CHAPTER 3

PLAY AS A TOOL FOR THE FACILITATION AND MEASUREMENT OF COMMUNICATION-RELATED BEHAVIOURS

3.1 INTRODUCTION

There is growing empirical evidence that infants and young children who are environmentally, biologically or medically at risk, developmentally delayed and/or handicapped benefit from early intervention. Various studies from diverse fields have strongly supported the efficacy of an early intervention model for children with disabilities (Guralnick & Bricker, 1986; Ottenbacher & Peterson, 1985; Rossetti, 1986:147; Schaaf & Mulrooney, 1989; Trohanis, 1989). Studies regarding specific outcomes of occupational therapy have also demonstrated benefits in the areas of fine, gross, sensory, visual, motor and self-help skills (Hourcade & Parette, 1986; Oelwein, Fewell & Pruess, 1985; Ottenbacher, Muller, Brandt & Heintzelman, 1987).

In the process of designing an early childhood intervention programme, the therapist should consider how to achieve adaptive responses in a child with a disability, thereby discouraging maladaptive responses. It is proposed that an intervention programme is a process of adapting the environment to suit the child's needs and abilities. Gilfoyle *et al.* (1981) stated that the desired outcome of therapy is when the infant or young child has the ability to master the environment, to function independently according to developmental age, or to cope with daily life. Inherent in this statement is the ability of the child to meet environmental demands, in other words, the ability to adapt.

As discussed in Chapter 2 the child's main occupation is play so it is through play that all intervention should take place. Before intervention (assessment and treatment), the therapist should have an in-depth knowledge of the theories and value of play in the normal development of the adaptive response. This means that the therapist should know how to eliminate maladaptive behaviour and facilitate adaptive behaviour through the use

of play. For this reason play as a vehicle for the development of an adaptive response serves as a basis for planning intervention and is presented as point of departure before the presentation of the role of play in intervention.

3.2 PLAY AS A VEHICLE FOR THE DEVELOPMENT OF AN ADAPTIVE RESPONSE

Play is not an easy concept to define, but Rubin, Fein and Vandenberg (1983) provide six characteristics of play that separate it from other occupations. The six characteristics are intrinsic motivation, attention to means rather than ends, organism rather than stimulus dominated, nonliteral, simulative behaviour, freedom from externally imposed rules and requiring the active participation of the player. Definitions of play endow it with fun and enjoyment. Three theories on play motivation support the value of using play therapeutically. Table 3.1 provides a summary of these theories.

Table 3.1 Theories of play motivation

Theory	Explanation
Optimal arousal	Play is viewed as a strategy to maintain a pleasurable emotional state. Arousal is a measure of alertness. Play is seen as an arousal-seeking activity. Play increases stimulation when children use objects and actions in new and unusual ways. Elements resulting in arousal include novelty, complexity, incongruity, and surprise (Berlyne, 1960; Ellis, 1973).
Flow theory	For a person to experience flow the following elements should be present: a match between the skills of the person and the challenges of the activity, total concentration on the activity at hand, a loss of self-consciousness, control over actions and the environment, and unambiguous feedback from the environment (Csikszentmihalyi, 1990). This flow state is easily observed in the object play of young children.
Competency and mastery	Mastery motivation is rooted in the belief that humans naturally possess a motive to control the environment, to master skills, and to be effective. It follows a developmental hierarchy: exploration, means-ends tasks, preference of challenging tasks, and self-initiated mastery. There is a strong relationship between mastery motivation and cognitive skills (Hrncir, Speller, & West, 1985). Reilly (1974) also used a developmental hierarchy when she described three stages of play behaviour: exploration, competency, and achievement of mastery.

When using play as an intervention medium with the aim of stimulating development, it is difficult to comply with all of the above. Bundy (1991:59) proposed a working definition of play for therapists:

> Play is a transaction between an individual and the environment that is intrinsically motivated, internally controlled and free of many of the constraints of objective reality.

This definition puts play in the realm of a bio-psychosocial approach (Mosey, 1986), as it comprises both action and attitude.

3.2.1 The role of play in the development of children with disabilities

Play and development are related and intertwining concepts (Parham & Fazio, 1997). Rast (1986:30) describes how play provides a natural arena within which therapy goals can be achieved. She states: "Play offers a practical vehicle to enlist a child's attention, to practice specific motor and functional skills, and to promote sensory processing, perceptual abilities, and cognitive development. It also serves to support social, emotional, and language development. In the therapeutic setting, play often becomes a tool used to work towards a goal". It is widely documented that the use of play as a therapeutic medium contributes to the development of children (Case-Smith, 1993; Heiniger & Randolph, 1981; Hughes, 1991; Johnson *et al.*, 1999).

Before considering the value and implementation of play as a therapeutic medium, it is necessary to take cognisance of some theories that highlight the importance of play in childhood development. Relevant aspects of these theories are presented in Table 3.2.

Table 3.2 Modern* theories on play and early childhood development

Theories	Discussion
1. Psychodynamic theory	Freud (1961) claims that play has a cathartic effect. The child rids himself of negative feelings and during repetitive play, he deals with unpleasant events.
2. Cognitive theories	
a) Piaget's theory (1978)	The type of play reflects the child's level of cognitive development and it contributes to cognitive development. For learning to occur there must be a balance between assimilation and accommodation, which he calls adaptation. During play a child practises and consolidates acquired skills.
b) Vygotsky's theory (1976)	He saw a direct link between play and cognitive development. Play has a crucial role in social, emotional and cognitive development, which points to

Theories	Discussion
	their interrelatedness.
c) Bruner's theory (1983)	Play promotes creativity, flexibility and exploration. He emphasises that the process (play) is more important than the end-product. He also acknowledged the adaptive usefulness of play. Play is linked to the narrative modes of thinking namely dealing with meaning, reconstruction of experiences and the imagination.
d) Sutton-Smith's Theory (1967)	Three concepts shape his thinking. *Symbolic transformation*, which enhances mental flexibility that later could be used for adaptive purposes; *Adaptive potentiation* allows the child to consider various options or alternatives to manage the challenges of the environment; and *Adaptive variability* embraces play as key to human development just as physiological and behavioural variables are the key to evolution. The adaptive potential of developing children requires not exact and precise adaptations, but greater flexibility to use specific abilities demanded by specific situations.
e) Singer's theory (1973)	Play offers a way for the child to modulate the rate of incoming stimulation, from both the external and internal worlds. Through play the child can optimise the flow of internal and external stimulation, thereby experiencing pleasurable emotions. The emphasis is on cognitive and emotional development.

*Classical theories were developed before World War I and the modern theories have their roots in the early theories (Johnson *et al.*, 1999).

From the above the following valuable theoretical underpinnings are provided for the implementation of play as a therapeutic medium in the elimination of maladaptive responses and the facilitation of adaptive responses in children with disabilities:

- Freud postulates that children can experience *catharsis through play*. This is important for children with disabilities as they often have feelings of frustration due to their inability to accomplish certain tasks; therefore they do not experience success. Children with intellectual impairments experience far more anxiety than children without disabilities (Du Toit, 1980). This can manifest in undesirable behaviours such as head-banging or rocking (Wehman, 1977). Giving the child the opportunity to control the environment reduces anxiety.

- Due to their impairments, children with disabilities do not experience a *sense of control* over the environment due to their impairments. It is the responsibility of interventionists to address this issue during therapy by adapting the environment to suit the needs and abilities of each individual child.

- All the cognitive theories emphasise the *interrelatedness between the different developmental domains* (cognitive, social and emotional). In Chapter 2 the

interrelatedness of all the developmental domains, including the sensorimotor domain, were discussed and also how maladaptive responses occur when there is a deficit in any of the domains.

- These theories also focus on the adaptive process as part of learning that occurs during play. Sutton-Smith (1967) stipulated that a child needs to be *flexible* in his approach to problem-solving – a skill acquired through exposure to different play situations.

- Singer (1973) addresses the internal system of *motivation as a drive* to increase opportunities for stimulation. This contributes to physical and emotional stimulation. Children with intellectual disabilities do not have a high inner drive or motivation (Pretorius, 1997). To contribute to the development of the child, play opportunities must be selected and planned carefully so that they are appropriate and challenging on the appropriate level for these children (Johnson *et al.*, 1999).

- Studies on children with intellectual disabilities, autistic and language impaired children, referred to by Westby (Casby & Ruder, 1983; Hill & McCune-Nicolich, 1981; Terrel, Schwartz, Prelock & Messeick, 1984; Anderson, Hinojosa & Strauch, 1987), indicate that children with disabilities exhibit the same *developmental play sequence* as children without disabilities, but with some qualitative and quantitative differences. The developmental sequence is, however, always delayed. In intervention consideration should be given to the selection of activities appropriate for mental, as well as chronological age.

- Children with intellectual impairments are less creative and imaginative than their peers without disabilities and they are often destructive during play (Steenkamp & Steenkamp, 1992). They are less likely to engage in constructive play but rather use non-specific touching of toys. Intellectual impairments do not prevent symbolic play, but it is observed only at a later chronological age. In intervention a child should be given opportunities for *more constructive and symbolic play situations* and less emphasis should be placed on destructive activities.

3.2.2 Value of play in the management of communication-related behaviours

From the above it is apparent that the play experiences of children with disabilities are influenced by their impairments. Wehman (1979) stated that adequate, independent interactions with play material might reduce the need for institutionalisation of severely handicapped children as they learn new skills, which could be carried over to other performance areas such as activities of daily living. It is not only the disability in itself that renders a child's play deficient. An environment that reflects the deprivation of play can also contribute to further handicap the child with any form of disability (McConkey, 1985; Law, 1991; Takata, 1974). When selecting toys and play materials for children with special needs, consideration should thus be given to the needs of the child, the inherent factors of the toys, the environment in which the activity will take place and the child's functional level of development. Furthermore, the selection of toys is also dependent on the therapeutic goals aimed at the facilitation of adaptive responses.

In Table 3.3 a summary is given of factors influencing toy and play material selection to encourage optimum intervention for children with disabilities.

Table 3.3 Factors influencing toy and play material selection for children with disabilities

Factors	Motivation	References
Internal environmental factors of the child affecting play	• Internal factors include performance components of all developmental domains, namely sensorimotor, cognitve, communication, and social-emotional. Each domain consists of specific behaviours that could be stimulated and measured to observe improvement. • The experience of playfulness facilitates problem-solving and adaptation by the child. • Children should explore with their own capabilities to: – Foster creativity; make decisions; understand cause-effect; understand congruence; learn to cope with anxiety, frustration, failure; facilitate optimal state of arousal	Bundy (1991) Missiuna & Pollock (1991); Reilly (1974)

Factors	Motivation	References
External environmental factors influencing play	• Environmental factors include: – adequate and safe play spaces – structure in daily routines – arranging the social environment to include competent play partners and responsive adults – adopting a naturalistic or milieu teaching strategies – reduction of distracting environmental stimuli	Bailey and Wolery (1992); Florey (1981); Musselwhite (1986)
	• Adults as part of the play experience: – children are influenced by the way in which adults present toys and materials to them. – children with developmental delays exhibit higher levels of positive emotion when adults encourage child-centred play with toys as opposed to a directive approach • Providing the "just right challenge" between the demands of the activity and the ability of the child to execute the activity so that he experiences a sense of mastery and competence. • Facilitation of confidence and self-esteem. • Essential skills for a therapeutic relationship are understanding, empathy and caring. • Establishment of rapport	Rubin and Howe (1985) Hupp, Boat and Alpert (1992) Csikszentmihalyi (1990) Ginott (1961); Howe and Swartzberg (1995)
Inherent factors of toys	• Guidelines for selecting toys and play materials for children with special needs. Toys should – be responsive – be age-appropriate – be adapted to increase engagement and learning – be natural objects familiar to the child – promote learning of important skills. • Novelty of toys stimulate exploration (simple manipulation) • Toys preferred by children with intellectual impairments: – structured toys (they spend more time playing with these toys) – social toys, which enhances social interaction (e.g. turn-taking, physical assistance, dramatic play) – reactive toys such as jack-in-the-box, battery-operated toys.	Bailey and Wolery (1992) Case-Smith (1993); Dempsey and Frost (1993) Ichinose and Clark (1990)

Factors	Motivation	References
Play stages: Sensorimotor stage	• Body-orientated activities • Use of basic materials and concepts • Opportunities for object permanence • Kinaesthetic learning should be included • Opportunities of repetition • Inclusion of all the senses • Activities with incidental elements and cause-effect • Opportunities for variety in tool use • Activities that allow for exploration and/or destructive actions	Adapted from Uys (1997)
Play stages: Symbolic and simple constructive stage	• Representational skills on 2- and 3-dimensional levels • Opportunities for construction • Opportunities for imitation of verbal and non-verbal actions • Problem-solving as part of abstract thinking behaviour • Stimulation of imagination	Adapted from Takata (1974)

During intervention there should be equal emphasis on the internal factors of the child affecting play and on the external environmental factors influencing play. Internal factors include performance components of developmental domains, such as coordination, attention, and turn-taking. Under internal factors, Bundy (1991) also includes aspects of playfulness, which facilitate problem-solving and adaptation by the child. These components form part of the interventionist's goalsetting for each therapy session and should be measured before and during intervention. External environmental factors are equally important to consider as Bailey and Wolery (1992) showed in specific guidelines, as presented in Table 3.3. In an activity-based intervention programme, the establishment of goals or objectives are directly linked to the selection of the activities. Activities should be selected to provide the child with the opportunity to develop and practise target behaviours (Bricker & Cripe, 1995).

When toys are selected only to suit the child's internal environment and the goals that should be met, success cannot necessarily be guaranteed. A crucial ingredient in the intervention process is the interventionist or therapist, whose role is to obtain interaction between the external environment and the child (See Figure 2.1). The therapist utilises three essential skills to establish a therapeutic relationship namely understanding, empathy and a caring approach. The therapist should be conscious of the use of self, the non-verbal, as well as the verbal communication being portrayed and which are relevant to the

situation. Therapeutic authenticity is a necessary requirement for establishing rapport. Rapport is experienced when the child feels the therapist's respect and regard, as well as appreciation of his own uniqueness and qualities. Participation in such a relationship facilitates the child's growth and change (Briggs, Duncombe, Howe, & Swartzberg, 1979). As this research focuses on children functioning on the sensorimotor and symbolic and simple constructive developmental stages, specific attention is paid to these two play stages.

3.2.3 Theoretical models that influence early childhood intervention

Various models have a bearing on early childhood intervention. The most pertinent of those have been investigated in order to present an overview and perspective.

Each of the models addresses some critical issues pertaining to this study. The *medical model* emphasises the importance of recognising the diagnosis of the population included in the study, as it influences the characteristics of the child with intellectual impairment's performance in unique ways, thereby assisting the therapist with appropriate and realistic goal-setting.

The *child developmental model* presents a theoretical foundation for the assessment procedures used in this study. Children with intellectual impairment follow the same sequential developmental route, although at a slower pace, than their peers without any kind of disability (Gowen, Johnson-Martin, Goldman & Hussey, 1992). Developmental norms should thus be considered in the assessment procedures used, in order to detect change in behaviour.

The *cognitive model* incorporates Piaget's (1951) principles of assimilation and accommodation of new and learned behaviours. Together these two processes account for intellectual adaptation and the development of intellectual structures, an important topic in this study. A further expansion of this model incorporates types of encouragement used in intervention (Hanson & Lynch, 1989). Criticism against this model is that the prevention of failure is not encouraged. Children with disabilities experience excessive negative feedback, which could influence their intrinsic and extrinsic motivation. It is the responsibility of the interventionist to provide positive feedback.

The *behavioural model* utilises motivational factors as part of intervention strategies. There is great emphasis on the development and use of instructional methods and intervention techniques. This interactive model is concerned with the relationship between the child's behaviour and the stimuli from the environment. This relationship is the key around which this study revolves and should form an integral part in the planning and execution of the assessment and treatment phases (Shonkhoff & Meisels, 2000).

The *ecological model* feels strongly about the match between the child and the environment for change in behaviour to occur (Dunst, 1985). Again, for this study the adaptation of these two components is vital in the planning phase. The environment should be adapted specifically to ensure access on a physical and mental level for the population in consideration (Thurman, 1997; Csikszentmihalyi, 1990).

3.3 THE ROLE OF PLAY AS AN INTERVENTION TOOL FOR THE DEVELOPMENT OF ADAPTIVE COMMUNICATION BEHAVIOURS

Intervention refers to the assessment and treatment plan to provide for the needs of children with special needs. Assessment and treatment are interrelated and authentic assessment procedures should lead to authentic curriculum goals and authentic interventions (Bagnato *et al.*, 1997). The primary role of assessment is to guide treatment, implying that one is dependent on the other and cannot be separated.

3.3.1 Play in assessment

3.3.1.1 Disadvantages of traditional assessment tools

Traditional assessments are not functionally orientated and are biased against children with developmental delays and disabilities (Brookes-Gunn & Lewis, 1981; Garwood, 1982). Children with disabilities are seen as "untestable" due to the influence of their impairments on their performance and therefore outcomes from the use of a traditional method of assessment do not reflect the child's actual abilities or progress. The progress made by children with disabilities is gradual and slow and the increments used in norm-based

assessments do not reflect small changes in observable behaviours (Bricker & Cripe, 1995). If a child has a language deficit he may seem to have a cognitive deficit when assessed by traditional measures, because a perceived deficit in one developmental domain may mask abilities in another area. This may lead to misinterpretation of results and ultimately inappropriate planning of the intervention programmes. Addressing these issues, various authors have developed alternative methods of assessment of children with disabilities that focus on their strengths, as well as their inabilities (Linder, 1993). The trend is to use assessment methods where people who are familiar with the child observe functional skills and comprehensively record performance on all developmental domains namely sensorimotor, cognition, self-care, social-emotional and communication-language.

If play is vital for development, and forms part of intervention programmes for young children, it should also form the basis of performance evaluation. Play is a functional activity and the performance during play is the window through which professionals should view the child's optimal developmental level (Westby, 1988; Fewell & Glick, 1993). This research project uses play as intervention medium, but it becomes evident that play should also be used for assessment of the child's performance before, during and after intervention.

3.3.1.2 Criteria for play-based assessment tools

There are certain criteria that an assessment instrument should meet in order to monitor programme-related performance of children with disabilities. Bricker *et al.* (1978) and DuBose (1981) suggested the following criteria. An assessment instrument should:

- be used by people who deal with the child on a regular basis in familiar settings;
- reflect curricular content of the intervention programme;
- provide a logical developmental sequence of items that can be used as training guidelines;
- accommodate a range of disabilities;
- specify performance criteria that indicate a skill as a functional part of the child's daily repertoire; and
- be a reliable and valid measure.

These six criteria refer to the authenticity, reliability, and validity of assessment tools.

i) Criteria for authenticity of play assessment tools

Bagnato *et al.* (1997) developed the LINK standards that are a set of six guidelines that addresses the missions, content, methods, and applications for linking authentic curriculum-based assessment and early intervention. These six standards according to which assessment instruments could be measured are presented in Table 3.4 and the model for the development of adaptive communication behaviours (See Fig. 2.1) incorporates these standards.

Table 3.4 The six operational LINK standards characterising early childhood assessments incorporated in the model for the development of adaptive communication behaviours

Standard	LINK dimension	Comparison with the model for the development of adaptive communication behaviours
Authenticity	- Bases assessments on sequential authentic goals contained in the curriculum or task analysis - Relies on child's actual performance - Requires appropriate and familiar toys or adaptive toys - Promotes natural circumstances for assessment - Uses qualitative and quantitative information	- Clear goal-setting with a challenge that could successfully be met - Active participation is facilitated by the correct selection of activities matching the person's occupation - Works towards interaction between the external environment and the internal environment
Convergence	- Uses multiple sources to collect data - Assessment in natural contexts - Relies on play-style simulations - Promotes transdisciplinary modes of teamwork - Is family-centred	- Play activities incorporate the occupation of the child - Theories on play and communication development should be integrated to elicit an adaptive response
Collaboration	- Relies on family as primary source of child's performance data - Supports consensus decision-making between parents and professionals	- When a child actively participates it is easier for professionals to conclude with an appropriate intervention programme specifically developed for a child with his own strong and weak areas
Equity	- Adapts the task to accommodate the child's functional limitations - Emphasises competencies demonstrated by the child	- Activities should be adapted in such a manner as to eliminate hindrance in the external environment and rather facilitate

Standard	LINK dimension	Comparison with the model for the development of adaptive communication behaviours
	- Uses natural test-teach-test framework that blends testing and teaching - Seeks to foster the child's learning-to-learn skills	an adaptive response and eliminate maladaptation - The opportunity for repetition should be created in a test-teach-test framework - The challenge presented to the child should not be too high or too low in order to decrease anxiety and inhibition
Sensitivity	- Uses graduated metrics to monitor small increments of progress - Links authentic assessment tasks to authentic curriculum goals and authentic intervention - Underscores activity-based intervention in natural settings, using natural activities	- Use play activities to teach and to test the child's abilities - Play activities appropriate for the child's social-cultural group should be used - Activity-based intervention provides the opportunity for internal and external feedback - As a child's developmental domains are all observed during play, authentic assessment is possible
Congruence	- Accomplishes missions of early childhood intervention(s) - Uses developmentally appropriate styles of assessment that emphasise play and natural observations - Allows flexible accommodations for children with disabilities - Encompasses social and treatment validities to support the suitability for children with disabilities	- Observations of the child's actual potential could be made when there is a match between the child's abilities and the demands from the external environment - This match could be obtained by adjusting the external environment - Treatment is guided by the performance of the child and the therapist should be flexible enough to change challenges expected from the child - The aim is to facilitate an adaptive response thereby facilitating mastery of the environment

Evaluating the criteria set by Bricker *et al.* (1978) and DuBose (1981), as well as the LINK standards of Bagnato *et al.* (1997), it is apparent that assessment of children's performance is multifaceted. According to these six standards the child should be observed in a natural setting, engaging in familiar play activities to obtain optimal performance. In this sense, they endorse a transdisciplinary approach to assessment. Social validity is a key to incorporate families and carers in the intervention process and they should also be used as a source to collect data. They encourage individualised assessments to make provision for the impairments of children with disabilities. Another key concept is the sensitivity of instruments with the ability to indicate slow progress and change in behaviour.

ii) Criteria for reliability of play assessment tools

Reliability refers to the extent to which one can rely on the results obtained from an instrument. It is the degree of consistency with which an instrument measures a variable or the ability of an instrument to produce similar scores on repeated testing occasions that occur under similar conditions (DePoy & Gitlin, 1994). The definitions of items used in an instrument should be clear and unambiguous, as this would reduce the likelihood of misinterpretation. The longer the measurement instrument measuring a specific construct, the more information is collected to represent the underlying concept, thus increasing reliability. Lynn (1986) argues that for content validity of a measurement instrument it should include just enough items to assess each construct reliably, thereby excluding duplication of items in a measuring instrument, but establishing a reliable instrument. Reliability is expressed as a form of a correlation coefficient that ranges from a low of zero to a high of 1.00. There are three methods of measuring reliability: stability, internal consistency, and equivalence. Table 3. 5 summarises these elements of reliability.

Table 3.5 Reliability measures

Reliability measures	Methods
1. Stability (Intra-rater reliability)	Stability refers to the extent to which the same results are obtained when the instrument is administered twice to the same sample by the same rater. It is concerned with the consistency of repeated measures (test-retest).
2. Equivalence (Inter-rater reliability)	This is the comparison of two observers measuring the same event. Eighty percent or more is considered an indication of a reliable instrument.
3. Internal consistency	This refers to the extent to which all of the items on an instrument measure the same characteristic.

A reliable assessment tool is needed for an accurate and consistent measurement of play and the skills involved to master the activity.

iii) Criteria for validity through data collection using play assessment tools

Assessment is a form of data collection. Validity addresses the critical relationship between a concept and how it is measured. It asks whether what is being measured is a reflection of the underlying concept or construct. The closer an instrument comes to representing the true definition of the concept, the more valid the instrument.

Table 3.6 Measures of validity

Types of validity	Description
Face validity	Experts in the field essentially base face validity on an intuitive judgement. This procedure is useful in the instrument development process in relation to determining readability and clarity of content. It means that the instrument measures what it is supposed to measure (Brink, 1999).
Content validity	This type of validity is sometimes referred to as *face validity*. In other words, it is the accuracy with which an instrument measures the factors or content that is studied (Leedy, 1985:25). Steps to obtain content validity include: - specification of the full domain of a concept through a thorough literature search - adequate representation of domains through the construction of specific items. One way of making certain of content validity is to use external raters to review constructed items or drafts of scales used (DePoy & Gitlin, 1994:208). The steps to obtain content validity include: 1) specification of the full domain of a concept through a thorough literature review and, 2) adequate representation of domains through the construction of specific items (DePoy & Gitlin, 1994). Each item on the instrument should be evaluated by experts in the field with regard to the degree to which the variable to be tested is represented. The overall appropriateness for its use should also be evaluated (Brink, 1999).
Treatment validity	The primary role of assessment is to guide treatment. Treatment validity is concerned with the degree to which assessment contributes to useful outcomes (Hayes, Nelson, & Jarrett, 1987). Assessment can contribute in three ways: 1) identifying goals to be reached, 2) determining methods and material to help reach the goals, and 3) detecting progress or change related to intervention. When assessment performs one or more of these functions, it has treatment validity.
Construct validity	A construct is any concept, such as sensorimotor, which cannot be directly isolated or measured (Leedy, 1985:25). Construct validity is concerned with the degree in which the construct is measured and how it differs from other constructs (e.g. cognition and social-emotional). Because constructs are abstract theoretical concepts, each construct should be clearly defined to eliminate inaccuracies and operationalised in order to be measured. Construct validity addresses which constructs the measurement instrument actually measures (DePoy & Gitlin, 1994; Brink, 1999). It establishes the relationship between the results provided by the instrument to the underlying

Types of validity	Description
	theoretical concepts of the instrument. The multitrait-multimethod approach is regarded as the preferred method to establish construct validity. This approach is based on the premise that different measures of the same constructs should produce similar results (Polit & Hungler, 1983; Waltz, Strickland & Lenz, 1991).
Convergent validity	The results of a new instrument should be compared to the data of a criterion measure (a known instrument), at the same time (Brink, 1999). Assessment validity refers to the quality of information provided to guide decision-making. Validity, therefore does not reside within the instrument, but depends on the instrument's use and contribution to the goodness of decisions made. This validity concerns how well assessment instruments help us make informed, useful, and worthwhile decisions for children and their families (Bagnato *et al.*, 1997).
Social validity	An assessment tool may be useful for specifying certain objectives, but those objectives may not be judged as worth pursuing. Social validity has three functions: 1) generating worthwhile goals, 2) using assessment instruments that are considered acceptable, and 3) producing findings with social validity recognising the importance of partnerships with families and carers of the children.

Convergent, treatment and social validity focus on the function or treatment utility of assessments (Hayes *et al*., 1987) whereas construct, content, and face validity focus on the structure of the assessment instrument.

3.3.1.3 Selected play assessment tools

Play is a universal human activity that blends cognitive, social, emotional, linguistic, and motor components. Although there are numerous assessment methods, only a few of the most relevant that use play as primary medium for assessment, are included in this discussion. Table 3.7 identifies the most commonly known play assessments used in the intervention (Sturgess, 1997).

Table 3.7 Selected play assessments used in intervention

Name of assessment	Clinical organisation	Age range
The Assessment, Evaluation, and Programming System for Infants and Children (AEPS) (Bricker, 1993)	Links assessment and intervention, and evaluation components. Six developmental domains are covered: fine motor, gross motor, self-care, cognitive, social-communication, and social. Data are collected through observations, direct test, and reporting from caregivers/parents.	One month to 3 years

Name of assessment	Clinical organisation	Age range
The Knox Preschool Play Scale (Knox, 1974; Bledsoe & Shepherd, 1982)	It is an observational assessment in a naturalistic setting. It requires observations on four dimensions – space management, material management, imitation and participation. Observations should be over a range of different settings. A disadvantage is that the measurement is in yearly increments which poses a problem when looking for progress.	0-6 years.
The Play Skill Inventory (Hurff, 1980)	It is a collection of 20 possible play situations and activities. Through the use of these play situations a child could be assessed for competency in sensations, motor ability, perception and intellect. It is a criterion-referenced performance-based test.	Eight to ten years
The Transdisciplinary Play-Based Assessment (TPBA) (Linder, 1993)	Focuses on assessment and individual programme development. In this way a child's performance can be monitored. It is a functional assessment tool, sensitive to the needs of children with disabilities. The TPBA is a natural, functional approach and assesses the four developmental domains of sensorimotor, cognitive, language and communication and social-emotional. The TPBA involves the child in a play situation with a facilitating adult and peers. The TPBA obtains a high score on overall quality according to the LINK standards. However, in the process of evaluating children's performance on a daily basis, the assessment instrument should be sensitive enough to indicate small and gradual changes over a short period.	Six months to six years
The Symbolic Play Scale (Westby, 1980; 1988)	Evolved from a Piagetian base language programme for severely intellectually impaired children. Westby emphasises the development of play itself and related language abilities. Five groups of toys are used during the assessment where a child-centred approach is followed. The assessment has two components namely play performance and language performance.	Nine months to five years
The Play Checklist (Heidemann & Hewitt, 1992)	Involves observation of 10 play skills. It was designed for use in preschool educational and care settings to analyse a child's current play skill level, with the aim of designing goals for play development.	Not specified

Numerous play assessments are available, some more recent than others with a variance in reliability and validity. Most tests also measure only one specific aspect or context of play and do not look at a developing child holistically. When selecting appropriate play assessments, the criteria given by Bricker *et al.* (1978) and DuBose (1981) and Bagnato *et al.* (1997) should be taken into consideration. Therapists are frustrated by the lack of reliable assessments available that seem fair to children with disabilities and are not too time-consuming to administer. Another reason for frustration is the lack of progress some of the assessment tools can demonstrate. For this purpose systematic observation should be incorporated. This refers to structured procedures for collecting objective and quantifiable data on developing or changing behaviours (Bagnato *et al.*, 1997) through a

method of observation in real-life situations, thereby increasing the authenticity of the assessment.

3.3.2 Play in treatment

Intervention is the process of adapting the environment, the use of purposeful play activities presented according to therapeutic principles, and the correctly selected therapeutic approach to facilitate the development of the child. The aim of the treatment is to create a better match between the child and the environment by changing the demands on the child to fit his capabilities, by enhancing his developmental skills and coping resources, and by changing the environment's response to him (Gorga, 1989). The programme should be planned in such a way as to provide a graduated challenge to the child, which will assist him to develop adaptive responses.

3.3.2.1 Early intervention: An occupational therapy perspective

The American Occupational Therapy Association (1986) has defined occupational therapy in early intervention in the following manner.

> "Occupational therapy personnel use purposeful activity in the development or restoration of function to help the child and family develop resources to meet personal needs and the demands of the environment. The child's occupations of movement, play, eating, interacting with others, dressing, bathing and the like are the purposeful activities used in early childhood intervention to promote normal development and adaptive coping behaviors. Treatment stems from a scientifically-based neurophysiological framework. Services are provided to help parents in their roles as providers and primary caregivers. Treatment may be provided in collaboration with other disciplines and professionals…Occupational therapy in early intervention promotes independent function and adaptive interaction with the environment through the use of age appropriate, purposeful activity."

The Education of the Handicapped Act Amendments of 1986 (Public Law 99-457) marks a shift in the focus and priorities for a comprehensive system of services for young children and their families. Included in this law is a definition of occupational therapy in early

intervention: "Occupational therapy includes services to address the functional needs of a child related to the performance of self-help skills, adaptive behavior and play, and sensory, motor, and postural development. These services are designed to improve the child's functional ability to perform tasks in home, school, and community setting, and include:-

i) Identification, assessment, and intervention;
ii) Adaptation of the environment, and selection, design and fabrication of assistive and orthotic devices to facilitate development and promote the acquisition of functional skills;
iii) Prevention or minimization of the impact of initial or future impairment, delay in development, or loss of functional ability".

The occupational therapist, as a member of a transdisciplinary or interdisciplinary team of parents, caregivers, health and education professionals, facilitates the independence in young children by enhancing motor control, sensory modulation, adaptive coping, sensorimotor development, social-emotional development, daily living skills and play. *Motor control* gives the child a means of mobility, of exploring the environment, and of communicating before speech develops (Gorga, 1989). Because of its influence on the development of other systems (social-emotional, cognitive), motor control is often at the root of many interventions. Neuro-developmental and sensory integration approaches are commonly used to address motor control. *Sensory modulation* is the ability to regulate the sensory processes needed to maintain a state of equilibrium. There is a correlation between dysfunction in sensory processing and learning behaviour in young children (Ayers, 1972). Sensory registration is the initial awareness of a change in the environment. This change results in arousal. The child focuses his attention on the stimulus in the environment, which enhances the possibility for learning to occur. Sensory modulation is essential for well-developed functioning in other areas (namely motor control, social interaction, and cognitive performance). *Adaptive coping* is the process of responding effectively to the demands of the environment. The match between the demands of the environment and the abilities of the child is of the essence for successful intervention. *Sensorimotor development* utilises principles of the learning theory and Piaget's cognitive theory (1951) to stimulate concept formation, memory, and problem-solving by incorporating environmental influences and demands in intervention.

3.3.2.2 Early intervention: A communication perspective

Early communication intervention can be defined as assessment and treatment provided to families and their young children who demonstrate or are at risk for demonstrating either a disability or delay involving communication, language, speech or pre-requisite oral-motor behaviour (American Speech and Hearing Association, 1989). The concept of early communication intervention for infants, young children and their families is increasingly recognised as an essential component of a modern society's special educational services (Mitchell, 1991).

When adults recognise that a disparity exists between their communicative competence and that of children with whom they interact, they adjust their communicative style. This changing of a communication style by adults to match those of children is known as communicative accommodation (Crago, 1992). According to Nelson (1996) the accommodations of an individual's own resources to the requirements of the task are one of the major types of adaptation. It could therefore be postulated that the adults adapt their behaviour to suit the abilities of the child. Adults can be communicatively accommodating towards children by means of the nature of their communicative interaction and its focus.

Adults can alter or adapt the nature of their discourse during interaction and one way in which communicative interaction is altered in an attempt to reduce the competence gap, is the simplification of the adult's speech to better match the lesser verbal competence of the child (Conti-Ramsden, 1985; Crago, 1992; Van Kleeck, 1992). This is characterised by shorter sentence structures, simpler lexicon and acoustically distinct higher pitch than normal.

The focus of the communication interaction refers to the adaptation that adults make for children regarding the topic of conversation and on whom or on what the conversation is focused. The situation-centred approach is characterised by the expectation that children should adapt to activities and persons in the situation at hand (Anderson & Battle, 1993; Schieffelin & Ochs, 1986). In a child-centred approach adult interactions are characterised by child-centred topics and a desire to engage the child frequently as a conversational partner (Schieffelin & Ochs, 1986). Both these approaches are important to incorporate in a communication intervention programme for young children.

3.4 THE DEVELOPMENT OF AN INTERVENTION PROGRAMME FOR COMMUNICATION-RELATED BEHAVIOURS

In the development of an intervention programme for communication-related behaviours, the following six areas are relevant:

3.4.1 Inclusion of developmental domains

Developmental domain categories, according to developmental theories, were identified as sensorimotor, cognitive, communication and social-emotional (Gilfoyle & Grady, 1983; Piaget, 1951; Robinson Ambron, 1978) (See Figure 2.2). All intervention programmes should therefore incorporate these domains.

3.4.2 Strategies and principles

The principles and strategies to facilitate communication-related behaviours were identified (Beukelman & Mirenda, 1998; Lloyd *et al.*, 1997; Musselwhite, 1986). These principles are presented in Table 3.8.

Table 3.8 Principles and strategies to facilitate communication-related behaviours

Behaviour	Strategies and principles
General strategies to facilitate communication (Constable, 1983; Olswang, Kriegsmann, & Mastergeorge, 1982)	• Requesting • Commenting on objects • Commenting on actions • Denying and protesting • Obstacle presentation • Mand-model • Time-delay • Nurturance • Sensitivity • Sequence experiences • Fading • Shaping
Prompting (Lloyd *et al.*, 1997)	• Verbal / gestural / physical / visual • Partial / full • Natural prompt – "What do you want." • Minimum prompt – "You need to tell me what you want."

Behaviour	Strategies and principles
	• Medium prompt – " You need to tell me what you want. You want_____." • Maximum prompt – "What do you want. You need to tell me. Say _____." Used with gestures, physical and visual cues.
Visual tracking and scanning (Musselwhite & St Louis, 1982)	• Stimulus: Size, colour, complexity of activity • Location: Distance – near to far • Range: Grade to 180° visual range • Cues: Verbal, vocal, gestural • Speed: Slow, medium, fast • Path: Horizontal, vertical, diagonal, circular, random
Choice-making (Porter, Carter, Goolsby, Martin, Reed, Stowers, Wurth, 1985)	• Child should have a preference before initiating choice-making • Child should have a mode of communication • Increase the opportunities • Child should learn natural consequence of making a choice
Joint activity (MacDonald & Gillette, 1984)	• Adult first follows the child's lead • Structure for give-and-take situation - Optimal eye contact - Sustain interaction - Routine back and forth action and then break the routine • Animation • Imitate behaviour • Initiating • Receive requests • Maintain eye contact • Touch
Activation (Musselwhite, 1986)	• Different planes • Different speed • Tone of voice • Give-and-take situation • Animation • Surprise element
Object interaction (Musselwite, 1986)	• Exploratory - accessibility of toys - increase duration of play - increase opportunities for manipulation • Conventional - non-threatening area - appropriate toys - allow self-directed play - functional object use
Learning (Bandura, 1977)	• Repetition / practise • Associations, assimilation and accommodation • Trial and error • Reinforcement • Motivation • Imitation • Insight • Multi-sensory experience • Methodical instructions

Behaviour	Strategies and principles
Social learning (Bandura, 1977)	• Observation and modelling • Continuous reciprocal interaction between the environment • Reinforcement, self-reinforcement • Rapport between the therapist and child
Adaptive response (King, 1978)	• Ensures active participation • Opportunity for goal-directed participation • Sub-conscious integration • Self-reinforcement through experience of success
Level of activity (Kramer & Hinojosa, 1993)	Grade level of activity according to: • Kinaesthetic • Three dimensional • Two dimensional

Strategies and principles are the cornerstones which make therapy a scientific practice. The strategies and principles could be used across all the developmental domains of sensorimotor, cognition, social-emotional and communication. It is the responsibility of the therapist to use these strategies and principles in planning the intervention programme. Without the use of specific strategies no change in behaviours will occur and the therapist will only maintain the functional level of the child. Treatment programmes are also graded according to the strategies and principles used during a session.

3.4.3 Selection of activities for inclusion in a play package

Many childhood intervention programmes implement play as a therapeutic medium. There are, however, no researched play packages except for one developed and researched in 1997 (Uys, 1997). Various authors have recognised play as an effective intervention medium for children (Fewell & Vadasy, 1983; Lear, 1996; Linder, 1983; Parham & Fazio, 1997; Uys, 1998). Play is regarded as a natural way through which a child learns, through which he acquires and practises the skills necessary for daily living and participation in human society (Uys, 1997:19). These primary occupations are viewed as activities that both reflect and facilitate the development of a child's competence in interaction with the world (Ayres, 1972; Mack, Lindquist & Parham, 1982; Reilly, 1974; Takata, 1969). Toys and other play materials are "tools" used during activity participation and are linked ultimately to the child's intellectual development and learning (Bradley, 1985). Play can give us insight into the child's volition (values, needs and interests), habituation (the child's and family's organisation of behaviours into patterns and routines), performance

(the child's skills and abilities), and environmental strengths and weaknesses (Kielhofner, 1985; Schaaf & Mulrooney, 1989).

Previous research (Uys, 1997) was aimed at the development of activities to be used by CSD. The play package was developed by ensuring that severely disabled children had access to play with specifically selected activities. Activities were modified or adapted to ensure participation on a physical, as well as a mental level. Four children from a developing community were included in the study and the activities were applied to them to make sure that they related to the activities. Although gains were obvious, it was indicated that of the ten activities selected, some targeted similar skills and in order to streamline the package, some activities could be excluded, while developing a more useful grading system of fewer activities. The activities, included in the play package, with their most prominent skills involved are presented in Table 3.9.

Table 3.9 Activities in a play package and their most prominent skills facilitated

ACTIVITIES	SKILLS MOSTLY PRESENT		
	Sensorimotor	**Cognitive**	**Communication**
1. Battery-operated toys	X		
2. Skittles	X		
3. Finger-painting	X		
4. Sensory box	X		
5. Music	X		
6. Concept board		X	
7. Pop-up toys		X	
8. Sand play		X	
9. Water play		X	
10. Storytelling			X

Uys (1997:71)

Although application of the package brought about significant differences in the children's behaviour, it became clear that before this package can be reproduced for wider application in South Africa, more in-depth research is needed to validate the play package in terms of changes in the behaviours of children with disabilities.

3.4.4 The content of the adapted play package

Taking the theoretical underpinnings, as discussed in Chapter 2 and 3, into consideration, it is evident that the adapted play package should meet the following requirements:

- *All developmental domains* should be included namely sensorimotor, cognitive, social-emotional, and communication. The therapist should have a thorough knowledge of theories of play motivation and the ability to incorporate the knowledge to facilitate an adaptive response.
- Crucial factors *from early intervention theories* should be taken into account namely the medical, child developmental, cognitive, behavioural, and ecological models.
- The activities should be planned in such a way that it is *flexible* for children with different levels of functioning to participate in the same activity. In other words, it should provide a match between the child's abilities and the demands of the activity. The therapist should be able to apply the knowledge of child development in the presentation of the activity.
- The *theories of play*, *development, including communication*, should be incorporated in the planning of the activities.
- Play activities should be *appropriate* in terms of the children's chronological and mental age, novelty, familiarity, social toys, reactive toys, and toys that would promote learning.
- Play activities should be selected *to facilitate the progression to the following stages of play* for young children.
- The therapist must be meticulous in the proposed *goals* that must be reached and the selection of appropriate *strategies and principles* that should bring about change in behaviours. In the treatment, a "just right challenge" for each child should be set which would make *successful participation* possible for him.
- There should be a *link between the treatment goals and the assessment* of changes in behaviours.
- Consideration should be given to *treatment and social validity*.
- Theories on the *facilitation of the adaptive response* should be included (See Fig. 2.1). These include
    - Adjustments should be made to ensure active participation

- The external environment is the primary stimulus for developing the skills necessary to perform tasks within a specific context, therefore activities should be adapted to facilitate physical and mental participation
- Unambiguous feedback from the external environment (the therapist and the activity) forms an integral part of the adaptive process
- The child should experience success as well as intrinsic reward
- The environment should be adapted to the child's abilities and the child should learn to adapt to demands from the environment
- Activities should be motivational to maintain optimal arousal levels and total concentration
- Activities should be easier in the beginning, rigidly structured and presented in a supportive environment, to decrease anxiety

3.4.5 Rationale for change

The play package should be refined in order to eliminate duplication of activities that train the same skills. A manual with treatment principles and their application should be developed to make the package accessible for community health workers to use successfully. The play package should be tested on a more homogeneous group of children with disabilities to establish specific related problems.

When designing a play package for children with intellectual impairments, attention has to be paid to learning strategies that will enable these children to benefit maximally from their experiences. McCormick and Schiefelbusch (1984:186) proposed recommendations for increasing the use of learning strategies with the intellectually disabled child:

a) Vary training stimuli on critical dimensions only.
b) Emphasise critical linguistic stimuli
c) Reduce the distracting potential of irrelevant stimuli
d) Take advantage of attentional predispositions
e) Consider the status of social and cognitive skills
f) Use group-related stimuli to facilitate categorisation
g) Arrange for referent and reference to be experienced simultaneously
h) Teach how and when to apply mnemonic strategies
i) Use within-stimulus prompts

j) Consider spatial as opposed to temporal arrangement of stimuli

As the adaptation of the play package forms part of the validation process, it will be described in Chapter 4.

3.5 CONCLUSION

There is evidence that children with developmental delays or disabilities benefit from early intervention (Shonkoff & Meisels, 2000). The aim of the interventionist is to facilitate an adaptive response from the child to ensure that learning occurs. Play is widely recognised as a powerful tool to be used in intervention with young children as this is seen as their primary occupation. The motivational aspect of play is supported by three theories on play motivation. Their strategies form a crucial part in the effectiveness of the treatment programme presented to young children.

Although play development in children with disabilities is delayed, the sequence of the play stages stays the same as for children without disabilities (Linder, 1993). It is therefore important to consider theories on play and early childhood development before planning a play package to facilitate development in children with disabilities.

For the purpose of this thesis the emphasis is on the facilitation of communication-related behaviours. This concept was clearly defined to identify the underlying elements of this complex construct. Elements in the internal environment (the child's developmental domains) and the external environment were identified. These elements are interwoven in the intervention process of assessment and treatment.

To enhance the validity of a play package to facilitate communication-related behaviours, there should be a distinctive link between the goals of treatment and the assessment instruments used. Specific criteria in the development and selection of assessment instruments are provided by Bricker *et al.* (1978), DuBose (1981), and Bagnato *et al.*, (1997).

If play is the intervention medium, the assessment should also be play orientated; it should be sensitive enough to depict small changes in behaviour of children with disabilities, as

their progress is slower than that of children without disabilities. This puts the emphasis on the treatment and social validity where parents or carergivers could be part of the process and able to see the benefits of the intervention. In developing an assessment instrument, reliability and validity measures should be followed meticulously in order to declare the intervention process valid.

The planning of a play package to facilitate communication-related behaviours should be based on the theories of early childhood development, play development, and the selection of appropriate play activities. The scientific base of treatment rests on the strategies and principles incorporated in the presentation of the play activities. These strategies and principles are derived from a transdisciplinary approach to intervention.

Previous research on the use of a play package to facilitate development in children with severe disabilities was used as a point of departure. This package was refined by selecting the most appropriate activities, by eliminating duplication of activities training the same skills and by changing the method of presentation to fit the population of children with intellectual impairments.

With this background it is evident that further empirical research is necessary to validate the play package and assessment instruments in the realm of a transdisciplinary approach.

3.6 SUMMARY

In this chapter the use of play to facilitate an adaptive response was investigated. This was related to children with disabilities and the influence play has on the different developmental domains. Various theories pertaining to early childhood development, play motivation and play development were investigated.

It is evident that there should be a link between assessment methods and treatment in the intervention process. Criteria with which assessment instruments should comply were discussed regarding authenticity, reliability and validity during the data collection procedures.

The importance of the selection of appropriate play materials and toys were discussed with special reference to children with intellectual impairments. Strategies and principles used during the presentation of these activities were investigated.

The chapter concludes with the refinement of a play package used in previous research to meet the needs of this research project.