

## CHAPTER 3

### **THEORETICAL BACKGROUND: ASSESSMENT OF A YOUNG CHILD IN SOUTH AFRICA**

#### **3.1 INTRODUCTION**

Assessing young children with cochlear implants is a necessary and fundamental activity for teachers, therapists, and other professionals involved. Assessments can be used to identify children who need further evaluations (screening), or to determine the nature and extent of the difficulties experienced, to determine eligibility for services, to identify the most appropriate placement, to identify goals, therapeutic and instructional strategies, to evaluate the effects of the intervention programme and to monitor effects of instructional programmes (Bailey & Wolery, 1998:18). Another issue is how to best provide assessment and intervention in an environment that is hostile to variable cultures. This topic is discussed and guidelines are provided in order to adapt programmes to meet the demands of a multi-cultural and multi-lingual society (Allum, 1996:XV).

**This chapter aims to provide a theoretical background by critically evaluating and interpreting relevant literature on effective assessment of a young child, as well as discussing the cultural and language barriers faced in South Africa.**

#### **3.2 ASSESSMENT OF A YOUNG CHILD IN SOUTH AFRICA**

Professionals understanding the value of measuring the effects of interventions use one or more objective or subjective outcome measures available. One of the advantages of measuring outcomes is to identify and adopt effective clinical processes and reject ineffective ones. While on the surface, this may seem like a good idea and easy to administer, however it is more difficult than it appears when done in young children (Abrams, 2004:1). Medicine has struggled with the issue of determining the most effective course of treatment for years. There is increasing reliance on Evidence-Based-Practise (EBP) to assist clinicians in making informed decisions when confronted with a particular clinical problem. EBP is described as the “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practise of evidence-based practise means

integrating individual clinical expertise with the best available external evidence from systematic research,” (Sackett, Rosenberg, Gray, Haynes & Richardson, 1996:71).

Thus, the rationale for assessment in a hearing impaired preschooler is to gather information essential for decisions about placement and appropriate education planning. Planning determines which individualised service is suited to the particular case; and because children grow and develop, the constantly changing needs of a child and its family mean that evaluation is in effect an ongoing process of assessment to ensure progress and growth in the individual child (Bailey & Wolery, 1998:2).

Assessment methods should be acceptable to all the participants in this process and should therefore be selected and implemented with sensitivity and responsibility. The challenge for all therapists lies in the appropriate choice of assessment materials, in eliciting those behaviours to be evaluated and in obtaining a general overview of the child’s strengths and weaknesses as well as current performance status. Thorough assessment involves the observation of a child’s current and unique status in order to make fundamental decisions regarding intervention and school placement. As summarized by Umansky and Hooper (1998:341), “assessment is a goal-oriented problem-solving process that utilizes various measures within a theoretical framework”. It is a variable process that depends on the questions being asked, the type of problems encountered by the child, and a myriad of social, developmental and contextual factors (Umansky & Hooper, 1998:341).

The most valid and comprehensive assessments of children in the earliest stages of language acquisition are based on multiple methods of data gathering, including observations of communication interactions in multiple contexts with more than one partner. Neisworth and Bagnato (1988:23-50) argues that outcomes are more comprehensive, reliable and valid when based on a multidimensional assessment that employs multiple measures, derives data from multiple sources, surveys multiple domains and fulfils multiple purposes (Nelson, 1998:235).

According to Shipley and McAfee (1998:191), no one method of assessment is better than the other – an appropriate choice of method depends on the client, the circumstances as well as the client’s environment. This statement is especially appropriate in the South African context because of our unique circumstances and environment. Assessment presents significant challenges to the therapist during the process of appropriate subsequent

intervention. The communication skills of the young child with a hearing loss are affected from the day the child is born. Linguistic, sensory, social and cognitive information is received by the newborn from the environment immediately following birth (Mahshie, et.al, 2006:5). It is also known that early amplification and intervention, is not only essential to the child's development and progress, but without early intervention, the child could experience continued failure and ultimately develop a poor self-concept. Additionally, children with communication deficits are at risk for a deficient spoken language system and this may lead to an inability to use language to aid learning (Butler, 1999:14). The level of linguistic competence ultimately determines academic performance at school level.

Therapists require the ability to interpret the information and choose the applicable intervention strategies and make correct decisions and projections. The emphasis of the assessment will differ depending on the child, the child's history and his/her setting. It is an art to gather and interpret the information received, but the process has to be conducted in a short space of time, as teachers and parents expect prompt feedback on the assessment and need to act on the suggested recommendations (Gerald & Carson, 1990:61). In addition, therapists must also consider the financial constraints, which are currently felt across all sectors of the population. Efficient time management and effective programmes are the essence of accountable practise and outstanding service.

Young children generally have to be evaluated over a period of time, as well as continuously in order to determine progress and change in their behaviour. It is emphasized again that thorough assessment implies affordability, time efficiency and accurate decision-making regarding intervention (Nelson, 1998:235). Assessment must be flexible to accommodate the environments of the child as well as the child's individual needs. Therapists have realized that young children must be assessed within the context of their language acquisition and the assessment must take into account the stimulation that they have been exposed to (Butler, 1999:21). According to Duchan (2000:189), the therapist must obtain answers to the questions regarding the child's problem, "as these answers often lie beyond the walls of the clinician's office and rather in everyday life contexts". Evaluation is often referred to as "dynamic assessment", which implies that the therapist's role is to be that of a neutral observer and to effect change (Gutiérrez-Cellen, 2000:217).

Dynamic assessment evokes a further controversy, namely the use of formal testing versus informal assessment. It is often still common practise to use formal tests as the main tool for assessment. However, most formal tests are not appropriate for the South African context and have limited use. The reason is that many formal tests have been translated, but not standardised for the South African population. In the second place, original formal South African tests have been standardised only for certain cultural groups in the country. Currently the requirements for formal tests are:

- Tests must not contain any racial or cultural bias,
- Tests must be valid for their intended purpose and can only be administered by trained professionals,
- Test procedures should address a variety of educational and developmental needs,
- Tests cannot be the sole contributor to the intervention plan; multidisciplinary contributions are also needed, and
- All educational and developmental areas should be addressed (Umansky & Hooper, 1998:341).

Formal tests are culturally, linguistically and socially biased and not relevant to the South African situation, which is unique and socially very different. Other barriers to assessment are the limitations of our understanding of the manner in which children grow and develop. Norms for various areas of development are available, but there is still a lack of a comprehensive view of the synergism of the developmental process. It is important to keep in mind that tables of norms present a fragmented view and not a picture of the whole child. However, tables of norms do provide valuable information. Developmental norms should be used as guidelines in the assessment process. Globally, there is a lack of appropriate assessment instruments and tests. Assessment is also affected by the child to be evaluated. The performance of the child can be inconsistent, the child might be distractible, or specific environmental and health factors may influence the assessment (Zsilavec & Naude, 2000:21).

For these reasons, informal assessments have become more popular when assessing a young child. The therapist can observe the child in various contexts and more natural settings over a suitable period of time. The assessment is informal, and done in as natural a setting as possible, and the assessment incorporates various developmental facets. Using informal

techniques as well as observation in evaluation does not affect the accountability factor of the assessment. Observation provides the therapist with an appraisal of the child's all round skills. The situation must be non-threatening to the child to ensure that they act normally within their environment and so that an accurate assessment can be made. The aspects mentioned above emphasize that in a "test situation" the child is under pressure, and there is always the underlying urge to get the test done in as short a period of time as possible, and the parents might also feel anxious and unsure. These factors will eventually influence the end product and final findings (Shipley & McAfee, 1998:184). Assessment should therefore always be handled with great sensitivity and care.

The complexity of the challenge is compounded by the fact that in the South African context, therapists work with a diverse population in which communication skills and needs differ substantially; allowance must be made for these variables in the assessment, says Pakendorf (1998:4). In South Africa, children from all cultures are receiving cochlear implants (i.e. Black, Asian, and White). Additionally, many cochlear implant users' first language is not English or Afrikaans, but rather one of the other official South African languages, i.e. Tswana, Zulu, Northern Sotho, Southern Sotho, Xhosa, Swazi, Ndebele, Tsonga, Venda, or one of the eight unofficial languages (Dictionary.LaborLawTalk.com, 2006). For a child that may have several language influences in his/her life, it is important for the clinician to try and get an overview of what language the child knows, i.e. the child may be able to use a second language for conversational interaction; however, this does not mean that the child is able to understand or use the language well enough to participate in the classroom situation or learn new information in a timely manner (Mahshie, et.al, 2006:89). Differentiating between interpersonal and school language is an important aspect of assessing the child's abilities and will probably be achieved through intensive intervention and ongoing evaluations.

The natural approach to assessment involves seven principles that are essential in the assessment process (Brenner 1992, 1993:67):

- Formal to informal;
- Norm-referenced to criterion-referenced;
- Standardised to adaptive;
- Direct to indirect;
- Naturalistic to clinical observation;

- Product orientated to process orientated
- Unidisciplinary to team approach.

During the assessment process, the therapist will use certain principles more than others, but it is recommended that the emphasis be on a naturalistic setting where the therapist observes the child during play. Observation includes sampling of various developmental behaviours, and recording of these behaviours. The recorded information is then made available to all those involved (Zsilavec & Naude, 2000:23).

The natural setting empowers the therapist to assess different behaviours the child may exhibit, validate formal tests if they were conducted, carry the assessment over to other situations, identify how the child reacts to particular stimuli in the environment and monitor intervention effects on a regular basis (Zsilavec & Naude, 2000:23).

Bailey and Wolery (1989:11-18) mention seven important characteristics of assessment:

- Important developmental and behavioural facets are included;
- Parents and caregivers are involved;
- It includes the use of various sources and multiple tasks;
- Various disciplines should be involved in a collaborative manner;
- Ecological validity is ensured – that is, considering the child’s “strange behaviour in strange circumstances with strange adults”;
- Non-discriminatory assessment methods are employed;
- It provides the opportunity for ongoing assessment of the child’s progress.

Therapists must therefore reduce cultural bias, and assessments should have salient implications for the intervention plan so that the child can derive the maximum benefit. Consequently, the Pretoria Cochlear Implant Programme compiled an assessment protocol by drawing from various sources (specifically from protocols used in other cochlear implant programmes) to comply by the principles of assessment and to ensure that no bias occurs during the assessment of the population they serve. A vital part of cochlear implant programmes is to evaluate expected changes, which may occur after cochlear implantation. Changes in communication, spoken language skills, educational achievements, social and emotional development are monitored (Archbold, 1994:197).

Many children with cochlear implants are referred to private therapists for intervention; it would be ideal if all speech therapists and audiologists use a similar assessment protocol, because this will help the team to obtain appropriate records for each child and enable researchers to make comparisons (Venter, 2000:90).

Monitoring progress in real life, as well as in a clinical test situation provides a more comprehensive report of a child's functioning, and ensures that the child's parents, therapists and educators are actively involved in the process. There are many areas in which a therapist, teacher or parent can help make certain observations concerning the progress of the child as they spend more time with the child compared to the members of the cochlear implant programme (Venter, 2000:90).

Many prescribed evaluation tools are available to assess the speech production and language skills of hearing-impaired children. Formal tests of phonetic repertoire, articulation, speech intelligibility, receptive and expressive language, vocabulary and other speech and language skills are commonly used. However, these assessments are not only indicative when candidacy of a child is to be decided, but the results can be used as baseline information for further post-operative assessments. The linguistic needs of children are also determined in order to provide realistic expectations regarding the outcomes of cochlear implantation to the parents. On the other hand, many of these tests are time intensive and provide limited useful information in terms of clinical management functions and in some instances the information has had to be discarded (Clark, Cowan & Dowell, 1997:89).

The major issue highlighted is that for speech therapists and audiologists to ensure effective and efficient evaluations, better assessments are required. A systemic and systematic assessment battery is needed in which the information gained from questionnaires, observations, informal assessments and formal assessments can be related to each other and to the intervention process. As the child's natural environment is incorporated into the intervention procedure, other types of assessments are needed, such as a standard method of assessing the child's communicative environment, to determine how well it provides the type of input that is specifically required for the child. Guidelines for making predictive statements should be produced in order to monitor the effectiveness of therapy. Therefore, an assessment tool should not only consider normative information, but should also consider the

rate of development. This will ensure that objective; predictive statements can be made (Gerald & Carson, 1990:74).

To provide more relevant information and to overcome the barriers of assessment in young children, naturalistic sampling of interactive play has begun to replace many of the formal tests. Video-recorded samples can be structured to provide maximum opportunities for meaningful interactions. Analysis of such conversational samples can provide direct information about problems in a communicative context, which can be used within habilitation programmes. Therefore, assessments are important in establishing the goals of habilitation programmes both pre- and post-operatively (Cummings, 1997:4).

As young children with cochlear implants may have little or no spoken language and few of the communication skills that form the precursors of speech and language development, assessment can be a daunting task. Not many assessment measures exist for children who are often unable to carry out the simplest imitative task, but there are certain general observations that are crucial to monitoring the progress of a young child. The first changes noticed in child who has received a cochlear implant, is usually behavioural, i.e. often these children seem less frustrated or anxious, because they are more in touch with the hearing world. Negative behaviour changes may indicate a problem with the device or its settings, or possible emotional problems while adapting to the implant. The second observation has indicated that there are changes in listening skills, as the child gradually starts to hear more sounds (environmental sounds and speech). Negative changes in listening skills usually indicate the need for a map. Change in the child's voice quality can also alert the people involved that the map needs fine-tuning. Changes in speech abilities are also a good indicator on how the device is functioning. Speech may become unintelligible or children may lose speech sounds that were previously used consistently. The final aspect that can indicate a problem is the child's dependence on lip reading. Sudden dependence on lip reading could indicate a problem (Venter, 2000:90).

Assessment of speech perception in the paediatric population is important for several reasons. First, results on speech perception measures help to determine whether a child is benefiting from a cochlear implant. Secondly, follow-up assessments help track performance over time. Lastly, speech perception data in combination with speech and language outcomes are essential for establishing guidelines for habilitation. A number of factors must be taken into



account when assessing speech perception in young children. These include a combination of the child, task, tester and environmental influences on test outcomes (Boothroyd, 2004:292-295). Child factors include the state of the child during testing, such as their attentiveness to the task. Moreover, children must demonstrate the requisite motor skills to perform the response task being asked of them (e.g. head turn, manipulation of objects, picture pointing, pushing a button), as well as the phonological, receptive and expressive language skills needed to participate in speech perception testing. Tester and environmental factors include the audiologist's aptitude to work with the paediatric hearing-impaired population, the feel of the facility, and caregiver attitudes and behaviours (Eisenberg, Johnson & Martinez, 2005:1).

Assessing speech understanding in the presence of competition or background noise also expands the options used in speech perception testing – as does testing under multimodal conditions (auditory-only, visual-only, and auditory-visual). With regard to the type of administration, live-voice affords the clinician greater efficiency and flexibility than the use of recorded stimuli, particularly when working with young children. However, inter-talker variability makes it difficult to compare results obtained with live voice across different clinicians, let alone paediatric centres. Use of recorded stimuli provides greater consistency in signal delivery across test sessions and test centres (Eisenberg et.al, 2005:2).

An attempt to monitor progress by enforced repetition of specific sounds disrupts the normal patterns of adult-child interaction and may not give an accurate representation of the child's progress (Archbold, 1994:198). It is therefore necessary to use different assessments to obtain a progress profile of the child. Repeating the same assessment protocols over time allows therapists to monitor the progress of a young child with a cochlear implant. Monitoring progress over a period of at least five years after implantation ensures adequate device performance, identifies problems and sets suitable expectations for parents and local professionals (Cummings, 1997:11).

By taking into account the principles of assessing a preschooler, the natural approach to assessment, the unique South African context and guidelines from assessment at other cochlear implant programmes, the Pretoria Cochlear Implant Programme developed a protocol to assess a young child with a cochlear implant within their programme.

The assessment protocol consists of informal measures, checklists and one formal assessment for receptive language. All aspects of development must be addressed, but the most important aspect is the child's listening progress. To monitor the child's auditory ability, two assessments are suggested:

- *Aided sound field audiometry* to obtain pure tone thresholds between 125 and 8000Hz, *speech discrimination* abilities and *Speech in Noise* abilities. As most hearing-impaired children have limited speech abilities and their speech is often unintelligible, it may be necessary to discriminate between common objects as in the Toy Discrimination Test (McCormick, 1994:81).
- Although aided sound field audiometry gives a measure of sensitivity (the ability to detect an auditory signal through the implant), there is also a need to measure the child's developing ability to listen and interpret the signal. A child who is suitable for implantation would have been unable to respond to spoken language presented auditorily in conversational settings. The pattern of social interaction in which a child develops the precursors to language may have been disrupted. Following implantation, the child should be able to respond to auditory stimuli within the familiar, repetitive settings that are found to promote linguistic skills. Consequently the *Developmental Assessment Schema (auditory ability)* is a checklist used to monitor a child's response to auditory stimuli (environmental and speech) and listening progress within his/her home or school environment.

As parents and teachers know the children best, it makes sense to involve them in the assessment process. Questionnaires about the children's listening and spoken language progress are included in the protocol. The *Meaning Auditory Integration Scale (MAIS)* is used to monitor a child's use of and reliance on the implant and focuses on the dependence on audition and increasing ability to attach meaning to sound. Parents and teachers are asked to respond to questions about the child's wearing of the device, awareness of environmental sounds and ability to deduce more subtle meaning from sound (Robbins, 1990:361-370). The *Meaningful Use of Speech (MUSS)* is a scale given to parents and teachers to respond to questions about the child's vocal control, communication and the child's use of speech (Robins & Osberger, 1991).

In a natural approach to assessment, less direct techniques of assessment are required. Progress towards the understanding and use of spoken language through audition can be predicted before implantation, and relevant research in this area can be performed through video analysis (Tait, 1993). Vocal turn-taking, vocal autonomy and non-looking turns in particular are sensitive indicators regarding the use of the implant system. Video recordings of each child interacting with an adult made at regular intervals, will enable the monitoring of small changes over time in conversational turn-taking and auditory processing. Auditory awareness and processing skills can also be monitored through video analysis, which allows one to observe how a child reacts to speech when not looking at the speaker. “The analysis provides objective evidence, before children are able to undertake formal speech and language evaluations, that there is, or there is not, progress in the preverbal skills which are the prerequisite of spoken language” (Tait, 1994:235). Video recordings allow for repeated viewing for in-depth analysis and these recordings provide a more complete picture of communication than formal assessments. Research has indicated that the use of meaningful contexts, familiar settings, non-contrived situations, and age-appropriate motivating activities will result in more representative communication samples (Cummings, 1997:4; Venter, 2000:93).

Video analysis of parent-child interaction and therapist-child interaction was included in the protocol. Before starting with specific assessments it is always appropriate to obtain an idea of the child’s general development. For this purpose, the *Developmental Assessment Schema (DAS)* and *Rossetti Infant-Toddler Language Scale* (Anderson, Nelson & Fowler, 1978; Rossetti, 1990:196) were included in the protocol. The *Voice Skills Assessment (VSA)* battery can also be completed as part of a video sample analysis to highlight specific prosodic strengths or difficulties (Dyar, 1994:257). The *Speech Intelligibility Rating (SIR)* form can be used to rate speech intelligibility during the video analysis (Dyar, 1994:258). The *Profile of Actual Linguistic Skills (PALS)* completed during the video analysis can serve as a cross-check for the other checklists and questionnaires completed, to assess effectiveness of spoken language abilities (Dyar, 2003).

A formal measure of receptive language, the *Reynell Developmental Language Scales III (Verbal Comprehension)* is included in the protocol (Edwards, Fletcher, Garman, Hughes, Letts & Sinkra, 1997). Many programmes, such as the Nottingham Cochlear Implant

Programme and the University of Stellenbosch/Tygerberg Hospital Cochlear Implant Programme include this assessment in their protocol.

As previously discussed, assessment protocols should include three key areas, i.e. speech perception, speech production, communication and language development (Tye-Murray, et.al, 1996:71). Furthermore, assessment protocols should be selected according to the child's linguistic status, i.e. preverbal, transitional or functional language development (Dyar, 2003). Hence, the proposed assessment protocol can be organised as follows for children with cochlear implants in the transitional stage of linguistic development:

**Table 3.1 Proposed assessment protocol for children with cochlear implants in the transitional stage of linguistic development**

Speech perception	Communication and language development	Speech production development
Aided sound field audiometry Speech discrimination Speech in Noise MAIS MUSS	PALS Video-analysis Rossetti Infant Toddler Language Scale Reynell Developmental Language Scales III (Verbal comprehension) Preschool Literacy Assessment	SIR VSA PALS

The Pretoria Cochlear Implant Programme included quantitative (Reynell Developmental Language Scales III) and qualitative (MAIS, MUSS, DAS, Rossetti-Infant Toddler Language Scale, Preschool Literacy Assessment, SIR, VSA, and PALS) measures in order to facilitate the descriptions of the communication interactions and general progress of a young cochlear implant user. The protocol also ensures that the principle of the whole deaf child is applied, by evaluating all aspects that could interfere with optimal communication and spoken language development.

### 3.3 CONCLUSIONS

From the preceding overview on the assessment of a young child in South Africa, certain implications for research can be deduced and implemented in the current study. Firstly, it was confirmed that assessment is an empirical part of a cochlear implant programme. Secondly, all the participants involved should accept the assessments and implement them with sensitivity and responsibility. Thirdly, a battery of tests was suggested in order to obtain an accurate overview of a child's abilities. Assessments in multiple contexts are also vital, as

children may feel threatened in a test situation, resulting in inaccurate assumptions regarding their abilities. Young children generally have to be evaluated over a period of time as well as continuously in order to determine progress and changes in their behaviour.

Lastly, the dynamic and natural approach to assessment commonly used in young children implies that informal assessments in naturalistic settings, provides the most accurate and unbiased results.

By taking into account the principles of assessing a young child, the natural and dynamic approach to assessment, the multi-lingual and multi-cultural South African context, and guidelines from assessment protocols used at other cochlear implant centres, the Pretoria Cochlear Implant Programme proposed an assessment protocol for young cochlear implant users which applies in particular to their context.

### **3.4 SUMMARY**

This chapter aimed to describe and discuss issues relating to assessment of a young child within the challenging South African context. This was followed by a discussion of the dynamic and natural approach to assessment, which implies the use of informal assessments in naturalistic settings. Outlining the type of assessments included and areas assessed, as well as providing rationales for the various assessments included in the protocol explained the assessment protocol proposed by the Pretoria Cochlear Implant Programme.