

A META-ANALYSIS OF PUBLISHED LITERATURE ON THE ROLE OF  
LOOSE PARTS IN THE PLAY BEHAVIOR OF NON-TYPICALLY  
DEVELOPING CHILDREN

A Thesis

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by

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## ABSTRACT

Prior research shows that the type of props that typically developing children play with may affect the amount and quality of their play. Less research has been conducted on the role of loose parts in the play behavior of non-typically developing children. This thesis was conducted in order to expand the knowledge on this topic. Five studies were analyzed; the published research suggests that loose parts props can aid non-typically developing children to engage in dramatic play, especially when prompted.

## BIOGRAPHICAL SKETCH

Nicole Erika Sroka was raised in Auburn, New York. After attending Auburn High School she attended Cornell University. She received a bachelors of science in Design and Environmental Analysis in 2005.

Nicole continued her education at Cornell to pursue a Masters in Human Environmental Relations. Upon her completion of her Masters degree she will be attending Golden Gate University Law School. Nicole is interested in using her knowledge of child development to work as a child advocate.

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## CHAPTER ONE

### INTRODUCTION

Today young children spend more time playing with computer and video games instead of playing with their peers. Rather than encouraging play in the classroom, educators and parents are promoting activities aimed at school readiness (Bodrova & Leong, 2003). However, research indicates that play is an important part of children's social, emotional, and cognitive development. Play can enhance children's self-regulation (Krafft & Berk, 1998) and memory (Newman, 1990).

One type of play, dramatic play, is "when a child, or children, interacting with the environment adopts roles and uses make-believe transformations to act out stories, real or imaginary, and create new stories as well (Mellou, 1994, p. 77)." Dramatic play (imaginary and symbolic play) is more beneficial than gross motor play for children's development because it is the most complex type of play (Fenson, Kagann, Kearsley & Zelazo, 1976; Largo & Howard, 1979; Ungerer, Zelazo, Kearsley & O'Leary, 1981). Dramatic play is labeled as a complex type of play because it encourages children to engage in long sequences of play with a great number of role enactments and a large variety of play themes. On the other hand, simple forms of play are less beneficial for children's development. Simple forms are short, and children repeat dramatic behaviors that imitate real life activities (Umek, 2001). Simple forms do not require children to use creativity or imagination. Dramatic play can also foster turn taking, perspective taking, representational thinking, and problem solving skills (Perry, 2003; Van der Aslyoort, 2004; Gmitrova, 2003; Mellou, 1994). When preschoolers form groups to act out play

themes, they develop feelings of control and accomplishment (Marjanovic & Petera, 2001).

In addition, dramatic play is more beneficial for children's development because it fosters progress in many areas including language skills (Fein, 1981; Davidson, 1998; Corsaro, 1988). When children engage in dramatic play, they are more likely to exchange positive reinforcement dialogue while interacting. Some types of speech that are developed during dramatic play include: imitator speech and speech that serves as substitutions for other objects and actions (Fein, 1981). In addition, dramatic play develops explicit speech (Smilanky, 1968; Pellegrini 1987; Umek, 2001). Children who engage in dramatic play have been shown to excel in comprehension tests, clarity of expression tests, organization of speech, and competency in verbal associations (Pellegrini, 1995). In dramatic play, words become representative of imaginary objects and actions. Developing the ability to symbolize relates to language development because written language is composed of symbols (Umek, 2001).

Dramatic play also fosters advanced social skills (Rubin & Pepler, 1979). Additional social skills developed by dramatic play include: cooperative skills (Singer, 1979), friendliness (Marshall 1961; Marshall & Doshi, 1965; Rubin & Maioni, 1975), and conflict resolving skills (Biblow, 1973; Marshall, 1961). For example, one of the aspects of dramatic play that requires having these social skills includes performing role-taking tasks (Rubin, 1976; Rubin & Maioni, 1975). Thus, when children engage in dramatic play they are learning and progressing.

Certain environments and play materials promote more dramatic play than others. Play spaces with encapsulated play areas (Kruidenier, 1978; Senda, 1992) and spaces with many entrances and exits (Maxwell, Mitchell & Evans, in review) tend to promote more dramatic and imaginative play than those without such areas. Studies also indicate that loose parts props encourage more dramatic play than other types of toys (Maxwell, Mitchell & Evans, in review; Wortham & Wortham, 1989; Nicholson, 1971; MycLoyd, 1983; Stern, Bragdon, & Gordon, 1976; Dodge, 1986).

For example, Maxwell, Mitchell and Evans (in review) looked at how outdoor play materials affected the play behavior of typically developing pre-school aged children and if a loose parts intervention would increase constructive and dramatic play. They found that by adding loose parts to the outdoor play space, the children engaged in an increased amount of constructive and dramatic play. Loose parts used in outdoor play spaces were played with for longer periods of time than fixed structures, and they were used in a greater variety of ways than other play materials.

Further investigation has suggested that the types of loose parts that children use to enact their play themes effects the level of dramatic play children engage in (Pellegrini, 1987). For example, when children are given a miniature tool set they often choose a play theme involving fixing or repairing a car. Other thematic materials such as dress up clothes also have an impact upon children's play themes. Because thematic loose parts do not require children to invent their own play themes, some educators feel that these props are not as beneficial for children as loose parts that allow children to invent their own themes (Wortham & Wortham, 1989). Although it seems that children should not be given highly realistic toys in order to

elicit the highest order of play, some studies suggest that when young children begin to play with loose parts, they may need a small degree of reality represented in the props (Enslein, 1979; Fein, 1979; Stern, Bragdon & Gordon, 1976). Most of the studies on play and loose parts have been conducted with typically developing children. Studies conducted with non-typically developing children have suggested that such children may need loose parts with a higher degree of reality, (Williams, 2001; Landry & Chapeiski, 1989) and that they may be more likely to engage in dramatic play when provided with highly realistic loose parts (McLoyd, 1983; Pederson, Rook-Green & Elder, 1981). However, realistic props should serve as a starting point for non-typically developing children to begin taking on dramatic roles and to invent imaginary play themes. As children learn how to engage in dramatic play, they need less and less realistic props (Garvey, 1984). For example, in a study conducted by Umek and Musek (2001), children first played with highly realistic toys such as dolls and dishes before playing with loose parts such as sticks, leaves, rope, cloth, and cardboard boxes.

Although quite a bit of research about the effects of loose parts on typically developing children has been conducted, not much research has included non-typically developing children. Instead, research has focused on the effects of mainstreaming classrooms. In these studies, observations were made to see how typically developing children react when non-typically developing children are introduced into play spaces. Non-typically developing children engaged in less social interaction with peers than their typically developing peers (Bishop, 1999; Hundert, Mahoney, Mundy & Vernon, 1998; Martin, Brady, & Williams, 1991).

Similarly, studies focusing on children with physical disabilities have tended to focus more on peer acceptance than on play (Craig, 1999).

Previous studies on how non-typically developing children use loose parts for dramatic and constructive play have focused on the differences between the quality and quantity of play. These studies have found that non-typically developing children do not progress within the same time frame and the same types of play as typically developing children. However, these results usually cannot be verified because many times experimenters have not been clear about whether they were comparing non-typically developing children to other children of the same chronological age or the same developmental level (Helldorn & Hoekman, 1992). In addition, the majority of these studies have been based on heterogeneous samples of children who have varying abilities. The resulting data in these studies was used to compare non-typically developing children to typically developing children rather than to compare the results to data of other non-typically developing children. For example, a study may take observations from the play of autistic and children with Down syndrome and collectively compare the results to the play of typically developing children (Fewell, 1988). Although the results are based on heterogeneous samples, the results of these studies have given researchers a picture of how the stages of non-typically developing children's play progresses.

Studies have also looked at the effect of adult intervention when playing with non-typically developing children. In these studies, adults took loose parts and showed the children how to play with them, and encouraged the children to mimic the same type of play. Similar studies have been conducted in order to see how to develop a

more intrusive play style of non-typically developing children (Thomas & Smith, 2004). However, there have not been any studies to see how non-typically developing children play with loose parts when they are independent of adult influence.

Some studies have been conducted in indoor play spaces with traditional toys to compare the amount of dramatic play that non-typically developing children engage in, as compared to typically developing children. The amount of dramatic play in which the children were found to be engaged in was judged by two criteria: their ability to represent an object as something else; and the ability to know that they were substituting one object for another. One such study by Williams (2001) found that non-typically developing children engaged in far less dramatic play than typically developing children. In a study by Jarrold et. al. (1996), non-typically developing children engaged in imaginative play, but only when prompted. It was hypothesized that non-typically developing children can engage in the mechanics of imaginative play, but may have problems in executing their desired acts. Non-typically developing children have less creativity than typically developing children, which is seen in their decreased imaginative skills (Craig, 1999). Non-typically developing children also engaged in less dramatic play, and had trouble even imitating dramatic play, as compared to typically developing children. Non-typically developing children also engaged in less group play than control groups. However, no research has examined the effect of loose parts on the amount of constructive and dramatic play in non-typically developing children.

Dramatic play is equally important for the development of non-typically developing children as it is for typically developing children. Dramatic can help non-typically developing develop self control, self determination and a better sense of identity. Also, dramatic play with loose parts can help foster development of skills in areas which non-typically developing children have impairments, for example, language impairments. Loose parts should be used to enhance the play of non-typically developing children in the same way that they are used to enhance typically developing children's play in order to be beneficial for their development. This meta-analysis of published literature was conducted in order to examine the specific role of loose parts in the play behaviors of non-typically developing children. I hope to show that children with varying abilities are able to engage in dramatic play when given loose parts; they will play at a higher level when given loose parts, and they are capable of engaging in the same type of play as typically developing children.

For the purpose of this paper children who are non-typically developing are defined as children who have physical or cognitive impairments requiring them to receive extra support other children may not need. Such children may have congenital disabilities, birth impairments; mental retardation, physical impairments, and they may use wheelchairs or have specific learning impairments. Examples of impairments or disabilities include children with cerebral palsy and children with Down syndrome.

The term 'loose parts' may have many definitions because each study that uses loose parts in its design defines 'loose parts' differently. Loose parts can have highly structured themes, moderate themes, or no themes. One definition of loose parts

refers to thematic props. It states that loose parts are tools that enable children to contribute a degree of needed reality to the abstractness of the play (Wortham & Wortham, 1989). Another definition of loose parts, describing non-thematic props, states that loose parts are any flexible materials (Wortham & Wortham, 1989). The theory of loose parts is “in any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it (Nicholson, 1971, p. 30).” Some examples of thematic loose parts may include: kitchen sets, aprons, pots, pans, stethoscopes, thermometers and other materials that have an implicit meaning and use. Examples of non-thematic loose parts may include: blocks, cardboard boxes, plastic piping, tires, and rope (Gbuman, Peebles & Gbuman, 1998). In this review, “loose parts” refers to any type of thematic or non thematic props.

## CHAPTER TWO

### METHODS

A meta-analysis of published literature on the role of loose parts in children's play behavior served as data for this project. Each study in this analysis will be critiqued on the basis of sample size, composition of sample (type of disability), data gathering technique, data analysis, interpretation of findings, and contribution to the literature.

#### *Search strategy*

The search was conducted over approximately a seven month period. First, the Cornell University online catalog was searched. Many of the materials found using this method were dated, so the electronic database was searched. The search engines used included: ERIC, ProQUEST, ArticleFirst, Jstor, and OCLC. In addition, the Google scholar search engine was used. Keywords searched included: "loose parts, open ended toys, dramatic play, dramatic play, imaginary play, disabled, non-typically developing, and play intervention." An effort was made to include all relevant materials, but authors were not contacted to attain additional information. All citations that were located are included in the references section of this analysis. Articles that were published in languages other than English were not included due to time restrictions. Efforts were made to attain some unpublished studies through interlibrary loans. However, they were not located. In addition to using electronic search engines, some studies were found using references from other articles. For example, when the name of the researcher was known, a search was conducted to see if the researcher had done other studies of a similar nature.

Studies sought after also had a high degree of similarity in the scales that were employed to code play behavior. Piaget's model of cognitive development seemed to be most prevalent in the literature. Studies which based coding scales upon other theories of development, such as the constructivist theory by Vygotsky, were not included in this study. Studies with the same coding scales were included in order to maintain a higher degree of similarity, which made it somewhat easier to compare results. Piaget's model classifies children's development into four stages: sensorimotor, preoperational, concrete operations, and formal operations. Each level of development has specific classification criteria. For example, a child should have the ability to use some mental imagery at the concrete operations stage. According to Piaget's theory, children successively develop more complex play behaviors as they move to higher levels of play. Piaget (1967) found that cognitive functioning can be assessed through the observation of dramatic play (Cunningham, Glenn, Wilkinson & Soper, 1985). Play behavior scales that are based on Piaget's theory have coding schemes correlated to these developmental stages (Piaget, 1964). For example, the Riguette, Taylor, Benaroya, and Klein (1981) study utilized a five point play scale. Similar to Piaget's stages of development, each point in the scale increased in complexity of play level. The scale went from motor play to transitional play, then dramatic, next animation, and finally animated sequence play.

### *Relevance of studies assembled*

Studies used in this analysis have been chosen because they meet certain substantive and methodological criteria. The studies had to evaluate dramatic play with loose parts. Studies had to examine play periods for at least ten minutes because any lesser amount of observation time would not yield an accurate picture of the child's abilities. The participants had to be attending a non university run school. Children had to be attending non-integrated or partially integrated schools in order to control for scaffolding effects. Partially integrated is defined as spending part of the school day with typically developing children. Raters had to be blind to the hypothesis being tested and the studies had to be conducted indoors. The sample size had to have at least ten participants who were no more than twelve years old. (See Table 1 & 2)

Table 1  
*Listing of descriptive information*

Study	Date	Type	Session time (min)	Integrated
Bishop	2005	journal	20	no
Lieber	1993	journal	30	*semi
Hill	1981	journal	30	no
Charman	1997	journal	15	no
Riguet	1981	journal	12	no

\**Note.* Children were integrated during play periods only.

This meta-analysis includes studies of children within the age range of thirty-four months to one hundred and forty-nine years (approximately three years to twelve years old). Although some children in the studies reviewed in this paper had chronological ages higher than preschool ages, the children often had mental ages equivalent to, or below the mental ages of typical preschool aged children. For example, in the Riguet study (1981), the average age of children with autism was 10 years old, yet their average mental age was 2.6 years old. Children with lower chronological ages may not have been used in these studies because children who were of typical preschool age may not have reached the cognitive stage allowing dramatic play yet. The term “preschool aged” in this study refers to children who possess the cognitive developmental stage necessary for dramatic play with loose parts. (See Table 2)

Table 2  
*Participant information*

Study	Total children	Mean age (mos.)			Standard deviation		
		MA	CA	IQ	MA	CA	IQ
Bishop							
hi social	7	83.14	90.43	93.14	16.03	10.67	19.58
lo social	6	85.17	89.33	95.17	19.52	14.04	14.59
Lieber							
typical dev.	15	-	50.73	-	-	3.65	-
non typical dev.	15	*	52.13	-	*	9.30	-
Hill	30	18.53	33.33	-	3.95	8.48	-
Charman							
autism	22	46.20	140.30	90.30	14.80	48.00	27.70
mental handicap	19	37.60	149.00	45.50	16.00	41.30	12.80
Riguet							
autism	10	31.2	120.00	-	-	-	-
down's	10	31.2	114.00	-	-	-	-
normal	10	31.2	34.80	-	-	-	-

\**Note.* Avg. language delay was 14.92 months; expressive language delay was 15.33 months for all participants.

Studies also had to have high interrater reliabilities. (See Table 3)

Table 3  
*Interrater reliability*

Study	Mean	
	Overall	Item by item
Bishop		
peak performance		93.5%
exploratory		99.0%
Lieber		
type of play		90.0%
entry into play		85.0%
play initiation		89.0%
play maintenance		84.0%
play termination		73.0%
Hill		
first	80.0%	
second	75.0%	
Charman	85.0%	90.0%
Riguet	98.7%	

Only five studies were identified as qualifying for the criteria stated above. About 150 articles as well as numerous books were found that discussed the effects of play on children's development. Of those articles, about half investigated the effects of loose parts on children's play behavior. Of those studies, only 34 had participants

who were non-typically developing. Most studies with non-typically developing participants had heterogeneous populations and did not focus on loose parts interventions. These studies were excluded because comparing the results of these studies would be inaccurate. The small sample of studies used exposes the lack of research conducted with homogeneous populations of non-typically developing children.

### ***Symbolic play in children with Down's Syndrome***

*Pretend Play and Patterns of Cognition in Down's Syndrome Children (Hill & McCune-Nicolich, 1981)*

#### *Participants*

The participants in this study consisted of sixteen males and fourteen females who were diagnosed as having Down syndrome. The chronological ages (CA) and mental ages (MA) of the children were measured and recorded. Mental age was measured using the Bayley Scales of Infant Development and Mental Scale (Bayley, 1969). The developmental levels of the children were assessed using Infant Behavior Record of the Bayley Scales (Bayley, 1969). Developmental measurements included social and symbolic abilities. The children's CA were twenty to fifty-three months old, with MA of twelve to twenty-six months old. Methods of recruiting participants were not stated. It was not clear whether the program was integrated or only for non-typically developing children.

## *Measures*

Each child was videotaped in his or her home playing with his or her mother or primary caregiver during a thirty minute play session. In some cases, the children were videotaped at their preschool. First the children were taped playing. Second, they were administered the Bayley Mental Scale component of the Bayley Scales of Infant Development (Bayley, 1969). Finally, the children's behaviors were scored according to the Infant Behavior Record component of the Bayley Scales (Bayley, 1969). A standard order was used during data collection.

During the play session, each child and mother pair were provided with the same set of toys. The set consisted of dolls, trucks, books, and blocks. Mothers were instructed not to give their children directions or specific instructions on how to play with the toys. Outside of this stipulation, mothers were told to play as usual with their children.

Mothers and their children played for twenty minutes, at which point examiners set up toys in a manner to foster pretend play. This specific set up was not explicitly described in the study. After the play session was finished, play episodes were transcribed and divided according to which toys the child used during the play session. Examiners determined and then assigned the child's level of symbolic play by employing methods used in the Nicolich (1977) study. Levels of play were coded based on Piaget's theory of development. For example, play behaviors where meaning was fused with action were coded as being the lowest level of play. The next level of play was coded when children displayed play behaviors in which

activities were egocentric, or based on the child's own body actions. Finally, each episode was categorized as a unit of play behavior based on the symbolic level of play assigned. (See Table 4) Interrater reliability was calculated twice: 0.80 for 71 episodes and 0.75 for 87 episodes. (See Table 3)

### *Results*

The statistical analysis conducted confirmed that mental age (MA) has a greater effect upon the level of symbolic play than chronological age (CA). Data was analyzed using Spearman rank-order procedures (Williams, 1959). In addition, correlations between symbolic play levels and the Infant Behavior Records were conducted. Results indicate that there were two types of behaviors that added the most weight to the correlation between MA and symbolic play level. These two behaviors were orientation to objects and social responsiveness to mother and examiner.

### *Discussion*

#### *Sample size*

The sample of thirty children is considered large in comparison to similar studies. Relatively large samples usually have results that more closely represent a population as a whole. Similarly, large sample sizes make generalizing to the population as a whole less speculative.

Table 4  
*Symbolic levels and descriptions (Hill & McCune-Nicolich, 1981)*

Level	Description
1: pre-symbolic scheme	At level 1 the child demonstrates knowledge of the function of an object by a brief gesture (e.g. touching comb to hair, cup to lips, or mop to floor). There is no pretending at level 1.
2: auto-symbolic scheme	Level 2 games are simple acts of self-pretend. The child may pretend eating, sleeping, or grooming. Pretending is inferred on the basis that actions are performed outside their normal context with inadequate materials (e.g. empty cup for drinking).
3: single-scheme symbolic games	At level 3 the child extends the symbolism beyond the self by either including other participants in the action or by pretending at the activities of others.
4: combinatorial symbolic games	Two forms of combinations occur: games where a single scheme is applied to several participants (4.1, single scheme symbolic games), such as feed self, then feed doll; and multi-scheme symbolic games (4.2) where two successive actions are played (e.g. feed and groom doll).
5: symbolic games with planning	At level 5 the child either announces verbally, gesuturally, or gives clear behavioral cues that he game is planned in advance of its imitation. Level 5.1 games are combinations with planning.

*Note.* From “Pretend play and patterns of cognition in down’s syndrome children,” by P.M. Hill and L. McCune-Nicolich, 1981, *Child Development*, 52, p. 613. Copyright 1981 by the Society for Research in Child Development, Inc.

### *Composition of Sample*

It was not stated whether the participants attended a university run day care program or a public day care program. A strongpoint of this study was that all children had Down's syndrome, and all children were tested to insure that they had relatively similar mental ages.

### *Data Analysis*

Correlation between symbolic play level with MA and CA were tested using the Hotelling's statistical test (Williams, Vasudevi & Costall, 1959). The authors chose to use a 0.04 significance level for CA and symbolic play level and 0.001 significance level for MA and symbolic play level. These significance levels are more conservative than the commonly used level of 0.05. This suggests that the data truly confirms the correlation between symbolic play and CA and MA (Dielman, 1999).

### *Data Gathering Technique*

A major strength of this study was the use of a scale adapted from one originally developed for typically developing children. The play sequence used by Nicolich (1977) was highly theoretical, while the scale used in this study had eight levels. (See Table 4) In order to determine whether Nicolich's (1977) theoretical framework could be made into scaleable behaviors where behaviors could be coded at certain levels, a scalogram analysis was conducted (Guttman, 1944). The results of the analysis confirmed that Nicholich's original theoretical framework was

insufficient to form an ordinal scale. The authors made their own scale with eight levels: 1, 2, 3, 4, 4.1, 4.2, 5.1, and 5.2. (See Table 4) The authors tested each level of play in their proposed scale for ordinality. The authors reviewed the results and concluded that four distinct qualitative levels of symbolic play would be adequate for coding. Unlike many studies that fit the participants' behaviors into scales developed for a different population, this study fit the scale to the participants' behaviors.

In addition, this study measured both the MA and CA of the children participating in the study. Many times when examiners test children for symbolic play, they match children exclusively by their CA. Results of this study indicate a strong correlation between MA and symbolic play; thus studies that do not measure MA may have misleading conclusions.

Children played with their mothers during play sessions. This parameter of the design may have eliminated some confounding variables. Other studies have shown that the relationship between the child and the person with whom they are playing has a large impact upon the level of symbolic play the child will engage in (Gbuman et. al., 1998). Similarly, holding the play sessions in the child's home may have increased the child's level of comfort and reduced any influence an experimental setting may have had on the results of the study. Conducting play sessions in experimental settings may cause the child to behave differently than normal (Bronfenbrenner, 1979).

On the other hand, children were shown new toys to play with and their play behavior was immediately recorded for analysis. Although the toys were fairly standard, the toys could have been foreign to the children. Children need time to explore and familiarize themselves with new toys. After the children are familiar with the materials, they may engage in higher levels of play (Wortham & Wortham, 1989). In order to control for this variable, the study could have provided time for the children to play with the materials beforehand.

### *Interpretation of Findings*

Results of this study have shown the importance of developing a scale that fits the population being studied. If the scale had not been changed, many of the behaviors that the children displayed would not have been left out of the results. Most studies do not reveal how their scales are developed, which questions the validity of the results.

### *Contribution to the literature*

The results may have exposed several areas where future research may investigate the degree to which intervention may be helpful in developing symbolic play in children with Down syndrome. One area that could be tested is age. Groups of children with Down syndrome may be tested at different ages to find the extent to which dramatic play lags behind that of typically developing children. In addition, studies may investigate how to design settings in which children with Down syndrome show high positive affective responses.

## *Symbolic play in children who are Autistic*

*Prompted Pretend Play in Autism Charman & Baren-Cohen (1997)*

### *Participants*

Twenty-two participants in this study were diagnosed with autism according to criteria in the DSM-III-R test (American Psychiatric Association, 1987; Rutter, 1978). Children recruited for the study attended a school specifically for children with autism. Eighteen participants were male, and four were female. Participants' CA and Verbal Mental Age (VMA) were recorded. VMA was measured with the Test of Reception of grammar (TROG) and the British Picture Vocabulary Scale (BPVS) (Bishop, Swain, & Bines, 1983). A control group of nineteen children were included in the sample. These children had other cognitive impairments but did not have autism. Cognitive impairment was defined as having Down syndrome or uncertain origin. CA of autistic children was 140.3 months; VMA was 46.2 months, MA 90.3 months old. CA of the control group was 149.3 months, VMA was 37.6, and MA was 45.5 months. The study did not state how participants in the control group were recruited.

## *Measures*

The participants were videotaped playing in a quiet room in their school. Each child was given two functional play tasks and two object substitution tasks. The props provided in the study were: a toy doll, spoon, cup, metal rod, and a wooden brick. The objects were placed on top of a table in front of the child, and then the examiner made a series of prompts to the child. The prompts were open, then specific, and then a behavior was modeled. An example of an open prompt is “what can you do with these (toys) (Charman & Baren-Cohen, 1997, p. 327).” A specific prompt could be “Give the dolly a drink.” When the examiner modeled the behavior, such as giving the doll a drink with the cup, he or she also repeated the prompt, “give the dolly a drink of juice.” The child was given twenty seconds after each prompt to show a response. The order of the tasks was counterbalanced, but functional tasks were always administered preceding object substitution tasks in order to maximize scaffolding.

The children were given a loose parts intervention in two trials, Trial 1 and Trial 2. The order of the trials was counterbalanced across subjects. The children were videotaped in thirty trials; each group participated in fifteen trials. Play behaviors were scored according to a four level scale. (See Table 5) A second examiner also scored behaviors. Item by item agreement of the behaviors which observers coded was 90%, and according to Cohen’s kappa statistical analysis test agreement for coded behaviors was 0.85. Cohen’s kappa is used to test interrater reliability in studies that use observational or qualitative measures. A score above 0.70 is considered to show adequate interrater reliability (Dielman, 1999). (See Table 3)

The study did not state whether the second examiner was blind to the hypothesis or which group of children was being scored.

Table 5  
*Symbolic levels and descriptions (Charman & Baron-Cohen, 1997)*

Level	Description
functional play	The child takes the spoon or cup and places it on the doll's mouth in a feeding/drinking motion.
situational appropriate object substitution	The child takes the rod/brick and places it onto the doll's mouth in a feeding/drinking motion.
novel or unprompted object substitution	The child takes the rod/brick and uses it in an action other than feeding and drinking with the doll, e.g., the child pushed the brick to and from across doll's mouth and said "cleaning teeth."

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*Note.* From "Prompted Pretend Play in Autism," by Tony Charman and Simon Baron-Cohen, 1997, *Journal of Autism and Developmental Disorders*, 27, p. 328. Copyright 1997 by Plenum Publishing Corporation.

### *Results*

No significant differences were found in the functional task trials. Both groups of children produced responses to open prompts but required more scaffolding in the object substitution tasks. Scaffolding in this study was defined as the examiner

modeling a technique of symbolic play that he or she wishes the child to exhibit. The intent of scaffolding is to help a child learn certain behaviors and later exhibit these behaviors without any promoting or modeling. However, autistic children tended to produce object substitutions that were not novel and that were circumstantially appropriate compared to the control group. For example, children with autism might take the cup and pretend to feed the doll a drink, while typically developing children may use the cup as a telephone to speak to the doll. In addition, participants with autism who did not need specific prompting on the object substitution task had lower CA's than the other autistic children.

### *Discussion*

#### *Sample size*

Because the sample was homogeneous, it was fairly large compared to other studies that used heterogeneous populations. Twenty-two children participated.

#### *Composition of sample*

All participants were chosen to participate in the study based on the condition that they had autism. All children were diagnosed to have autism according to the DSM-III-R test (American Psychiatric Association, 1987; Rutter, 1978). Because all children were tested with the same scale to confirm their MA, this adds some validity to the findings because there would be less variability in the sample.

### *Data gathering technique*

Data may have been collected in a different way to strengthen the validity of the results. The examiners gave very specific prompts to the children. Perhaps the subjects produced what looked like object substitution due to the promoting and limited availability of props. In this situation, the cognitive skills required for pretending would not have to be used. Moreover, the object substitution tasks immediately followed the functional task trials. The two tasks were related, which may have caused some carry-over effects.

### *Interpretation of findings*

The study design made interpretation of the findings very limited because the prompts given to the children were so specific. However, a positive interpretation of these results show those autistic children can produce functional play acts and object substitution acts at a similar level to children with other cognitive impairments, when prompted.

### *Contribution to the literature*

This study challenges previous findings of Sigman and Ungerer (1984) which state that children who are autistic cannot engage in functional and object substitution play. The children used in the Sigman and Ungerer study were younger, which may suggest that autistic children develop the same play skills as other children, just at a slower pace.

## ***Symbolic play in children who are blind***

*Symbolic play in congenitally blind children (Bishop, Hobson, & Lee, 2005)*

### *Participants*

Thirteen congenitally blind children participated in this study. Criterion for participation was: being blind from birth or having minimal light perception since birth. Participants were tested with the Childhood Autism Rating Scale (CARS) (Schopler, Reichler, & Renner, 1988) to ensure that they were not autistic. Chronological age (CA) age of participants ranged from between six to nine years old. Mental age (MA) was measured by administering Wechsler Intelligence Scale for Children-Revised (WISC-R) tests (Schopler, Reichler, & Renner, 1988). Mean CA age of participants was eighty-five months, and mean MA was seventy-nine months. The children attended a school for blind children in England; the study did not state how they were recruited. Seven children were socially able, while six were socially impaired. The group of socially able children served as a control for the socially impaired children. Socially able was defined as “children’s ability to relate to others (adults or peers), establishing normal interpersonal contact with them (Bishop et. al., 2005, p. 451).”

Children were classified as being socially able or socially impaired according to teachers’ ratings of the children’s social abilities. Teachers ranked the children’s social abilities according to a five point scale. The decision criteria for administering points was not included in the study. Five represented a child being very social; one

represented a child having poor social skills. Children were classified into high social (HS), and low social (LS) groups. Children who had intermediate scores reflecting moderate social skills were eliminated from the participant pool.

### *Measures*

The first half of the study compared the symbolic play of socially able blind children to socially impaired blind children. The second half of the study compared the symbolic play of socially able blind children to the symbolic play of socially able sighted children. The purpose of the second half of the study was to investigate whether the symbolic play of socially able blind children lags behind that of socially able sighted children.

Each child was videotaped in a quiet room in his or her school playing for about twenty minutes. The child played with an examiner as he or she sat on the floor. Every child engaged in two tasks with the examiner. Materials used in the first task were: a natural looking doll, a box lid, a flannel napkin, a paper napkin, a clear plastic open bottle, a plastic covered pad, and a washing bowl. Materials in the second task consisted of two miniature figures and an open-ended box with holes cut out. During the first task, the examiner gave the children two prompts. The prompts were open-ended questions about the doll such as “do you want to play with Ann?” The first two minutes of this type of play was rated as described below. Next, the examiner guided the child through a pretend scenario, such as giving the doll a bath. In the second task, the children were given two prompts as in the first task. Again, only the first two minutes of play were rated.

The first half of the study was designed to investigate the relationship between symbolic play and children's social ability. Another intention of the authors was to determine how much of the symbolic play was rooted physically in the loose parts provided to with the children. Symbolic play was classified according to the amount of abstraction in the play. For example, pretending one object was another, attributing novel properties to an object, and pretending an absent object was present. In addition, the play was further classified according to a five point scale where one point was the lowest possible score and five was the highest possible score was developed specifically to rate the level of complexity in the children's play. The children's play was measured to see what the overall rating for the play episode was, as well as a peak rating of the highest level of play. In order to develop the scale, the author of the study rated taped play episodes. A second rater blind to the hypothesis of the study also assessed the children's play. He or she was blind to whether the children were High Social (HS) or Low Social (LS). Assessment of symbolic play mirrored a study conducted by Leslie (1987). (See Table 6) The same method was followed in the second half of the study. Two raters assessed videotaped play using the five point scale. Interrater reliability for this measure was 86%. (See Table 3)

Table 6

*Symbolic levels and descriptions (Bishop et. al., 2005)*

Score	Criterion	Description
5	The child displays consistently high performance	A child could use the materials to represent bathroom items for the doll, which was given an identity.
3	The child displays moderate symbolic skills	A child who gave some meaning stop play materials (referring to the doll's nightie), but for whom this seemed only loosely connected with her play actions (e.g., the doll was treated impersonally, and where it was difficult to be confident that "pretending" was sustained rather than reporting the child's own experiences.
1	The child displays very poor performance	A child for Task 2, initially held the figures resting in limp hand, which lay open palm upward on the floor, and subsequently brought them to the box without manifest representational meaning.

Note. From "Symbolic play in congenitally blind children," by Martin Bishop, R.P. Hobson, and A. Lee, 2005, *Development and Psychopathology*, 17, p. 454. Copyright 2005 by Cambridge University Press.

## *Results*

### *First half of the study*

No significant difference was found between the two groups of children on level of attentiveness related to the play materials. Both the HS and LS groups had mean ratings above 4 on tasks one and two. Although statistical significance was not reached, Task 1 results indicate a trend for differences in symbolic play scores. HS children received higher scores than LS children, who exhibited more variation in their scores. For example, more HS children than LS children might have been able to use the washing bowl to represent a bathtub. In addition, Task 1 seemed to elicit a greater degree of elaboration in the play of both groups of children. On the other hand, the set up of Task 2 actually reduced the children's scores for level of complexity in symbolic play. This result was particularly apparent in the LS group, where the children had trouble relating a meaning to the plastic figurines.

Play sessions were also coded to reveal each child's highest level of symbolic play during the play session. HS children all exhibited some form of symbolic play involving social roles. Children in the LS group exhibited different results. They had a large range of scores. In both tasks, HS children reached higher scores than the LS group of children. The results may suggest that LS children have trouble attributing symbolic meaning to play materials and attributing roles to play figures, in comparison to their HS counterparts.

### *Second half of the study*

Children who were sighted achieved similar levels of scores in their levels of symbolic play to the HS blind children. No significant group difference was found in attribution of symbolic meaning to the figurines. However, there was a significant difference in the scores in the children's ability to assign individual roles to the play objects. The sighted children scored 16-19, while the HS blind children showed a range of scores from 11-18. (Maximum possible score was 20).

Collectively, the results of this study show that congenitally blind children who are impaired in socializing are also limited in symbolic play abilities. Although these children showed a definite delay in this ability, they did not show a total lack of ability. Comparison of the HS group to sighted children confirmed that HS blind children can still develop sophisticated levels of symbolic play. The results of this study also imply that symbolic play ability is related to social ability, not to verbal ability. Most importantly, the results illustrate that vision impairment is not an obstruction to acquiring the ability to engage in elaborative symbolic play.

### *Discussion*

#### *Sample size*

The sample only had thirteen participants, which is too small to generalize from the results of this study.

### *Composition of the sample*

Participants in this study had a CA of five to nine years old. At this age, typically developing children have already begun to show and develop symbolic play skills. The time period of initial development had already passed, so it would be hard to use this data to assess possible factors that may cause a lag in symbolic play ability. The requirements for participating in this study produced a very narrow range of sight ability within the children; therefore, the results cannot be accurately extrapolated to include all blind children. Additionally, the very small sample size does not allow generalization of the study's results.

The study stated that the children attended "schools for visually impaired children around England." Unfortunately, the study did not explain if it controlled for socio-economic status (SES) and other possibly confounding variables. It was not clear if measures were taken to insure that variables such as school curriculum were controlled. Aside from some weaknesses, this study had a unique strength. It used congenitally blind children for the experimental and control groups, thereby eliminating many possible sources of error that are conflated when features of blind children's symbolic play are compared to that of sighted children.

### *Data Gathering Technique*

Like many studies with non-typically developing children, the examiners scaffold the play sessions. The intention of the study was designed to elicit symbolic play from the children. However, the study elicited the play in a manner that may have

overpowered the child's freedom of engaging in a particular level of symbolic play. For example, in Task 1, the examiner asked the child "Can I make up a story with Ann?" Then, the examiner guided the child through a long narrative while helping the child touch the play objects. After an extensive narrative, the child was allowed approximately five minutes for its own contribution. If the examiner had merely left the child alone with the materials the results may have not elicited the same levels of symbolic play.

#### *Data Analysis*

Examiners supplemented measures of the children's dramatic play by also measuring the children's affective relation toward the doll and how the children ascribed individual characters to the dolls in the narratives. These additional measures helped to pinpoint exactly how the control group children's play differed from that of the children in the experimental group.

#### *Interpretation of the findings*

Social ability may play a role in children's ability to use loose parts in dramatic play scenarios. Qualitative and quantitative data was collected to confirm the authors' hypothesis.

### *Contribution to the literature*

This study has evaluated an aspect of children's symbolic play that is usually not studied in loose parts interventions. The results have revealed dimensions of loose parts interventions that may be manipulated in order to foster increased dramatic play in congenitally blind children.

### ***Comparison of symbolic play in typically and non typically developing children***

*A comparison of social pretend play in young children with and without disabilities (Lieber, 1993)*

### *Participants*

Children were recruited from schools in an urban school district. Non-typically developing children were integrated with typically developing children during thirty minute play sessions three to five times a week. Fifteen children who were typically developing and fifteen children who were non-typically developing were all of lower income families. Ten males and five females composed the non-typically developing group, while ten females and five males composed the typically developing group. Children were recruited as non-typically developing for a range of reasons. Children mainly had speech and language delays, but could also have cerebral palsy, and mental retardation. MA was measured using the Learning Accomplishment Profile (Sanford & Zeiman, 1981) and the Brigance Diagnostic

Inventory of Development (Brigance, 1978). The average cognitive delay of non-typically developing children was 14.92 months, and average language delay was 15.33 months. Typically developing children had a CA of 50.73 months. Children were recruited directly from the childcare or daycare centers, and parent consent forms were used to admit the children into the study.

### *Measures*

Children were given two months of playing in the integrated setting before videotaping began. Children were videotaped playing in three areas: the housekeeping area, the block area, and the manipulative area. Each of the areas was located in one of two classrooms, either the typically developing classroom or the non-typically developing classroom. Not all play areas were in one classroom. For example, the block area and manipulative area may have been located in the typically developing classroom while the housekeeping area was located in the non-typically developing classroom. The authors did not state whether children participated in the study at their native school or if the study took place at more than one site. Thus, it is not clear from the methods section whether the children were familiar with these classrooms. If the study did take place in at only one site it may be assumed that some children who were native to the school were familiar with the classrooms and others were not.

After each play session, the contents of the video taped play session were transcribed verbatim. A second transcriber checked for accuracy. After the records were transcribed, the play sessions were divided into an episode according to whether it

was socio-dramatic play, social exchanges that were not pretend play, and other. The other category included play in which the child explored the object or played alone symbolically. Rather than recording a set block of time, play sessions began when the target child was joined by a playmate, and terminated when the target child was left again.

Play behaviors were coded according to a scheme developed by Goncu (1987). This scale analyzed how children enter into play. After play entry strategies were assessed play episodes were coded according to Goncu (1987). The study stated these scales devised by Goncu were modified, but how or why they were modified was not stated. A research assistant also coded behaviors. It is not clear whether he or she was blind to the hypothesis of the study. Interrater reliability ranged from 73% for coding of play termination, 84% for turns in play dialogue, 80% for play initiation, 85% for entry into play, and 90% for type of play. (See Table 3)

### *Results*

No differences were found between typically and non-typically developing children were found in the amount of play session time spent engaged in different types of play. When both groups of children engaged in socio dramatic play, their play episodes were short. *T*-tests did not reveal any differences in episode duration. However, differences were found in the strategies used in entering into play. Non-typically developing children used disruptive strategies 14% more of the time than their typically developing peers. In addition, when non-typically developing

children were rejected after their first attempt to join into play, they did not make additional attempts to join the play.

Differences in the types of symbolic play were found between typically and non-typically developing children. Non-typically developing children did not use fantasy roles such as ghost, time traveler, and snake. Only typically developing children engaged in these roles. Non-typically developing children engaged in pretend roles such as doctor, pupil, and animal rescuer.

### *Discussion*

### *Sample Size*

The study had fifteen participants in each of the control and experimental groups. Although this study controlled for SES of the children, it did not consider other differences that may have influenced the results. The children were recruited from three different schools within a larger school district. Although all schools had similar play areas, it was not specific whether they were exactly the same. In addition, the different teaching styles and curricula between schools were not addressed in the study.

### *Composition of sample*

Although participants were mainly selected because they had speech and language delays, the participants expressed these delays differently. For example, some

participants had cerebral palsy while others had mild mental retardation. Many studies examining loose parts interventions on the symbolic play behavior of non-typically developing children often lump together groups of heterogeneous participants. Although this study did have participants with varying impairments, measures were taken to insure that they all had a common impairment that was predominant, namely speech and language delays. Including this design parameter in the study added a degree of homogeneity to an otherwise heterogeneous group of participants.

#### *Data gathering technique*

A positive design parameter of this study was that it waited until December of the school year to start analyzing the play behavior of the children. Children were given a chance to develop relationships with their peers. In addition, it allowed the children to explore the play materials. Therefore, neither the playmates nor the play materials were novel.

#### *Data analysis*

A framework previously used in studies analyzing children's symbolic play (Goncu, 1987) was manipulated in order to answer this study's specific research questions. Adapting the scale to the behaviors that the children displayed made coding results more accurate because observers did not have to generalize observed behaviors to fit into certain categories.

### *Contribution to the literature*

Although non-typically developing children do engage in dramatic play with loose parts, this study has shown that the quality of the play lags behind that of typically developing children. This finding was important because educators who see non-typically developing children playing may not feel the need to intervene. However, in order for children with different abilities to reach higher levels of symbolic play, interventions may be necessary. Future studies may investigate ways in which educators and parents can use loose parts to help non-typically developing children engage in dramatic play for longer periods of time and at higher levels.

### ***Comparison of symbolic play in typically and non typically developing children***

*Symbolic play in Autistic, Down's, and Normal Children of Equivalent Mental Age (Riguet et. al., 1981)*

### *Participants*

Ten autistic, ten Down syndrome, and ten typically developing children participated in this study. None of the children attended integrated schools. CA and MA were matched in the children, with a median age of 30 months. MA of autistic children was measured with the Peabody Picture Vocabulary Test (PPVT) (Rutter, 1971) and the Leiter International Performance Scale (LIPS) (Rutter, 1978). The study did not state how the children were recruited, or where they were recruited from.

### *Measures*

Four groups of toys were presented and modeled for each group of children in a fixed order. Toys in group one included: a plush monkey, plastic spoon, and a Popsicle stick. Toys in group two included: a pink panther, whiskbroom, and cardboard. Toys in group three included: a moppet frog, washcloth, and fabric. Group four toys included: doll, wooden cart, and a plastic container. Toys were used in a fixed order. Half of the children in each ability group received an animate toy with a realistic prop and then an animate toy paired with a substitute object.

Each child was seated at a table across from an examiner. Each participant engaged in two play sessions. Each session had four, one minute trials where the examiner presented an animate toy and its accessory. Then, the child engaged in two four minute free play periods where all of the toys were presented to the child in a structured manner. The examiners modeled symbolic play using the props. Finally, the examiner modeled symbolic play with a realistic accessory and then with a substitute accessory. Immediately after the experimenter modeled the play, the child was given the toys to see if she or he would engage in a similar level of play.

The sessions followed a structured order as follows: initial free play for four minutes, structured play for two minutes, modeling was not timed, structured play for two minutes, and finally free play for four minutes. The child's play was observed for level of play for one minute following the modeling.

The examiner and a trained observer recorded field notes. It was not stated whether the observer was visible to the children. The observer was not informed of the hypothesis of the study. The observer recorded the child's play behavior every thirty seconds using a structured observation schedule. Play occurrences were coded according to a five point scale based on studies by Inhilder, Lezine, Sinclaur & Stambak (1972); Lowe (1975); and Nicolich (1977). Interrater reliability scores reached 98.7%. (See Table 3) Each child's play session was also evaluated for symbolic fluency and imitation response. Symbolic levels were scored on a five point scale. (See Table 7) Imitation responses were scored on a six-point scale. (See Table 8)

Table 7  
*Symbolic levels and descriptions (Riguet, Taylor, Benaroya, and Klein 1981)*

Level	Description
5	Animated sequence
4	Animation or non animated symbolic sequence
3	Symbolic
2	Transitional
1	Motor

*Note.* From "Symbolic play in Autistic, Down's, and Normal Children of Equivalent Mental Age," by Candace Riguet, Nancy Taylor, Sigmund Benaroya and Leslie Klein, 1981, *Journal of Autism and Developmental Disorders*, 11, p. 443.

Table 8

*Imitation response levels and descriptions (Riguet, Taylor, Benaroya, and Klein 1981)*

Level	Description
0	No imitation.
1	Possible imitation of action by child.
2	Clear imitation of action.
3	Attempt to animate toy by having it hold the object accessory, followed by child imitating action.
4	Child assigns independent action to toy, making it perform a reasonable imitation of the action
5	Imitation as in 4, then variation or elaboration of animation sequence.

*Note.* From "Symbolic play in Autistic, Down's, and Normal Children of Equivalent Mental Age," by Candace Riguet, Nancy Taylor, Sigmund Benaroya and Leslie Klein, 1981, *Journal of Autism and Developmental Disorders*, 11, p. 444.

### *Results*

Autistic children engaged in more off task behaviors and less play than Down syndrome and typically developing children. Modeling symbolic play was effective for eliciting higher levels of play for autistic children, and for children of similar MA and Verbal Mental Age (VMA). In addition, the developmental level of play in autistic children was found to be similar to that of children who had similar VMA during free play, not structured play. Symbolic play of autistic children was found to have poorer content than that of children who were the similar according to VMA.

### *Discussion*

#### *Sample size*

The sample size of each population was very small, therefore results cannot be generalized.

#### *Composition of sample*

Although the sample size was small, participants were measured for mental age using two different tests to ensure that the children's mental ages were within the same range. Typically developing children and children with Down syndrome were given the PPVT (Rutter, 1971) test while children with autism were given the LIPS (Rutter, 1978) test. Using two different tests was necessary because some children

who have autism also have language impairments. The LIPS test allowed examiners to measure mental age of children who had autism without requiring them to speak.

#### *Data gathering technique*

Most studies have observers rate and code play behaviors, which may lead to confounding errors. In addition, most studies' observers are not experts in the field of child development. However, in this study the rating of recorded play behaviors was done by a developmental psychologist. The rater was blind to identification of subject, group, session, trial and stereotypy. The expertise of the rater combined with his or her blindness to the characteristics of the child being rated may have added strength to the data, results, and conclusions.

#### *Data analysis*

Some studies do not use appropriate tools to analyze data collected from observations. However, this study evaluated the data with appropriate statistical tools. The Kruskal-Wallis statistical test was used to analyze data. The test results indicated a significant effect of modeling symbolic play with loose parts. The Kruskal-Wallis test was appropriate to use in this study because examiners were comparing three different groups of children. Therefore, conclusions made by the authors may be more relevant than other studies' findings (Dielman, 1999).

### *Interpretation of findings*

This study demonstrated that when symbolic play behaviors are modeled for autistic children, they can engage in higher levels of play. However, these higher levels of play were only literal imitations, rather than play themes from the children's own imaginations. Similar to other studies that utilize modeled behavior as play interventions, it was difficult to distinguish between children's original play behaviors and what was simply being mimicked.

### *Contribution to the literature*

After preliminary analysis of measures, authors concluded that the type of loose part given to the child had no significant effect on the play behavior of the children who were tested. If this conclusion can be applied to loose parts interventions in general, it would strengthen conclusions made from these types of studies. A possibly confounding variable, type of loose part, would be eliminated.

## CHAPTER THREE

### RESULTS

All studies found that non-typically developing children have the ability to engage in symbolic play. Specifically, the Lieber (1993) study found that non-typically developing children may engage in the same types of play as typically developing children, and for the same amount of time in test sessions. The Charman and Baren-Cohen (1997) study found that autistic children engaged in the same amount of object substitution as children with Down syndrome. Similarly, the Bishop et. al. (2005) study found that congenitally blind children were able to attribute symbolic meaning to objects during symbolic play to the same degree as typically developing children. However, the Charman Baren-Cohen, Lieber, and Riguet et. al., (1981) studies all found that children with autism rarely reach the levels of symbolic play as typically developing children. Children who have autism often display situational appropriate symbolic play, unoriginal, and impoverished play. For example, situational appropriate play might be when a child uses an empty teacup to feed a doll tea. Furthermore, the Lieber study found that children with autism did not engage in fantasy roles during symbolic play. These types of play can be classified as low order symbolic play within the defined orders of play.

Autistic children were able to reach higher levels of symbolic play, but only when they were prompted. The Charman Baren-Cohen study found that when prompted, children who had a VMA of four years were able to engage in the same levels of symbolic play as typically developing children with a CA of two years. The Riguet et. al., (1981) study also demonstrated that children with autism can reach higher

levels of play if an examiner demonstrates how to engage in that type of play. The interventions in these two studies were highly suggestive and controlled; the children were shown very detailed examples of symbolic play. However, in both studies, children who displayed symbolic play did not have as much detail in their play as the examiners.

The Bishop et. al. (2005) and Hill & McCune-Nicolich (1981) studies found that the social ability of the child may have effects upon the child's ability to engage in symbolic play. Lieber demonstrated that children who had different social abilities used more disruptive tactics of entering play with others than typically developing children. The Bishop et. al. study (2005) found that congenitally blind children who were classified as "highly social" were able to engage in similar levels of symbolic play as sighted children; however, "low social" children did not achieve the same levels of play. The Hill and McCune-Nicolich study found that the relationship between the child and the examiner (in this case his or her mother) contributed most to the correlation of MA and symbolic play. One may conclude that children who are more socially capable display higher levels of symbolic play because they have more practice engaging in dramatic play with their peers, thereby building symbolic play skills.

Although these conclusions are being made from a relatively small number of studies, an interesting finding was that the children who attended partially integrated schools did not show higher levels of play than children who were enrolled in non integrated schools. In addition, when studied as a single case, the familiarity of the examiner was thought to be a confounding variable. Then again, when studied with

a wider scope, it seems like familiarity did not play a role in the results of these studies. Children who were examined by an experimenter did not have significantly different results from an intervention compared to children playing with their mothers or primary caregivers. Perhaps the children were very focused on the tasks given to them and they were not affected by setting or presence of strangers.

The results of the five studies show that non-typically developing children can engage in symbolic play and at similar levels as typically developing children. Although it may take more time for non-typically developing children to reach high levels of symbolic play, they do have the ability to engage in this type of play. These studies have also shown that scaffolding and prompting may help children with different abilities reach higher levels of symbolic play sooner than without any help.

## CHAPTER FOUR

### DISCUSSION

#### *Statistical Methods*

Regression analysis on the possible predictors of intervention results was not included in this analysis. The studies reviewed in this analysis were not designed to test for the same results. The baselines and measurements after interventions with loose parts used a range of scales and coding criteria. Some studies tested for frequency of types of play after an intervention. For example, the Hill and McCune-Nicolich (1981) study examined the children's play after viewing modeled play. No baseline measures were taken, the examiners measured the effects of the intervention "in hopes that play abilities in the child's repertoire not previously demonstrated, would be evoked." The Bishop et. al. (2005) study also examined children's play after an intervention, but used a different baseline. Children were observed to see whether they attended to the objects at all before the study, and their quality of play was assessed after the intervention. However, it was hard to qualitatively compare these studies because the Bishop et. al. study evaluated play behaviors based on a scale made up with behaviors that were fabricated for the study. The Charman Baren-Cohen (1997) and Riguet et. al., (1981) study both assessed children's play after conditions in which children were shown similar examples of symbolic play. However, the Charman Baren-Cohen study assessed children's play after the intervention using a categorical scale, while the Riguet et. al., study measured frequencies of two particular behaviors. If an overarching scale was developed to

compare all of these studies, the results would be diluted, and valuable information would be lost. For example, if a scale was developed to show whether an intervention produced symbolic behavior or not, details about the level of symbolic play elicited by the modeling would be omitted.

### *Assessment of bias*

Meta-analyses of observational studies have inherent biases because bias could have occurred in the original studies. Original studies could have had flaws in design and the original studies' conclusions could have been inaccurate due to these design flaws. The large diversity in study designs and populations may also limit the overall conclusions of the meta-analysis studies. Another bias found in meta-analyses studies is inclusion bias. Because I was aware of the outcome of loose parts interventions before I began searching for articles, I could have included only those articles that matched my previous knowledge. In addition, research shows that electronic databases may not be very reliable in finding studies (McManus, 1998). About half of relevant studies are sometimes missed when using electronic databases. But, these studies have proven useful in quantifying data from a range of studies so that sources of variation can be found. Although the studies used in this analysis differed in some aspects of their study designs, they provide a larger picture about the symbolic play of non-typically developing children.

Observational designs, such as the ones employed in the studies within this analysis, may lack random assignment to the intervention. They may also have relied on studying changes in one characteristic of interest while disregarding other outcomes.

Another issue that relates to confounding and quality are publication biases. It is not clear whether the studies chosen to evaluate in this paper were affected by publication bias.

#### *Justification for exclusion*

Non-English language citations were excluded because the limited time frame for this project did not allow for translation. Using studies only published in English could have influenced the results of this analysis. For example, studies with very significant results are more likely to get published in English, they are more likely to get cited, and therefore they are more likely to be published repeatedly.

#### *Assumptions*

The main assumption of all studies measuring the impact of loose parts on the play behaviors of children is that the loose parts are equally meaningful to all children across gender, socio-economic statuses, and ethnicity (Pellegrini, 1987). However, this may not be true. In a study by McLoyd (1982), lower class children who were given the same toys as middle class children exhibited less socio-dramatic play because they were less familiar with the toys. For the purpose of this analysis, it was assumed that the props were equally meaningful to all participants.

Another assumption concerns the nature of observational studies. There is sometimes a gap between what is really happening and what observers are coding. When observers code the play behaviors of children, they are coding their own ideas

of what the interactions of the children are about (Sigel, 1978). Although studies use inter-rater reliability scores to justify their results, this statistic only shows that more than one person shares that construction. For example, when training observers experimenters make “decision rules” about how to code certain play behaviors. Observers have personal biases and interpretations, and these decision rules attempt to remove some of these biases by training observers to code according to a generalized bias. In one study by Pellegrini (2001) observers had trouble distinguishing reliably between associative and cooperative interactions, so they combined these two categories into one category. It is impossible to be totally objective when observing children (Pellegrini, 1987). Most measures have unclear boundaries and little uniformity of information across their measures. For example, coding dramatic play has some discrepancies between actual and coded behaviors. Studies use children’s actions, movements, gestures, and mainly words to differentiate when children are engaging in dramatic play (Pellegrini, 1987). However, many non-typically developing children may not exhibit dramatic play in the same way as typically developing children. For example, some autistic children are not very articulate (Williams et. al., 2001). Also, children with speech impediments may express themselves differently when they are engaging in dramatic play. This disparity may cause examiners to fail in coding dramatic play even when it is taking place. In this analysis, it was assumed that interrater reliability reflected consistent coding methods, and that the gap between what really happened and what was coded was insignificant. (See Table 3)

This analysis also assumed that the children in the studies were capable of dramatic play. For example, a study by DeLoache (1995) showed that in the middle of their

third year of life, a long time after they have supposedly developed the ability to engage in dramatic play, children may still have trouble using spatial relations that represent symbolic objects such as toy houses (DeLoache, 1995). One conclusion of the study was that children may not actually develop the ability to pretend as early as we think they do. A study by Slade (1987) and Feise (1990) has shown that children are more likely to engage in what we see as 'symbolic play' right after adults has done so (Jackowitz & Watson, 1980; Bretherton, 1984; Fenson, 1984). Therefore the children may not have been actually exhibiting the ability to engage in symbolic play. These studies question whether children are actually engaging in symbolic play when educators, adults, and examiners think they are.

#### *Assessment of quality of included studies*

In general, the studies included in this analysis were thought to be representative of each population of non-typically developing children. The design of these five studies considered the constraints involved in each particular population being studied. For example, the study by Bishop et. al. (2005) chose participants for control and experimental groups who were congenitally blind. This design factor eliminated any variability in the results that would depend upon when the child loses sight, or how much sight the child had and so on. The Hill and McCune-Nicolich (1981) study was also very careful in its design to control for variation in the results. This study tested to see if the scale used in other studies with typically developing children was useable in studies with children who had Down syndrome. Lieber (1993) recruited participants from lower income families. This design parameter is important because many studies of this nature take place in university day care

settings. Thus, the participants probably come from families of higher SES, and they are not likely representative of the general population. The Riguet et. al., study matched autistic, Down's and typical children of the same MA, and the autistic and Down syndrome children were matched for CA as well. This factor allowed for comparison of results between groups. (See Table 1)

The studies included in this analysis had stronger designs and fewer confounding variables than other studies conducted on this topic. The most important criterion that these studies met was that the populations of participants were homogeneous in impairment. Many studies assessing the play behaviors of non-typically developing children have small heterogeneous samples, and often group together children with wide ranges of disabilities (Fewell & Kaminski, 1988). The results of such studies cannot be accurate because children with different impairments may display different play impairments.

For example, children with Down syndrome may have cognitive delays that produce lags in productive language. Because symbolic play is closely related to language level and cognitive developmental level, these children may also show a lag in dramatic play (Wing et al, 1977; Cunningham, 1985; Whittaker, 1979; Beeghly & Cicchetti, 1987). On the other hand, children with cognitive delays, speech delays, and visual impairments have similar confinements in their play. They tend to use more disruptive strategies during play, and they are more likely to be rejected by their peers during play (Lieber, 1993). Children with autism show more variation in their play than children with Down syndrome. In such children play is less elaborated, varied and integrated than the play of typically developing children. A

study by Williams (2001) found that children with autism engaged in far less dramatic play than typically developing children. In a study by Jarrold et al (1996), autistic children engaged in imaginative play, but only when prompted. It was hypothesized that autistic children can engage in the mechanics of imaginative play, but may have problems in executing their desired acts (Craig 1999). There may be two possible causes for their lack of variation. Children with autism may have trouble with transitioning from self-directed to other-directed play (Baron-Cohen, 1985; Leslie & Frith, 1988; Perner, Frith, Leslie, & Leekam, 1989; Russell, Mathner, Sharpe & Tidswell, 1991), or they may have trouble with Theory of Mind, ToM. Mastering theory of mind skills contributes to variation in dramatic play because theory of mind allows a child to know that other people may have different thoughts and points of view than their own (William et. al., 2001). At times, non-typically developing children, especially children with autism, may have insufficient self control as compared to typically developing children of the same age, which also hinders social interaction (Bishop, 1999). Children with autism do not typically use dramatic play props such as dolls as agents or actors with the same frequency as children who are typically developing. They may show this behavior because substituting props as actors requires ToM skills, which are lagging in children with autism. Often, children with autism also develop language skills later than typically developing children, and they have trouble with expressive language. This language impediment affects their symbolic play because pretend play often involves the construction of verbal narratives, which requires well-developed language skills (Rutherford, 2003). Autistic children may be socially impaired; they may engage in less social interaction, and engage in more repetitive activities in place of

imaginative symbolic interests because of their impaired language development (Wing, 1979; Snyder, 1987).

Besides controlling for impairments, four of the five studies included in this analysis observed children in a non-integrated setting. One study studied children who spent their play period in an integrated setting. Therefore, the results assessed the children's capability of playing without scaffolding from their peers. A study by Martin, Brady, and Williams (1991) found that children with different abilities engaged in more social play with toys when they played in integrated settings. The studies where children were not integrated demonstrated the effects of the examiner's interventions.

### *Conclusion*

Based on the studies reviewed here, one of the ways to increase the level of symbolic play in non-typically developing children may be to foster their development of social skills. Some studies have implied that non-typically developing children were able to achieve higher levels of play when prompted. Possible alternative explanations may include: the children were mimicking the examiners or the children were displaying activities they had previously experienced.

Several of the studies reviewed (Riguet et. al., 1981; Charman & Baren-Cohen, 1997;) did not provide time for the children to explore the loose parts props before beginning the examination. The Hill and McCune-Nicolich study (1981) only allotted twenty minutes for children to explore the loose parts before taping began.

The novelty of the objects may be an explanation for why the children did not use the materials for play with novel themes. The children may not have been ready to explore the materials beyond functional use. As a child develops, constructive play with objects progresses from playing with the materials to engaging in activities to explore what can be done with the materials (Wortham, 1989). If the children were given adequate time to familiarize themselves with the materials, they might have shown higher levels of play.

Some of the studies coded for a “peak reading” in which the child’s highest order play was noted. Coders may have coded a higher level of play than the child was really displaying, thereby skewing the results upon which the conclusions were based. Examiners did not note what factors were related to the child engaging in a higher level of play. Therefore, although one may know the child is capable of this level of play, one does not know how to foster this play in the future.

One study (Riguet et. al., 1981) observed the children in a laboratory setting. The results of this study may be due to confounding effect of having the children play in an unfamiliar setting. While some studies allowed the children to play with their mothers or primary care givers (Hill & McCune-Nicolich, 1981), others (Lieber, 1993; Bishop et. al., 2005; Charman & Baren-Cohen, 1997) used an examiner to prompt the children. The difference in familiarity also could have affected the findings.

Within the domain of the literature review, the results of this meta-analysis show that non-typically developing children are capable of engaging in symbolic play with

loose parts, and that they will play at higher levels when given loose parts or when prompted. Future research may answer some of the questions that were not answered due to the limited scope of this analysis. Nevertheless, there are few quality studies which assess the use of loose parts symbolic play behavior of children who have different abilities. The number of studies with homogenous groups of participants is rare compared to the number of studies that are conducted with typically developing children. The studies chosen also reflect the difficulty of finding large populations of children who have a specific impairment. Most studies evaluate the play of children who have more common impairments such as language delays and autism. Few studies look at children with less common impairments such as Pervasive Development Disorder (PDD), Asperger's Disorder, and Rett's Disorder.

The lack of research on this topic may reflect the lack of opportunities non-typically developing children are given to play on their own. Many times educators and parents provide a lot of guidance when they play with non-typically developing children. In addition, sometimes schools are hesitant to let outsiders observe the children's play. This hesitance to free non-typically children from educators is also evident in the types of studies that are conducted with non-typically developing children. The studies seldom allow children to invent their own themes, or choose their own play materials.

Future research should be designed to determine some of the reasons why delayed symbolic play in children who have different abilities occurs. Research has not adequately addressed whether non-typically developing children may reach these

levels of play without any aid from prompts or modeling. The types of modeling are usually similar, and are usually directive. Research may be developed that tries to foster higher orders of play in children with different abilities without using methods that entail teaching children useful skills. For example, a child may be taught how to request entry into a play group rather than being taught to mimic symbolic play. Then, children may find it easier to engage in socio-dramatic play with their peers and learn how to engage in symbolic play on their own.

Existing research does not address the social ability of children when evaluating their symbolic play with loose parts. Experimental designs often ignore children's natural inclination to play longer and more intensely with their friends (Gbuman et. al., 1998). It has been demonstrated that symbolic play with peers is related to a child's ability to get along with their peers (Rubin & Clack, 1982). Non-typically developing children may not have many friends, or they may not have the social skills to get along well with their peers. Therefore, to get a complete picture of the child's skills, observers should take aggregated measures across different play settings and only then draw a conclusion on their competence. For example, instead of studying a child's play behavior only in an outdoor play space, an observer should code behaviors indoors, outdoors, at school and if possible at home where the child is most comfortable with his or her surroundings (Pellegrini, 1987). Future studies should therefore record a child's behavior across many different settings.

Each study reviewed here used a different set of loose parts; therefore, it was difficult to determine if any specific type of prop is more beneficial than others in eliciting higher orders of play. Few, if any, studies have been conducted to date

exploring what role loose parts may play in the play behavior of non-typically developing children in an outdoor play space. Studies investigating dramatic play with non-typically developing children also tend to use more thematic props rather than open-ended props. Thematic props may rob children of the opportunity to reach their highest capability in dramatic play because the play themes are preconceived and children do not have to think on their own. In the future, a documented set of loose parts used by prior researchers should be used as a standard when designing a study. Using a standard set of props would allow researchers to manipulate other variables for examination, such as setting (indoor vs. outdoor), age, and degree of openness of the props. Variability in the results due to different props would be removed, making it possible to make generalizations from a large number of studies.

Likewise, rating scales used in these types of studies do not assess a child's role in the behavior under study. Often, observers code a general behavior such as "running." However, it is also important to note how the child engages in play behaviors in addition to the play act. For example, it would be helpful to know whether the child was requesting, indicating, or entering into play for the discussion of the study's results. No scale exists that measures a child's intent of interaction, or that measure a child's capacity for social interaction during dramatic play. Moreover, studies that use a basic surveying method to code behaviors are assessing a single social interaction capacity, and do not apply to multiple situations. For example, when an autistic child points at a block to request it for play, an observer may code this behavior as a positive social interaction. However, one does not know if this child really has an adequate social interaction capacity (Gbuman et. al., 1998). Rating scales used to assess play behaviors of children who have limited verbal skills

are often the same scales used to assess articulate children. Scales used to code dramatic play often require a child to describe their thoughts. For example, an observer would have to hear a child say “hello” into a block in order to code dramatic play. Because children with limited verbal skills cannot articulate their thoughts, observers either assume the child is engaging in dramatic play when the child displays what looks like dramatic play, or the observer codes a lower order play. A scale needs to be developed for children who have language impairments so that loose parts interventions can be accurately assessed.

The loose parts used in the studies reviewed here served as a type of measure to gauge the levels of dramatic play the children engaged in all of the studies. The role of the loose parts could also be viewed as a platform on which the examiners built dramatic play episodes. For example, in the Bishop et. al. (2005) study, the loose parts were a tangible way for the examiner to prompt the blind children on how to exhibit dramatic play. In the studies examining the behavior of children with autism, the loose parts were used to model dramatic play and hope the child learns how to imitate those modeled behaviors. Many studies that utilize loose parts in their designs do not allow the children to engage in free play with the loose parts, possibly because they are based on the Piagetian notion that representation is learned by imitation (Fein, 1979). Therefore, the potential role of loose parts in the children’s play is not clear. In the future, study designs should allow children more freedom to play with loose parts as they choose. A study design that may reveal the role of loose parts in non-typically developing children would measure levels of dramatic play before and after loose parts were introduced into a play space.

Prior research has focused on whether non-typically developing children are capable of engaging in dramatic play. However, studies have not been designed to see how these types of play benefit children with impairments. For example, it has been found that autistic children can engage in functional dramatic play. It is not known how this benefits them in learning how to communicate. Future studies may investigate the relationship between dramatic play and cognitive development. Studies of children with varying abilities that trace how dramatic play develops, when dramatic play develops, and what factors may foster dramatic play development might help to illuminate some of the questions remaining in this research.

In conclusion, prior research has revealed the importance of providing loose parts props to non-typically developing children in order to promote higher orders of play. Although prior research on this topic is limited and has some design flaws, many areas for future research have been revealed. The studies reviewed in this analysis have illustrated that non-typically developing children are capable of using loose parts for dramatic play. It is important to continue exploring how loose parts may influence the dramatic play behavior of non-typically developing children. Future empirical evidence may serve as a basis to make loose parts interventions that help mitigate the effects of developmental and cognitive impairments in children.

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