework although future research would aim to conduct further trials.

5.2 Recommendations

Based on the limitations identified above and the key findings and conclusions drawn, three key recommendations are proposed. First, due to the limited research focusing

specifically on content and structure, and the precision that were obtained from a grounded approach to analysis in this study, it is recommended that more observations on the content and structure of play are conducted and future trials of the developed framework are conducted. The deeper the understanding of the specific play actions presented by children, the greater the ability to identify specific differences in comparison studies and to target support in these areas. Moreover, research should continue to focus on children diagnosed with autism and SLD as they have, in addition to needs associated with autism, their own unique needs too. Finally, it is recommended that future research continues to work with practitioners in the field of autism to ensure that frameworks are suitable for use across the autism community.

6. References

- Archer, J. (1992). *Ethology and human development*. Hemel Hempstead: Harvester Wheatsheaf.
- Baron-Cohen, S. (1987). Autism and symbolic play. *British Journal of Developmental Psychology*, 5, 139–148.
- Barton, E. (2010). Development of a taxonomy of pretend play for children with disabilities. *Infants and Young Children*, 23, 247–261.
- Barton, E., & Wolery, M. (2012). Teaching pretend play to young children with autism. a review of the literature. *Topics in Early Childhood Special Education*, 28, 109–125.
- Charmaz, K. (2014). *Constructing grounded theory*. London: Sage Publications.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research Methods in Education*. Oxon: Routledge.
- Corke, M. (2012). *Using playful practice to communicate with special children*. Oxford: Routledge.

We don't play that way, we play this way: Functional Play Behaviours of Children with Autism and Severe Learning Difficulties

- Department for Education (DfE). (2014). Performance - P Scale - attainment targets for pupils with special educational needs. London: DfE.
- Dobson, C. (2008). *Conducting research with people not having the capacity to consent to their participation: A practical guide for researchers*. Leicester: The British Psychological Society.
- Dominguez, A., Ziviani, J., & Rodger, S. (2006). Play behaviours and play object preferences of young children with autistic disorder in a clinical play environment. *Autism: The International Journal of Research and Practice*, 10, 53–69.
- Frederickson, N., & Cline, T. (2009). *Special educational needs, inclusion and diversity*. Maidenhead: Open University Press.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative researchers*. Mill Valley: Sociology Press.
- Harrop, C., Green, J., & Hudry, K. (2017). Play complexity and toy engagement in pre-schoolers with autism spectrum disorder: Do girls and boys differ? *Autism: The International Journal of Research and Practice*, 21, 37–50.
- Holmes, E., & Willoughby, T. (2005). Play behaviour of children with autism spectrum disorders. *Journal of Intellectual and Developmental Disability*, 30, 156–164.
- Holton, J. (2010). The coding process and its challenges. *The Grounded Theory Review*, 9, 21–41.
- Imray, P., & Hinchcliffe, V. (2014). *Curricula for teaching children and young people with severe or profound and multiple learning difficulties*. Oxford: Routledge.
- Jarrold, C. (2003). A review of research into pretend play. *Autism*, 7, 379–390.
- Jarrold, C., Mansergh, R., & Whiting, C. (2010). The representational status of pretence: Evidence from typical development and autism. *British Journal of Developmental Psychology*, 28, 239–254.

We don't play that way, we play this way: Functional Play Behaviours of Children with Autism and Severe Learning Difficulties

- Johnson, J., Christie, J., & Wardle, F. (2005). *Play, development, and early education*. Boston, MA: Pearson Education.
- Jordan, R. (2013). *Autism with severe learning difficulties*. London: Souvenir Press.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250.
- Kelle, U. (2007). The development of categories: Different approaches in grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 191–213). London: Sage Publications.
- Leslie, A. M. (1987). Pretense and representation: The origins of “theory of mind.” *Psychological Review*, 94, 412–426.
- Leslie, C. (2002). *Essential behavior analysis*. London: Hodder Headline Group.
- Libby, S., Powell, S., Messer, D., & Jordan, R. (1998). Spontaneous play in children with autism: A reappraisal. *Journal of Autism and Developmental Disorders*, 28, 487–497.
- Lifter, K. (2000). Linking assessment to intervention for children with developmental disabilities or at-risk for developmental delay: The developmental play assessment (DPA) instrument. In K. Gitlin-Weiner, A. Sandgrund, & C. Schaefer (Eds.), *Play diagnosis and assessment* (pp. 228–261). New York, NY: John Wiley & Sons.
- Lifter, K. (2008). Developmental play assessment and teaching. In J. Luiselli, D. Russo, W. Christian, & S. Wilczynski (Eds.), *Effective practices for children with autism: Educational and behavioural support interventions that work* (pp. 299–324). Oxford: Oxford University Press.
- Martin, P., & Bateson, M. (2015). *Measuring behavior*. Cambridge: Cambridge University Press.
- Meini, C., & Voltolini, A. (2010). How pretence can really be metarepresentational. *Mind and Society*, 9, 31–58.

We don't play that way, we play this way: Functional Play Behaviours of Children with Autism and Severe Learning Difficulties

- Naber, F., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Swinkels, S. H. N., Buitelaar, J. K., Dietz, C., ... Van Engeland, H. (2008). Play behavior and attachment in toddlers with autism. *Journal of Autism and Developmental Disorders*, 38, 857–866.
- Newby, P. (2010). *Research methods for education*. Oxford: Routledge.
- Rubin, K., Fein, G., & Vanderberg, B. (1983). Play. In P. Mussen & E.M. Hetherington (Ed.), *Handbook of child psychology socialization, personality, and social development*. (Vol 4, pp. 694–759). NY: Wiley.
- Sayeed, Z., & Guerin, E. (2000). *Early years play: A happy medium for assessment and intervention*. London: David Fulton.
- Schertz, H. H., Odom, S. L., Baggett, K. M., & Sideris, J. H. (2016). Parent-reported repetitive behavior in toddlers on the autism spectrum. *Journal of Autism and Developmental Disorders*, 46, 3308–3316.
- Stich, S., & Tarzia, J. (2015). The pretense debate. *Cognition*, 143, 1–12.
- Thiemann-Bourque, K. S., Brady, N. C., & Fleming, K. K. (2012). Symbolic play of preschoolers with severe communication impairments with autism and other developmental delays: More similarities than differences. *Journal of Autism and Developmental Disorders*, 42, 863–873.
- Trudell, P. (2010). A place for play: Creating complex learning environments. In J. R. Moyles (Ed.), *Thinking about play: Developing a reflective approach* (pp. 197–212). Maidenhead: Open University Press/McGraw-Hill Education.
- Ungerer, J. A., & Sigman, M. (1981). Symbolic play and language comprehension in autistic children. *Journal of the American Academy of Child Psychiatry*, 20, 318–337.
- Ventola, P. E., Yang, D., Abdullahi, S. M., Paisley, C. A., Braconnier, M. L., & Sukhodolsky, D. G. (2016). Brief report: Reduced restricted and repetitive behaviors after pivotal response treatment. *Journal of Autism and Developmental Disorders*, 46, 2813–2820.

- Williams, E. (2003). A comparative review of early forms of object-directed play and parent–infant play in typical infants and young children with autism. *Autism: The International Journal of Research and Practice*, 7, 361–377.
- Williams, E., Reddy, V., & Costall, A. (2001). Taking a closer look at functional play in children with autism. *Journal of Autism and Developmental Disorders*, 31, 67–77.
- Wolff, J. J., Botteron, K. N., Dager, S. R., Elison, J. T., Estes, A. M., Gu, H., ... Piven, J. (2014). Longitudinal patterns of repetitive behavior in toddlers with autism. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 55, 945–953.
- World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines*. (10th Ed.). Geneva: World Health Organization.
- Yakubova, G., & Taber-Doughty, T. (2017). Improving problem-solving performance of students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 32, 3-17.
- Yoder, P., & Symons, F. (2010). *Observational measurement of behavior*. New York: Springer.
- Zelazo, P. R., & Kearsley, R. B. (1977). *Functional play: Evidence for a cognitive metamorphosis in the year-old infant*. Paper presented at the biennial meeting of the Society for Research in Child Development, New Orleans.

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Table 1

Table 2: Process of developing core categories

<u>Original Child 4 codes:</u>	<u>Two codes merged to become:</u>	<u>All three codes merged to become:</u>	<u>Final position</u>
Moving away from object	Changing location	Positional	All original codes are seen again separately under Body Position category
Walking with object	with object	movement related to	
Returning to object	Returning to object	the object	

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Figure caption list

Figure 1: Descriptions of functional play for children with autism and SLD