

THE UNIVERSITY OF MANITOBA  
PLAY BEHAVIOURS OF HEARING IMPAIRED AND  
NORMAL HEARING PRESCHOOL CHILDREN  
WITH SELECTED TOY MATERIALS

by  
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## ABSTRACT

The play behaviours of 16 matched pairs of hearing impaired and normal hearing preschool children, 3 to 4 years of age, were compared in response to toy materials selected on the basis of their auditory-related properties. Toy categories included toys which children use to produce sounds, toys with which children associate sounds or language, and toys that do not produce sounds or are not associated with sounds. Children were tested individually during three 15-minute play sessions by separately presenting them with toys from each of the categories for a maximum time of 5 minutes per toy. Play responses were examined in terms of durations of play and types of play including manipulative, make-believe, and cognitive-perceptual behaviours relative to the toy categories. Results indicate that although the hearing impaired as a group show some differences in play as compared to their normal hearing peers, many of their play behaviours are similar. The two groups play for similar lengths of time with sound producing and sound associated toys, and for different lengths of time with nonsound toys. However, for hearing impaired children, the greater their hearing loss, the less they play with sound producing toys, while the more educational experience they have, the longer they play with nonsound toys. In relation to types of play, the

hearing impaired as a group show similar play behaviours in terms of sound manipulation, listening behaviours, make-believe responses, and cognitive-perceptual behaviours as the normal hearing, whereas those children with greater hearing losses appear to be adversely affected in all types of play. The play of the hearing impaired is also influenced to a lesser extent by age, education, and socioeconomic variables. It would appear, therefore, that it was those children with the greater hearing losses who showed differences in play in the directions hypothesized.

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## CHAPTER 1

Children acquire general organized knowledge about the nature of their environment through sensory stimulation and active interaction with the surrounding world (Caplan and Caplan, 1973). Thus, an environment rich in visual, auditory, and tactile experiences tailored to a child's information-processing abilities is important in challenging cognitive growth.

In the young child, exposure to perceptual stimuli and active interaction with the environment is accomplished through the behavioural medium of play, with play regarded as an important cognitive activity and the basis of all higher forms of intelligence (Furth, 1969; Piaget, 1962). Through play a child expresses gains in cognitive understanding based on his or her interpretation of perceptual experience. In this regard, a child who is sensorially handicapped, i.e., receiving reduced or no stimulation through one or more sense organs, could be expected to play differently than a child whose senses are intact. Specifically, children who are deaf or suffer from hearing impairments may show possible differences in those play behaviours dependent upon auditory stimulation and/or language for their expression in comparison to normal hearing peers.

## Literature Review

### Play as a Cognitive Activity

Play, as the predominant activity of young children, has long been recognized by educators, philosophers, and psychologists alike. Indeed, over the past century, there have been several theories about the functions of play in the growth and development of children. For example, Piaget (1953) has looked at play primarily as it relates to the logical structures of knowledge, while Erikson (1940) has seen play as having prime importance in the mastery of emotional needs. While extended reviews of theories of play are available in the literature (Gilmore, 1966; Millar, 1968), the focus of the present study is on play within the framework of a cognitive processing system.

Only in recent years has play been formally recognized as the child's natural medium of learning and an essential part of intellectual development. As Ellis (1973) notes, educators are beginning to realize that playful behaviour is often motivated by an intense desire to learn accompanied by positive feelings of enjoyment. Thus, a child who is curious and interested in exploring the surrounding environment attempts to understand his or her world through play, which is regarded as the primary vehicle for the expression of thought in a young child. In this regard, an important function of play is cognitive functioning, with play serving as the child's exploratory and evaluational approach to environmental stimuli (Neumann,

1971).

Jean Piaget (1962) has been the main exponent of the relationship between play and cognitive development. According to his theory, play is "the activity by which a child assimilates external reality to his own internal life" (Miller, 1970, p. 113). Thus, in play, Piaget views the child as incorporating experience into his own psychological processes, i.e., assimilation, rather than adapting his sense of reality to external forces as is the case in imitative behaviour. Piaget regards the development of play behaviours as corresponding to cognitive development, with sources of thought found in the preverbal sensori-motor actions performed and experienced in the first early years of a child's life. In summarizing the importance of play in Piagetian terms, it is seen as the basis of all higher forms of mental activity, and as intellectual by nature in leading a child from activity to symbolic representation.

Another important researcher in the area of cognitive development and play is Jerome Bruner, whose studies have been highly influenced by Piaget (Bruner, Olver, and Greenfield, 1966). Bruner stresses that learning takes place most readily in an atmosphere of playfulness, and like Piaget, stresses the importance of a personal experience or sensation as being the foundation for perception and thinking. Experiments of Bruner on levels of awareness and intelligence in infants indicates a powerful

information processing ability in infants that responds to environmental stimuli, i.e., their brain is programmed for actions and skills that are elicited by sensory stimuli and environmental interaction (Bruner, 1973).

Closely related to research on play and cognitive development are those studies relating play and creativity. Since creativity is regarded as an important facet of cognitive processes, there is an underlying relationship between creativity, cognition, and play. Sutton-Smith (1967) has particularly emphasized the function of play as one of creative expression, and defines play as exploratory behaviour which transforms environmental information by playfulness. Omwake (1963) and Almy (1968) similarly emphasize the exploratory nature of play and the consequent imaginative transformation of reality. They note that self-initiated or spontaneous play allows a child to give full reign to curiosity and imagination. Omwake regards a unique feature of play as the possibility of endowing objects and events with desired features and functions. Thus, researchers indicate an important relationship between creative behaviours and learning and identify both processes in the play of children.

In addition to emphasizing the cognitive value and characteristics of play, investigators of child development, through extensive observation, have provided descriptive lists of stages of growth in children's play (Hurlock, 1942; Gesell, 1949; Piaget, 1962). For example,

Hurlock lists different kinds of play, emphasizing that the degree to which children engage in these various kinds of play differs according to individual preference and age. Her list of play behaviours include free spontaneous play which is mostly exploratory in nature, dramatic play which reaches its peak at about  $5\frac{1}{2}$  years as a child becomes more realistic, constructive play, and music play, all of which follow certain developmental patterns.

Throughout the literature on cognitive development, intrinsic motivation has been regarded as a primary force in development and play (Neumann, 1971). In this regard, Ellis (1973) regards the activation of play behaviour as dependent upon environmental stimulation and interaction between organism and environment. Play is viewed by Ellis as a vehicle with which the child can mediate the amount of stimulation available to achieve a balance at an optimal level of arousal. Research on cognitive development has also emphasized that the child must be in control of the learning situation, enabling the child to select the type and direction of transaction with the environment to match his own level of complexity (Sackett, 1965). Play experiences in particular provide the child with opportunities to assume control.

While nearly all theories of play account for it in terms of inner contingencies or reinforcers, there has been evidence to show that some play behaviours are related to external reinforcers, with cultural and family

environments important in eliciting certain types of play. For example, Smilansky (1968) found that imaginative and dramatic play behaviours are not as common in children from lower socioeconomic backgrounds as in those from higher level backgrounds. She attributes this to home environments which do not provide the materials for, or the reinforcement of, imaginative play. Exploratory play behaviours are also reported to increase in stimulating environments where there is a variety of toys and play materials, and where adults reinforce such behaviours and teach children to interact with their environments (Mussen, Conger, and Kagan, 1963).

In summary, then, according to the theories relating play to cognitive development, the process and objectives of play vary over time, within and between children. Although different terminology tends to be used, there is much agreement on the description of play stages reached by children in the work of Piaget (1962), Gesell (1949), and Herron and Sutton-Smith (1971). Play appears to be a process similar to that of cognitive functioning with play behaviours increasing in complexity with age depending upon the cognitive level of the individual, and upon the quality and quantity of environmental stimulation. Thus, the potential activity of play is inherent in children, but since they play within a specific environment, the form and content of their play are learned or acquired within and according to the sociocultural context of their environment.

## Play Behaviour of Hearing Impaired Children

While much information is available in the literature concerning the normal development of play, there is very little on the development of play in children who are sensory-impaired, specifically those with hearing deficits. Michelman (1974) provides some insight into the importance of play experiences for the intellectual growth of deficit children, i.e., children with sensory or physical handicaps. He views sensation as the foundation for perception and cognitive development in that children learn about their environment through exploratory play by combining visual, auditory, tactile, and kinesthetic sensations. Michelman stresses the critical importance of providing a deficit child with rich and varied sensory inputs, with such experiences providing enriching cues about reality, and discriminating one thing from another. According to Michelman, any knowledge which deficit children gain through their intact senses helps them to process and interpret information from the surrounding world which is internalized through play.

Unfortunately, the role of poor sensory input, specifically auditory deprivation or deafness, in relation to children's play development is not well documented.<sup>1</sup> Indeed, the paucity of research studies focusing on play behaviours of deaf and hearing impaired children points to

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<sup>1</sup>Deaf children refers to those in whom the sense of hearing is non-functional for the ordinary purposes of life, whereas the hearing impaired are those children in whom the sense of hearing, although defective, is functional with or without a hearing aid.

the critical need for more empirical data in this area. The studies which are relevant to the present investigation will be discussed.

In a study by Heider and Heider (1941) of hearing impaired children 3 to 6 years of age, it was found that in play, limited communication restricted social relations amongst the children, and that hearing impaired children more frequently came into conflict with others than hearing children. These researchers noted that hearing impaired children were handicapped in dealing with qualities of objects and abstract relations, and were therefore largely limited to concrete aspects of the present situation, and were unable to make specific meanings clear. In addition, they added that hearing impaired children were unable to anticipate the next step in a situation, as well as being limited in imaginary play. Heider and Heider concluded that these behaviours all contribute to the reduced social interaction of hearing impaired children, and consequently, an increased incidence of individual play in such children.

In comparing the play of hearing impaired children with that of hearing children, Kendall (1953) found the greatest difference to be in dramatic play and the least difference in free muscular play. With regards to dramatic play, he notes that among hearing impaired children, such play occurred almost as frequently as among hearing children, but that the dramatic play of the hearing impaired children was seldom woven into consistent or long

patterns of fantasy as occurred in hearing children. Kendall believed that lack of language in hearing impaired children was related to a deficit in dramatic play, particularly at the preschool level.

Vygotsky (1966) studied hearing impaired children with varying degrees of delayed speech development and found that those who possessed poor oral language could not substitute one object for another in play as easily as those who had relatively good levels of speech acquisition. He stressed the need for hearing impaired children to be taught skills such as those involved in subject substitution in play-like situations.

Heilitzer (1962) investigated the effect that frustration had on doll play of handicapped and non-handicapped children. A total of 75 children were examined, and included those with hearing impairments, those with orthopedic disabilities, and those with no handicaps. Assessing play before and after a frustrating task resulted in emotionally inappropriate behaviour as a more common response in handicapped subjects than normal subjects (although the incidence of emotionally appropriate behaviour was below that found in other studies). The amount of thematic doll play engaged in by non-handicapped children was greater than that for handicapped children, with frustration tasks having a negligible effect on the non-handicapped group, and an adverse effect on the thematic play of the hearing impaired group. In addition, the play

of the hearing impaired group was found to be characterized by a general clumsiness such as dropping toys and other play equipment.

One of the most extensive studies of the play behaviour of aurally handicapped children was conducted by Kretschmer (1972). A sample of 71 pairs of preschool hearing impaired and normal hearing children was used and their individual play behaviour and social interaction styles were compared. The first phase of the study indicated differences in the play between the two groups of children. Kretschmer reports that the hearing impaired were more active in the test situation, moving about the room more, with fewer "goal directed" movements, i.e., movements from one specific object to another, as compared to the normal hearing children. Differences were also reported in handling of objects, with the hearing impaired picking up, transporting, and setting objects down more frequently. The hearing impaired were reported to engage in more self-exploratory activities, i.e., handling their clothes, hair, etc. In regards to the amount of behaviour noted in all areas of actual play behaviour, i.e., mechanical, classification, dressing up, setting up, pretending, and problem solving, the normal hearing children exceeded the hearing impaired. However, it was found that for both groups, the more mechanical aspects of the situation such as physical activity and manipulation seemed to predominate over interaction with the toys on a creative basis as in pretending

and problem-solving. Kretschmer also reports that the hearing impaired employed more generalized and "immature" methods of exploration and scanning behaviours with toy materials, i.e., using gustation, ambient vision, and ambient tacton, as compared to the normal hearing who were more selective in exploratory efforts using focal point vision and specific intentional tacton. When the communicative behaviours of both groups were examined, the hearing impaired used more gesturing, babbling-like noises, and distressful sounds, while the normal hearing children used more speech and sound effect utterances when playing with certain toys, e.g., cars, as well as more humming. In summarizing his research findings, Kretschmer concluded that the play of the hearing impaired children was "immature" in comparison to that of the normal hearing, indicating a need for more direct guidance in the play activities of hearing impaired children. The second phase of the study focused on social interaction, and results indicated that the hearing impaired were less cohesive as a group, produced fewer successful social contacts, and used gesturing as a communication device more frequently than vocalizing as compared to normal hearing children.

In a more recent study by Darbyshire (1977), dramatic, constructive, and motor aspects of play of 45 hearing impaired children between 3 and 8 years of age were observed in classroom and out-of-classroom situations. Based on the observations of an experienced play therapist,

as well as questionnaires completed by teachers, counselors and parents, Darbyshire concluded that "the evolution of play in young hearing impaired children seems to follow the pattern described by Piaget but slows down with age in relation to normally hearing subjects" (p. 25). In regard to constructive and dramatic play, games, social development and communication, the hearing impaired children were reported to develop more slowly than the normal child. This was most obvious in social development where more solitary and parallel play was observed rather than associative or cooperative play, as well as in games, i.e., those forms of play activities involving rules and a fairly high degree of verbal conceptualization. For many of the hearing impaired children, dramatic play was less imaginative or elaborate, consisting almost of straight imitation with little object substitution utilized. Constructive play, e.g., colouring, painting, drawing, as well as activities involving water, sand, clay, were found to be relatively well developed in the hearing impaired child with the exception of block building, i.e., many hearing impaired children at about 7 years of age built towers, copied designs, or lined blocks up for no specific purpose rather than using them for structural ends. When the hearing impaired children were observed in their pre-school settings, they were reported to do a considerable amount of aimless wandering, not knowing how to occupy their time. To summarize Darbyshire's findings, the

playing of games was the area in which the hearing impaired child was the most retarded, particularly if speech and language were not well developed and children were unable to follow rules. Motor play was the area in which they were least retarded, i.e., the majority of children were normally active in their motor play. Relatively "mature" play patterns of the hearing impaired were related to several factors including the acquisition of hearing aids at a young age, an early start of training and/or therapy, as well as high socioeconomic backgrounds. Thus, higher socioeconomic status was associated with greater skill in constructive, and dramatic play. The length of time a child had been wearing a hearing aid and received therapy was positively related to the degree of social development. In addition the degree of hearing loss was found to adversely affect certain types of play including motor play, dramatic play, and games.

A further series of short experiments by Darbyshire (1977) examined the play of nine matched pairs of hearing impaired and normal hearing children. The behaviour patterns of the hearing impaired were reported as less mature, being characterized by needless laughter and purposeless moving about, finger sucking, and exaggerated staccato gestures. In addition, object substitution and make-believe play were relatively common in normal hearing children but not in those with auditory deficits. The hearing impaired children also showed some fear behaviours,

with a few refusing to participate unless accompanied by a known adult. Darbyshire concluded that most of the hearing impaired children in his studies were retarded in their play development, rating lowest on games and most highly on motor play, as well as being retarded in dramatic and constructive play. Basing a general comparison on the normative data for hearing children, Darbyshire notes that the hearing impaired were delayed, on the average, by about 18 months in their general play development.

In overview, the literature and research on the play behaviours of deaf and hearing impaired children indicates that generally their play is less developed than that of normal hearing children. There is evidence that, with intervention, play behaviours of children with auditory deficits need not be delayed as they often are if such children are given more direct guidance in their play by parents and teachers.

In this regard, Furth (1973) maintains that experience, of which play is a large part in childhood, is the greatest deficit of the hearing impaired child, and emphasizes the importance of play as a non-verbal symbolic system in developing a child's cognitive abilities. Thus, cognitive deficits shown by deaf and hearing impaired children may be viewed as due to experiential deficits rather than to a lack of verbal language abilities per se. Indeed, as Watts (1979) points out, "The fact that most deaf children are denied to a large extent the ready-made symbol system of

the hearing world, not only for communication, but also for thinking, suggests that thinking cannot find its base in verbal behaviour or these children could not think at all" (p. 47). It is noteworthy that historically, studies of conceptual development began by finding large differences between hearing impaired and normal hearing children (Oleron, 1953). However, due largely to the work of Furth and his associates (Furth, 1964), linguistic requirements of tasks were reduced and understanding of tasks assured, resulting in only minimal differences between deaf and hearing subjects (Darbyshire and Reeves, 1969). Similarly, data on intelligence scores and cognitive abilities of hearing impaired children indicate a normal range of abilities when nonverbal tests are administered individually and steps are taken to ensure that the child understands the instructions (Hiskey, 1956; Vernon, 1968).

In sum, the importance of play as a means of developing cognitive abilities and symbolic thinking in young children with auditory deficits cannot be overstated (Harris, 1971, 1975). As Darbyshire (1973) notes, "There appears to be a marked lack of understanding among adults who work with hearing impaired children that play is as important in learning as formal instruction, particularly in the years of infancy and early childhood" (p. 33). Thus, play has particular importance for a child with communication disorders in making experience more than just simple exposure. In this regard, Schlesinger and Meadow (1972)