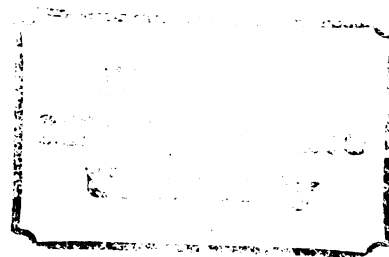


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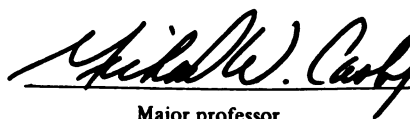
THE RELATIONSHIP BETWEEN SYMBOLIC PLAY
AND EARLY COMMUNICATION DEVELOPMENT
IN HEARING IMPAIRED CHILDREN

presented by

Susan Marie McCormack

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THE RELATIONSHIP BETWEEN SYMBOLIC PLAY
AND EARLY COMMUNICATION DEVELOPMENT
IN HEARING IMPAIRED CHILDREN

By

Susan Marie McCormack

A THESIS

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ABSTRACT

THE RELATIONSHIP BETWEEN SYMBOLIC PLAY AND EARLY COMMUNICATION DEVELOPMENT IN HEARING IMPAIRED CHILDREN

By

Susan Marie McCormack

This study investigated the relationship between symbolic play and language performance for young hearing impaired children. Subjects included 20 hearing impaired youngsters ranging in age from 38 months to 69 months. Ten children were placed in ordinal communication groups. Placement in one of the communication levels was dependent upon information concerning the number of spontaneous expressive communication units the child produced. The experimental task consisted of three predetermined play themes in which the child previously displayed functional play. A nonconventional item was then included, and the play behaviors were observed for the occurrence of symbolic play under a spontaneous or modeled condition. The results indicate a significant difference in symbolic play between the two ordinal communication levels. Additionally, there was a strong positive relationship observed between the variables of symbolic play and early communication development.

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Introduction

The study of child language development over the years has shifted from structure to meaning and most recently, to cognitive and pragmatic factors. The role of the child's developing cognitive capacity upon early language development has received much attention. (Bates et al., 1975, 1977; Corrigan, 1978; Sinclair, 1973; Leonard, 1978) Several authors (Bloom, 1973; Brown, 1973; Sinclair, 1973) have proposed that the conceptual ~~relations~~ expressed in language develop first as cognitive relations. Initially, relations among objects and events in the world exist in the content and behavior of early experiences without a dependance on linguistic form. Thus, language development can be understood in a much larger perspective, that is, as a part of a child's total cognitive development. Bloom (1973) noted that children learn that objects and events exist, cease to exist and recur; that people do things and that objects are acted upon. This knowledge is what comprises children's early experiences and in turn is the content of children's early language.

The focus of cognitive achievements on early language development has led to the rediscovery of Piaget's theory of cognitive development. Piaget's theory of cognitive

development (Piaget, 1971) perceives language as one of several symbolic activities, such as imitation, play, and mental imagery.

Basically, Piaget divides the child's development into four major periods of cognitive development.

Sensorimotor period, from birth to 2 years, is divided into six stages. During this stage, the child makes use of behavioral schemes to manipulate objects, thus learning the properties of objects and obtains goals by combining several schemes. Behaviors are tied to the concrete and the immediate.

Preoperational period, from 2 to 7 years, is notably marked by the child's acquisition of symbolic functioning (the ability to make one thing represent a different thing which is not present). The child increases his sphere of activity to include past and future events as well as present ones.

Concrete operational period, from 7 to 11 years, is characterized by the shaping of the child's thinking skills. The child acquires the ability to comprehend complex relationships within his environment.

Formal operational period, from 11 years onward, is marked by the child's ability to think in terms of logical problems that can be tested through experience.

Of all the stages of cognitive development proposed by Piaget, the sensorimotor period has most often been linked to children's early linguistic development.

Sensorimotor Intelligence and Early Language Development

Several contemporary reviews of Piagetian psychology stress the importance of the relationship between the levels

of cognitive development and early language development (Leonard, 1978; Bowerman, 1978; Morehead and Morehead, 1974). According to these authors, certain cognitive attainments are related to features of early linguistic development. It appears that the cognitive achievements of the sensorimotor period and the preoperational period are related to early language development. Many others (Sinclair, 1971; Menyuk, 1975; Bloom, 1973; Slobin, 1973) feel that certain attainments during this period are crucial to future language development.

Several dimensions of sensorimotor intelligence have been related to stages of early language development. For example, the development of causality has been related to early intentional communication (Bates, Camaioni, and Volterra, 1975); the development of object permanence has been related to early vocabulary development (Bloom, 1973; Corrigan, 1978); and the development of symbolic play has been related to early language behavior (Casby, 1980; Bates, Benigni, Bretherton, Camaioni and Volterra, 1977).

Bloom (1973) stated that the establishment of object permanence affected the way children use words. In analyzing her subject's speech, Bloom noted that two classes of words predominated her speech: substantive words and function words. Substantive words are those words which refer to

objects, persons, actions or events. Function words refer to non-referent relational words such as more, no and up. Bloom (1973) observed that function words tended to stabilize early and that substantive words did not appear to be stable until 18 months of age. She speculated that at objects age and events have some permanence and the child can more readily map these linguistically.

Recent studies do not support as strong of relationship between object permanence and language development as was once proposed. In a longitudinal study of four children, Ingram (1977) observed that one child began using multiword utterances, a skill quite in advance of early substantive word forms, before attainment of Stage VI object permanence. Corrigan (1978) explored the correspondence between three children's use of syntax. Her results suggested that the presence of syntax was not closely related to whether or not a child has achieved object permanence.

Sensorimotor Stage V causality or tool use (i.e., the child's ability to behave in a goal directed manner) has been suggested as the cognitive ability attributed to the onset of intentional communication (Bates et al., 1975). This is first seen as proto-imperatives and proto-declaratives. Proto-declaratives are preverbal attempts of the child to direct the adult's attention to some event or object in the

environment. The child makes use of an object as a means of gaining the adult's attention, for example, banging his cup for more milk. Proto-imperatives are the child's intentional use of the listener as an agent or tool in achieving some end. The child uses the adult as a means to a desired end or object, for example, pointing to a desired toy or an alternate gaze between the desired object and the adult. (Bates et al. (1975, 1977) concluded that object permanence and object-to-object tool use are not in themselves strongly related to early communication development. Their results indicated that a child's development of causality and sensorimotor schemes for relating to objects in play are better predictors of the child's use of referential speech.

As noted above, cognitive attainments such as objects permanence and causality have been related to early language development (Bates et al., 1975, 1977; Corrigan, 1978; Bloom, 1973) but it is symbolic functioning or mental representation that has been regarded as the primary cognitive attainment linked to the onset of multiword utterances (Brown, 1973; Morehead & Morehead, 1974). With the development of symbolic functioning the child now has the knowledge that objects and events can function in different manners. This capacity for symbolic functioning manifests itself in various behaviors including deferred imitation and symbolic play.

Symbolic Functioning

Several investigators have proposed that the language capabilities of the child are related to the emergence of a representational capacity (Brown, 1973; Morehead & Morehead, 1974). Piaget (1952) initially described the evolution of the symbolic or representational function as the child's ability to make something stand for or represent an object or event which may not be present. For example, the child can use a mental symbol of a bicycle or the word bicycle or a small schematic toy to stand for the real bicycle when it is not in immediate view. The ability to symbolize in this way makes it possible for the child to operate on new levels. At this point, he is not restricted to acting on things in the immediate environment because the symbolic function allows him to evoke the past and anticipate the future. Since he has formed a mental symbol of the bicycle, he is able to recall his previous experiences with it and to speculate about future activities with it.

According to Piaget (1952), language is but one manifestation of symbolic functioning emerging from the sensorimotor period and a prerequisite for further development. He considered symbolic functioning to be a basic process which provides the basis for the acquisition of both private symbols, as in play, and for the social signs of language. With the

development of symbolic functioning, the child becomes capable of representing reality by a gesture, a mental image or a word. Symbolic functioning does not emerge suddenly but manifests itself in several ways, developing gradually as deferred imitation, symbolic play and other aspects of representation.

As the child's representational abilities develop, he has the capability to recall the past, represent the present and anticipate the future. He can internally evoke a signifier (an image, a word) which symbolizes an absent event (the signified). Through the process of accommodation, the child is able to develop a thought as opposed to actually carrying out an action/imitation made in the past. This internal imitation takes the form of an image and constitutes the first signifier (i.e., the signified being the action, object or word which the image is a reduplication of). The first signifiers are not linguistic signs but are private, nonverbal symbols often observed in symbolic play activities of children (Morehead & Morehead, 1974). Casby (1980) studied the relationship between language acquisition and symbolic play (i.e., the ability to substitute the use of one object to represent another). In comparing symbolic play abilities between normal and language delayed children across two different language levels (Pre-State I, MLU - 1.0; State I, MLU - 1.5-2.0), he concluded that regardless of age, a child's

development of combinational speech can be related to symbolic play abilities.

Development of Play.

Play is a natural medium of expression for children, and its importance in child development has been well documented. The works of Piaget and Inhelder (1969) and Miller (1974) have repeatedly demonstrated the importance of play for social, interpersonal, and cognitive development. Play, more importantly, provides a vehicle for the integration of symbolic representation.

Piaget (1952) believed that play, specifically symbolic play, was one manifestation of representational functioning and described its gradual emergency during the child's development. Initially, the child engages in a functional equivalent of play which appears to be pursued for the sheer pleasure of doing so. The type of play that predominates at this stage is sensorimotor (or practice) play. As the child develops, another play pattern emerges: ritualization. The child encounters stimuli associated with an action/event and goes through rituals associated with it. For example, the child may be presented with a blanket and will re-enact sleeping. Further development produces the emergence of representational, or symbolic play. The child now becomes capable of true make-believe play. Stimuli no longer need to be appropriate by treating inappropriate stimuli as if they were appropriate

by treating them as something else. For example, a block can now become a car, a boat, an airplane, a brush, etc. The most sophisticated type of play is rule-governed games. This form of play develops last and continues through adulthood.

Smilansky (1968) also described the development of play. She identified four stages of play: functional, constructive, dramatic, and games with rules. Functional play, similar to Piaget's sensorimotor play, consists of simple muscular activities. The games the child engages in are functional; he repeats his actions and manipulations, tries new actions, and imitates them for the pleasure of doing so. As the child develops, he manipulates toys and play objects, gaining experiences concerning his immediate environment. This prepares him for the next stage, constructive play. This form of play introduces the child to creative activities. The child moves from functional activities to more creative uses of play material. Dramatic or symbolic play is the third stage. At this stage, the child can freely display his creative abilities. He can substitute objects for other objects or events and can evoke imaginary situations, simultaneously being actor, observer, and participator in his play. Games with rules is the highest stage, marked by actions/events with pre-arranged rules which control behavior, actions and reactions.

Rosenblatt (1977), in observing twenty children longitudinally between nine and twenty-four months, suggested a progression of play development from undifferentiated play to meaningful and representational play. At first, the child's play is stereotypical, sensorimotor activities with a single object/toy. The predominant play activities are touching, mouthing, holding, etc. The child displays handling activity with no "real" play activity. As development proceeds, the child now displays sensorimotor activity in combinations, as seen in relational play. Here the child will manipulate the toys in a simple fashion, banging two together, stacking blocks, etc. Next the child demonstrates representational combinations or functional play. The child will demonstrate appropriate or conventional use of objects/toys. For example, the child will engage in such activities as brushing the doll's hair, pushing a car or drinking from a cup. Early representational combinations lead to the development of novel and imaginative acts, with true symbolic play or double knowledge, the child's ability to use an object to stand for another (a block for a car) developing later. These play behaviors develop first with single toys and then with two or more toys.

Symbolic Play and Language Development.

Developments in a child's play behaviors are related to other developing abilities of the child. Developmental play activities have been found to enhance attachment behavior and facilitate social, emotional, and cognitive functioning in young hearing children. The effectiveness of a developmental play program with hearing children between the ages of three to nine years has been documented by Brody (1975). Brody and her colleagues demonstrated that developmental play activities would facilitate attachment behaviors, cognitive development and expressive communication. This is further supported by Rosenblatt's study (1977) which noted that those whose play matured most rapidly also learned language earlier, achieved object permanence earlier, and scored higher on an infant development scale.

Although developments in play behaviors appear to enhance developments in other areas, it seems that the development of the symbolic play ability is most closely related to language acquisition. Morehead and Morehead (1974) noted that representational ability is apparent in children's play behavior. They state that as a child displays symbolic knowledge about objects or events in play, he is demonstrating a "function that has significance for the development of preconceptual thought and words in language." (p. 174)

As stated earlier, findings of Bates et al (1977) coincide with this as they found referential speech to be correlated with symbolic play. Cromer (1976) also stressed the importance of the role of symbolic play in the acquisition of language, stating that the child makes use of such play behaviors to incorporate symbolic activity with mental imagery and language. Casby (1980) also supports the hypothesis that symbolic play abilities are related to early language acquisition; specifically the transition from single word utterances to multiword utterances.

Researchers have looked at the development of symbolic play and language acquisition. In 1968, Lovell, Hoyle and Siddall reported a significant correlation between mean number of morphemes per utterance and the amount of time spent in symbolic play by linguistically deviant children. Several other studies comparing play behaviors and language development of deviant populations (Tilton & Ottinger, 1964; Weinger, Ottinger & Tilton, 1969; Wing, Gould, Yeates & Brierly, 1977) concluded that the play behaviors of the children were inferior in type and quantity. One can speculate from these findings that non-communicating children would fail to exhibit symbolic play behaviors or engage in such behaviors less frequently than communicating children.

Cognitive and Linguistic Development of
Hearing Impaired Children

Hearing Impaired children have been found to be severely delayed in almost all aspects of language achievement. (Goetzinger and Rousey, 1959; Geers & Moog, 1978; Kretschmer, 1976; Wilcox and Tobin, 1974). Yet, there is no evidence that these language deprived children have an overall or specific representational deficit. Studies by Furth (1966) indicate that the Hearing Impaired display minimal differences on formal operational tasks of conservation of weight. Rosentein (1960) felt that the language capabilities of the hearing impaired interfered with task understanding and, therefore, with performance. He constructed tasks to study the cognitive abilities of the hearing impaired on multiple classification and number concept skills using language that was well within the capabilities of the hearing impaired. He found no significant differences between the hearing impaired and hearing children's ability to perform on the tasks.

Little research is available concerning the early cognitive and linguistic development of hearing impaired children. Best and Roberts (1976) investigated the sensorimotor development in young hearing impaired children between the ages of 23 to 38 months. Their results showed that the hearing impaired children performed as well as the hearing

children on all of the sensorimotor subscales except that measuring vocal imitation. It appears that the hearing impaired develop adequate cognitive skills yet fail to develop adequate language skills. One could hypothesize that this phenomenon is a result of the hearing impaired child's development without a conventional linguistic means for symbolic functioning.

According to Schlesinger and Meadow (1972) and Vernon (1974), most hearing impaired children start school with little or no vocabulary or grasp of syntax. This deficit is contrasted with the normal development of the average first grader who knows approximately 5,000 to 26,000 words and enough grammar to use these words in sentences (Vernon, 1974). This language deficit of the hearing impaired child is rarely overcome. The linguistic handicap of deafness disrupts the normal process of language acquisition and, consequently, of early developmental play experiences. One exception would be hearing impaired children of hearing impaired parents who are reported to have distinct advantages in the areas of language, cognition, and psychological functioning compared to hearing impaired children of hearing parents (Schlesinger and Meadow, 1972). These advantages are thought to have resulted from early parent-child communication which leads to the development of an internalized language system for the hearing impaired child of hearing impaired parents.

Play Patterns and Language Performance of Hearing Impaired Children.

In investigations of the play pattern of young hearing impaired children between the ages of three to eight years, Darbyshire (1977) concluded that although the evolution of play in young hearing impaired children appeared to follow the pattern described by Piaget (1952), the progression was at a slower rate. He also found that several factors were associated with relatively mature patterns of play development. These included high socio-economic backgrounds, the acquisition of hearing aids at a young age and the early start of training and/or therapy. He further noted that games and activities involving rules and a fairly high degree of verbal conceptualization were the form of play that presented the hearing impaired child the greatest difficulty.

Singer and Lenahan (1976) found the kinds of play, fantasy material and day and night dream content of hearing impaired subjects with high and average IQ scores to be concrete, with only minimal amount of fantasy and imaginative content. The responses of young hearing impaired children showed less originality and were similar to the responses of hearing children who were three to five years younger. Young hearing impaired children with high and average IQ scores enjoyed ordinary activities such as hide and seek, basketball, etc. None of these hearing impaired children stated a preference

for adventurous games that suggest fantasy or imagination, such as cops and robbers, pirates, etc.

Similar findings were reported by Sisco, Kranz, Lund and Schwarz (1979), who recorded observations of hearing impaired children participating in play therapy. They found that hearing impaired children's play was similar to that of hearing children two to four years younger. They also observed that the children moved through developmental sequences of play and growth similar to those of hearing youngsters. They speculated that the movement through these sequences was at a slower rate because of the language handicap. Further observations noted that initially very young hearing impaired children used little or no language in the play situations, whereas the language of older hearing impaired children was usually fragmented and difficult to understand. An interesting observation was that as their abilities developed, hearing impaired children attempted to manipulate language in the play situation, beginning to explore the use of words in different and varied contexts.

Comparing the solitary play behaviors of hearing impaired and normal hearing preschoolers in a laboratory setting, Kretschmer (1972) reported that the hearing impaired children engaged in less object-focused or symbolic play than their normal hearing counterparts. He speculated that the lack of symbolic language skills actually may interfere with

the hearing impaired child's organization of solitary play. Gorrell (1972) also found that small play groups of hearing impaired children lacked the social play skills of children with normal hearing. Hearing impaired children vocalized less, responded and approached each other less, and attended to themselves, rather than objects or others, more often. Further support is suggested by Darbyshire (1977), who indicated that children with the greatest communication impairments are less likely to play in organized play situations or to exhibit dramatic/symbolic play.

More recently, Higgenbotham and Baker (1981) analyzed free-play observations of hearing impaired youngsters. They reorganized the social participation and cognitive play classifications into a more precise format to accommodate both hearing impaired and normal hearing children. They believed that social participation (Parten, 1932) and cognitive play (Smilansky, 1968) category definitions employed in earlier research had been constructed with an emphasis on verbal communication competence, a factor which could unjustly bias the evaluation of hearing impaired children's play. Their findings indicated that the hearing impaired children appeared less able to engage in dramatic play activities than normal hearing children; the hearing impaired youngsters spent significantly more time in constructive play than in either

dramatic or functional play, whereas normal hearing children exhibited approximately the same amount of constructive and dramatic play, spending less time in functional play. Overall, the social and cognitive play patterns of the normal hearing preschoolers were considerably more complex than those of the hearing impaired children. They speculated that this may be due to the verbal interactions utilized by the normal hearing children, permitting them to interact in larger, more coordinated groups. These findings support the earlier observation of Kretschmer (1972) and Darbyshire (1977), that is, the dramatic play deficiencies exhibited by hearing impaired children may be related to a generalized deficiency in symbolic functioning.

In summary, the development of representation occurs as a result of the differentiation of meaning and symbol from context. One early form of representation is symbolic play (Piaget, 1952; Sinclair, 1973; Morehead and Morehead, 1974). Although the relationship between symbolic play and language acquisition has been speculated, there has been little research investigating the early symbolic skills of young hearing impaired children.

This study investigated the symbolization skills of young hearing impaired children as reflected in their ability to engage in symbolic play. The purpose of the study was to

determine the presence of symbolization skills as reflected in symbolic play behaviors of hearing impaired children and further to investigate the relationship between symbolic play and language performance of young hearing impaired children. Specifically, the following questions will be asked: Is there a significant difference in the symbolic play behavior of hearing impaired youngsters at two different levels of communication development? What is the magnitude of the relationship between communication development and symbolic play for young hearing impaired children?

Method

Structured play situations were used to investigate the symbolic play performance of young hearing impaired children of differing communicative abilities. The children were presented with symbolic play situations in which the experimenter substituted a non-conventional item for a conventional item. The children's play behavior was then observed to note whether they represented the conventional items with the experimental substitutes.

Subjects

Subjects included twenty hearing impaired youngsters, ten each at two different communication levels. All were enrolled as day students in the pre-school program at the Pennsylvania School for the Deaf. The subjects exhibited at least a severe hearing loss (i.e., 71+ dB, ANSI, 1969, Martin, 1975) in the better ear and all wore hearing aids. All subjects were considered to have normal non-verbal intelligence as indicated by their school educational records. Furthermore, the children exhibited no additional known handicaps (e.g., blindness, cerebral palsy) and had normal hearing parents.

Each child was assigned to one of two ordinal communication levels. Level I included those children whose

expressive communication was less than or equal to twenty-five different communication units. A communication unit was defined as consisting of any of the following communicative behaviors: communicative gestures, sign, and/or words. Level II included those children whose expressive communication was greater than twenty-five different units. The chronological age for the ten children placed in Level II was 53 months to 69 months ($\bar{x}$ 60; SD 5.3) (See Table 1). It is also noted that the majority of children in both groups of subjects were male; i.e., Group I - 9 males, 1 female; Group II - 6 males, 4 females.

Communication Level Assignment

Each child's assignment to one of the communication levels was based upon data gathered from informants' reports. This included reports from two significant others (e.g. teacher and parent, parent and clinician, or clinician and teacher) indicating their observations regarding the child's communicative behavior. Using a prepared form (Appendix A), they were to list all expressive communication the child produced. This was to include gestures, sign and words. In order for a child to be placed in one of the two ordinal communication levels, both sources had to agree on whether or not the child was using less than or more than 25 different communication units.

Table 1. Description of subject characteristics.

Level I

Subject	Communication Units	Sex	Age (Months)	Hearing Level
1	16	M	56	Profound
2	12	M	37	Profound
3	9	M	44	Profound
4	17	M	58	Severe
5	12	M	38	Profound
6	18	M	52	Profound
7	21	F	55	Profound
8	19	M	52	Profound
9	23	M	59	Profound
10	22	M	62	Profound
	$\bar{x}$ 16.9		$\bar{x}$ 51.3	
	SD 4.4		SD 8.7	

Level II

Subject	Communication Units	Sex	Age (Months)	Hearing Level
1	27	M	53	Profound
2	29	M	56	Profound
3	42	M	69	Profound
4	33	F	65	Profound
5	28	F	56	Severe
6	30	M	63	Profound
7	29	M	64	Profound
8	28	M	62	Profound
9	27	F	54	Severe
10	36	F	58	Profound
$\bar{x}$ 30.2		$\bar{x}$ 60		
SD 4.3		SD 5.3		

Reliability of subject's communication level placement was assessed by the experimenter randomly sampling the communication of a number of the Level I and Level II children. The children (3 Level I and 3 Level II) were each observed for a four hour period during regular school hours. Throughout this time the experimenter noted all of the different communication units the children produced. Using this information, the experimenter placed the children in one of the two levels of communication. In all cases this assignment agreed with that of the informants. The number of communication units utilized by Level I children ranged from 9 different units to 23 units ($\bar{x}$ 16.9, SD 4.4) whereas the range of the children placed in Level II was 27 units to 42 units ($\bar{x}$ 30.2, SD 4.3).

Symbolic Play Situations

Structured play situations were designed utilizing conventional play materials (e.g., doll, bottle, car, etc.). The play materials chosen, as well as the play themes, were ones that were readily identified as common for pre-school children.

The play themes utilized were:

1. Feed the baby. The materials included a doll, bottle, blanket, and a block the same size as the bottle.

2. Racing cars. The materials included miniature cars, a race track and blocks.
3. Tea party. The materials included a miniature tea set and several different sized blocks.
4. Racing boats. The materials included several boats and blocks of various sizes.
5. Flying airplanes. The materials included miniature model airplanes and blocks.

These themes are further described in Appendix B.

Experimental Task

Each child was accompanied from his academic classroom by the experimenter to a separate play room. This play room was familiar to all subjects and bare of any objects aside from a table and chair. Individual children initially observed the examiner model typical play behaviors with the sets of standard objects. This consisted of the examiner enacting the situation and describing what was happening. To circumvent the effects of impaired verbal comprehension among subjects, descriptions were given both verbally and in sign language (ASL). The child was then provided with the toy materials and the verbal and sign instructions of "You do it; Your turn." At this point the child was required to demonstrate typical functional play behaviors associated

with the standard objects. Each child had to demonstrate this level of performance for a minimum of three out of the five structured play themes prior to being presented with the experimental task. Once the child passed the functional play criterion, the experimental condition of symbolic play was presented.

For the experimental condition of symbolic play the stimulus objects of the three play themes for which the child had previously demonstrated conventional play were re-presented with one important exception. Now, a non-conventional object was substituted for one of the standard objects. In all cases, the non-conventional objects consisted of a block of various shape and size. For example, in the feeding baby situation, a block was presented in place of the bottle; in the tea party activity, blocks were used instead of the tea set; blocks were substituted for the boats in the racing boats theme. The materials were presented to the child, and, as before, the verbal-sign instructions "You do it." were given by the experimenter.

- +

Nest Theme

The child's spontaneous behavior was observed for occurrence of symbolic play (i.e., using the substitute objects as the real counterparts). If the child failed to demonstrate symbolic play spontaneously, then the experimenter modeled appropriate symbolic play with the substitute objects and presented them once again to the child. At this point the occurrence of symbolic play following modeling was noted as present or absent in the child's performance.

Scoring of Play Responses

Conventional play. The conventional play portion of the experiment was scored dichotomously; the children did or did not demonstrate conventional play behavior within the structured situation. Recall that the children had to demonstrate conventional play for three out of five play situations in order to be considered a subject for the investigation.

Symbolic play. The children's symbolic play performance was scored in the following manner: If the children demonstrated spontaneous symbolic play, that is if they used the substitute objects as they had the standard counterpart without any modeling, they received a score of two. If the subjects demonstrated symbolic play only after the experimenter's model, they received a score of one. A score of zero was given if the child did not demonstrate symbolic

play following the experimenter's model. If a child demonstrated spontaneous symbolic play for a particular theme, then a score of one was automatically given for the modeling condition. This scoring system was applied to each of the three play situations presented to each child. The possible range of scores is reflected in the following: A child who demonstrated spontaneous symbolic play for all presentations would receive a total score of 9; two for each of the three spontaneous play tasks and one for each of the modeling conditions. A child who only demonstrated symbolic play following modeling would receive a total score of 3; zero for each of the three spontaneous situations and one for each of the modeling conditions.

Results

The symbolic play scores for all subjects are listed in Table 2. The scores for the Level I children ranged from 0 to 7 with a mean of 3.7 (SD 2.53). The symbolic play scores of the Level II children ranged from 5 to 9 with a mean of 7.8 (SD 1.33). Because of the ordinal nature of the data, the subjects' performances were compared using the Mann-Whitney U Test (Siegel, 1956). Results of this indicated a significant difference in the symbolic play performance between the Level I and Level II children ($U = 9$; $p < .002$;

Table 2. Symbolic play scores of subjects.

Level I		Level II	
Subject	Play Score	Subject	Play Score
1	7	1	9
2	4	2	9
3	7	3	9
4	4	4	9
5	4	5	9
6	3	6	7
7	3	7	7
8	2	8	7
9	0	9	7
10	0	10	5
$\bar{X}$	3.7		7.8
SD	2.53		1.33

two-tailed). The Level I children demonstrated significantly less symbolic play than did the Level II children. Close inspection of Table 2 reveals that there was very little overlap between the two groups of children for individual scores as well. Not one subject of Level I had a symbolic play score equal to or greater than the mean symbolic play score of the Level II children. Similarly, not one subject from Level II had an individual symbolic play score as low as the mean symbolic play score of the Level I group. The two groups of children were also found to be significantly different in chronological age ($U=20$; $p < .05$; two-tailed) although not at the same level (i.e., $p < .002$) as the difference found for symbolic play abilities.

A further interest was the relationship between expressive communication development and symbolic play performance for young hearing impaired children. A rank-biserial correlation coefficient was calculated between the dichotomous variable of language level and the ordinal variable of mean symbolic play score for each child. The coefficient was calculated as .82, indicating a high positive relationship between the two variables. The Spearman Rank-Order Correlation between the variable of chronological age and mean symbolic play score was .35, and it was .053 for the relationship between chronological age and communication level. The results of the correlation analyses indicate that there

exists a stronger relationship between symbolic play abilities and the domain of communication development than there exists between symbolic play and chronological age, or between communication level and chronological age.

Reliability

To assess intra-judge reliability of functional and symbolic play, the experimental task performance of five Level I and five Level II subjects were rescored from videotapes. The play scores calculated were in total agreement with the initial scores for both the functional and symbolic play.

To evaluate inter-judge reliability, randomly selected subjects' play behaviors were independently scored by four raters. All raters were naive as to the nature of the research and were considered inexperienced in that they have never had any formal training in speech/language pathology. They were only provided with the instructions to score the presence or absence of functional play and symbolic play. The term functional play was defined as typical play behaviors with the real objects, i.e., using the bottle to actually feed the baby. Symbolic play was defined as typical play behaviors with the substituted items, i.e., treating the block as a bottle and utilizing it to feed the baby. Five Level I subjects were scored by two raters and five Level II subjects were scored

by two different raters.

Regarding the functional play of Level I, rater 1 agreed with 12 of 15 decisions in an item-by-item comparison; (.83) rater 2 agreed with 14 of 15 decisions in an item-by-item comparison (.93). For Level II, rater 3 agreed with 15 of 15 decisions (1.00) and rater 4 agreed with 15 of 15 decisions (1.00). Inter-judge reliability comparisons for the functional play portions ranged from .83 to 1.00 with a mean of .93. All proportions of agreement were based on an item-by-item comparison.

To demonstrate inter-judge reliability between the raters and the experimenter on the symbolic play aspect of the experimental task, the raters independently scored the children's symbolic play performance. These were then compared to the experimenter's original scoring of the task. The mean percentages of agreement for the Level I children was .60 with a range of .60 to 1.00; whereas the mean percentage of agreement for the Level II children was 1.00.

Discussion

It will be recalled that this study was conducted to investigate the relationship between symbolic play and the communication level of young hearing impaired children. The results clearly indicate that hearing impaired children do engage in symbolic play behaviors spontaneously and that a

relationship exists between their communication performance and symbolic play.

The findings from the experimental tasks show that Level II subjects had significantly higher symbolic play scores than did the Level I subjects. These findings are in agreement with Darybyshire's (1977) observations that children with the greatest communication impairments engage in symbolic play less. The scoring method employed indicates that the Level II subjects not only scored higher but also engaged more readily in spontaneous symbolic play behaviors, whereas the Level I subjects had greater difficulty in demonstrating the behaviors spontaneously, with some failing to do so even upon presentation of a direct model. In looking closely at the scored symbolic play responses of the subjects, it was observed that all of the Level I children required the modeling condition in two or more of the three presented play themes. Yet only 50% of the Level II children required the modeling condition. That is, 5 of the Level II subjects spontaneously engaged in symbolic play whereas the remaining five required the modeling condition for at least one of the three presented play themes. Those children with higher developed communication skills tended to spontaneously engage more frequently in symbolic play behaviors than children at

a lower level. These results agree with similar findings by Casby (1980) and Bates et al., (1975, 1977), who speculated on a relationship between symbolic play and referential language behaviors.

In addition, Kretschmer (1972) speculated that children at early language levels engage less in symbolic play because of the absence of symbolic language skills. The results of this investigation supports this; but more significantly, they indicate a connection between language skills and symbolic play. Recall that the two groups of children were significantly different with respect to chronological age. But the results of the correlational analyses indicated a stronger relationship between symbolic play ability and communication development than between symbolic play and chronological age.

It is interesting to note that the observations from the structured play situations are similar to ones involving free-play observations of hearing impaired youngsters (Higgenbotham & Baker, 1981). They found that hearing impaired youngsters engaged more in constructive play, equivalent to functional play utilized in this study, than in dramatic play (symbolic play). All the subjects in this study, regardless of communication level, passed the functional play criterion, readily engaging in the functional

play themes for extended periods of time. Often the child would participate in the play theme prior to indications from the experimenter and was more precise and exact with his/her behaviors. For example, one child grabbed the baby before the examiner could model the play theme and proceeded to cradle the doll in her arms, feed her the bottle, burp her, rock the baby in her arms and finally lay her down and cover her with a blanket. Yet this same child when presented with the symbolic play task for this theme, proceeded to pick up the block, place it appropriately for a few seconds and then cover the doll with the blanket. In addition, several children would re-enact several car races with the real objects but initiated only one race when presented with the non-conventional items. It appears that all of the subjects had little difficulty in displaying functional play extensively. It will be recalled that the differences between subjects appeared in their symbolic play abilities. Some children failed completely to demonstrate symbolic play abilities, even following a modeling condition, whereas others were able to display symbolic play abilities but with varying degrees. Several investigators (Higgenbotham & Baker, 1981; Kretschmer, 1972) believed that verbal communication skills perform a vital role in play and that the lack of certain language skills may actually interfere

with the hearing impaired child's organization of play. The observations here support this in that children with the more advanced communication development had less difficulty in engaging in symbolic play activities than those children with less advanced communication skills. However, the findings of this study nor of the Higgenbotham & Baker (1981) or Kretschmer (1972) allow for a statement of causality.

In taking a closer look at the difference in the communication abilities of Level I and Level II, it was observed that not only did the two groups differ in the number of different communication units they exhibited spontaneously, but also in the way they utilized these units to communicate. All of the Level I children used single units in a labeling manner, to point out objects or request items. Level II children, on the other hand, exhibited combinations of two or more different communication units to reflect such notions as agent-action, location and possession.

Overall, the results of this study support the hypothesis that there are basic general cognitive skills, specifically symbolic functioning which are related to the acquisition of certain language behaviors. It provides support for Piaget's view and the work of Casby (1980) and Bates et al. (1977) in that the emergence of symbolic functioning is closely linked

to development of communication in young children. It appears that there are relationships between objects or between objects and persons that are understood by the child before these same relations are coded by language.

Conclusions

The results of this present investigation provide further support to the speculated link of symbolic play development and language development in young children. More specifically, the presence or absence of symbolic play patterns in hearing impaired children is closely linked to their communicative ability. It appears that hearing impaired children develop play patterns along a normal continuum but at a delayed rate.

As indicated by the results outlined in this investigation, further play research is warranted. Although the results of this investigation were significant, they were based on a small number of hearing impaired subjects. Another study for further research would be the examination of play differences between those children attending schools for the hearing impaired and those who are mainstreamed into regular classrooms.

All of the subjects in this study were day students attending a residential school. It would be interesting to see if differences in educational setting influence the play

patterns of hearing impaired children. Further research is also needed to specify the environmental variables affecting the hearing impaired child's play behaviors. More specifically, factors such as etiology of hearing loss, age of identification and intervention, types of communication training may significantly influence the hearing impaired child's play performance.

APPENDICES

APPENDIX A

Instructions for Informant Information

Indicate in the appropriate space all expressive communication that the child produces. This includes communicative gestures, limited to those gestures that are directed to another individual and are not a direct motor act on an individual or object (i.e., shoving a person/object out of one's way; signs; and words (or word approximations-a sound used by the child to indicate a person, action, object, want, etc.)

Communicative Gestures

Signs

Words

Individual filling out report: _____ Parent
 _____ Teacher
 _____ Clinician

APPENDIX B

Structured Play Themes

1. Feed the baby.

Materials: doll, bottle, blanket; block same size as bottle

The experimenter will present each item (doll, blanket, bottle) and proceed to model the appropriate play behaviors of tasting the bottle, holding the baby, feeding the baby, burping the baby and placing the baby down covering her with the blanket. The play materials will then be presented to the child with the instructions "You do it. Your turn." The materials will then be removed. A block (the same size as the bottle) will be substituted for the doll. The materials will be re-presented to the child with the instructions "You feed the baby. You do it."

2. Racing cars.

Materials: two miniature cars; two blocks

The experimenter will present the two cars and proceed to model a car race, determining a starting line, finishing line, the race itself and a car crash. The play materials will then be presented to the child with the instructions "You race the cars." The materials will then be removed. Two blocks will be substituted for the cars. The materials will be re-presented to the child with the instructions "You race the cars."

3. Tea Party.

Materials: miniature tea set; blocks (1 large block, several smaller ones)

The examiner will present the tea set and proceed to model a tea party, setting up, making tea, pouring tea, serving tea, stirring the tea and drinking tea. The play material will then be presented to the child with the instructions "You have a tea party." The materials will then be removed. Blocks will be substituted for the pot and cups. The materials will be re-presented to the child with the instructions "You have a tea party."

4. Racing boats.

Materials: Several boats of various sizes; blocks of various sizes

The experimenter will present each item and proceed to model the appropriate play behavior of sailing and racing the boats. The toys will then be presented to the child with the instructions "You race the boats." The materials will be removed. Blocks will be substituted for the boats. The materials will be re-presented to the child with the instructions "You race the boats."

5. Flying airplanes.

Materials: Model airplanes; blocks of various sizes

The experimenter will present the airplanes and model the appropriate play behaviors of flying and landing the planes.

The materials will be presented to the child with the instructions "You fly the airplanes." The materials will then be removed. Blocks will be substituted for the planes. The materials will be represented to the child with the instructions "You fly the airplanes."

APPENDIX C

Informed Consent Release Form

I, _____ freely and voluntarily consent to allow _____ to serve as a subject in a scientific study of the relationship between play behavior and language conducted by Susan M. McCormack.

I understand that the procedures for this study are experimental and that the results of this study may not be of direct personal benefit to me or my child.

I understand that the participant will not be exposed to any experimental conditions which constitute a threat to his/her hearing, physical or psychological well being.

I understand that the data gathered from the participant for this experiment are confidential, that no information uniquely identified with him/her will be made available to other persons or agencies, and that any publication of the results of this study will maintain his/her anonymity.

I agree to participation in this study freely, without payment to me or from me, and without implication of personal benefit. I understand that I may cease participation in the study at any time.

I agree to allow the experimenter to review the participant's school/educational records to obtain information concerning his/her present hearing level and non-verbal intelligence.

I understand that the participant will be videotaped and that these tapes will be used only for research purposes. Confidentiality will be respected in all situations.

I have had the opportunity to ask questions about the nature and purpose of the study, and have been provided with a copy of this written informed consent form. I understand that upon completion of the study, and at my request, I can obtain additional information about the study.

Date: _____ Signed: _____
Parent/Guardian

APPENDIX D

Experimental Task Score Sheet

Date:

Subject #:

DOB:

Age:

Language Level: I II

PRE-TESTEXPERIMENTAL TASK

	Functional Play	Spontaneous Sym. Play	Modeling Sym. Play
1.			
2.			
3.			
4.			
5.			

Comments:

APPENDIX E

Subject CharacteristicsLevel I

Subject	Communication Units	Sex	Age (Months)	Hearing Level db HTL
1	16	M	56	110
2	12	M	37	110
3	9	M	44	100
4	17	M	58	90
5	12	M	38	110
6	18	M	52	100
7	21	F	55	105
8	19	M	52	110
9	23	M	59	100
10	22	M	62	110
$\bar{x}$ 16.9		$\bar{x}$ 51.3		$\bar{x}$ 104.5
SD 4.4		SD 8.7		SD 6.5

Level II

Subject	Communication Units	Sex	Age (Months)	Hearing Level db HTL
1	27	M	53	100
2	29	M	56	110
3	42	M	69	100
4	33	F	65	110
5	28	F	56	75
6	30	M	63	95
7	29	M	64	100
8	28	M	62	110
9	27	F	54	85
10	36	F	58	110
$\bar{x}$ 30.2		$\bar{x}$ 60		$\bar{x}$ 99.5
SD 4.3		SD 5.3		SD 11.3

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