

PLAY IN INFANCY AND APPLICATION IN TREATMENT*

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SUMMARY

The theoretical principles of play according to Piaget are described. Six stages of play up to two years of age are detailed, whilst play relevant to the transition from infancy to childhood is mentioned. The application of play in assessment, parent counselling and treatment is discussed.

The Developmental Assessment Clinic at the Red Cross War Memorial Children's Hospital in Cape Town, deals with children who are physically or mentally handicapped as well as those who are socially disadvantaged. Some who are considered to be 'at risk' in infancy continue to undergo comprehensive periodic assessment during their pre-school years.

In order to make the assessment procedure pleasurable a play situation, which served as a preliminary to more formal assessment, was created within the clinic setting. During these observations it was found that

OPSOMMING

Die teoretiese beginsels van speel volgens Piaget word beskryf. Ses stadia van speel tot op twee jaar word opgesom, terwyl speel met betrekking tot die oorgang van kleinkind tot kind (na twee jaar) genoem word. Die toepassing van speel in evaluering, raad aan ouers en behandeling, word bespreek.

play could provide an alternative form of assessment in its own right and, moreover, serve a useful guide in planning treatment and for parent counselling.

There are many ways in which play may be defined. Children, adults and animals play, and different cultures have their own forms of play. Sheridan's definition, 'Play is the eager engagement in pleasurable physical or mental effort to obtain emotional satisfaction', is appropriate to the observations that will be discussed.

Norms of child development used as instruments for observation and diagnosis reflect the maturation of patterns of behaviour in infancy and the integrity of the neuro-motor system. These provide a yardstick with which to measure progress and a guide for treatment, but deal very little with play as a natural and spontaneous function.

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Sheridan (1977) went a long way to bridge this gap when she supplemented her scales of 'Children's Development Progress from birth to 5 years', with an interpretive analysis of 'Spontaneous Play' in 'Early Childhood', but there remained the problem of insufficient insight into the underlying processes that could explain observations made. An attempt was made to find the clarification required and to apply this to the existing needs.

THEORETICAL PRINCIPLES

Piaget (1951, 1953, 1969) explains mental functions by their mode of formation. He refers to the first two years of life as the sensori-motor period and believes that it is during the first eighteen months that the child constructs the cognitive substructures which serve as a foundation for his intellectual and perceptual development. Central to Piaget's description of sensori-motor development are the action-schema, the circular reaction and the role of imitation.

An **action-schema** is a co-ordinated pattern of behaviour, involving movement and perception. As development proceeds, every newly established neuro-motor perceptual action becomes integrated into an action-schema.

A **circular reaction** is a behaviour pattern which is repeated for the pleasure of prolonging it or for an interesting result. A circular reaction is self-motivated and inherently satisfying. Its crucial factor is the active element. There are three types of circular response. The first or primary circular reaction is a behavioural adaptation to an hereditary mechanism or reflex. For example, sucking becomes stronger through satisfaction and repetition. The secondary circular reaction occurs because an accidental occurrence provokes repetition — for example, an object accidentally shaken, makes a noise and is shaken again. The tertiary circular response occurs when an activity can be varied because of feedback. The infant may make several attempts to switch on a light, using action schemas within his repertoire, but varying them slightly each time. If he succeeds, he repeats the activity over and over again for the pleasure of mastery of his own power.

Imitation is dependent on the social-affective environment. It begins in early infancy and continues throughout life. Piaget describes six stages of imitation in infancy.

1. The first sounds a baby makes are self-initiated. The mother responds to these signals with sensitive timing. She repeats the sound which the baby again imitates and thus the 'conversation' is prolonged. Piaget refers to this as vocal contagion. He describes a similar process of imitation with movements of the head.
2. At the next stage, the baby becomes able to imitate the same sounds and movements which are already within his repertoire, if his mother initiates them. A new sound or movement introduced by his mother cannot be imitated at this stage.
3. A little later the baby is able to imitate a few new movements if initiated by his mother, but his own movements must be visible to him. He thus learns to clap hands and wave bye-bye.
4. Later still, he is able to imitate movements which are not visible to him, thereby imitating facial grimacing or hand to face movements. The integration of imitation of sound and of movement may have some bearing on the commencement of babbling.
5. The baby now enters a stage at which he is readily able to imitate new sounds and movements which were not previously in his reper-

toire. He is therefore able to echo new words and imitate simple domestic events which are concerned with his own behaviour.

6. Finally, at the end of the sensori-motor period, the baby is able to reproduce sounds and movements heard previously. In other words imitation can be based on memory. Piaget calls this 'deferred imitation'. This period marks the emancipation from sensori-motor connections and indicates the emergence of symbolic activity. The continuing development of language is part of the symbolic process. Piaget considers that the appearance of symbolic behaviour is the crucial point in the interpretation of play.

Bruner (1974) believes that 'mastery play' is crucial for development during the first eighteen months and that it consists of extending to new limits already achieved skills. Stated differently, he says that play consists of pleasure-giving variations of newly acquired routines.

Bruner believes that initial learning has a large element of pre-adaptation which reflects species typical genetic instruction. With this in mind, his studies of competence in infancy have been primarily concerned with visually guided prehension and the transition from unilateral to bimanual manipulation. It is this ability which leads to tool making and distinguishes the human species from others.

According to Bruner skilled activity specifies an objective to be achieved. The crucial issue in the regulation of intentional action is the opportunity to compare what was intended with what in fact resulted, using the difference between the two as a basis for correction. He refers to this as 'internal feedback' which signals an intended action within the nervous system.

Bruner's description of the maturation of visual attention in association with prehension and the development of bimanual activity are of particular relevance to a detailed observation of infant play.

As well as the theoretical principles of Piaget and Bruner and the observations of Sheridan, further analysis of play by Lowe, (1975), Tizard, Philips and Philips (1976), Sinclair (1970) and Rosenblatt (1977) have been used.

STAGES OF PLAY

The following is a summary of stages of play which is being used as a guide in developmental assessment. Observations have confirmed that although age levels are to some extent arbitrary, the sequence is invariable.

Stage I

0-6 weeks

In the neonatal period innate reflexes are re-inforced by practice. The baby is visually highly distractable, but there is momentary visual fixation on faces or moving objects.

Stage II

6-10 weeks

Mutual imitation occurs at the exact moment the sound or movement is produced. If mother stops imitating, baby stops vocalising. He reinitiates a new sequence himself.

Visual attention is directed towards a stimulus and he is attracted by targets with good visual ground properties. If his head turns his eyes remain fixed on the target.

Hand to mouth activity which began as a reflex, is perpetuated by practice and becomes a voluntary act.

10-16 weeks

Vocal contagion continues.

Visual attention can be shifted from one target to another without much intermediate drifting. (Bruner states that this is the visual matrix in which movement of the hand can be appreciated. The infant not only recognises what the hand is, but where it is.)

Presentation of a suitable object induces activity of the baby's arms, opening and closing of the hands and movement of the mouth.

Stage III*4-6 months*

Sounds previously practised by the baby, if initiated by the mother, are repeated by the baby.

The baby sees an exciting object, moves his limbs, accidentally touches the object and repeats the activity.

He reaches, grasps, retrieves and mouths single objects using one hand at a time. Full visual inspection accompanies the act. The hand is shaped to grasp as he reaches forward and the mouth opens in advance. He begins to pass the object from hand to hand, but retains only one object at a time.

6-8 months

The baby continues to initiate new sounds and gestures which his mother imitates and the baby re-imitates to prolong the activity.

Mother now can initiate movement which the baby is able to imitate, if his own movements are visible to him, e.g. clap hands, wave bye-bye. Single objects are shaken, waved and banged. A pleasant result provokes repetition. Shaking, waving or banging schemas are used on all objects. The mouth remains as the terminal phase of activity, but this action no longer requires full visual attention.

An object can be retained in each hand.

Stage IV*8-12 months*

Actions within the baby's repertoire which are not visible to him can now be imitated, e.g. facial grimaces, hand to face movements.

Babbling begins, initiated at first by the baby and imitated by the mother.

Bimanual activity begins. The baby can now hold an object steadily in one hand and explore parts of it with the other. He is able to hold two objects and click them together.

Acquired action-schemas can be applied to new events, e.g. objects may be dropped deliberately from varying positions. An object can be retrieved by moving an obstacle aside if the baby has watched it being hidden. He still uses only one hand for both moving the obstacle and retrieving the object.

Stage V*12-18 months*

The baby is able to imitate new sounds and gestures not seen or heard previously. Thus he begins to echo new words and imitates new gestures. However, he discontinues if the model for imitation is not visible or audible.

Through imitation single object representation begins, e.g. baby dials the telephone or puts the telephone to his ear, but does not combine the two, brushes his hair, scribbles with a crayon.

Bimanual activity matures. Play becomes more appropriate to the material and two objects are combined. Thus objects are placed on top of, beside or into one another. Lids are removed and replaced. Long thin objects are placed into holes.

Action schemas can now be altered because of feedback and a type of trial and error for a desired result begins, e.g. switching on a light, turning a knob.

With the advent of bimanual activity, mouthing is greatly diminished.

Stage VI*18 months-2 years*

Imitative behaviour can now take place in the absence of an immediate model. The child begins to reproduce words heard previously and imitate events previously seen.

He reproduces representational schemas associated with his own behaviour, using two or three objects as props. For example, he manoeuvres a steering wheel and pretends to drive, pretends to feed himself using a cup and a spoon, pushes a car making appropriate noises.

Play with a doll, at this stage is still indiscriminate.

Bimanual dexterity is sufficiently advanced to solve simple problems, e.g. a lid can be lifted with one hand and an object retrieved with the other while the lid is held open.

According to Piaget the infant in the sensori-motor period does not have any mental representations by which he can evoke persons or objects in their absence; that is, he lacks the symbolic function. He believes that the appearance of symbolic behaviour is a crucial period in the development of intellectual function. It is the means by which the child can assimilate reality to his own desires and interests. Furthermore, the child's language at this stage is unsuited to express his living experience so that he requires a means of self-expression suited to his needs. The means of self-expression that he uses is play which may be purely representational or symbolic.

Piaget calls the next stage in development the pre-operational stage, which continues until the seventh year. This stage is beyond the scope of a discussion on infant play, but during the child's third and fourth year specific elements of play can be distinguished which are relevant to the stage of transition between infancy and childhood.

These are:

Practice play — in which the child consolidates his sensori-motor powers. He repeats and varies acquired activities for pleasure and mastery. No representation or symbolism is involved. Examples of this type of play are filling and pouring, throwing pebbles into water, pushing one object with another, pushing a wheeled toy down a slope.

Constructive combinations — in which the child experiments with educational toys. Play may be constructive or destructive. Simple objects are placed in lines or clusters, objects are sorted by colour and shape. Elaborate constructions may be made for the process alone, and the representational imagination added by exclaiming, 'I've made a house'.

Representational schemas. Whereas in the sensori-motor period domestic mimicry was related to the child's own behaviour, these schemas are now projected onto something else. Representational play now becomes sex-appropriate. Doll-related play becomes dominant using a combination of appropriate domestic objects. Girls feed their dolls, wrap them up, comb their hair. Little boys are most likely to recreate schemas involving motor cars, accidents or similar incidents, given

suitable material. In representational play, using appropriate material the child will "Cook like mummy" or "Work like daddy".

Symbolic play. This occurs when the child can identify himself as someone else, e.g. playing that he is mummy, postman, shopkeeper. If realistic material is unavailable the child can improvise by using substitute items. A chair may be used as a motor-car and the use of a steering wheel may be mimed.

Representational play precedes symbolic play in the developmental sequence, but it may frequently be indistinguishable from it as the child adapts the situation to his needs. Both representational and symbolic play signify the presence of a language process.

Games with rules. These emerge in the slightly older child and increase in importance as social life is enlarged.

APPLICATION IN TREATMENT

The skill of the therapist lies in her ability to adapt her knowledge of normal development to the needs of the handicapped child.

Piaget's theory describes the means by which the normal infant improves his physical skill and knowledge of his environment through practice and imitation. By the end of the sensori-motor period the child has a basic understanding of objects and his relationship with them and is ready to use newly developed powers of symbolization. The emergence of symbolic or make-believe play is the culmination of the experience he has gained in the sensori-motor period.

If Piaget's theory is to be applied in practical terms the following should be kept in mind:

The importance of preverbal communication:

Piaget believes that in the first few months of life it is the infant who initiates a vocal sequence and the mother who reinforces it by imitation. A survey of current research in Britain carried out by Tizard, (1975) indicates that there is considerable evidence to substantiate this.

As vocalising in handicapped and retarded children is often delayed, the baby's signals may be too weak to be recognised. It may be possible to assist the commencement of reciprocal vocalisation by making the mother aware of her need to imitate *the sound that her baby makes*, even if these seem to be inappropriate for his age. The therapist can augment this process further by imitating the baby's vocal efforts during treatment.

The opportunity to learn by imitation:

If every effort is made to capture the child's visual attention, early mutual imitation of hand and face movements can be encouraged. It will be remembered that several stages of imitation occur before a child is able to carry the image of an event in his mind and reproduce it spontaneously. Domestic mimicry is an important stage in the transition from sensori-motor to representational play. The handicapped child requires endless opportunity to observe the activities of the household and needs to be given suitable representative objects with which to play.

The necessity for active engagement in play:

Action→result→feedback→repetition of the action, are the components of the circular reaction. The child's

own actions are the only means by which he can discover the properties of objects and his effect on them. When a child's physical ability is limited or distorted, this poses many problems. Careful assessment and selection of suitable toys should assist in overcoming these problems.

Handicapped and retarded children may proceed very slowly through each stage of development. At times a change of direction in play may assist in planning the next stage of treatment. One example of this is the problem of prolonged mouthing of objects that sometimes occurs when a child does not develop a firm bilateral grasp. If treatment effectively enables the child to retain his grasp in both hands simultaneously, bimanual activity can commence and mouthing is slowly reduced. In the normal baby bilateral grasp coincides with his ability to pull up and support himself in standing.

CONCLUSION

Successive stages of play with objects in infancy and early childhood have been described. By combining theory and observation an attempt has been made to apply the knowledge gained to the treatment of handicapped children.

It is doubtful whether it is possible to 'teach' a child to play but, given suitable conditions and careful management, every child should be able to play as effectively as his handicap permits.

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