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DEPARTMENT OF SPEECH PATHOLOGY & AUDIOLOGY

**Auditory-Verbal Therapy with Deaf or Hard-of-Hearing Children  
in Gauteng, South Africa**

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A research report submitted in partial fulfilment of the requirements for the degree of  
Master of Arts in Audiology by Coursework and Research Report in the Faculty of Humanities,  
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## DECLARATION

I, Ashleigh Taylor, hereby declare that this research report, “*Auditory-verbal therapy with deaf or hard-of-hearing children in Gauteng, South Africa,*” is my own original work and has not been presented for any other degree at any other academic institution, or published in any other form. It is submitted to the University of the Witwatersrand in partial fulfilment of the requirements for the degree of Master of Arts in Audiology by Coursework and Research Report.

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Ashleigh Taylor

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Date

## **DEDICATION**

Dedicated with love to the memory of my grandmother, Kathleen Mabel Gibson.  
She was an inspiration as a grandmother, mother and friend.

*“Some people come into our lives and quickly go.  
Some stay for a while and leave footprints on our hearts.  
And we are never, ever the same.”*

Source Unknown

## ACKNOWLEDGEMENTS

*“Knowledge is learning something every day. Wisdom is letting go of something every day.”*

Zen Saying

- First and foremost, God, for your strength: *“For nothing is impossible with God.”* Luke 1:37

### ***Footprints***

*One night I had a dream. I was walking along the beach with the Lord, and across the skies flashed scenes from my life. When the last scene of my life appeared before me, I looked back at the footprints in the sand, and, to my surprise, I noticed that at many times along the path of my life there was only one set of footprints.*

*The Lord said, “My precious child, I never left you during your time of trial.*

*Where you see only one set of footprints, it was then that I carried you.”*

- My family, Mom, Dad and James: thank you for your unconditional love, trust and faith in me and for always being in my corner.
- My supervisor, Mrs. Nomfundo Moroe and co-supervisor, Ms. Dhanashree Pillay: thank you for your encouragement and support.
- To the participants: thank you for your enthusiasm, dedication and willingness to participate, without you, this research study would not have been possible.

*“Sometimes our light goes out but is blown into flame by another human being. Each of us owes deepest thanks to those who have rekindled this light.”*

Albert Schweitzer

- To all the children receiving AVT, a quote of encouragement:

*“Knowledge is light and love and vision.”*

Helen Keller



## ACRONYMS AND ABBREVIATIONS

<b>AG</b>	Alexander Graham
<b>AV</b>	Auditory-Verbal
<b>AVI</b>	Auditory-Verbal International
<b>AVT</b>	Auditory-Verbal Therapy
<b>EHDI</b>	Early Hearing Detection and Intervention
<b>FDA</b>	Food and Drug Administration
<b>HOH</b>	Hard-of-Hearing
<b>HI HOPES</b>	Home Intervention – Hearing and Language Opportunities Parent Education Services
<b>HPCSA</b>	Health Professions Council of South Africa
<b>HREC</b>	Human Research Ethics Committee
<b>JCIH</b>	Joint Committee on Infant Hearing
<b>LSL</b>	Listening and Spoken Language
<b>LSLS</b>	Listening and Spoken Language Skills
<b>SAAA</b>	South African Association of Audiologists
<b>SASL</b>	South African Sign Language
<b>SASLHA</b>	South African Speech-Language-Hearing Association

## TERMINOLOGY

The following terms are defined according to their application as used in the study.

**Auditory-verbal therapy (AVT):** A refinement of the oral-aural approach and emphasizes listening instead of visual input (Schow & Nerbonne, 2013). AVT is the application and management of technology, strategies, techniques, and procedures to enable children with hearing impairment to learn to listen and understand spoken language in order to communicate through speech (Estabrooks, 1994).

**Aural habilitation:** Intervention for individuals who have not developed listening, language and speech skills. Aural habilitation may comprise diagnosis of hearing loss and consequent communication difficulties, auditory training and speech reading, speech and language therapy, communication strategies training, counselling, manual communication and educational strategy provision (Tye-Murray, 2009).

**Aural/Oral Approach:** A method of language instruction used to teach children presenting with significant hearing loss. The aural/oral method comprises the utilization of hearing and speech reading but excludes manual communication (Tye-Murray, 2009).

**Aural rehabilitation:** Intervention for individuals who have developed listening, language and speech skills prior to onset of hearing loss. Aural rehabilitation aims to minimize the communication difficulties related to hearing loss and may comprise hearing loss diagnosis, provision of amplification, counselling and psychosocial support, auditory training and speech reading, communication strategies training, speech and language therapy, family instruction and education management (Tye-Murray, 2009).

**Cochlear implant:** An electronic amplification device designed to compensate for the damaged portion of the cochlea (Niparko, 2009). The coded electrical signals stimulate different auditory nerve fibres which then send information to the brain where the sound is processed and meaning is attributed (Cole & Flexer, 2007). Cochlear implants are comprised of internal and external components (Tye-Murray, 2009). “The internal components are implanted in the skull, in close proximity to the inner ear” and include the internal receiver which is placed on the mastoid bone and an electrode array which is inserted into the cochlea (Tye-Murray, 2009, p. 112). The external components include the microphone, connecting cables, a speech processor and a transmitter (Tye-Murray, 2009).

**Cued speech:** Communication system that uses phonemically based hand gestures supplementing speech reading (Comett as cited in Tye-Murray, 2009). Spoken language is used while simultaneously cueing the message (Tye-Murray, 2009).

**Deaf:** The term deaf may be divided into Deaf (with a capital “D”) and deaf (with a lowercase “d”). **Deaf** refers to an individual with a severe or profound hearing loss who identifies with the Deaf culture and South African Sign Language (SASL) whereas **deaf** represents an individual with a severe or profound hearing loss without the cultural identity and promotes the use of amplification and residual hearing (Schow & Nerbonne, 2013).

**Hard-of-hearing:** An individual who presents with a mild to moderate hearing loss whose primary communication is spoken language and who may benefit from amplification devices such as hearing aids or cochlear implants (Schow & Nerbonne, 2013).

**Hearing aid:** An amplification device which includes a microphone, an amplifier and a receiver forming an electronic listening device developed to deliver sound from the environment to the listener (Tye-Murray, 2009).

**Sign Language:** A manual form of communication with focus on facial expressions and body language (Tye-Murray, 2009). In the context of this research report, the term sign language refers to ‘official’ manual languages such as South African Sign Language (SASL).

**Total Communication:** Combined use of signing and speech during education and sometimes referred to as simultaneous communication (Tye-Murray, 2009).

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## ORGANISATION OF THE RESEARCH REPORT

A brief description of the sections included in the research study is outlined in Table 1.

Table 1

*Description of the sections comprising the research study*

<b>Chapter 1</b>	The <b>INTRODUCTION</b> outlines the background to the research study and includes the statement of the problem and the rationale of the study.
<b>Chapter 2</b>	The <b>LITERATURE REVIEW</b> defines and describes key concepts relating to the research study and critically evaluates research in the field of auditory-verbal therapy with particular reference to deaf or hard-of-hearing children.
<b>Chapter 3</b>	The <b>METHODOLOGY</b> describes the research procedure and includes the research design, sampling strategy, ethical considerations, measurement techniques, data collection procedure and data analysis.
<b>Chapter 4</b>	The <b>RESULTS</b> present the findings of the research study relating to the research objectives.
<b>Chapter 5</b>	The <b>DISCUSSION</b> positions the findings of the study in the context of the available literature, interprets the possible reasons for these findings and discusses their significance in the South African context.
<b>Chapter 6</b>	The <b>CONCLUSION</b> summarises the key findings of the research study. The implications for clinical practice are discussed and recommendations for future research are proposed.



## ABSTRACT

Auditory-verbal therapy (AVT) is an intervention approach used as part of an aural (re)habilitation programme conducted by an audiologist with deaf or hard-of-hearing (HOH) children. AVT is a refinement of the oral-aural approach and emphasizes listening instead of visual input. Previous research has focused on AVT in developed countries; however, there is limited available research in developing countries such as South Africa. This study explores and describes the relevance of AVT provided by audiologists in Gauteng, South Africa. The specific objectives of the study were to explore the differences between AVT and general paediatric aural rehabilitation therapies conducted by audiologists; the impact of language on the implementation of AVT and the challenges associated with AVT training. A qualitative research design was used. A purposive sampling strategy was used to identify and recruit participants. Ten audiologists currently conducting aural rehabilitation were selected to participate in the study. The sample size was divided into five audiologists who had obtained the LSL certification (equivalent to AVT certification) and five audiologists without the LSL certification. A pilot study was conducted prior to data collection to determine the applicability of the research study. Thereafter semi-structured interviews were conducted, using an interview schedule. Thematic analysis was employed and themes were described qualitatively. Results revealed the emergence of three resounding themes which included challenges, differences in therapy approaches, and implementation and contributing factors to the success of AVT. The results concluded the need for the implementation of newborn hearing screening programmes to assist with early identification and detection of hearing loss. The study identifies a strong need for the increase in the number of certified LSL therapists in South Africa and additional AVT comprehensive programmes to be implemented at various institutions in Gauteng. Awareness regarding the success of AVT implementation needs to be raised. Finally, the HPCSA needs to revisit and explicitly define the role of audiologists interacting with deaf or HOH children with the LSL qualification being a mandatory postgraduate pre-requisite for working in the field of aural rehabilitation.

**Key words:** Auditory-verbal therapy; aural rehabilitation; deaf; hard-of-hearing.

## CHAPTER 1

### Introduction

*This chapter comprises a synopsis of auditory-verbal therapy as well as a brief rationale for conducting this study. In addition, this chapter provides the reader with information regarding the current situation of auditory-verbal therapy in South Africa.*

Auditory-verbal therapy (AVT) is an intervention approach used as part of an aural (re)habilitation programme conducted by an audiologist with deaf or hard-of-hearing (HOH) children (Cole & Flexer, 2007). Gelfand (2001, p. 443) states that the terms aural rehabilitation and audiologic rehabilitation may be used interchangeably and refer to a “wide range of modalities employed by the audiologist to maximize the hearing impaired patient’s ability to live and communicate in a world of sound.” The terms aural rehabilitation or aural habilitation may be used to discuss the “provision of services related to alleviating the problems associated with hearing loss” (Tye-Murray, 2009, p. 8). Clarity is required regarding the distinction between the terms aural rehabilitation and aural habilitation.

The term habilitation refers to the development of a skill that was not present before (Tye-Murray, 2009). Aural habilitation therefore refers to working with an “individual who has not yet developed a skill, such as a child with prelingual hearing loss” (Gelfand, 2001, p. 443). Tye-Murray (2009) further suggests that it is intervention for individuals who have not developed listening, speech and language skills. Cole and Flexer (2007, p. 241) confirm the definition of aural habilitation as “intervention aimed at helping young children with hearing loss learn to listen and talk, where parents are the primary agents of change in helping the child to learn.”

Tye-Murray (2009) argues that the term rehabilitation is defined as restoring something that was lost. In the context of this study which focuses on deaf or HOH children, rehabilitation refers to restoring the child’s ability to listen. Aural rehabilitation refers to working with an individual who has “an impairment of an already-developed skill,” such as an adult with an acquired hearing loss (Gelfand, 2001, p. 443). The term aural rehabilitation emphasizes the

diagnosis of hearing loss and the provision of listening devices with less emphasis on follow-up support services such as communication strategies (Tye-Murray, 2009).

For the purpose of this research study, the term aural habilitation will be used as the majority of children receiving AVT were diagnosed with congenital idiopathic deafness. The term congenital suggests that the hearing loss was present at birth (Tye-Murray, 2009). The child therefore presents with prelingual hearing loss as the hearing loss occurred before the acquisition of speech and language thereby confirming the use of the term aural habilitation (Tye-Murray, 2009). During AVT, children with prelingual hearing loss will first need to learn to attend to the auditory signal and then can eventually learn to relate the auditory signal to their vocabulary (Tye-Murray, 2009).

Hearing impairment is comprised of HOH and deaf (Schow & Nerbonne, 2013) and is used to describe any type and degree of hearing loss (Ross, Brackett & Maxon as cited in Cole & Flexer, 2007). Hearing impairment may be used synonymously with the term hearing loss (DEAFSA, 2014). It is important to note that these terms, HOH and deaf, differ in terms of hearing status and communication modality (Schow & Nerbonne, 2013). The term HOH refers to an individual who presents with a mild to moderate hearing loss whose primary communication is spoken language and who may benefit from amplification devices such as hearing aids (Schow & Nerbonne, 2013; DEAFSA, 2014). Many individuals who are HOH are culturally Deaf and identify with the Deaf community (DEAFSA, 2014). As a result these HOH individuals may have spoken language abilities in addition to knowledge of Sign Language (DEAFSA, 2014). The term deaf may be divided into Deaf (with a capital “D”) and deaf (with a lowercase “d”). Deaf refers to a person with a severe or profound hearing loss who identifies with the Deaf culture and South African Sign Language (SASL) whereas deaf represents a severe or profound hearing loss without the cultural identity and promotes the use of amplification and residual hearing (Schow & Nerbonne, 2013).

Cole and Flexer (2007) suggest that the terms HOH and deaf may also be used functionally as these terms are not associated with the degree or onset of hearing loss. Individuals who are functionally HOH may have been born with or subsequently experienced hearing loss but have developed language and received information from the environment, primarily auditorily, through

the assistance of amplification technology and auditory intervention (Ross, Brackett & Maxon as cited in Cole & Flexer, 2007).

An individual would be considered functionally deaf if language learned and information received from the environment was primarily through visual input (Cole & Flexer, 2007). Visual input includes speech reading or lip-reading, cued speech or Sign Language (Ross, Brackett & Maxon as cited in Cole & Flexer, 2007). A common misperception is that the term deafness refers to a total loss of hearing. Individuals who are deaf present with a degree of hearing loss which can range from mild to profound (Gelfand, 2001).

AVT promotes early diagnosis, one-on-one therapy and active parent or caregiver participation and involvement (Alexander Graham [AG] Bell Academy, 2012). AVT is a parent-orientated approach as parents or caregivers are actively involved in therapy (Chaikof, 2014). Parents or caregivers become the primary facilitators of their child's spoken language development through the guidance, coaching and demonstration provided by the auditory-verbal (AV) therapist (AG Bell Academy, 2012). The AV therapist works closely with the parent or caregiver as information and observations provided from the parent are important in planning the child's AVT programme (Chaikof, 2014).

Parents are defined as biological, adoptive or step parents who are involved in providing care to their children (Census as cited in Popich, 2003). Caregivers is a broader term which is used in literature (Markus et al.; Ligthelm as cited in Popich, 2003) and may also refer to parents (Markus et al. as cited in Popich, 2003) as well as day care staff and nannies (Ligthelm as cited in Popich, 2003). For clarity purposes, this study will differentiate between the term parents, defined as biological, adoptive or step parents who are involved in providing care for their infants (Census as cited in Popich, 2003) and caregivers, referring to all adults including parents, grandparents and other family members as well as day care staff and nannies who are involved in the infant's life through nurturing and participating in the infant's upbringing (Popich, 2003). For the purpose of this study, the term caregiver will be used. The Health Professions Council of South Africa (HPCSA) (as cited in Van der Spuy & Pottas, 2008) state that there is a "vast quantity of children without parents" resulting in many children in South Africa being raised by caregivers. This

justifies the use of the term caregiver in this study which will focus on the implementation of AVT in South Africa.

AVT facilitates “optimal acquisition of spoken language through listening by newborns, infants, toddlers, and young children who are deaf or HOH” (AG Bell Academy, 2012, p. 2). AVT is used with children who are deaf or HOH who have been fitted with amplification devices at an early age (Chowdhry, 2010). The United States Food and Drug Administration (FDA) (2014) states that children are considered newborns between birth and one month of age and the first 28 days of life is referred to as the neonatal period. An infant is considered between the ages of one month to eighteen months, a toddler between eighteen months and three years, preschool children between three and five years, and school-aged children are between six and eighteen years of age (FDA, 2014; Ambrose, Hammes-Ganguly & Lehnert, 2009). In South Africa, an adolescent is considered between the ages of twelve and eighteen years and thereafter is considered an adult (Muller & Wagenfeld, 2003). Thus the paediatric population refers to a collective term of individuals aged between birth and 18 years of age (Gelfand, 2001).

The foundation of AVT is that deaf or HOH children, who are fitted with amplification devices such as hearing aids or cochlear implants, can learn to listen and understand spoken language in order to communicate through speech (Chaikof, 2014). The Joint Committee on Infant Hearing (JCIH) (2007) recommends that children who are born with a hearing loss should be identified by three months of age. These children with confirmed hearing loss should receive follow-up audiological and medical evaluations which include the fitting of appropriate amplification devices by three months of age followed by the commencement of appropriate intervention by six months of age (JCIH, 2007). This is currently not being achieved in South Africa. Possible reasons for the delay in diagnosis and amplification in South Africa include long waiting lists for amplification, limited access to healthcare, lack of resources, finances as well as administrative measures used in the public healthcare system (Khoza-Shangase & Michal, 2014).

AVT intervention emphasizes auditory skills instead of visual cues which encourages the deaf or HOH child to “develop the auditory system with directed listening practice” (Schow & Nerbonne, 2013, p. 280). The AV therapist will reduce or eliminate visual information by covering

most of his or her face while presenting the speech stimuli (Estabrooks as cited in Schow & Nerbonne, 2013). Khoza-Shangase, Barrat and Jonosky (2010) suggest linguistic barriers may be the reason as to why caregivers are not always given the opportunity to select the mode of communication as most audiologists in South Africa do not speak or understand languages other than English or Afrikaans. Findings revealed that only 10% of audiologists indicated that the choice of communication mode was a combined decision between caregivers and professionals (Khoza-Shangase, Barrat & Jonosky, 2010). These findings are concerning as the communication mode should be chosen by the caregivers subsequent to receiving information from the audiologist regarding all available communication options (Khoza-Shangase, Barrat & Jonosky, 2010). The JCIH (as cited in Khoza-Shangase, Barrat & Jonosky, 2010, p. 104) confirms that “informed choice on the part of parents is one of the pillars of successful early intervention.”

AVT advocates that therapy should be conducted in the child’s first language. A child’s home language encompasses cultural and family values. Rhoades (2006) argues that proficiency in the language used at home has personal, family, cultural and academic implications. Children develop this proficiency between the ages of three and five. It is therefore essential that AVT targets and supports the language of the home (Auditory-Verbal UK, 2014). Furthermore, many professionals work with a number of families who have English as an additional language (Auditory-Verbal UK, 2014). AVT involves caregiver training which will assist families who primarily communicate in another language to learn the skills they need to develop their child’s listening and speaking in their home language (Auditory-Verbal UK, 2014).

The language in which AVT is conducted is crucial in the South African context as most children acquire English as an additional language. Owens (2005, p. 7) defines language as a “socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols.” Caregivers are therefore considered important members within the provision of AVT as the audiologist may require assistance to provide AVT in the child’s home language. There are eleven official languages of South Africa all of which are spoken in Gauteng (Department of Basic Education, 2010). The following statistics provide information regarding the first languages spoken by the Gauteng population in the form of a percentage. These languages include English (13.3%), Afrikaans (12.4%), isiNdebele (3.2%),

Sepedi (10.6%), Sesotho (11.6%), Setswana (9.1%), SiSwati (1.1%), Tshivenda (2.3%), Xitsonga (6.6%), isiXhosa (6.6%) and isiZulu (19.8%) (Statistics South Africa, 2012). A further 0.4% of the Gauteng population utilize South African Sign Language (SASL) as their first language and 3.1% speak other languages (Statistics South Africa, 2012). The home language refers to the “language that is spoken most frequently at home” by the child’s family (Department of Basic Education, 2010, p. 11). It is important that deaf or HOH children receive AVT intervention in their home language. AVT advocates family-centred intervention by instructing caregivers in ways to provide maximal acoustic stimulation which is stated in the third principle of AVT (Goldberg & Flexer, 2001).

The Auditory-Verbal International (AVI) Strategic Plan as cited in Goldberg, Dickson and Flexer (2010, p. 129) raise concern regarding the practice of AVT as “only 8% of deaf or HOH children worldwide whose family desires a spoken language outcome have access to a qualified professional.” The field of AVT therefore “lacks an adequate number of prepared professionals” (Bess as cited in Morrison, Perigoe & Bernstein, 2010, p. 146). Goldberg, Dickson and Flexer (2010, p. 130) therefore highlight the need for a “global saturation of professionals” to assist families who choose listening and spoken language to communicate and to meet the needs for generations to come. Children who are deaf or HOH face many challenges in South Africa. One of the biggest challenges is delayed identification of hearing loss and subsequent delayed commencement of intervention such as AVT as a result of financial issues, limited access to healthcare, lack of resources in hospitals and high therapist to patient ratios especially in public hospitals.

Research conducted by Khoza-Shangase and Michal (2014) investigated the current audiological management protocols used for children identified with hearing loss. In addition, this study determined the modes of communication adopted in therapy with children identified with a hearing loss in public hospitals in Gauteng (Khoza-Shangase & Michal, 2014). The results revealed that 48.57% of children who receive aural rehabilitation were using AVT (Khoza-Shangase & Michal, 2014) which allowed them to effectively communicate through speech (Estabrooks, 1994). The results indicated that 18.57% of children were using Sign Language as a mode of communication which gave them access into the deaf community (Tye-Murray, 2009). A

further 11.43% were using the total communication approach while 14.29% did not receive aural rehabilitation. Those children who did not receive aural rehabilitation were affected by failure to follow up which has been reported to limit the effectiveness of early identification. Follow-up aural rehabilitation appointments are crucial due to the possible progressive nature of paediatric hearing loss (Swanepoel as cited in Khoza-Shangase & Michal, 2014).

Khoza-Shangase and Michal (2014) therefore highlighted the current paediatric aural rehabilitation therapy approaches used in South Africa. These approaches include formal and informal AVT, Sign Language and total communication where cued speech may be implemented. In addition to the three approaches identified by Khoza-Shangase & Michal (2014) is the auditory-oral approach. There are currently few comprehensive AVT programmes available in South Africa (Khoza-Shangase & Michal, 2014). The Carel du Toit Centre in Cape Town has an AV centre which started in 1973, where children who are deaf or HOH can develop speech and language in a natural way (The Carel du Toit Centre, 2014). Chris Hani Baragwanath Academic Hospital in Gauteng also provides AVT to deaf or HOH children and have provided training programmes to audiologists on paediatric aural rehabilitation focusing on the implementation of AVT.

In developed countries such as the United States of America, Canada, England and Australia, AVT programmes are readily available and provided; however in a developing country such as South Africa, there are few audiologists with certified AVT qualification and training who are providing AVT (Khoza-Shangase & Michal, 2014). Training is defined as the action of teaching a person a particular skill or type of behaviour through sustained practice and instruction (Stevenson & Waite, 2011). The study therefore aims to investigate the challenges associated with training of audiologists regarding formal and informal AVT in South Africa.

### **Statement of the problem**

AVT intervention emphasizes listening instead of visual input and focuses on early identification of hearing loss and optimal amplification (Schow & Nerbonne, 2013; Estabrooks, 1994). Early identification and detection of hearing loss is a concern in developing countries such as South Africa (Olusanya et al., 2007). This results in later enrolment of deaf or HOH children in early intervention programmes such as AVT. Delays in diagnosis and intervention may be



attributed to inadequate support services for early intervention in South Africa as is the case in many other developing countries (Olusanya et al., 2007). Van der Spuy and Pottas (2008) confirm that the development of comprehensive and responsive early intervention services in South Africa is still in its infancy.

There is a lack of availability of AVT programmes as there are few certified auditory-verbal (AV) therapists (Goldberg, 1997). There are currently few hospitals, schools or centres where comprehensive AVT programmes are provided in South Africa (Khoza-Shangase & Michal, 2014). Current research reveals encouraging results that almost half of the children (48.7%) who receive aural rehabilitation are enrolled in AVT (Khoza-Shangase & Michal, 2014). This suggests that AVT is a growing intervention programme used with deaf or HOH children in South Africa. It is however a concern as to how many audiologists have received adequate training in the area of AVT as well as their perceived level of competence and confidence when conducting AVT.

### **Rationale**

AVT is a unisensory approach which emphasizes auditory skills instead of visual input such as lip-reading, cued speech or Sign Language, and encourages the deaf or HOH child to “develop the auditory system with directed listening practice” (Schow & Nerbonne, 2013, p. 280). Deaf or HOH children can gain sufficient hearing potential to learn to listen and develop spoken language, by learning to use the amplified residual hearing through the assistance of the fitting of amplification devices, such as hearing aids and cochlear implants (Chaikof, 2014, Estabrooks, 1994). Spoken language is therefore developed through listening. It is important to commence with AVT at an early age as the child’s greatest facility for learning language occurs during the first two to three years of life (Chaikof, 2014). The child’s hearing must be stimulated and listening skills must be developed during this critical period (Chaikof, 2014).

Through amplification technology, the auditory brain centres of infants with any degree of hearing loss can be accessed (Flexer, 1999). Early identification of hearing loss is critical as the longer the brain is deprived of auditory input, the greater the resulting sensory deprivation (Lim & Simser, 2005). Sensory deprivation prevents auditory learning and neural growth. The longer the deprivation, the more “stunted” the auditory brain growth (Lim & Simser, 2005, p. 308). The focus

in AVT is auditory brain development through the stimulation of auditory neural centres (Flexer, 1999). Early detection and diagnosis of hearing loss and immediate audiological and educational intervention, preferably by six months of age, are therefore vital in order to benefit from the optimal developmental periods of the auditory brain (JCIH, Sharma et al., Yoshinaga-Itano, Sedey, Coulter & Mehl as cited in Dornan, Hickson, Murdoch & Houston, 2009). This study will focus on deaf or HOH children who are receiving AVT in South Africa.

This study is undertaken in order to obtain a broader perspective on the current practice of audiologists conducting AVT in Gauteng, South Africa by focusing on the relevance of AVT in an attempt to focus on the challenges associated with this therapy approach. The study aims to explore the impact of language on the implementation of AVT in South Africa. The language in which AVT is conducted is crucial in the South African context as most children learn English as a second or third language. Caregivers are therefore considered important members within the provision of AVT as the audiologist may require assistance to provide AVT in the child's home language. By interviewing audiologists who practice AVT and audiologists who practice general paediatric aural rehabilitation therapies would lead to identifying which approach is the most effective for deaf or HOH children in the South African context. The benefits and limitations of AVT in comparison to other aural rehabilitation therapies will be discussed and contextual information will be included. In addition, the results of the study may lead to considerations for the need of more comprehensive AVT programmes to be implemented in South Africa. On a theoretical level, the study may provide insight into the need for further AVT training which would result in more audiologists becoming certified AV therapists.

## CHAPTER 2

### Literature Review

*This chapter provides a review of literature pertaining to research conducted both internationally and locally regarding auditory-verbal therapy. Additional paediatric aural rehabilitation approaches are discussed in relation to auditory-verbal therapy which provides the reader with insight into the benefits of implementation AVT.*

### The AVT approach

AVT is an early intervention approach used with children who are deaf or HOH who have been fitted with amplification devices at an early age (Chowdhry, 2010). The JCIH (2007) recommends that children who are born with a hearing loss should be identified by three months of age. These children with confirmed hearing loss should receive follow-up audiological and medical evaluations which include the fitting of appropriate amplification devices by three months of age followed by the commencement of appropriate intervention by six months of age (JCIH, 2007). This is currently not being achieved in South Africa and possible reasons for delayed diagnosis and subsequent delayed intervention will be discussed.

### Principles and pre-requisites of AVT

The AVT approach follows a logical and critical set of guiding principles (AVI, 1994). It stipulates that children with any degree of hearing impairment should have the opportunity to develop the ability to listen and use verbal communication (Flexer, 1999). The AVT approach is based on nine guiding principles described in Table 2. “The principles outline the requirements needed to realize the expectation that children who are deaf or HOH can be taught to use minimal amounts of amplified residual hearing” (Goldberg & Flexer, 2001, p. 407). The use of amplified residual hearing through the fitting of hearing aids or cochlear implants allow children who are deaf or HOH to learn to listen, to process verbal language and to speak (Estabrooks, 1994; Pollack et al. 1997).

Table 2

*Auditory-verbal therapy principles*

<b>Supporting and promoting programmes for the early detection and identification of hearing impairment and the auditory management of infants, toddlers and children so identified.</b>
<b>Providing the earliest and most appropriate use of medical and amplification technology to achieve the maximum benefits available.</b>
<b>Instructing primary caregivers in ways to provide maximal acoustic stimulation within meaningful contexts and supporting the development of the most favourable auditory learning environments for the acquisition of spoken language.</b>
<b>Seeking to integrate listening into the child’s personality in response to the environment.</b>
<b>Supporting the view that communication is a social act and seeking to improve spoken communication interaction within the typical social dyad of infant or child with hearing impairment and primary caregiver(s), including the use of the parents as primary models for spoken language development and implementing one-to-one teaching.</b>
<b>Seeking to establish the child’s integrated auditory system for self-monitoring of emerging speech.</b>
<b>Using natural sequential patterns of auditory, perceptual, linguistic and cognitive stimulation to encourage the emergence of listening, speech and language abilities.</b>
<b>Making ongoing evaluation and prognosis of the development of listening skills an integral part of the (re)habilitative process.</b>
<b>Supporting the concepts of mainstreaming and integration of children with hearing impairments into regular education classes with appropriate support services and to the fullest extent possible.</b>

*Note.* From “Auditory-Verbal Graduates: Outcome Survey of Clinical Efficacy,” by D. M. Goldberg & C. Flexer, 2001, *Journal of the American Academy of Audiology*, 12, p. 407. Adapted from Pollack et al. (1997).

All nine principles of AVT need to be adhered to and considered as a whole and must not be considered independently in order for the child to achieve effective AVT which will lead to the successful development of speech and language. The AG Bell Academy (2007) states that the term “parents” include grandparents, relatives, guardians and any caregivers who interact with the child. In addition, there are six pre-requisites of AVT which closely resemble the principles of AVT.

It is important for the audiologist to consider certain pre-requisites before commencing with AVT. The pre-requisites of AVT are outlined in Table 3. AVT is based on the concept that most children with mild to profound hearing loss can learn to communicate through spoken

language if provided with appropriate amplification and abundant listening and language stimulation to develop their hearing potential (Lim & Simser, 2005).

Table 3

*Pre-requisites of auditory-verbal therapy*

<b>Early detection of hearing impairment</b>
<b>Appropriate use of hearing device</b>
<b>One on one intervention with full parent or caregiver involvement</b>
<b>Absence of signs and speech reading training</b>
<b>Integration with hearing peers</b>
<b>Ongoing diagnostic therapy</b>

*Note.* From “Auditory Verbal Therapy,” by J. Chowdhry, 2010, *Otorhinolaryngology Clinics: An International Journal*, 2, p. 158.

The first principle of AVT states the importance of early detection and identification of hearing loss and subsequent intervention provided to deaf or HOH children (Goldberg & Flexer, 2001). This principle of AVT corresponds with the first pre-requisite of AVT which emphasizes early detection of hearing impairment (Chowdhry, 2010). Early detection and identification of hearing loss is currently not being achieved in South Africa. Research conducted by Van der Spuy and Pottas (2008) indicated that the mean age of enrolment into an early intervention programme in South Africa was 31 months. This was relatively late when compared to the recommended age of 4 months as proposed by the Early Hearing Detection and Intervention (EHDI) programmes in the South African Position Statement (HPCSA, 2007). Previous reports have established that infants whose hearing loss is identified before four months of age and provided with appropriate intervention, have significantly better language abilities compared to those whose hearing loss were identified later (JCIH, 2007; Moeller, 2000; Yoshinaga-Itano, 2004).

The results from research conducted by Van der Spuy and Pottas (2008) revealed that 13% of families were enrolled in an early intervention programme before the age of six months, and the average time-interval between diagnosis and intervention was eight months. This time-interval is an important predictor of intervention outcomes and accentuates the fact that early identification could only be effective if early intervention is available as early as possible, at least within the first

year of life (JCIH, 2007; Sjoblad et al. 2001; Yoshinaga-Itano, 1995). Delays in diagnosis and intervention may be attributed to inadequate support services for early intervention in South Africa as is the case in many other developing countries (Olusanya et al. 2007). Van der Spuy and Pottas (2008) suggest that the development of comprehensive and responsive early intervention services is still in its infancy in South Africa.

In a study conducted by Khoza-Shangase and Michal (2014), the age at which a child was introduced into an aural rehabilitation programme ranged from 3 months to 5 years 3 months, with an average age of 2 years 5 months. These findings are consistent with findings obtained by Swanepoel and Storbeck (2008) where the average age of initial enrolment into an early intervention programme was 31 months. These findings are concerning as they indicate a significantly delayed point of entry to aural rehabilitation. The HPCSA position paper states that children must be enrolled in an early intervention programme before the age of 6 months (HPCSA, 2007). This study therefore confirmed that delayed point of entry into aural rehabilitation is consistent with delayed identification which highlights the importance of newborn hearing screening at the neonatal period to ensure early identification (Khoza-Shangase & Michal, 2014).

The second principle of AVT highlights the importance of providing the deaf or HOH child with the earliest and most appropriate use of medical and amplification technology in order to achieve maximum benefits (Goldberg & Flexer, 2001). The second pre-requisite of AVT confirms the need for appropriate use of hearing devices (Chowdhry, 2010). In South Africa, hearing aids are provided free of charge for children in the public healthcare sector (Swanepoel, 2009). Cochlear implants are currently unavailable through the public healthcare system due to the high expense associated with this device and the accompanying surgery. As a result, most families have to provide the finances needed in order to obtain hearing aids or cochlear implants. The majority of children who are deaf or HOH in South Africa will therefore receive amplification devices at a much later age than is recommended by the standards proposed by the JCIH (2007) which states that evaluation procedures including hearing aid amplification must be in place before 3 months of age in order for intervention to commence by 6 months. Research conducted by Khoza-Shangase and Michal (2014) revealed that children only received amplification on average at 30 months and therefore missed out on the critical periods of accessing residual hearing for language

acquisition. These findings were consistent with results obtained from Khoza-Shangase, Barratt and Jonosky (2010) in which audiologists reported that amplification is rarely provided before the age of 12 months. Children are receiving amplification at a later age in South Africa as a result of delayed identification of hearing loss. The average age of identification of hearing loss was 23 months and the average waiting period to be fitted with hearing aid amplification was approximately 8 months (Khoza-Shangase & Michal, 2014). The time period between identification and amplification ranged from between 2 weeks to 3 years with an average age of 7.11 months (Khoza-Shangase & Michal, 2014).

Possible reasons for the delay in diagnosis and amplification in South Africa include long waiting lists for amplification, limited access to healthcare, lack of human resources in the form of audiologists which results in a low audiologist-to-patient-ratio, finances as well as administrative measures used in the public healthcare system (Khoza-Shangase & Michal, 2014).

The third and fifth principles of AVT emphasizes the use of a family-centred approach where primary caregivers need to be instructed in order to provide maximal acoustic stimulation and caregivers are viewed as models for spoken language development (Goldberg & Flexer, 2001). The need for one on one intervention with full parent or caregiver involvement is stated in the third pre-requisite of AVT (Chowdhry, 2010). Popich (2003) raises the concern that there has been an increase in the number of mothers who are now working in South Africa and as a result, many children are placed in day care facilities or are left at home with nannies or relatives. Goldberg (1997) argues that the child may not make as much progress if the parent or caregiver is unable to commit to the amount of involvement required in AVT. It is therefore crucial that parents who decide on AVT for their child are available for the AVT sessions as they have the closest relationship with the child.

The fourth, sixth and seventh principles of AVT highlight the need for integrating listening and spoken language into the child's daily environment. In addition, parents or caregivers need to be guided to use natural developmental patterns of audition, speech, language, cognition and communication. Caregivers must also help their child self-monitor spoken language through listening (Goldberg & Flexer, 2001). AVT follows natural speech and language development and

focuses on daily routines to encourage the listening (Estabrooks, 1994). The fourth pre-requisite of AVT states that there must be the absence of signs and speech reading training (Chowdhry, 2010) as AVT focuses on auditory input in terms of listening instead of visual input (Schow & Nerbonne, 2013). As previously mentioned, it is important that parents or caregivers are actively involved in AVT. Popich (2003) mentioned that in the South African context many mothers are working and as a result, the child may be left at home or at a day care facility. In the case where the parents are working, an older sibling or relative in the home environment or day care personnel need to take over this responsibility in order to assist the deaf or HOH child to develop the ability to self-monitor spoken language through listening.

The eighth principle of AVT states the importance of ongoing evaluation and prognosis of the development of listening skills as an integral part of the rehabilitation process (Goldberg & Flexer, 2001). The sixth pre-requisite of AVT confirms the need for ongoing diagnostic therapy (Chowdhry, 2010). Simser (1999) suggests the need for individualised diagnostic therapy with parent participation. Individualised therapy will allow the AV therapist to adjust the AVT programme to “account for differences in the child’s and parent’s personality, their learning styles, their interests and the current functioning of the child” (Simser, 1999, p. 1). Ongoing evaluation and diagnostic therapy is currently not always being achieved in South Africa especially in public hospitals. Results obtained from research conducted by Khoza-Shangase and Michal (2014) revealed that 14.29% of children identified as deaf or HOH in Gauteng State Hospitals, South Africa have not received aural rehabilitation. This is concerning as these children who have not received aural rehabilitation will be affected by failure to follow-up which has been reported to limit the effectiveness of early identification (Khoza-Shangase & Michal, 2014). Swanepoel as cited in Khoza-Shangase and Michal (2014) confirms that follow-up aural rehabilitation appointments and ongoing evaluation is essential due to the possible progressive nature of paediatric hearing loss which is consistent with the eighth principle of AVT.

The ninth principle of AVT refers to mainstreaming and integration of children with hearing impairment into regular education classes (Goldberg & Flexer, 2001). Lim and Simser (2005) confirm that with early detection, early amplification and effective individualized AVT with parent participation, up to 80% of children who are deaf or HOH can potentially be successful



in mainstream education and society. Many deaf or HOH children who have access to AVT in South Africa will continue their education in mainstream schools thereby achieving the ninth principle of AVT which is mainstreaming and full inclusion into regular education classes (The Carel du Toit Centre, 2014). The fifth pre-requisite of AVT is in accordance with the ninth principle of AVT as it emphasizes the importance of integration of deaf or HOH children with hearing peers (Chowdhry, 2010).

The AV therapist must therefore consider the pre-requisites of AVT in conjunction with the nine principles of AVT as well as strategies, techniques and procedures of AVT.

### **Strategies, techniques and procedures of AVT**

AVT involves strategies, techniques and procedures which enable children with hearing impairment to learn to listen and understand spoken language in order to communicate through speech (Estabrooks, 1994). It is important that the nine guiding principles of AVT are adhered to throughout the course of therapy (Estabrooks, 1994).

The process of attaching meaning to sounds takes time, effort, patience, motivation, consistency, commitment, clear goals and persistence (Chaikof, 2014). With young children, the attitudes and expectations of the adults interacting with the child, and also the environment in which the child lives, all have a direct impact on whether the child uses the hearing aids or cochlear implant and how effectively they are used (Chaikof, 2014; Houston, 2012).

Simser (1999) identifies five useful techniques practised in AVT to enhance a child's listening, speech and language skills which include the hand cue, acoustic highlighting, auditory feedback, pausing and waiting and natural sequential development. A popular technique used in AVT is the hand cue which emphasizes listening rather than lip-reading (Estabrooks, 1994; Chaikof, 2014). The hand cue alerts deaf or HOH children that someone is talking to them and they are required to listen (Simser, 1999). The hand cue is used to place emphasis on the stimulation and facilitation of processing spoken language through auditory pathways (Estabrooks, 1994). The AV therapist will reduce or eliminate visual information by covering most of his or her mouth while presenting the speech stimuli thereby emphasizing listening (Estabrooks as cited in

Schow & Nerbonne, 2013). The AV therapist or caregiver may then place their hand in front of child's mouth which serves as a cue for the child to respond either through imitation or spontaneous speech (Simsler, 1999).

Imitation should only be encouraged if a child begins to use meaningful sounds spontaneously and may be used with parents as models to encourage their participation (Chaikof, 2014). Once the child begins to rely on hearing, the hand cue will no longer be necessary to encourage listening or speech production (Chaikof, 2014).

Another technique used when conducting AVT is acoustic highlighting (Simsler, 1999). The earliest form of acoustic highlighting is "motherese" (Simsler, 1999). Motherese is speech used by parents or caregivers when talking to young children in order to make speech more audible to help them in learning language (Simsler, 1999). Kuhl (as cited in Simsler, 1999) indicated that motherese is universal and plays an important role in helping infants analyse speech. Chaikof (2014) confirms the importance of speaking to the deaf or HOH child using motherese which is rich in suprasegmental (singsong) qualities, repetitive and short, meaningful two to three word phrases and is described in Table 4. Acoustic highlighting is an auditory technique that is extended in communicating with the early listener to increase the audibility of language (Simsler, 1999). As the deaf or HOH child learns to listen, the "aim is to progress towards a more normal, less highlighted mode of communication" (Simsler, 1999, p. 6).

Auditory feedback is another useful technique used in AVT (Simsler, 1999). When deaf or HOH children imitate or use spontaneous speech, they match their voice production with the speech patterns of others therefore monitoring their own speech production (Simsler, 1999). This corresponds to the sixth principle of AVT where the aim is to establish the child's integrated auditory system for self-monitoring of emerging speech (Goldberg & Flexer, 2001). In addition to auditory feedback, children receive indirect feedback from the listener's reactions to their vocalisations and speech which reinforces the quality of their production (Simsler, 1999).

The deaf or HOH child may take longer to process auditory information (Simsler, 1999). The technique of pausing and waiting therefore encourages the deaf or HOH child to listen and

complete a task rather than waiting for the AV therapist for repetition (Simser, 1999). When the child has developed some spoken language through hearing but is not attending well to auditory input, he or she may respond to auditory input with “What?” or may have a blank expression. The AV therapist will emphasise listening by pausing and then asking, “What did you hear?” This will assist the child to develop clarification skills. It is possible that the child has heard the AV therapist and will respond appropriately or they will ask for clarification by telling the AV therapist how much of the input was understood.

Simser (1999) suggests the use of natural sequential development which is another useful AVT technique. It is important that each child progresses through a hierarchy of listening, speech, language, cognitive and communication skills in order to ensure successful AVT (Simser, 1999). The AV therapist will develop targets based on a hierarchical model (from most audible to least audible) and on normal stages of development in these areas (Simser, 1999). Input is provided primarily through audition. It is important that targets are not too difficult and must follow a natural sequential order. A developmental programme is used to develop speech through hearing. Initially, variations in vowel content and suprasegmentals offer good acoustic contrast aiding in speech perception (Simser, 1999). As speech perception improves, there will be reciprocal benefit in speech production (Ling as cited in Simser, 1999). It is important that once the child produces the targeted syllables, these phonemes must be reinforced in spoken language. Language targets follow a hierarchy of normal development and available acoustic cues. Target words are given to parents or caregivers and classroom teachers in order to co-ordinate efforts and to build on listening basics (Simser, 1999). Parents need to integrate AV techniques and targets into daily, meaningful activities and experiences in order to provide their child with the best opportunity to develop good listening and language outcomes. This requirement by parents is in accordance with the fourth principle of AVT which highlights the importance of primary caregivers providing maximal acoustic stimulation within meaningful contexts (Goldberg & Flexer, 2001).

Estabrooks (1994) suggests further techniques used in AVT which include sharing the child’s lead but providing direct instructions for the parents. It is important for the AV therapist to reinforce when something is heard by pointing to the ear as this will assist the child to integrate hearing into his or her personality (Estabrooks, 1994). This corresponds to the fourth principle of

AVT which suggests the importance of integrating listening into the child's personality in response to the environment (Goldberg & Flexer, 2001). The pace of the therapy session must also be considered as much concentration is required and young children have a tendency to have a short attention span. Another useful technique is for the AV therapist to repeat exactly what the child says (Estabrooks, 1994). This will assist the AV therapist and parents to analyse speech and language difficulties and to plan effective rehabilitation strategies (Estabrooks, 1994). In addition, other useful techniques for working with the early listener are described in Table 4.

Table 4

*Techniques for working with the early listener*

<b>Speak naturally to the child, speaking without exaggerated facial movements and without Sign Language.</b>
<b>Use natural expressions appropriate to the child's age and language level.</b>
<b>Read familiar story books, recite familiar nursery rhymes, and sing familiar songs.</b>
<b>Encourage the young child to use babbling and jargon as normal hearing infants do rather than pushing the child to imitate words.</b>
<b>Be close to the child's microphone of the cochlear implant or hearing aid of the child's better ear.</b>
<b>Encourage listening by sitting beside the child and focusing on objects in front of the child.</b>
<b>Minimize background noises, especially air conditioners, televisions, refrigerators and radios.</b>
<b>Speak using "Motherese" spoken language that is rich in suprasegmental (singsong) qualities, repetitive, and in short, meaningful two to three word phrases.</b>
<b>Cue the child to listen throughout the day by pointing to your ear to alert the child to meaningful environmental sounds.</b>
<b>Follow the child's interest level in age and use appropriate activities and experiences while working towards specific goals.</b>

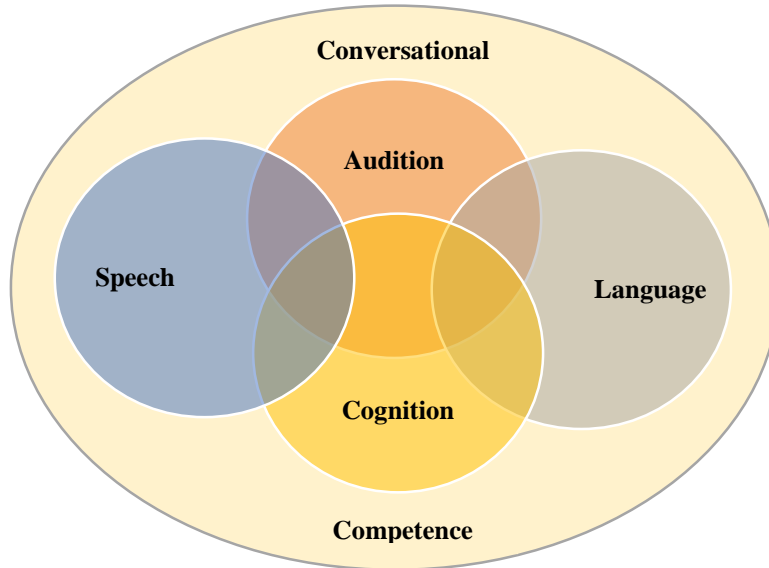
*Note.* From "What is the Auditory-Verbal Therapy Approach" by M. Chaikof, 2014, retrieved from <http://cochlearimplantonline.com>

Chaikof (2014) suggests further techniques that may be used with the early listener. These techniques include speaking naturally to the child. AVT encourages and follows natural language and speech development (Estabrooks, 1994) and therefore exaggerated facial movements and Sign Language should be avoided. The level of speech and language used must be age appropriate and at the child's language level (Chaikof, 2014). The child will be able to develop natural-sounding

speech through the use of singing favourite songs or familiar nursery rhymes (Estabrooks, 1994; Chaikof, 2014).

An important technique to consider in order to achieve optimal benefit of amplification is for the AV therapist or caregiver to be close to the child's microphone of the cochlear implant or hearing aid of the better ear when conducting AVT (Chaikof, 2014). Simser (1999) suggests the importance of preferential seating where the primary caregiver sits closest to the child's better ear or microphone of the cochlear implant. The closer the caregiver is to the child's ear, the softer the voice which ensures that the child will hear the less salient speech sounds (Simser, 1999). This is due to vowel sounds being louder than consonant sounds and as a result vowel sounds often mask a child's hearing of softer consonants (Simser, 1999). This is also evident in a child's speech when consonants are deleted or substituted. The hand cue will not be used when preferential seating is implemented unless the child is searching for visual cues (Simser, 1999). It is also important to encourage listening where the AV therapist will sit beside the child and focus on objects in front of the child (Chaikof, 2014). Another important consideration is to ensure that the therapy environment has minimal background noise in order to enhance amplification (Chaikof, 2014).

AVT is an ongoing process and involves individualized therapy on a one-to-one basis in five areas including audition, speech, language, cognition and communication as illustrated in Figure 1 (Chowdhry, 2010; Lim & Simser, 2005). Parents or caregivers are actively involved in AVT sessions and assist the AV therapist in helping the child to develop hearing, language and spontaneous speech through play, singing, everyday routines and structured therapy sessions (Estabrooks, 1994). AVT must not only be regarded as a "technique" but as a way of life that needs to be practised on a daily basis (Goldberg & Flexer, 2001).



*Figure 1.* Diagrammatic representation of the five areas of AVT illustrating their relationship. From “Auditory Verbal Therapy,” by J. Chowdhry, 2010, *Otorhinolaryngology Clinics: An International Journal*, 2, p. 158.

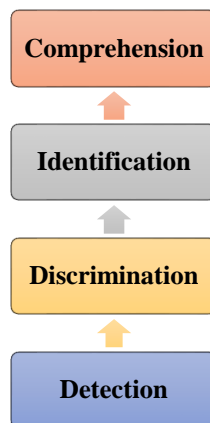
The ultimate goal of AVT is that children who are deaf or HOH can grow up in a “regular” or “typical” learning and living environment which enables them to become independent, speaking, participating and contributing members of the hearing society (AVI as cited in Goldberg & Flexer, 2001). It is also important that the AV therapist has a positive relationship with the parents or caregivers in order to assist the deaf or HOH child to achieve success in AVT. In addition, parents need to be made aware of all available aural rehabilitation approaches in order for an informed decision to be made as to whether to commence with AVT.

### **Components of the listening hierarchy**

The aim of AVT is for the deaf or HOH child to “acquire listening as a primary modality to developing spoken language” (Goldberg & Lebaum as cited in Lim & Simser, 2005, p. 309). AVT utilizes a hierarchy of listening skills, an expectation by therapist and caregivers that a child who is deaf or HOH can learn to listen and speak, as well as “educational, social and emotional integration with hearing peers” (Lim & Simser, 2005, p. 309). Edwards and Estabrooks (1994, p. 66) suggest that the hierarchy of listening skills “is a theoretical concept to permit an ordering of skills levels.” This therefore suggests that certain components in the listening hierarchy may

overlap and activities may include the use of two components simultaneously (Edwards & Estabrooks, 1994). This highlights the importance that these components must be used as a guideline for the commencement of the AVT programme (Edwards & Estabrooks, 1994).

It is important for the AV therapist to have access to the child's audiological results. These results will be used to assign the child to one of four auditory skills (Tye-Murray, 2009). AVT progresses through four consecutive components of the listening hierarchy which are illustrated in Figure 2. These four components are "sequential and overlapping" (Edwards & Estabrooks, 1994, p. 56) and include detection, discrimination, identification and comprehension (Edwards & Estabrooks, 1994; Erber as cited in Tye-Murray, 2009).



*Figure 2.* Four components of the listening hierarchy. From "Using normal developmental milestones with children who have cochlear implants," by K. Heavner, 2007, *Advanced Bionics Corporation*, retrieved from <https://www.advancedbionics.com>

Edwards and Estabrooks (1994, p. 57) suggests that the organization of listening activities "is based on increasing levels of auditory difficulty from detection through to comprehension." Detection is the most basic auditory skill and refers to the ability to determine the presence or absence of sound (Tye-Murray, 2009; Chaikof, 2014). The child therefore learns to respond to sound, to pay attention to sound and not to respond when there is no sound (Edwards & Estabrooks, 1994). Discrimination is the ability of the listener to perceive differences between sounds and will indicate whether two sounds are different or the same (Tye-Murray, 2009). The child learns to attend to different sounds and responds differently to different sounds (Edwards & Estabrooks,

1994). Identification is the ability to label the auditory stimuli that has been heard by repeating the speech heard, pointing to a picture or picking up the object representing the word(s), sentence, or environmental sound that is perceived (Tye-Murray, 2009). Finally, comprehension is a higher auditory skill in which the listener is able to understand the meaning of a spoken message (Tye-Murray, 2009; Chaikof, 2014). The child demonstrates understanding by answering questions, following instructions, paraphrasing or participating in a conversation (Edwards & Estabrooks, 1994).

Edwards and Estabrooks (1994, p. 57) suggest that a child who presents with severe and profound sensorineural hearing loss will benefit from “focusing on specific listening activities” which correspond to the child’s listening level. It is therefore essential that activities corresponding to the child’s listening level are conducted as part of the AVT programme. The hierarchy of listening skills, associated activities and auditory processes corresponding to each listening level are outlined in Table 5.



Table 5

*Hierarchy of listening skills*

<b>Detection</b> <ul style="list-style-type: none"><li>• <b>Conditioned play response</b></li><li>• <b>Spontaneous alerting response</b></li></ul>
<b>Discrimination</b>
<b>Identification</b> <ul style="list-style-type: none"><li>• <b>Suprasegmentals</b><ul style="list-style-type: none"><li>○ <b>Prosodic features of speech</b></li><li>○ <b>Loudness and pitch</b></li><li>○ <b>Angry and sad voices</b></li><li>○ <b>Male, female and child's voice</b></li></ul></li><li>• <b>Segmentals</b><ul style="list-style-type: none"><li>○ <b>Initial "sound" vocabulary</b></li><li>○ <b>Words varying in number of syllables</b></li><li>○ <b>One syllable words varying in vowel and consonant content</b></li><li>○ <b>Words in which the vowel is constant and the consonants contrast in manner, place and voicing</b></li><li>○ <b>Two critical elements in a phrase</b></li><li>○ <b>Auditory monitoring of segmentals</b></li></ul></li></ul>
<b>Comprehension</b> <ul style="list-style-type: none"><li>• <b>Familiar expressions/ common phrases</b></li><li>• <b>Single directions/ two directions</b></li><li>• <b>Classroom instructions</b></li><li>• <b>Sequencing three directions</b></li><li>• <b>Multi-element directions</b></li><li>• <b>Sequencing three events in a story</b></li><li>• <b>Answering questions about a story: closed set and open set</b></li><li>• <b>Comprehension activities/ exercises in noisy environments</b></li><li>• <b>Onomatopoeic words</b></li></ul>

*Note.* From "Learning through listening: A hierarchy," by C. Edwards & W. Estabrooks, 1994, In W. Estabrooks (Ed.), *Auditory-verbal therapy for parents and professionals*, p. 58.

The first level of listening refers to the detection of sound. A child who is fitted with hearing aids will demonstrate benefit through a change in conditioned or spontaneous alerting response as well as increased vocalization (Edwards & Estabrooks, 1994). It is important for the AV therapist to be aware of the unaided and aided thresholds obtained by the child during the audiological assessment. This information will be used to predict the child's ability to detect, identify and comprehend auditory stimuli (Edwards & Estabrooks, 1994). Detection may be achieved through conditioned play response or spontaneous alerting response (Edwards & Estabrooks, 1994).

The conditioned play response is used in paediatric audiological assessment and requires the child to perform an action when a sound is detected (Edwards & Estabrooks, 1994). The action may include putting a block in a bucket, putting a peg into a pegboard or any other similarly repetitive play response. The activity is first demonstrated for the child where a sound is presented and the therapist leads the child's hand through the action and praises the child at the end (Edwards & Estabrooks, 1994). The therapist will demonstrate and assist the child in completing the activity several times ensuring that the sound is presented randomly to prevent a timed response (Edwards & Estabrooks, 1994). Thereafter, the child will be encouraged to respond independently. Edwards and Estabrooks (1994) confirm that the conditioned play response serves two purposes which include the consolidation of the child's conditioned response to sound and the observation of changes in the child's responsiveness to detection tasks. In addition, the AV therapist will implement the use of Ling's Six Sound Test as speech stimuli for teaching or monitoring the child's detection skills (Edwards & Estabrooks, 1994). It is important for the sounds to be presented at random intervals to prevent the child from developing a timed response to the task. Edwards and Estabrooks (1994) suggest that children are cognitively ready to respond using a conditioned play response around the age of two years and above however, some children may be able to respond at 18 to 24 months of age.

The spontaneous alerting response refers to a "variety of spontaneous behaviours that are observed in response to sound" and include searching for the sound, localization, cessation of activity, quieting, startling or vocalizing (Edwards & Estabrooks, 1994, p. 60). The detection of sound is initially focused on the ability to develop the conditioned play response. The ultimate goal however, is for the child to develop spontaneous use of audition in daily routines and within

the home environment (Edwards & Estabrooks, 1994). It is essential for the child to demonstrate some spontaneous response to sound before progressing to next level in the listening hierarchy.

The second component in the hierarchy of listening skills is discrimination. Discrimination activities include same-different tasks and are primarily used for “clarification of identification or comprehension errors” (Edwards & Estabrooks, 1994, p. 60). An example of a same-different task is presenting minimal pair stimuli which include the singular “dog” and the plural “dogs.” The therapist would ask the child to indicate whether the words are the same or different. The child therefore learns to respond differently to different sounds. Discrimination progresses through different stages such as discrimination by duration, discrimination between words that are the same length but have different consonant and vowel information and discrimination between individual consonants and vowels. The goal of discrimination is for the child to develop pattern perception and to differentiate between same and different (Edwards & Estabrooks, 1994). The AV therapist may use discrimination activities for remediation rather than as a developmental step between detection and identification skills (Edwards & Estabrooks, 1994). Word discrimination activities consisting of one, two or three syllables may also be used to stabilize the ability of discrimination skills (Heavner, 2007).

The third component of the listening hierarchy is identification. The term identification may be used synonymously with recognition (Edwards & Estabrooks, 1994). Identification involves suprasegmentals and segmentals of speech. Suprasegmental aspects may be referred to as prosodic features and include intonation, stress, duration and loudness (Tye-Murray, 2009). Schow and Nerbonne (2013, p. 91) further state that prosody or suprasegmental information can help in “understanding in noise, music appreciation and hearing emotion in speech.” These suprasegmental components are overall features of speech that are superimposed on phonemes and words (Schow & Nerbonne, 2013). Edwards and Estabrooks (1994) emphasise that the auditory channel provides the most complete information regarding duration, loudness and pitch. Ling (as cited in Edwards & Estabrooks, 1994, p. 61) states that all children with “minimal to severe sensorineural hearing impairment and most children with profound sensorineural hearing impairment have the auditory potential to detect and identify suprasegmental features.”

Suprasegmental features of speech form the foundation for identification and comprehension of speech and enhances speech intelligibility (Edwards & Estabrooks, 1994).

The auditory identification of prosodic features of speech is “most easily learned through the imitation of prosody” (Edwards & Estabrooks, 1994, p. 61). The AV therapist presents a speech pattern such as a loud voice or a rising pitch pattern through listening only. The child is then required to produce the same pattern. Reinforcement is provided for correct imitation of the prosodic pattern (Edwards & Estabrooks, 1994). Loudness and pitch are often confused by children who present with severe to profound hearing loss (Edwards & Estabrooks, 1994). These children confuse “high” with “loud” and “low” is confused with “soft” (Edwards & Estabrooks, 1994). The child therefore needs to acquire a substantial number of words to describe sound and to classify and discuss the sounds heard (Edwards & Estabrooks, 1994). The AV therapist needs to ensure that the child has the linguistic ability to describe the loudness and pitch parameters (Edwards & Estabrooks, 1994). Once the child is able to identify differences in loudness and pitch, the child is required to attach meaning to changes in loudness, duration and pitch characteristics in voices (Edwards & Estabrooks, 1994). The child learns to label the emotional content of a person’s voice as angry and sad (Edwards & Estabrooks, 1994). An angry voice would be classified as “high-loud” or “low-loud” and a sad voice would be considered as “low-soft.” In addition, the child will imitate the “person’s voice and body language to integrate the reception and production of appropriate prosodic features” (Edwards & Estabrooks, 1994, p. 62). The AV therapist will make use of puppets and role playing when teaching the child to identify the different voices.

Furthermore, pitch differences determine the identification of male and female voices (Edwards & Estabrooks, 1994). The fundamental frequency of a male voice is considered to be at 125Hz, a female voice is at 250Hz and a child’s voice is at 325Hz (Edwards & Estabrooks, 1994). Most children who present with a profound sensorineural hearing loss with aided thresholds within the speech spectrum at 250Hz to 1000Hz will be able to differentiate between a male, female or child’s voice but may require formal training in this area (Edwards & Estabrooks, 1994). In contrast, children who present with a moderate or severe hearing loss will be able to identify the different voices without formal intervention (Edwards & Estabrooks, 1994). The AV therapist will begin by contrasting a male and child’s voice, then a male and female’s voice followed by female

and child's voices and finally by comparing male, female and child voices (Edwards & Estabrooks, 1994). The voices of family members may be incorporated into the AVT session by using tape recorders in an attempt to generalize this auditory skill into the home environment (Edwards & Estabrooks, 1994). The presentation of voices must be randomized and the same pattern must not be repeated in order to prevent the child from guessing (Edwards & Estabrooks, 1994). Furthermore, the AV therapist must select a pass criterion of 80% or more before progressing to another activity (Edwards & Estabrooks, 1994).

In addition to the suprasegmental features of speech, the AV therapist must also focus on the identification of segmental features of speech (Edwards & Estabrooks, 1994). Segmentals are the vowels and consonants in speech (Tye-Murray, 2009). Several areas involved in segmental features of speech will be discussed. These areas include initial sound vocabulary; words varying in number of syllables; one syllable words varying in vowel and consonant content; words where the vowel is constant and the consonants contrast in manner, place and voicing; two critical elements in a phrase as well as auditory monitoring of segmentals (Edwards & Estabrooks, 1994).

Initial sound vocabulary involves the learning of certain sounds known as the "Learning to Listen" sounds which are onomatopoeic and associated with animals or specific objects (Edwards & Estabrooks, 1994). Most of these sounds can be "differentiated on the suprasegmental and vowel characteristics" which allows children with functional hearing at the low and mid frequencies to identify most of them (Edwards & Estabrooks, 1994, p. 63). These sounds include "meow" for kitten, "ar" for airplane and "bu-bu-bu" for bus (Edwards & Estabrooks, 1994). Each sound is presented with the associated toy during the AVT session and during meaningful play activities in the home environment (Edwards & Estabrooks, 1994). Caregivers are encouraged to expose the child to different sounds in as many natural contexts as possible (Edwards & Estabrooks, 1994).

Words that differ in the number of syllables are used to assist the child to identify words from a small set of objects (Edwards & Estabrooks, 1994). The therapist will initially use objects and later uses pictures in identification tasks from a closed set response task where there is a controlled number in each set (Edwards & Estabrooks, 1994). Words that are used in the child's everyday environment may be part of the child's initial vocabulary such as "ball," "banana," "cup,"

“shoe,” “yummy,” “no,” “more” and “up” (Edwards & Estabrooks, 1994). Once the child is able to identify simple words, the therapist will ask the caregiver to prepare a list of words for their child to learn. It is essential that the therapist is aware of the interests relating to the child and family in order to incorporate appropriate vocabulary into therapy (Edwards & Estabrooks, 1994). In addition, it is important that words selected are motivational and culturally relevant for the child and family (Edwards & Estabrooks, 1994). This is essential in the South African context as there is a multicultural and diverse population. South Africa has a population of 51.77 million and is a nation of diversity with a wide variety of cultures, languages and religious beliefs (Statistics South Africa, 2012).

The child will then learn to identify words where the suprasegmental characteristics remain the same and the segmental characteristics consisting of vowels and consonants differ (Edwards & Estabrooks, 1994). The therapist presents a closed set of objects or pictures consisting of monosyllabic words which vary in vowel and consonant content (Edwards & Estabrooks, 1994). The child is required to select a word from the closed set which may include words such as “cup,” “boat,” “fish,” “tree,” “house,” and “dog” (Edwards & Estabrooks, 1994, p. 64). An older child may focus on word identification within open set tasks which involves repetition of the word produced by the therapist (Edwards & Estabrooks, 1994). This task is more difficult in comparison to closed set of words where the child can use “contextual clues to identify the phrase or expression” (Edwards & Estabrooks, 1994, p. 65).

The level of auditory difficulty increases when the child is required to identify words based on consonant differences initially from a closed-set of words or objects and later from an open-set (Edwards & Estabrooks, 1994). Consonants vary in manner, place and voicing (Edwards & Estabrooks, 1994). Manner refers to the “way the sound is produced in the vocal tract” (Edwards & Estabrooks, 1994, p. 65). The different features of manner include plosives such as /p/, /b/, /t/, /d/, /k/, /g/, nasals such as /m/, /n/, /ng/; fricatives such as /sh/, /s/, /f/, /th/; affricates such as /ch/, /j/; liquids such as /l/, /r/ and semivowels such as /y/ and /w/ (Edwards & Estabrooks, 1994). Place refers to the “point of greatest constriction in the vocal tract during articulation” (Edwards & Estabrooks, 1994, p. 65). The different features of place include bilabial such as /b/, /p/, /m/; labiodental such as /f/, /v/; linguadental such as /th/; alveolar such as /t/, /d/; palatal such as /sh/;

velars such as /k/, /g/ and glottal such as /h/ (Edwards & Estabrooks, 1994). Voicing refers to the “presence or absence of vocal fold vibrations during articulation” (Edwards & Estabrooks, 1994, p. 65). Voiced and unvoiced pairs include /b/ and /p/; /d/ and /t/; /g/ and /k/; /v/ and /f/; /j/ and /ch/; /z/ and /s/ (Edwards & Estabrooks, 1994). This identification task is highly specific and focuses on school-aged children. Ross and Giolas (as cited in Edwards & Estabrooks, 1994) argues that this type of analytical task will have less value at the preschool level where therapy is focused on semantics and pragmatics.

The child will then learn the ability to identify two elements in a critical phrase. This may be illustrated with the use of prepositional phrases such as “show me the book under the table” (Edwards & Estabrooks, 1994, p. 65). It is important that the child is familiar with the vocabulary used within the phrase. The last area in the segmental features of speech is auditory monitoring of segmentals. Deaf or HOH children learn to speak through the auditory channel. Listening skills are therefore vital in the development of “accurate speech production of vowels and consonants” (Boothroyd; Estabrooks; Ling; Pollack as cited in Edwards & Estabrooks, 1994, p. 66). Edwards and Estabrooks (1994, p. 66) argue that “speech perception and speech production are integrally linked.” The inclusion of combining auditory detection and identification exercises for segmental contrasts when learning speech production therefore proves to be beneficial for the deaf or HOH child (Edwards & Estabrooks, 1994).

The final component of the listening hierarchy is comprehension. Comprehension involves making use of the auditory information, requires auditory memory and follows an auditory sequence (Edwards & Estabrooks, 1994). Comprehension activities for young children form a natural part of communication (Edwards & Estabrooks, 1994). Simple comprehension activities may therefore be conducted “concurrently with identification activities” (Edwards & Estabrooks, 1994, p. 66). Edwards and Estabrooks (1994) argue that comprehension may not always be viewed as the final component in the listening hierarchy. Caution is therefore raised when using the hierarchy of listening skills as they form a theoretical concept used in the ordering of auditory skills and one component may not always be conducted in isolation (Edwards & Estabrooks, 1994). Several elements of comprehension will be discussed. These elements include familiar expressions and common phrases, following single directions and two directions, following

classroom instructions, sequencing three directions, comprehension of multi-element directions, sequencing three events in a story, answering questions about a story in both closed and open sets, listening in noise and description of environmental sounds (Edwards & Estabrooks, 1994).

Modelling of familiar phrases and expressions begins as soon as the child is fitted with hearing aid amplification. The introduction of expressions follows the language development models for children with normal hearing (Edwards & Estabrooks, 1994). A few examples of familiar expressions may include “be careful!” “I love you!” “all gone!” and “all better!” (Edwards & Estabrooks, 1994, p. 66). This activity may be used at either the comprehension or identification level. The child is required to perform the action which relates to comprehension or is asked to select a picture corresponding to the action which resembles the identification response (Edwards & Estabrooks, 1994). Caregivers are therefore essential as they will provide the AV therapist with common expressions used in the home to ensure generalization from the therapy session to the home environment occurs (Edwards & Estabrooks, 1994).

Another area in the component of comprehension is the ability to follow single and two directions. Young children are able to follow the directions of the caregiver and therapist (Edwards & Estabrooks, 1994). When the child reaches preschool age, directions may include the manipulation of objects in a closed set task such as “give me some bread” and “make the dog run” or some action that the child is required to perform in an open set task within a structured setting such as “close the door” (Edwards & Estabrooks, 1994, p. 67). It is important that the child masters this skill in a structured task before the therapist introduces the activity as a spontaneous part of each therapy session (Edwards & Estabrooks, 1994). Activities involving two directions will be introduced once the child has mastered the ability to follow single directions.

Classroom instructions become important when the child is of school-age. The child requires a solid understanding of basic concepts when entering school (Boehm; Bracken as cited in Edwards & Estabrooks, 1994). The deaf or HOH child who does not have the understanding of basic concepts will have difficulty following classroom instructions (Rush as cited in Edwards & Estabrooks, 1994). The teaching of understanding basic concepts and the “comprehension of typical instructions is therefore important to the child’s academic success” (Edwards &



Estabrooks, 1994, p. 67). Classroom instructions include “draw a line under the last word” and “circle the word in the middle” (Edwards & Estabrooks, 1994, p. 67). Reading is used when listening may not be sufficient to understand instructions (Edwards & Estabrooks, 1994).

The sequencing of three directions involves “identification, comprehension and extension of auditory memory” (Edwards & Estabrooks, 1994, p. 67). The child is required to practice storing auditory information. In the school environment, the child may be required to store four to five messages prior to responding (Edwards & Estabrooks, 1994). At the preschool level, the child may be required to manipulate objects placed in front of her (Edwards & Estabrooks, 1994). As the child gets older, sequencing of three directions used within the classroom context will be appropriate. This level of sequencing three directions has increased complexity and the child may require additional time to process the information before following the instructions (Edwards & Estabrooks, 1994). The therapist and caregiver must encourage the child to take some time to respond before repeating the instructions if the child does not respond immediately to the directions (Edwards & Estabrooks, 1994).

The comprehension of multi-element directions consists of many levels of difficulty in addition to the “auditory capability to detect the phonemes, identify the language and retain the auditory information” (Edwards & Estabrooks, 1994, p. 68). The child requires a high level of linguistic competence at the semantic, syntactic and pragmatic levels in order to develop the ability to comprehend multi-element directions (Edwards & Estabrooks, 1994). Furthermore, the child needs to demonstrate the ability to understand riddles or clues that describe an object. The child is required to identify the object by using the salient cues (Edwards & Estabrooks, 1994). An example of an activity used to develop the ability to comprehend multi-element directions is “I spy” (Edwards & Estabrooks, 1994).

The next area in comprehension is the sequencing of three events in a story. This is similar to sequencing three directions except that the auditory task is in the context of a story (Edwards & Estabrooks, 1994). The therapist presents a story to the child through the auditory modality to encourage listening. Pictures of three events are then shown and the child is required to place the events in the correct order (Edwards & Estabrooks, 1994). The child will eventually be required

to say what happened first, second and third without the use of pictures (Edwards & Estabrooks, 1994). In addition, three-sequence picture stories may be used as reinforcers once the child has completed the task through listening (Edwards & Estabrooks, 1994). The child will often take the pictures home to share with the family, may complete homework activities associated with the task and may receive these pictures as part of a home programme (Edwards & Estabrooks, 1994).

The child will be required to listen to several sentences, extract meaning from them and respond appropriately (Edwards & Estabrooks, 1994). In the classroom, the child will be expected to listen to a story which is longer than three sentences and answer questions regarding the story (Edwards & Estabrooks, 1994). Stories that are humorous and of interest to the child and family written by the AV therapist appear to be more effective than commercially written stories (Edwards & Estabrooks, 1994). The child would initially see the pictures relating to the story and would extract cues about content from the pictures (Edwards & Estabrooks, 1994). The therapist asks selected questions about the story and gives the child a limited set of answers to choose from which may be in the form of pictures or written responses depending on the age of the child (Edwards & Estabrooks, 1994). A story with an open set nature would be typically asked in the classroom. It is therefore important that the child progresses to an open set response as soon as possible. The educator may initially show the pictures associated with the story but the child is expected to deduce answers to the questions about the story without any other clues (Edwards & Estabrooks, 1994). In the later grades, the story is presented verbally without visual stimuli (Edwards & Estabrooks, 1994). Listening activities follow a “similar transition from listening to a story with contextual clues to listening to a story without contextual clues” (Edwards & Estabrooks, 1994, p. 70). Paraphrasing is another type of comprehension task that involves a combination of cognitive, linguistic and auditory skills (Edwards & Estabrooks, 1994). This is a useful skill for the deaf or HOH child to develop as paraphrasing is essential for clarification of the speaker’s message (Edwards & Estabrooks, 1994).

Deaf or HOH children have difficulty comprehending spoken language in the presence of background noise (Edwards & Estabrooks, 1994). The degree to which background noise affects the child depends on the type and degree of hearing loss and the child’s susceptibility to noise (Edwards & Estabrooks, 1994). A range of noise conditions are used for the child to practice

listening and comprehension (Edwards & Estabrooks, 1994). Initially the least interfering noise backgrounds are used and progress slowly to the most interfering noise conditions (Edwards & Estabrooks, 1994). This may result in the child being able to persevere listening under difficult conditions for a longer time as a result of positive listening experiences (Edwards & Estabrooks, 1994). The least interfering noise conditions are steady state environmental noises such as a fan or a kettle boiling (Edwards & Estabrooks, 1994). Moderately interfering noises include “random environmental noises with less predictability” such as traffic noise (Edwards & Estabrooks, 1994, p. 71). The most interfering noise is speech from other talkers on topics of interest to the listener (Edwards & Estabrooks, 1994). A preschool child may find a speaker reading a familiar fairy tale to be interfering (Edwards & Estabrooks, 1994). Comprehension activities are initially presented in quiet environments and are then introduced in noise beginning with the easiest noise conditions and progressing to more difficult noise conditions (Edwards & Estabrooks, 1994).

The last area of comprehension is the description of environmental sounds and onomatopoeic words and is important to the child’s understanding in reading (Saunders as cited in Edwards & Estabrooks, 1994). Deaf or HOH children may not have experience with certain words such as “jingling, tinkling, clanging, rustling and crackling” as they are seen as low priority for direct teaching (Edwards & Estabrooks, 1994, p. 71). The comprehension of these words provides the child with a rich vocabulary in order to classify and categorize sounds in the everyday environment (Edwards & Estabrooks, 1994). The AV therapist presents a variety of environmental sounds and the child is required to describe the sound (Edwards & Estabrooks, 1994). Environmental sounds must be selected that are relevant to the child’s everyday environment (Edwards & Estabrooks, 1994). The child is initially taught the specific vocabulary and is then asked to describe and contrast different sounds (Edwards & Estabrooks, 1994). The child is then encouraged to write sentences, poems or stories using the sound vocabulary (Edwards & Estabrooks, 1994).

In summary, the hierarchy of listening skills is comprised of four components (Erber as cited in Edwards & Estabrooks, 1994). Detection refers to the ability to hear a sound, discrimination is the ability to differentiate between words, identification is the ability to label what is heard and comprehension is the ability to use the information in a meaningful way. In

addition, learning through listening must include the “personalities of the child and family and the characteristics and expectations of the child and family’s everyday environment” (Edwards & Estabrooks, 1994, p. 72). The therapist will learn to listen to the child and the family similar to the way in which the child learns to listen to others (Edwards & Estabrooks, 1994). Edwards and Estabrooks (1994) state that the components in the listening hierarchy must be used as a guideline and components such as identification and comprehension may be used concurrently. These auditory skills represent a continuum of skills used as a guideline by the AV therapist to develop an AVT programme in which activities are chosen according to the child’s auditory skills level (Tye-Murray, 2009).

### **Existing paediatric aural rehabilitation therapies**

Swanepoel and Storbeck (2008) conducted a study on the prevalence of hearing loss in South Africa within the private and public health care settings. The results revealed that the private sector services 15% of the total population in South Africa. The prevalence of hearing loss is 3 in every 1000 births. This translates to an annual rate of 496 babies and a daily rate of 1.5 babies per day born with a hearing loss (Swanepoel & Storbeck, 2008).

The public sector services 85% of the South African population (Swanepoel & Storbeck, 2008). The prevalence of hearing loss is 6 in every 1000 births which is an annual rate of 5620 babies and a daily rate of 15.5 babies per day born with hearing loss. Swanepoel and Storbeck (2008) therefore highlighted that there is a higher prevalence of hearing loss in the public health sector in South Africa. There is currently limited published research into the early intervention services provided in this population (Khoza-Shangase, Barrat & Jonosky, 2010). This may be due to the limited number of audiologists employed in the public sector when compared to those in the private sector (Khoza-Shangase & Michal, 2014). Khoza-Shangase, Barrat and Jonosky (2010) reported that there is a low audiologist-to-patient-ratio as well as a heavy clinical service load in the public sector. The majority of audiologists are working in the private health care sector which services the minority of the South African population (Khoza-Shangase, Barrat & Jonosky, 2010).

Khoza-Shangase and Michal (2014) determine the modes of communication of children identified with a hearing loss in public hospitals in Gauteng. The results revealed that 48.57% of

children who receive aural rehabilitation were using AVT (Khoza-Shangase & Michal, 2014) which allowed them to effectively communicate through speech (Estabrooks, 1994). The results indicated that 18.57% of children were using Sign Language as a mode of communication which gave them access into the deaf community (Tye-Murray, 2009). A further 11.43% were using the total communication approach while 14.29% did not receive aural rehabilitation. Those children who did not receive aural rehabilitation were affected by failure to follow up which has been reported to limit the effectiveness of early identification. Follow-up aural rehabilitation appointments are crucial due to the possible progressive nature of paediatric hearing loss (Swanepoel as cited in Khoza-Shangase & Michal, 2014).

Khoza-Shangase and Michal (2014) therefore highlighted the current paediatric aural rehabilitation therapy approaches used in South Africa. These approaches include formal and informal AVT, Sign Language and total communication where cued speech may be implemented. In addition to the three approaches identified by Khoza-Shangase and Michal (2014) is the auditory-oral approach. For the purpose of this study, the researcher will not delve into the outcomes of the mentioned approaches. The similarities and differences between AVT and each approach is discussed. Refer to international research conducted by Dettman et al. (2013), Connor et al. (2000) and Moog (2000) and local research conducted by Glaser and van Pletzen (2012) for further details on the outcomes of the mentioned approaches.

There are currently few comprehensive AVT programmes available in South Africa (Khoza-Shangase & Michal, 2014). The Carel du Toit Centre in Cape Town has an AV centre which started in 1973, where children who are deaf or HOH can develop speech and language in a natural way (The Carel du Toit Centre, 2014). Chris Hani Baragwanath Hospital in Gauteng also provides AVT to deaf or HOH and have provided training programmes to audiologists on AVT. Most schools for the deaf implement the bilingual-bicultural approach and may implement AVT if the children have some residual hearing.

### **Formal and Informal AVT**

Formal AVT intervention focuses on activities that occur during designated times of the day usually in the form of a one-on-one lesson between the clinician and child or in a small group

of children (Tye-Murray, 2009). These activities are highly structured and may involve drill and children may receive reinforcements for performing tasks. A drill activity involves “repeated exercises and rote activities” (Tye-Murray, 2009, p. 675). Training activities and materials should be appropriate for the child’s age, gender, language ability and culture (Tye-Murray, 2009). It is important that formal AVT is conducted in a quiet room with minimal distractions in order to achieve the goals for that session. Reinforcements are essential in order to make the formal AVT stimulating for the child. Tye-Murray (2009, p. 162) states that “a reinforcement is something desirable provided to the child after he or she performs a training activity or performs in a desired manner.” The AV therapist must consider several issues when choosing and providing reinforcements. An issue that needs to be considered is that the child should be able to perform a reinforcement activity quickly as he or she should not spend more time on the reinforcement activity when compared to the training activity (Tye-Murray, 2009). Reinforcement activities should not be too difficult or too absorbing as the child may not concentrate enough on the training task as he or she is focused on the reinforcement activity. It is important that the reinforcement activities are varied and interest the child and must be performed immediately after responding to a training activity (Tye-Murray, 2009).

Informal AVT intervention differs from formal AVT intervention as an activity occurs as part of a daily routine and is often incorporated into other activities such as conversation and academic learning (Tye-Murray, 2009). Informal AVT aims to develop listening skills as listening skills practice often occurs in the context of meaningful communication and is not removed from the situational context (Tye-Murray, 2009). The focus of informal AVT is on enhancing the child’s confidence in his or her ability to engage in conversation and increasing his or her motivation to rely on hearing for communication (Tye-Murray, 2009). Very young children receive primarily informal training. When the young child listens to language spoken in a meaningful context, he or she will develop speech and language as well as listening skills (Tye-Murray, 2009).

The importance of the third and fifth principles of AVT and the third pre-requisite of AVT is highlighted when providing informal AVT. The third principle of AVT states the need for family-centred intervention by instructing primary caregivers in ways to provide maximal acoustic stimulation (Goldberg & Flexer, 2001). The fifth principle of AVT highlights the importance of

parents or caregivers as the models for spoken language development (Goldberg & Flexer, 2001). This is in adherence to the third pre-requisite of AVT which emphasizes the importance of one-on-one intervention with full parent or caregiver involvement (Chowdhry, 2010). The parents or caregivers therefore play an important role in providing listening practice to the child in the home environment (Tye-Murray, 2009). They may be required to minimize background noise in the home, to speak close to the child's amplification device and to occasionally speak with their mouth covered, and to use language and speech that is repetitive, melodic, expressive and rhythmic (Tye-Murray, 2009). Theme-based activities may be used in informal AVT as it "mimics how the child with normal hearing naturally learns to listen" (Tye-Murray, 2009, p. 164).

Most successful AVT programmes will include a combination of formal and informal training activities (Tye-Murray, 2009). This will ensure that there is a balance of structured activities as well as activities which form part of the child's daily routine allowing generalization into the home environment to occur.

### **Auditory-Oral Approach**

Auditory-verbal and auditory-oral techniques are often combined under the term "Listening and Spoken Language" (LSL). Similarities between AVT and the auditory-oral approach is that they are both forms of LSL, advocate the use of residual hearing to develop spoken language and are reliant on the use of amplification devices such as hearing aids, cochlear implants or FM systems (Schow & Nerbonne, 2013). Another similarity between these approaches is that parents or caregivers are responsible for establishing full-time use of amplification devices (Schow & Nerbonne, 2014). The auditory-oral approach emphasizes consistent practice for spoken language development and encourages the use of visual cues obtained through speech reading (Schow & Nerbonne, 2013). AVT differs from the auditory-oral approach as auditory skills instead of visual cues are emphasized (Schow & Nerbonne, 2013).

Deaf or HOH children who are enrolled in auditory-oral programmes are educated in settings with other children who are deaf or HOH (Schow & Nerbonne, 2013). In contrast, AVT programmes aim to allow the deaf or HOH child to be mainstreamed into regular classrooms with children who present with normal hearing (Chaikof, 2010). Auditory-oral programmes involve

therapy which targets speech, language and auditory development and parents or caregivers are given related home activities to support these goals (Schow & Nerbonne, 2013). AVT focuses on family-centred intervention as parents are taught how to integrate listening and spoken language activities into the child's home routines such as getting dressed and washing the dishes (Schow & Nerbonne, 2013).

### **Sign Language**

Sign Language is a manual form of communication with focus on facial expressions and body language (Tye-Murray, 2009). It is a visual-gestural language which focuses on the use of the individual's hands, face and body movement to convey ideas (Schow & Nerbonne, 2013). This differs for AVT as children are encouraged to focus on auditory information in an attempt to learn spoken language (Estabrooks, 1994). The bilingual-bicultural approach is currently being adopted by many schools for the Deaf in South Africa. The bilingual-bicultural approach views Sign Language, specifically South African Sign Language (SASL) in the South African context, as the child's first language used in education with the written form of a spoken language as the child's second language (Marschark, 2001). Some families may choose a bilingual-bicultural approach without the use of spoken language, while others choose to supplement this approach with some component of speech training (Schow & Nerbonne, 2013).

SASL is a distinct and natural language that differs from spoken English as it contains its unique grammatical structure. AVT differs from the use of SASL as AVT discourages any use of visual input and spoken language is developed through listening and not through the written form (Estabrooks, 1994). This is further stipulated by the fourth pre-requisite of AVT which suggests the absence of signs and speech reading training (Chowdhry, 2010). Most children who adopt the Sign Language approach view the use of amplification such as hearing aids or cochlear implants as not important as these children will become part of the Deaf culture. The Deaf community defines Deafness with a capital "D" to express identity with a shared culture rather than individuals grouped by a medical condition (Niparko, 2009). The Deaf culture, or more recently known as the Deaf world, is characterized as having its own language such as SASL. The Deaf culture possesses strong views against cochlear implantation and hearing aids as the use of amplification is seen as an attempt to "fix the Deaf child" (Schow & Nerbonne, 2013, p. 84). AVT differs from Sign



Language as the deaf or HOH child is highly reliant on the use of amplification in order to learn to use their residual hearing to develop spoken language (Schow & Nerbonne, 2013). Estabrooks & Sogwartz as cited in Chowdhry (2010, p. 157) suggest that cochlear implantation is the most suitable form of amplification for children attending AVT and conclude that “AVT is a natural companion of such technology.”

Receptive language is developed through the use of Sign Language and English is taught as a second language after the child has mastered Sign Language whereas in AVT, the child learns to speak through the early, consistent and successful use of amplification (First Years, 2011). The child will use Sign Language as their primary expressive language in addition to written English whereas the child who uses AVT will develop expressive language through spoken and written English (First Years, 2011). If parents choose the method of Sign Language, it is important that they become proficient in Sign Language in order to communicate with their child. Parents and family members also play an important role in AVT as they provide a language-rich environment, make hearing a meaningful part of all the child’s everyday experiences and ensure that the child uses amplification at all times (First Years, 2011).

### **Total Communication**

Total communication refers to the combined use of sign and speech during education and is sometimes referred to as simultaneous communication (Tye-Murray, 2009). The child will use “every available means to receive a message, including sign, residual hearing and lip-reading” (Tye-Murray, 2009, p. 564). Total communication allows the child to develop language which may be spoken, signed or a combination of the two, through the exposure to oral speech, a formal sign language system, speech reading and amplification whereas AVT focuses on the development of spoken language through the use of amplification and discourages visual input including speech reading (First Years, 2011). Some schools for the deaf such as KwaThintwa School for the Deaf in Inchanga, KwaZulu-Natal adopt the total communication approach which is supplemented by the use of cued speech. DEAFSA (2014) raised concerns regarding the use of total communication as this approach has been unsuccessful in improving the language or literacy levels of Deaf learners in South Africa. Another disadvantage of total communication is that therapists are concerned that learning to sign and talk simultaneously may affect the child’s ability to learn both whereas AVT

focuses only on the acquisition of spoken language through listening and signing is discouraged (DEAFSA, 2014).

### **Cued Speech**

Cued speech is a “communication system that uses phonemically based hand gestures to supplement speech reading or lip-reading” (Tye-Murray, 2009, p. 565). AVT differs from cued speech as AVT uses a hand cue to emphasize listening rather than lip-reading (Chaikof, 2014) and any visual information is eliminated by the AV therapist by covering his or her mouth (Schow & Nerbonne, 2013). In cued speech, the child will learn to speak through the use of amplification, speech reading and the use of different “cues” which represent different sounds whereas in AVT, the child will develop language through the use of amplification only (First Years, 2011). If cued speech is chosen, parents and family members will be the primary teachers of cued speech to their child. It is important that they cue at all times while they speak and must learn to cue fluently for the child to develop age-appropriate speech and language. Parents and family members also play an important role in AVT as they need to ensure that language-rich environment is created in all daily routines and must ensure full-time use of amplification (First Years, 2011).

It is important to consider that all intervention approaches require extensive family involvement regardless of the type of paediatric aural rehabilitation approach that is selected as the most appropriate intervention approach for the deaf or HOH child (Schow & Nerbonne, 2013). Paediatric aural rehabilitation therapies, such as formal and informal AVT and total communication, require therapeutic intervention, consistent use of amplification in the form of hearing aids or cochlear implantation as well as commitment from the family (Schow & Nerbonne, 2013). It is critical to consider the role of the audiologists as an AV therapist in order to identify key responsibilities and areas of competence required by the AV therapist when conducting effective AVT.

### **The role of the audiologist as an AV therapist**

The AV therapist is a qualified professional who has training in the disciplines of audiology, speech-language pathology and/or deaf education and has chosen to abide by the nine guiding principles of AVT (Estabrooks, 1994). AV therapists obtain additional academic and

professional qualifications which may be certified by AVI. They are required to comply with the AVI Professional Code of Ethics for AV practice and follow the AVI Scope of Practice when planning and conducting AVT (AVI as cited in Estabrooks, 1994).

The AVI Professional Code of Ethics seeks to “protect persons served and to ensure the integrity of recognized AV practices” (AVI as cited in Estabrooks, 1994, p. 295). It consists of five ethical principles and each principle has rules of ethics. The principles state that the individuals conducting AVT, the AV therapists, must abide with the purpose, philosophy and guiding principles of AVT (Estabrooks, 1994). They must achieve and maintain high standards of professional competence when providing AVT (Estabrooks, 1994). The AV therapists must also maintain good relationships with colleagues as well as members of allied professions, parents or caregivers and the children receiving AVT (Estabrooks, 1994). It is important that the AV therapists uphold dignity and autonomy of the profession by not violating any of the ethical principles or rules (Estabrooks, 1994).

The AVI Scope of Practice is defined by the “training and knowledge of professionals who are certified by AVI” (AVI as cited in Estabrooks, 1994, p. 301). AV therapists must be competent in several areas outlined in Table 6.

Table 6

*Areas of competence required by the AV therapist*

<b>Knowledge of hearing and audiology</b>
<b>Enhancement of auditory functioning</b>
<b>Knowledge of spoken language communication in the provision of AV techniques and procedures</b>
<b>Knowledge of child development</b>
<b>Skills in parent guidance</b>
<b>Knowledge of the history and philosophy of AV practice</b>
<b>Familiarity with current professional issues</b>

*Note.* From “AVI Scope of Practice,” AVI, 1994, in *Auditory-Verbal Therapy for Parents and Professionals* by W. Estabrooks, p. 301.

The first area of competence required by the AV therapist is knowledge of hearing and audiology. The AV therapist needs to have knowledge regarding “hearing science such as anatomy of the ear, physiology of hearing, physics of sound, causes of hearing impairment, types of hearing impairment, conditions that present in addition to hearing impairment and early identification and high risk factors” (AVI as cited in Estabrooks, 1994, p. 301). Knowledge regarding amplification devices and the fitting of amplification is essential. In addition, the AV therapist must have knowledge regarding audiological and hearing aid evaluations (AVI as cited in Estabrooks, 1994).

The second area is the enhancement of auditory functioning. This area includes important concepts in the understanding of listening function and important concepts regarding the habilitation of a child with hearing loss (AVI as cited in Estabrooks, 1994). In addition, the AV therapist must have knowledge regarding emerging auditory development as well as techniques and strategies for the assessment of listening skills (AVI as cited in Estabrooks, 1994).

The third area of competence is spoken language communication which includes two areas of language and speech production. Language includes knowledge of spoken language development, assessment of language development and teaching techniques and strategies in language production (AVI as cited in Estabrooks, 1994). Speech production refers to the knowledge of anatomy and physiology of the speech mechanism, speech development, assessment of speech production and teaching techniques and strategies used for speech production (AVI as cited in Estabrooks, 1994).

The fourth area is auditory-verbal techniques and procedures. The AV therapist is the professionals who “develops the child’s maximal use of residual hearing” through the application and integration of areas including audiology, child development, speech acoustics and language (AVI as cited in Estabrooks, 1994, p. 302). Furthermore, the AV therapist will use learning to listen strategies and formal AV assessment procedures, provides and assesses the effectiveness of ongoing AVT intervention, develops procedures for stimulating spoken language development, employs techniques to integrate listening skills into daily routines and experiences and develops procedures for integrating the child into the hearing society (AVI as cited in Estabrooks, 1994).

The fifth area of competence required by the AV therapist is child development. The areas of child development include “stages of motor, social and emotional development; stages of cognitive and communication development; the influence of associated factors on child development; play development and educational mainstreaming” (AVI as cited in Estabrooks, 1994, p. 303). The associated factors include sensory integration, cultural, community and family issues (AVI as cited in Estabrooks, 1994).

The sixth area is parent guidance which includes family guidance techniques and understanding the impact of hearing impairment on the family such as coping mechanisms, family functioning and stages of grief (AVI as cited in Estabrooks, 1994). In addition, the AV therapist must have knowledge regarding the awareness of associated factors on parent guidance such as cultural, economic, lifestyle and community factors as well as skills behaviour management and parent education (AVI as cited in Estabrooks, 1994).

The seventh area involves the knowledge of the history and philosophy of AV practice. The AV therapist must have knowledge of the history of habilitation and the education of children with hearing loss and the principles of the AV approach (AVI as cited in Estabrooks, 1994).

The final area of competence required by the AV therapist is the familiarity with current professional issues. Professional issues include current legislation and regulations concerning specialists working with individuals with hearing impairment; “current legislation and regulations concerning persons with disabilities; assessment of appropriate resources; ethical issues; responsibilities to colleagues and to the profession and professional associations and organisations concerning deaf education and rehabilitation” (AVI as cited in Estabrooks, 1994, p. 303).

In addition to the areas of competence required by the AV therapist is the importance for the AV therapist to consider each child holistically. The interests of the child and the family should be integrated when developing an individualized treatment plan which follows the natural language development of hearing children (Estabrooks, 1994). It is therefore important that the professional conducting AVT has specialised training and certification in order to provide optimal AVT (Caleffe-Schenck as cited in Goldberg & Flexer, 2001).

## **AV Training**

The field of AVT lacks an adequate number of trained AVT professionals (Morrison, Perigoe & Bernstein, 2010). Intervention programmes such as AVT require certified professionals who have the knowledge and skills to enable children with hearing loss to realize their full potential.

The AG Bell Academy for Spoken Language Certification programme sets standards of certification as a Listening and Spoken Language (LSL) Specialist. Professionals who obtain the LSLS Certified Auditory-Verbal Therapy (LSLS Cert. AVT) or Certified Auditory-Verbal Educator (LSLS Cert. AVEd) credentials must meet the standards for knowledge and skills (AG Bell Academy as cited in Morrison, Perigoe & Bernstein, 2010). These are essential to assist children with hearing loss learn to listen to and communicate using spoken language (AG Bell Academy, 2009). The current programme extends over a three year period and the professional who is enrolled to obtain the LSLS Cert. AVT must be certified for a total of 18 hours. The professional will be certified for 8 hours in the first year and for 5 hours in the second and third years respectively (AG Bell Academy, 2009).

## **Early detection and identification of Hearing Loss in South Africa**

In South Africa, it is estimated that approximately 6116 babies are born every year with permanent bilateral hearing loss or acquire hearing loss in the first few weeks of life (Swanepoel, 2009). Therefore 17 babies are born with or will develop hearing loss every day. It is critical that newborn hearing screening is conducted in order for early detection and identification to take place. The JCIH (2007) recommends that the hearing of all infants should be screened at no later than one month of age in order to maximize the outcome for infants who are deaf or HOH. Those infants who do not pass the screening should have comprehensive audiological evaluation at no later than three months of age (JCIH, 2007).

Recent South African studies indicate that there are few hearing screening programmes being conducted in both the public and private health care settings which results in late identification of hearing loss, often after two years of age (Swanepoel, 2006; Swanepoel, Delpont & Swart, 2007). Swanepoel (2009) mentioned that there are currently limited hearing screening

programmes in place due to financial restraints and limited support from hospital management. The earlier the child is identified with hearing impairment, the sooner audiological management can take place including the fitting of amplification devices. AVT intervention can then commence which will allow the child to begin using the amplified amounts of residual hearing which is needed to develop listening and spoken language.

### **AVT in South Africa**

AVT professional training is available in South Africa through the Listening and Spoken Language Skills (LSLS) (LSLS South Africa, 2011). The training is one year and covers nine topics (AG Bell Academy for Listening and Spoken Language, 2007) related to listening and spoken language interventions focusing primarily on AVT in South Africa. The professional must have obtained a degree in either audiology, speech-language pathology or education of deaf or HOH children and must currently be working with these children when they enrol for the AVT training.

Research conducted by Khoza-Shangase, Barratt and Jonosky (2010) indicated that there are only 26% of South African audiologists who provide aural rehabilitation on a weekly basis. This may be due to a lack of resources such as poor therapist/ patient ratios or financial problems for patients which is common in developing countries such as South Africa. There are currently few professionals who have obtained certified training in AVT in South Africa (LSLS South Africa, 2011). The most recent statistic is a total of 31 LSL therapists excluding the group of therapists who are currently undergoing training (LSLS South Africa, 2015). Audiologists receive basic understanding of AVT as part of their undergraduate degree within the area of aural rehabilitation.

This study therefore aims to explore the relevance of current practice of audiologists using AVT in South Africa. Furthermore, the differences between AVT and general paediatric aural rehabilitation therapies will be explored in an attempt to determine whether AVT is the most effective intervention approach used with deaf or HOH children. It also aims to determine whether languages other than English may impact on the implementation of AVT which is a reality in the South African context as most children do not acquire English as their home language. Finally, the

study will investigate the challenges associated with training regarding formal and informal AVT. This will assist in identifying potential reasons for why this approach is not readily chosen by audiologists within the South African context.



## CHAPTER 3

### Methodology

*This chapter includes a description of the aims of the study, the research design as well as the ethical considerations. In addition, the description and characteristics of the participants, details of the interview schedule and the procedure utilized for eliciting the data are discussed.*

#### Main aim

The overall aim of the study was to explore the relevance of AVT provided by audiologists in Gauteng, South Africa.

#### Sub-aims

The sub-aims included:

- To explore the differences between AVT and general paediatric aural rehabilitation therapies conducted by audiologists.
- To explore the impact of language on the implementation of AVT.
- To investigate the challenges associated with training regarding formal and informal AVT.

#### Research design

For the purpose of this study, a qualitative research design was used. Qualitative research methods aim to understand complex situations by exploring and interpreting observations and building on theory (Leedy & Ormrod, 2013). Qualitative research designs emphasize description, induction, grounded theory, and the study of peoples' understanding (Bogdan & Biklen, 1992). This study therefore addressed questions aimed at determining the nature of a phenomenon (Neuman, 1997). This study aimed to investigate the relevance and current practice of AVT in South Africa by conducting semi-structured interviews with identified audiologists.

#### Participants

##### Sample size

The South African Speech-Language-Hearing Association (SASLHA) and the South African Association of Audiologists (SAAA) 2014 membership lists were used to obtain the names

and contact details of currently registered audiologists. The SAAA membership currently consists of 200 members including audiologists in private practice, universities, schools, hospitals and hearing aid companies (SAAA Position Statement, 2014). All audiologists conducting aural rehabilitation were included in the sample population. Purposive sampling was used to obtain the sample size which comprised of a total of ten audiologists according to inclusion and exclusion criteria. The sample size was divided into five audiologists conducting aural rehabilitation who had obtained the LSL certification (equivalent to AVT certification) and five audiologists conducting aural rehabilitation without the LSL certification.

### **Sampling strategy**

Purposive sampling is used when participants are selected by the researcher's judgment for a specific purpose and is used due to the highly specific sample required (Leedy & Ormrod, 2013). The researcher deliberately selects certain participants based on the knowledge of their characteristics (Maxwell & Satake, 2006). The participants in this study were comprised of a specific population group which included audiologists who conduct aural rehabilitation with the paediatric population. Purposive sampling was applied to this study to ensure that only audiologists who conduct aural rehabilitation with children were selected to participate in the study.

### **Inclusion criteria**

- The participants must have obtained their degree/s in audiology at a recognized university in South Africa or internationally.
- The participants must be currently registered as an audiologist with the HPCSA.
- The participants must be employed as an audiologist in either the private or government sector in South Africa.
- The participants must be audiologists who are currently practicing aural rehabilitation in South Africa.
- The participants must be audiologists conducting aural rehabilitation who include the paediatric population as part of their current caseload.
- Participants must make reference to AVT conducted with children from birth to six years of age (Cole & Flexer, 2007) and school-aged children.

### **Exclusion criteria**

- Participants who have not conducted AVT with children who present with a degree of hearing loss ranging from mild to profound will be excluded.

### **Description of participants**

Table 7 illustrates the biographical information of the AVT participants who are referred to as AVT 1 – 5. The biographical information includes the participant's highest qualification, institution at which the qualification was obtained and the year in which the qualification was obtained. AVT 1 obtained a Bachelor of Logopaedics from the University of Pretoria in 1990 which is equivalent to the four year honours degree of speech and hearing therapy. AVT 2 and 3 obtained an honours degree in Speech and Hearing Therapy from the University of the Witwatersrand in 2009. AVT 4's highest qualification was a Masters in Speech Pathology from the University of the Witwatersrand in 2010. AVT 5 achieved a Masters in Augmentative and Alternative Communication from the University of Pretoria in 2000. The AVT participants' experience post qualification therefore ranged from six years to twenty five years. This broad range of experience provided depth and insight to the semi-structured interviews in terms of the foundation of aural rehabilitation provided as part of the degree at the varying institutions.

Furthermore, Table 7 provides information regarding the participant's current employment setting, the year in which the LSL training was completed as well as any additional training or courses completed by these participants. Most of the AVT participants were employed at a special needs school with AVT 1 employed at a government school as well as private practice. AVT 5 had received a licence in cochlear implant mapping from the University of Stellenbosch. AVT 1 – 4 attended courses on paediatric aural rehabilitation that were offered by various institutions.

All AVT participants attended LSL training which was conducted through the University of Stellenbosch. The course duration was one year. LSL is equivalent to AVT certification but is termed differently as it was not conducted by Warren Estabrooks, the founder of "WE learning to listen" and AVT training. AVT 4 was the only participant who completed the AVT training conducted by Warren Estabrooks in 2010.

Table 7

*Biographical information of AVT participants*

<b>Participant</b>	<b>Highest Qualification/s</b>	<b>Institution</b>	<b>Year of Qualification</b>	<b>Employment Setting</b>	<b>AVT Training and Year</b>	<b>Additional Training/ Courses</b>
<b>AVT 1</b>	Bachelor of Logopaedics	University of Pretoria	1990	Government School and Private Practice	LSL 2012/ 2013	None, mainly short courses
<b>AVT 2</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2009	Special Needs School	LSL 2012/ 2013	Ndiyeva conference on paediatric aural rehabilitation
<b>AVT 3</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2009	Special Needs School	LSL 2012/ 2013	Paediatric aural rehabilitation at Chris Hani Baragwanath Academic Hospital
<b>AVT 4</b>	Masters in Speech Pathology	University of the Witwatersrand	2010	Head of Special Needs School	AVT 2010	Courses offered by Southern ENT on aural rehabilitation
	Postgraduate Diploma in Advanced Practitioner	University in the UK	2008			
<b>AVT 5</b>	Masters in Augmentative and Alternative Communication	University of Pretoria	2000	Special Needs School	LSL 2012/ 2013	Licence in cochlear implant mapping from University of Stellenbosch

Table 8 illustrates the biographical information of the Non AVT participants who are referred to as Non AVT 6 – 10. The biographical information includes the participant’s highest qualification, institution at which the qualification was obtained and the year in which the qualification was obtained. Non AVT 6, 8 and 9 obtained an honours degree in Speech and Hearing Therapy from the University of the Witwatersrand. Non AVT 7 obtained a Bachelor of Communication Pathology (Dual qualification) from the University of Pretoria in 2011. Non AVT

10 achieved a Masters in Speech Pathology from the University of the Witwatersrand in 2003. The Non AVT participants' experience post qualification therefore ranged from one year to twelve years. Furthermore, Table 8 provides information regarding the participant's current employment setting as well as any additional training or courses completed by these participants. Non AVT participants were employed at either a School for the Deaf or a government hospital. Non AVT participants had attended limited courses on paediatric aural rehabilitation.

Table 8

*Biographical information of Non AVT participants*

<b>Participant</b>	<b>Highest Qualification/s</b>	<b>Institution</b>	<b>Year of Qualification</b>	<b>Employment Setting</b>	<b>Additional Training/ Courses</b>
<b>Non AVT 6</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2007	School for the Deaf	Carel du Toit Centre, Cape Town conference on aural rehabilitation and courses offered by Southern ENT on aural rehabilitation
<b>Non AVT 7</b>	B Communication Pathology (Dual Qualification)	University of Pretoria	2011	Government Hospital	None except case presentations in aural rehabilitation at hospital
<b>Non AVT 8</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2012	Government Hospital	None
<b>Non AVT 9</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2014	Government Hospital	None
<b>Non AVT 10</b>	BA Speech and Hearing Therapy	University of the Witwatersrand	2003	School for the Deaf	Courses offered by Southern ENT on aural rehabilitation
	Masters in Speech Pathology	University of the Witwatersrand	2005		

## Data Collection Instrument

In qualitative research, a semi-structured interview schedule is recommended as it consists of a predetermined list of questions that is posed to all participants while allowing the researcher to probe and add further questions where necessary (Pitney & Parker, 2009). Further enquiry through probing provided valuable insight as it permits tangential discussions which elicit critical and noteworthy information (Liamputtong & Ezzy, 2007). An interview schedule was therefore utilized as the method of data collection in order to interview participating audiologists and determine their experience of conducting aural rehabilitation specifically with children (*refer to Appendix E*). Recommendations proposed by Schiaveti and Metz (2002) were implemented and included a balance of open and closed-ended questions. Chapin (2004) concurred that these questions provided the researcher with flexibility and accuracy in terms of understanding and interpretation of emerging themes. Furthermore, Rembar, Lind, Arnesen and Helvik (2009, p. 191) stated that the use of open ended questions encouraged the participants to “respond in their own words, in a narrative fashion.” As a result, the researcher obtained a detailed description of the participants’ own perspective and experience.

The interview schedule was designed and adapted from various studies by following a similar format using sections and addressing areas relevant to this study (Estabrooks, 1994; Goldberg & Flexer, 2001; Khoza-Shangase & Michal, 2014). The questions were formulated to answer the proposed research question by incorporating the aims of the study together with the comprehensive literature review. The interview schedule was used as a guide to probe pertinent areas and comprised of five main sections (*refer to Appendix E*):

- Section 1: Biographical information of the audiologist.
- Section 2: Relevance of AVT provided by the audiologist.
- Section 3: AVT and general paediatric aural rehabilitation therapies.
- Section 4: Language of AVT in South Africa.
- Section 5: Evaluation of AVT as part of the intervention programme.

Table 9 provides a description of the areas probed in the interview schedule as well as a motivation for each selected area.

Table 9

*A description of areas outlined in the interview schedule and motivation for their selection*

<b>Area</b>	<b>Description</b>	<b>Motivation</b>
<b>Section 1</b> <b>Biographical information of the audiologist</b>	Information regarding professional registration and experience, qualification/s, current employment and additional training.	The AV therapist is a qualified professional who has training in the disciplines of audiology, speech-language pathology and/or deaf education (Estabrooks, 1994).
<b>Section 2</b> <b>Relevance of AVT provided by the audiologist</b>	Current practice of audiologist including the paediatric caseload receiving aural rehabilitation, length of time practicing aural rehabilitation and the relevance of nine guiding principles of AVT in the South African context.	The principles of AVT stipulate that children who are deaf or HOH can be taught to use minimal amounts of amplified residual hearing (Goldberg & Flexer, 2001).
<b>Section 3</b> <b>AVT and general paediatric aural rehabilitation therapies</b>	Information will include the advantages and disadvantages of the chosen method for aural rehabilitation. The audiologist will specify whether formal or informal AVT is used. If AVT has not been selected, then the audiologist will specify the general aural rehabilitation therapy that is being implemented.	Khoza-Shangase and Michal (2014) suggest that current paediatric aural rehabilitation therapy approaches used in South Africa include formal and informal AVT, Sign Language and total communication where cued speech may be implemented. In addition, the auditory-oral approach may be implemented.
<b>Section 4</b> <b>Language of AVT in South Africa</b>	Impact of bilingualism in South Africa. In addition, information will include the importance of caregiver involvement and the use of a caregiver as an interpreter to ensure that the child receives AVT in his or her home language.	AVT advocates family-centred intervention by instructing caregivers in ways to provide maximal acoustic stimulation (Goldberg & Flexer, 2001).
<b>Section 5</b> <b>Evaluation of AVT as part of the intervention programme</b>	Information will include the following: standardized testing procedures and protocols, modifications, age appropriate and culturally sensitive tools, useful techniques, challenges, factors contributing to successful AVT, suggestions to improve AVT and additional comments regarding needs in terms of AVT intervention.	The AV Scope of Practice includes the knowledge of techniques and procedures for effective AVT intervention (AVI as cited in Estabrooks, 1994). In addition, challenges associated with training regarding formal and informal AVT will be identified.

## **Pilot study**

A pilot study was conducted prior to data collection to determine the applicability of the research study. Pilot studies are used to ensure time and cost efficiency, and goal efficacy (Neuman, 1997). A pilot study was used to evaluate the effectiveness of the interview schedule as a tool in obtaining the required information from participants (Leedy & Ormrod, 2013). Prior to the commencement of the research study, any discrepancies in the procedure as well as the interview schedule were addressed.

One audiologist who was currently practicing AVT with deaf or HOH children was selected for participation in the pilot study according to participant criteria. This participant had completed the LSL qualification and was included as part of the ten participants interviewed in the study. The information document (*refer to Appendix B*) was emailed to the participating audiologist. The informed consent document (*refer to Appendix C*) was completed by the participant prior to the commencement of the semi-structured interview. The semi-structured interview was conducted using the interview schedule (*refer to Appendix E*) which focused on relevant areas pertaining to AVT practice.

The interview schedule was evaluated in terms of participant understanding, nature of questions, relevance of questions in relation to the required information, and duration of the interview. The pilot study therefore served as a trial of the interview schedule (*refer to Appendix E*), to determine its efficacy in obtaining the required data. The pilot study was conducted at the participant's employment setting. One of the considerations that arose from the pilot study was the lack of clarity with certain questions in the biographical section of the interview schedule. The second observation was the flow of the questions in the interview schedule. These questions were rearranged to ensure that appropriate and effective responses were obtained from participants.

## **Procedure**

Ethical clearance was obtained from the Non-medical Human Research Ethics Committee (HREC) at the University of the Witwatersrand, Faculty of Humanities in order for the study to be conducted (*refer to Appendix A*).



SASLHA was contacted via email in order to obtain the contact details for the audiologists who are currently on the 2014 membership list. Audiologists who fulfilled the inclusion criteria of the research study were invited to participate. A pilot study was conducted prior to the main study. Amendments to the interview schedule were made according to the observations made from the pilot study. An information document (*refer to Appendix B*) was emailed to each identified participant. The information document explained the nature, content and aim of the research study. Each participant completed the informed consent document (*refer to Appendix C*) prior to commencing with the semi-structured interview. The informed consent document explained that participation was voluntary and that the participant may withdraw from the interview at any time.

Semi-structured interviews were used to obtain information from the audiologists who implemented AVT as part of aural rehabilitation as well as those audiologists who conduct aural rehabilitation using a different therapy approach. Semi-structured interviews were conducted, using an interview schedule (*refer to Appendix E*) as a guide to explore the relevance of AVT in South Africa. Semi-structured interviews may be adopted when topics are sensitive in nature and participants are from diverse backgrounds (Welman & Kruger, 2001). The use of semi-structured interviews allowed the researcher to probe into personal experiences and perceptions of the participants. Each semi-structured interview was audio recorded to assist with written transcription. Permission was obtained from each participant via an informed consent document (*refer to Appendix D*) to permit the use of recording equipment.

Each semi-structured interview was transcribed and thematically analysed using a combination of inductive and deductive coding. The identified themes were interpreted and discussed using supporting literature.

### **Ethical considerations**

Ethical principles including autonomy, beneficence, anonymity and confidentiality were addressed.

The ethical issues that govern this research study included:

- Ethical clearance was obtained from the Non-medical Human Research Ethics Committee (HREC) at the University of the Witwatersrand, Faculty of Humanities in South Africa (*refer to Appendix A*).
- SASLHA was contacted via email and permission was obtained to gain access to current audiologists' membership and contact details.
- Each participant was invited to participate in the study by emailing an information document (*refer to Appendix B*).
- The study abided by principles of research ethics by obtaining informed consent (*refer to Appendix C*) from each participant prior to the commencement of the interview.
- The anonymity of participants was assured as names were not requested (Maxwell & Satake, 2006). All participants remained anonymous and the data obtained was used for the sole purpose of the research study. Each participant was allocated a number to ensure anonymity.
- The participants were informed that their participation in the study was voluntary and that they reserved the right to terminate participation in the study at any given time (Maxwell & Satake, 2006).
- Participants' responses remained confidential (Leedy & Ormrod, 2013).
- Research findings were presented honestly and without distortion (American Sociological Association, as cited in Leedy & Ormrod, 2013). Information received was presented as part of the research study and was not altered by the researcher in any way.
- All research data will be stored electronically in a password protected computer for a period of five years and thereafter will be archived.

### **Autonomy**

Informed consent is an important part of the ethical principle of autonomy. Autonomy refers to the ethical responsibility to ensure the adequate protection of a person's privacy as well as maintaining respect for the person who is involved in making the decision (Rosenthal & Rosnow, 2008). Informed consent focuses on the "individual's right to authorize or deny a particular intervention" (Hyde & Power, 2006, p. 105).

### **Beneficence**

Rosenthal & Rosnow (2008) describe beneficence as “doing of good.” This suggests that the research is expected to have some benefit for the participant. The study aimed to identify factors contributing to successful AVT intervention as well as barriers experienced by audiologists when conducting AVT with deaf or HOH children. This resulted in providing possible solutions and identifying areas where further training is required in order to benefit the audiologist as well as the deaf or HOH child receiving the AVT.

### **Anonymity and confidentiality**

Anonymity was maintained as no personal information was obtained from the participants. In addition, names were not requested as each participant was allocated a number. Confidentiality refers to the ethical principle of trust with the participants of the study. Participants were fully informed regarding the nature, content and aims of the study through the information document (*refer to Appendix B*). Confidentiality refers to ensuring that the responses provided by the participants will be protected which will ensure privacy (Rosenthal & Rosnow, 2008). Furthermore, participants’ privacy were protected as participants will be responding anonymously (Rosenthal & Rosnow, 2008). Confidentiality was maintained by electronically storing all research data for a period of five years and thereafter would be archived.

### **Analysis of data**

Thematic analysis was used to identify, analyse and report themes within the data (Braun & Clarke, 2006). Thematic analysis was implemented, as it was data-driven and allowed information to be organized in themes. Each semi-structured interview was transcribed to identify major and frequently occurring themes. The researcher then identified recurring themes obtained across all participants. The responses obtained from the participating audiologists were categorized using coding in order to predetermine and precisely define characteristics that arose from open-ended questions (Leedy & Ormrod, 2013).

For the purpose of the study, the researcher adopted a combination of inductive and deductive coding. An inductive approach is when the identified themes are strongly linked to literature and is data driven (Braun & Clarke, 2006). By using inductive coding, the collected data

evolved through rigorous coding and not through a fixed or pre-existing frame. The specific research question which aimed to explore the relevance of AVT in South Africa therefore evolved through the coding process. In contrast, a deductive approach would be “driven by the researcher’s theoretical or analytic interest in the area” (Braun & Clarke, 2006, p. 12). This form of thematic analysis tends to provide a less rich description of the overall data and a more detailed analysis of some aspect of the data (Braun & Clarke, 2006). By using deductive coding, the researcher coded for a specific research question and the themes may be predetermined (Braun & Clarke, 2006). These themes were then discussed and interpreted by arguing the relevance of each theme using supporting literature.

### **Ensuring rigor and trustworthiness**

The trustworthiness of the study is important when evaluating its worth (Trochim, 2006). Rigor was maintained using rigorous, precise and thorough methods to collect, record and analyse data (Leedy & Ormrod, 2013). In this study rigor and trustworthiness were maintained by conducting a pilot study. According to Trochim (2006), trustworthiness includes the credibility, neutrality or confirmability, consistency or dependability, and applicability or transferability of information. The credibility of the study was established by maintaining that the results of the study are true and a believable reflection of the participants views (Trochim, 2006). Credibility included peer reviewing, recording of each semi-structured interview and field notes which were taken by the researcher during the interview process. Neutrality or confirmability refers to the manner in which results support each other, when results are corroborated or confirmed by more than one party (Trochim, 2006). Consistency or dependability is used in a qualitative study to examine the process and the product of the research for consistency (Hoepfl, 1997). In addition, dependability shows that the findings of the study are consistent and may be repeated (Trochim, 2006). Dependability was maintained by using an interview schedule during the semi-structured interviews to ensure that all participants were asked similar questions. Applicability or transferability refers to how the results obtained from a study may be utilized in other contexts or settings (Trochim, 2006). Transferability was addressed through a detailed description of the context, selection and characteristics of the participants as well as data collection and data analysis. In addition, quotations in support of the findings were provided to further facilitate transferability.

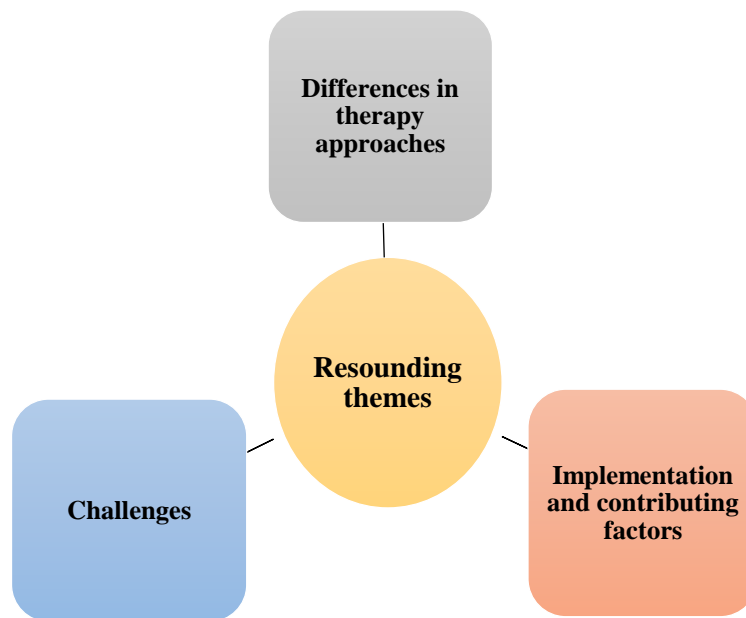
## CHAPTER 4

### Results

*This chapter explores the themes identified by the researcher from the interviews conducted with the audiologists.*

Semi-structured interviews were conducted with a total of ten participants using an interview schedule as a guide to explore the relevance of AVT in South Africa. Five participants had received the LSL training and will be referred to as AVT 1 – 5 and five had not received the LSL training and will be referred to as Non AVT 6 – 10.

All participants were required to respond to the same list of questions from the interview schedule. The responses from these semi-structured interviews were collated. The thematic analysis as proscribed by Braun and Clarke (2006) revealed three resounding themes that were identified by the researcher: 1) challenges, 2) differences in therapy approaches, and 3) implementation and contributing factors to the success of AVT. The themes are illustrated in Figure 3. These themes were subsequently further divided into a number of sub-themes. The themes and sub-themes that emerged are represented in Table 10, Table 11 and Table 12.



*Figure 3.* Diagrammatic representation of the three resounding themes.

## THEME 1: CHALLENGES

The participants identified challenges associated with the commencement and implementation of aural rehabilitation with deaf or HOH children. Four sub-themes emerged subsequent to data analysis as influencing the participants' decision as to which therapy approach was to be selected. These sub-themes are outlined in Table 10.

Table 10

### *Challenges*

<b>Early detection and intervention</b>
<b>Amplification devices</b>
<b>Bilingualism</b>
<b>Resources</b>

These sub-themes are discussed in further detail below.

### **Early detection and intervention**

The majority of participants advocated the need for early detection and intervention and suggested that it is a precursor when identifying the most appropriate therapy approach for the deaf or HOH child. In addition, the participants stated that early detection and intervention is currently not being achieved in South Africa and as a result, it has a profound impact on the fitting of amplification devices and the commencement of aural rehabilitation in a paediatric population. This was evident in the following responses obtained from the participants:

**AVT 2:** *“not all of the kids have been identified early;”*

**AVT 4:** *“What I would really, really ah, recommend is a lot of hospitals and private hospitals and clinics do not have early detection AND intervention and that’s a big, big thing for us and I think if we can try and get at that level, I won’t see four year olds here in my setting that have never had therapy before;”*

**AVT 4:** *“I think if hospitals do stick with the um, ah, birth screening, it’s very important, again I see often individuals missed;”*

**AVT 4:** *“What happens is that the child gets missed then the child gets referred to [Name of institution] um, they take on a different approach to oral um, then by the time the parent figures things out they don’t know what options they have and I think that’s can be detrimental;”*

**AVT 4:** *“I think what needs to happen is that there needs to be a strong link with um, aural habilitation therapists and audiologists at the hospital setting where as soon as a child is born, a screening is done and it’s not optional, it is compulsory and it needs to come from, from that level then I think we, we ok;”*

**AVT 5:** *“we have children being lately iden..., late identified, we don’t work in an ideal setup;”*

**AVT 5:** *“I don’t think um, our identification and our screening are in place for every child to benefit from AVT because we identify too late;”*

**Non AVT 7:** *“The other thing that makes aural rehab challenging is the age we are identifying them, that you almost want to tell the parents that the child’s gonna be fine and will be able to speak but even if I stand on my head, if they’re four and a half years old, brain development is nearly finished;”*

**Non AVT 7:** *“when we come to a government institution where parents are only noticing their child can’t hear at two then you still have the whole assessment process;”*

**Non AVT 7:** *“the rest of them are all under five and a lot of them are identified last year or the year before last that we’re seeing for aural rehab.”*

## **Amplification devices**

When asked about the challenges experienced when conducting aural rehabilitation with deaf or HOH children, many of the therapists mentioned that the provision of optimal hearing technology and amplification devices is not well implemented in Gauteng. The JCIH (2007) recommends that children born with hearing loss should be identified by three months of age. This is currently not being achieved in Gauteng as the majority of cases of paediatric hearing loss are diagnosed over the age of two years (Khoza-Shangase, Barratt & Jonosky, 2010). Late identification results in delayed fitting of amplification devices and subsequent delayed intervention. In addition, the majority of therapists interviewed commented that if amplification devices were fitted, some devices were not providing adequate benefit for the child due to limited equipment available at various institutions. Furthermore, some children were limited to one

amplification device due to financial implications and regulations as stipulated by the institution. These findings were articulated in the following statements:

**AVT 3:** *“the acceptance of like technology and regular hearing aid use which obviously, you know that’s an issue and lack of um amplification;”*

**AVT 5:** *“optimal technology, cochlear implant if necessary, I don’t think that is in place;”*

**AVT 1:** *“if the children are not, not aided properly;”*

**AVT 1:** *“not knowing what’s this child hearing um, and if the child is aided optimally;”*

**AVT 4:** *“I think, ah, our cochlear implant situation is different in South Africa because ah, she was fitted at [Name of hospital] and um, they only allow one, yes, because it is state funded.”*

## **Bilingualism**

A further theme that emerged from challenges associated with the implementation of aural rehabilitation is the issue of bilingualism. Bilingualism is broadly defined as an individual who knows two languages (Baker as cited in Tye-Murray, 2009). The majority of therapists in South Africa provide intervention in English due to limited resources available in other South African languages. Pascoe and Smouse (2012) confirm that there are few assessments and therapeutic materials available for audiologists and speech-language therapists in other South African languages which may be due to limited research regarding the development of these languages. AVT 3 and 4 reported conducting therapy only in English as the medium of instruction at the institution was English. It was further reported that parents were informed that English was the medium of instruction upon the child’s enrolment. The parents were in agreement to speak English at home even if this was not considered the family’s home language in order for the child to progress academically. AVT 5 mentioned that bilingualism posed a difficult choice for therapists as to whether therapy was conducted in the child’s home language or in the language of education. In the case of AVT 5’s employment setting, English was the language of education and the child was therefore exposed to English during school which resulted in therapy being conducted in English.



**AVT 3:** *“So for entry into the school, they have to be agreed to speak English and that also means that they speak English at home. So even if they did have another language, Zulu, Sotho, Afrikaans, they have to agree that at home they will speak English, otherwise, you know, the progress won't work;”*

**AVT 4:** *“Unfortunately in the context of South Africa, there's not a lot of schools that cater for additional languages and that's a reality of it, if you look at most of the schools that the child's gonna go to it is going to be English is going to be the medium of instruction.”*

**AVT 5:** *“So there's also a different scenario between do you stick to mother tongue or do you change over to the, to the language of education, um... with us if you come here that is how you are prepared, you are going to have to be educated in English because that is what the child's going to hear.”*

In addition, the issue of bilingualism was identified as challenging in the South African context due to the language barriers encountered. Most of the therapists reported that they were not fluent in the other official languages of South Africa other than English and for one therapist, English and Afrikaans. The therapists therefore commented that they could not provide adequate service in another language. The majority of the therapists mentioned that the support provided by the deaf or HOH child's family was essential for successful aural rehabilitation. The family would be familiar with the child's home language and would be able to continue therapy in the home environment. The parent or caregiver would be able to assist the therapist during aural rehabilitation sessions by supplementing what was taught by the therapist in the child's home language.

**AVT 4:** *“I'm not skilled in working in other languages;”*

**AVT 5:** *“we do have language barriers;”*

**AVT 5:** *“I'm not comfortable with bilingualism, that's, I feel sort of I don't really know how to handle that because it's not the same for any family.”*

## Resources

The decision to select the most appropriate aural rehabilitation approach for the deaf or HOH child can be dependent on additional challenges such as available resources and equipment as well as limited therapists allocated to various institutions. Khoza-Shangase, Barratt and Jonosky (2010) confirm that lack of adequate resources in the form of personnel, available audiological

equipment in state hospitals in Gauteng and assistive devices may contribute to delayed provision of habilitative services and may be viewed as the main reasons for late diagnosis and delayed amplification. Many of the therapists in the current study reported such challenges and commented that limited resources have a direct impact on the fitting of appropriate amplification devices and subsequent intervention as evidenced in the following statements:

**Non AVT 6:** *“I think there just aren’t resources for um, the, the kids that we see, um we, we researched a lot before we invented this programme;”*

**Non AVT 6:** *“our resources in terms of like there’s only three of us, I’d probably, staffing is a huge issue, ja, it would probably be nice to see the kids more frequently or um, individually or in pairs;”*

**Non AVT 10:** *“I’m concerned with at this stage with the amount of staff that we have and the resources that we have;”*

**Non AVT 10:** *“resources, sorry, um, definitely the staffing, um it would be nice to see maybe teachers a little bit more involved;”*

**Non AVT 7:** *“I think just having enough resources like, being able to do whatever activity I want to do like I’ve googled awesome activities but I just don’t have the stuff here and the, and the busyness I don’t have time to prepare;”*

**Non AVT 8:** *“whether I think it’s [resources] enough, I don’t think so. I could always do with more. I think every speech therapist would say that or audiologist so ja, we never have enough things;”*

**Non AVT 8:** *“We don’t have that much equipment.”*

## **THEME 2: DIFFERENCES IN THERAPY APPROACHES**

The participants differed in their perspectives regarding the use of therapy approaches. Two main differences were identified by the participants, formal and informal AVT and various paediatric aural rehabilitation approaches which were adopted. These sub-themes are outlined in Table 11.

Table 11

*Differences in therapy approaches*

<b>Contrast of formal and informal AVT</b>
<b>Paediatric aural rehabilitation therapy approaches</b>

**Contrast of formal and informal AVT**

All the participants reported that they were using an informal AVT approach. The participants with LSL certification (AVT 1 – 5) mentioned that their approach was informal due to limited parental involvement in the therapy sessions. The third and fifth principles of AVT stipulates the use of a family-centred approach (Goldberg & Flexer, 2001) where caregivers are instructed and involved in each therapy session in order to continue therapy in the home environment and increase the spoken language development of the child. AVT 1 – 5 were not applying these principles of AVT and argued that a pure AVT approach could only be adopted when the parent or caregiver was present during therapy, although the remaining guiding principles of AVT were adhered to. Parents only attended one AVT session during the week. The parents were not present for the other AVT sessions due to work responsibilities and commitment. This is evident in the following responses obtained from AVT 1 – 5:

<p><b>AVT 1:</b> <i>“I’ve had grannies come in and I’ve had caregivers come in and so on but that’s almost like doing it in the third person um, and that’s a little bit difficult so maybe you’re not getting pure AVT;”</i></p>
<p><b>AVT 2:</b> <i>“I realize that in the South African context it is difficult to implement AVT because you need an intense amount of parent involvement and a lot of parents just can’t give that especially if there’s transport issues or they can’t get off work. So I think that that’s really, really challenging as that’s the essence of AVT is parent involvement;”</i></p>
<p><b>AVT 2:</b> <i>“there are challenges so perhaps not a pure approach can always be followed but the principles should be applied;”</i></p>
<p><b>AVT 3:</b> <i>“So, if the parent’s not in the room, it’s not really AVT session. So for that session the parent’s there, we’re using AVT but for the other sessions, we’re using, you, know, more the principles putting listening first using the different hierarchy, to use those things, so it’s not informal, so you’re using the little bag of tricks that you have;”</i></p>

**AVT 4:** *“The only diff... difference is that it’s not pure AVT because the parents find it quite difficult to attend the therapy. They do come at least once a week but with AVT you need to have much more frequent, frequency, ah, the frequency has to be more;”*

**AVT 5:** *“I think if I’ve done that [AVT] purely that [AVT] with the children here, I would not have had success because we have children being lately iden..., late identified, we don’t work in an ideal setup, we do have language barriers, we don’t have the parents here every session.”*

In addition, AVT participants described specific techniques and strategies that were implemented during the informal AVT sessions. Estabrooks (1994) states that AVT involves strategies, techniques and procedures which enable children with hearing impairment to learn to listen and understand spoken language in order to communicate through speech. Five useful techniques identified by Simser (1999) include the hand cue, acoustic highlighting, auditory feedback, pausing and waiting and natural sequential development. All AVT participants reported using most of these techniques. Acoustic highlighting as well as pausing and waiting were considered the most effective techniques when conducting AVT.

**AVT 1:** *“I think the acoustic highlighting works well, the auditory closure works well, the rewording when the children are very little and have very little language... pausing definitely works, waiting definitely works but it’s quite a trick to get that to work;”*

**AVT 2:** *“So for me the one I find most effective is waiting. That’s one of the strategies that really has worked really well. Um, also just creating that listening attitude and demanding, having a greater expectation on the child and encouraging the parents to do so. Um, I’ve also found the sort of the whole essence of AVT with handing over to the parent. As challenging as that is at first as that the therapist really relinquished that I’ve seen good results with that when the therapist really sits back and allows the parent to elicit language. I’ve found that to be really effective um, ja, I’d say those - waiting, expectations and handing over have been really great;”*

**AVT 3:** *“I find acoustic highlighting, I really am using a lot especially for my early listeners;”*

**AVT 4:** *“highlighting, um, I think that’s a good technique, um, ah, waiting and, and, and leaning forward is also a very good technique. Um, so obviously expecting more from the child, um, presenting it to the child completely auditorily first to see if the child’s able to get anything, that also works well. Um, modelling and expecting the child to repeat the model answer without any visual cues that also helps. Um, and then just the, the basic principle..., principles of you know, detection, discrim, identification and comprehension;”*

**AVT 5:** *“seating is one... I use auditory closure, I use that a lot um, I use, um, what did you hear, what did I say... providing alternatives but that is forced alternatives... We sort of start with that visual acoustic highlighting, pausing straight away... I’ve learned to put listening first, to not change my rhythm, to not change my um, loudness but to just give it to the child naturally and then from there on scaffold, ok, and to actually use listening three times before I start scaffolding even with a pause or with a forced alternative, or with an auditory closure... So create a context that’s functional, um, and then put listening first, have your seating right and then from there on you use your techniques. But I particularly like um, waiting... That expected pause that expecting to actually respond and to wait for that respond, that I think is very important.”*

Interestingly, AVT 3 discouraged the use of the hand cue when asked whether this technique was utilized in AVT. The hand cue is used to emphasize listening and alerts the deaf or HOH child that someone is talking to them and they are required to listen (Estabrooks, 1994; Simser, 1999; Chaikof, 2014). AVT 3 reported that by being seated next to the child, a focus is already placed on listening. The hand cue was therefore seen as unnecessary providing that this seating arrangement is implemented.

**AVT 3:** *“No, no... because I find if I’m sitting next to the child, they’re not really looking at my mouth.”*

### **Paediatric aural rehabilitation therapy approaches**

In contrast to the previous theme which displayed the use of formal and informal AVT, Non AVT 6 – 10 reported using a combination of paediatric aural rehabilitation approaches. These participants reported including an informal AVT approach as they did not have the required AVT certification to conduct formal AVT. Non AVT 7 – 9 incorporated certain techniques and approaches according to the components of the listening hierarchy and the listening level at which the deaf or HOH child was functioning.

**Non AVT 7:** *“the hierarchy of detection, um, discrimination, identification, comprehension so we plot where each child is and they’re not all on the same stage and we work on that level;”*

**Non AVT 8:** *“I’m struggling with the, with the identification of sounds. I think that initial, that initial detection of sound is really problematic cause it’s so difficult for me to identify if the child’s hearing, if they’re not hearing and the responses are so inconsistent and you’re not sure if you need to make the hearing aid louder and they can’t necessarily tell you;”*

**Non AVT 8:** *“in terms of the younger children it was iden, ah, just detections of sounds basically are they able to um, hear environmental sounds first;”*

**Non AVT 9:** *“depending on the level they were at, if they were um, at detection or identification.”*

In addition, many Non AVT therapists reported introducing new concepts supplemented with Sign Language in order to provide a means of communication as the child begins to develop spoken language. The responses are evident from the following quotations:

**Non AVT 6:** *“I wouldn’t, um, just use oral language;”*

**Non AVT 7:** *“I don’t just do aural rehab listening skills with them, I also work on language comp..., well not, I don’t want to say language comprehension but like ECI activities as well with them;”*

**Non AVT 7:** *“something I do with most of my kids is I introduce sign, not because I think they’re not going to cope but because I feel like the age at which we’re identifying hearing loss;”*

**Non AVT 7:** *“in the meantime while they’re still getting their listening skills up to par we try and give them some signs just to give them a way of communication;”*

**Non AVT 8:** *“I was also providing them with um, Sign Language just to provide a form of communication for them with the parents so it wasn’t just, for me I don’t do it just in isolation with just the auditory. I try to use visual cues as much as possible especially for the younger kids;”*

**Non AVT 10:** *“if you’re gonna explain a whole concept, you’ll explain it in Sign Language.”*

Non AVT 6 and 10 mentioned implementing the use of Signed English in their aural rehabilitation sessions. This was due to a bilingual-bicultural approach being adopted at the employment setting of these therapists. SASL was viewed as the child’s first language used in education with the written form of a spoken language, in this case, written English as the child’s second language. These therapists reported that by introducing Signed English, the children receiving aural rehabilitation were exposed to spoken language while still being taught in their first language of SASL. This is conveyed in the following responses:

**Non AVT 6:** *“because Sign Language is our kids’ first language, um, everything’s instruct..., we greet the children in Sign Language and everything’s instructed in Sign Language and whatever. But um, we focus a lot on speech and lip reading whenever we’re within the session. So it’s, ah, definitely a good balance of both;”*

**Non AVT 10:** *“if we’re targeting or no we’re aiming at, you know a certain sentence or phrase or whatever, then we will use Sign..., then we’ll use Signed English with, with voice so that, you know, we’re doing a bit of everything and they, they’re still on track with us.”*

An overview of the factors considered by the therapists contributing to the selection of the appropriate aural rehabilitation therapy approach for deaf or HOH children is provided in Table 12. Each factor will be discussed in further detail under theme 3 and the supporting comments provided by the participants will be included.

### **THEME 3: IMPLEMENTATION AND CONTRIBUTING FACTORS**

The thematic analysis revealed nine sub-themes that are attributed to the implementation of aural rehabilitation therapy approaches and AVT. These sub-themes are listed in Table 12 and are discussed thereafter.

Table 12

#### *Implementation and contributing factors*

<b>Further training</b>
<b>Financial responsibility</b>
<b>Factors for successful implementation of aural rehabilitation or AVT</b>
<b>Awareness and benefits of AVT</b>
<b>Emotional status of the parent</b>
<b>Parental involvement</b>
<b>Carry-over into the home environment</b>
<b>Language stimulation</b>
<b>School placement</b>

#### **Further training**

When asked about what factors contributed to the implementation of a successful aural rehabilitation programme, all the participants reported a need for ongoing and further training in the area of aural rehabilitation. AVT 1 – 5 emphasised the importance and invaluable insight

obtained from the LSL course. These therapists reported that the LSL training should be mandatory when working with deaf or HOH children as they felt they were inadequately trained prior to the completion of the LSL training.

**AVT 2:** *“I actually don’t think therapists are well equipped and I do think it’s essential that it becomes a postgrad requirement that in order to work in this field, I think that all therapists should have additional postgrad training;”*

**AVT 2:** *“I just, I think it should be mandatory that therapists have the training in order to do, to do the AVT;”*

**AVT 2:** *“I feel now since I’ve done the course, um, from an undergrad level no, but from doing additional training, I do feel adequately trained;”*

**AVT 3:** *“I think if you want to work with hearing impaired children, you must do the LSL course;”*

**AVT 4:** *“I think that does prepare the um, other professionals out there, private professionals on how to do AVT;”*

**AVT 5:** *“Ok, you have to do the language spoken listening course, um, I think that’s very valuable.”*

All therapists regardless of LSL certification provided suggestions of what should be included as part of the undergraduate qualification in order to improve training of newly qualified therapists conducting aural rehabilitation. Most of the therapists reported that there is insufficient focus on aural rehabilitation at an undergraduate level due to the numerous areas of audiology covered over the duration of four years. In addition, an increase in practical exposure to aural rehabilitation was recommended prior to the final year of study.

**AVT 2:** *“I think that at a undergrad level, there’s just not enough focus. I can only speak from my University that I attended, but there’s just not enough focus on an undergrad level;”*

**AVT 3:** *“I think they need to increase the module of the theory of it and I think they need to increase the practical component as well. Um, I think it should be further studied, there’s too much to study in four years. But I think there needs to be enough exposure that the therapist understands why it’s so important and why they need to do further studying;”*



**AVT 3:** *“Because they’re not really doing it at an undergrad, or, like, in the course, because we supervise fourth year students here for the aural rehab prac and the first time they’re seeing a hearing impaired child was in fourth year so...”*

In contrast, AVT 4 stated that the undergraduate qualification provided a sufficient foundation to the field of aural rehabilitation and advocated that further training in aural rehabilitation should be considered a postgraduate qualification once the audiologist has decided that this is an area of interest.

**AVT 4:** *“No, I think at an undergraduate level, and I mean this with no disrespect. I just don’t think that the students are ready enough to actually um, undertake a project like this. I think um, because hearing impairment is so precious in a way you cannot waste time, ah, I think students learning about it without a qualified professional there is actually wasting the child’s time. I think it’s something that has to be taken very seriously and I, I definitely, I strongly believe it’s a postgraduate qualification.”*

Furthermore, therapists reported the need for further training and continued professional development within the field of aural rehabilitation. The therapists mentioned that further training needs to focus on aural rehabilitation being culturally and linguistically appropriate to the context of South Africa. In addition, they reported that most of the theoretical content refers to AVT conducted in more developed countries which is considered an ideal environment. This highlights the dearth in research in the area of aural rehabilitation in developing countries such as South Africa.

**AVT 4:** *“you see I think what’s difficult is that South Africa compared to overseas is a very different context;”*

**AVT 4:** *“more online coaching would be, really would be beneficial where ah, people can have an opportunity of presenting um, the child that they’re seeing together with the therapy plan and how they’re doing the therapy. I think it’s great to have it on paper but I think actually seeing it is much more different;”*

**AVT 5:** *“we don’t work in an ideal setup;”*

**AVT 5:** *“I do think that even if you are trained to have follow-up courses will be, will be a great asset, but I think for, for a basic to answer your question, you at least have to do an, an LSLSA course. I don’t think that just with a traditional speech, um, speech therapy degree, that you will be an effective, um, therapist for the hearing impaired child when you want to do auditory-verbal therapy principles with that child;”*

**Non AVT 7:** *“I think if they start looking at aural rehab as more of a um, culturally and linguistic appropriate approach for South Africa.”*

AVT 4 emphasised the need for more therapists to obtain the LSL training in order to be adequately qualified to provide this service to deaf or HOH children. Khoza-Shangase and Michal (2014) confirm that there are a limited number of qualified AV therapists in South Africa. This may therefore be a contributing factor when selecting AVT as the most appropriate aural rehabilitation approach as there are few qualified therapists who are able to provide effective and optimal AVT.

**AVT 4:** *“for me in terms of AVT and and aural habilitation happening here, I think um, the barriers is having qualified people to do it and I think even if you’re not qualified to have really good mentorship and I think those are the two things that are important.”*

### **Financial responsibility**

Most of the participants reported financial implications associated with the selected therapy approach which included the costs of fitting of appropriate hearing technology, maintenance of the hearing devices, continuous aural rehabilitation sessions and future schooling requirements. These therapists further reported that in many cases it is the responsibility of the parent to account for these expenses. Government hospitals in Gauteng currently only allow deaf or HOH children to be fitted with one hearing device. It is the parents’ responsibility to account for the cost should the child require a second device.

**AVT 3:** *“because of lack of funding in the government sector;”*

**AVT 4:** *“I think, ah, our cochlear implant situation is different in South Africa because ah, she was fitted at [Name of institution] and um, they only allow one, yes, because it is state funded;”*

**AVT 5:** *“I don’t think that is in place, in terms of infrastructure, financial um, means of actually giving that child a cochlear implant when he needs it at the age of two or at the age of six months, maybe he hasn’t even been identified.”*

Non AVT 9 reported that transport costs may have a direct impact on the maintenance of hearing devices. Many deaf or HOH children who have received hearing devices from government hospitals have difficulty in accessing the hospital for regular hearing aid checks. One issue that

was reported was that children may not have a functioning hearing aid due to not having batteries which is a direct result of transport costs.

**Non AVT 9:** *“And also just general care and quality impact on that um, and how things like transport to get the batteries and ok, ja, fine, they’ll get the batteries for free but they’ve got to be able to get here to get the batteries, so how many days are the kids going without the hearing aids cause it didn’t have batteries and no one could get batteries, um, so I find the care of the hearing aids very poor.”*

In addition to the financial costs attributed to the family of the deaf or HOH child, AVT 4 reported that the LSL training is costly to the therapist. The LSL training involves assignments, time required for preparation, feedback sessions on assignments as well as attending lectures for the duration of the training. The cost of the LSL training may be a direct cause of the limited number of therapists who have obtained the LSL qualification in South Africa.

**AVT 4:** *“It was actually quite expensive, um, so I know a lot of people haven’t really followed that route, It’s quite a high, it’s quite a um, it’s a qualification that needs a lot of maintenance um, as such from a financial point of view.”*

### **Factors for successful implementation of aural rehabilitation or AVT**

AVT participants were asked to provide possible factors that may contribute to the successful implementation of aural rehabilitation with emphasis on AVT in Gauteng. A factor which raised concern and was reported by most of the AVT participants is the limited number of therapists who have participated in the LSL training in South Africa. Other factors included early identification and intervention, appropriate amplification and parental involvement. These factors emerged as sub-themes under challenges associated with the commencement and implementation of an appropriate aural rehabilitation approach. These factors are evident in the following statements obtained from the AVT participants:

**AVT 3:** *“I think early identification, um, appropriate amplification, parent involvement and a trained therapist. Because I don’t think there are enough trained therapists in this country;”*

**AVT 4:** *“So obviously early detection, um and intervention, um, parental involvement, child um, potential, learning potential and I think qualified therapist. I think those um, and also the right setting, ah, if we looking at the child from a preschool point of view, I think those factors really help in terms of, of, um really promoting the child to become a successful communicator and also um, a successful oral communicator;”*

**AVT 5:** *“we need more clinicians trained in that field, especially in our rural areas ... we need more therapists trained in, in auditory-verbal therapy, um, that’s that’s what I think because I think we lack, we lack man power almost um, especially if, if the child is not living close to a main city.”*

### **Awareness and benefits of AVT**

Non AVT participants varied in their responses regarding their awareness of AVT. Non AVT 6 reported that there was no mention of AVT during her undergraduate qualification. A possible reason for not being exposed to AVT at an undergraduate level is that AVT is a relatively new approach implemented in the South African context. The LSL programme officially commenced in South Africa in 2011 subsequent to the original AVT training conducted with certain therapists by Warren Estabrooks, the founder of AVT, in 2010 (LSLS South Africa, 2011).

**Non AVT 6:** *“Not at varsity. I know it’s mentioned sometimes in the cochlear implant meetings and um, [Name of AV therapist] ran a workshop on it and ja, so, it has been mentioned, ja, I’m not specifically trained.”*

Non AVT 9 became confused with the term AVT and referred to AVT as auditory-visual therapy. Auditory-visual therapy refers to audible speech information combined with lip-reading (Garstecki & Erler, 2009). This differs to AVT as the primary emphasis with AVT is placed on access to learning through the auditory modality and visual cues are removed in order for the child to develop the auditory system through directed listening practice (Brown, 2009). Furthermore, speechreading is not a primary teaching strategy and this visual information is reduced or eliminated during therapy by covering most of the face while presenting speech stimuli (Estabrooks as cited in Brown, 2009).

**Non AVT 9:** *“What do you mean by... auditory, auditory-visual?”*

In contrast, Non AVT 7 reported receiving a solid theoretical introduction to AVT as part of the aural rehabilitation module in the undergraduate degree although further detail regarding specific AVT techniques and strategies used during therapy was not covered.

**Non AVT 7:** *“I would say I know a good introduction to it, um, bearing in mind my introduction was five, six years ago now if you look back when I studied, how much I remember from it is another thing but I have all the notes and stuff but um, ja, I, I think I’ve got a solid introduction to it. I don’t know all the nitty gritty and exact way they expect things to be done.”*

Non AVT 7 commented that the focus on AVT at an undergraduate level may have been because the university had access to an institution where AVT was conducted daily. In addition, the AV therapist employed at this institution provided students with theoretical and practical sessions on AVT as part of the aural rehabilitation module and students were permitted to observe these sessions.

**Non AVT 7:** *“She gave us classes on aural rehab and obviously she’s an auditory-verbal therapist and not actually in a speech therapist. So, um, ja. I feel like we were very well trained because we had training from her and then we physically went to [Name of institution], we watched her give therapy and then we had our patients.”*

Non AVT 7 further reported that the university at which she obtained her qualification advocated the implementation of AVT which resulted in a focus on AVT as an optimal aural rehabilitation approach to be adopted.

**Non AVT 7:** *“Like when we learnt at varsity, we did learn mostly about AVT;”*

**Non AVT 7:** *“I also feel like [Name of University] maybe focuses a bit more on auditory-verbal approach cause they’re very behind that, they, they like that approach.”*

AVT participants were asked to comment on what was needed in order to raise awareness regarding AVT implementation in Gauteng. AVT 2 mentioned the importance and continuation of the LSL training. Many private audiologists focus on the provision of appropriate hearing devices and are not providing aural rehabilitation post amplification fitting. AVT 2 reported that awareness is required regarding the importance of aural rehabilitation with focus on AVT for audiologists employed in the private sector. In addition, AVT 3 reported the need to educate therapists in the field of aural rehabilitation regarding AVT as many therapists are not aware of the benefits of AVT and some have not heard of AVT. This may result in improved implementation of aural rehabilitation in South Africa specifically Gauteng as by encouraging the use of AVT, aural rehabilitation is encouraged.

**AVT 2:** *“I think training like the LSLs was, was great and I think that should be continued for therapists to do and to create more awareness, particularly with audiologists in that often many children in the private sector are fitted and there’s not a sufficient rehab following their fitting. So I think that particularly in private audiologists there needs to be a greater awareness of, of AVT and exactly what it entails;”*

**AVT 3:** *“I think greater awareness amongst therapists because most therapists don’t know the approach exists.”*

In addition to raising awareness, the AVT participants mentioned several benefits of AVT which are articulated below. AVT 2 reported that AVT is relevant to the South African context despite challenges such as early detection and intervention, provision of amplification devices, resources and bilingualism that emerged as themes.

**AVT 1:** *“For me, at this stage, AVT has worked very well;”*

**AVT 4:** *“AVT has been great because especially with the early learning to listen sounds, ah um, listeners, we used to often use noisemakers and its, AVT actually taught us that noisemakers don’t really help us and from a training point of view, training the kids to listen, so from that point of view we use more of the AVT ah, therapy because we use more learning to listen sounds;”*

**AVT 2:** *“So I think those are a lot of challenges that we have in our country but I think despite that there’s a lot of relevance, because good research has shown the effects of AVT and how with when you follow those principles of early intervention, state of the art amplification, guiding and coaching the parents, you see good results and children can follow typical developmental patterns of audition and language. So, I do think it’s relevant in our country.”*

### **Emotional status of the parent**

An additional factor that may influence the success of an aural rehabilitation programme is the emotional status of the parent. AVT 1 commented that many of the parents are initially shocked to be included in AVT and feel anxious and insecure about conducting therapy correctly.

**AVT 1:** *“Now with AVT I include the parents and for many of them in... initially it’s like a shock ah, why would you want me there? Am I doing it right? Am I not doing it right?”*

In addition, AVT 1 stated that a possible reason for little or no parental involvement may be the stage of grief that the parent is experiencing. The stages of grief include shock, denial, grief, guilt, anger and acceptance (Tye-Murray, 2009). Once the parent is in the acceptance stage, AVT 1 reported better parental involvement and noticed that parents are able to conduct therapy easier and more readily.

**AVT 1:** *“You have uninvolved parents and ja. But having said that, I think that a lot of that is based on the grieving, you know, and I think once we underst..., once we understand where they are in terms of acceptance*

*um, it's a lot easier and I must also say to you that a lot of parents I think don't know or, or do... or feel insecure in, in, in doing any sort of language thing for their children."*

AVT 4 reported that the emotional status of the parent may be related to delayed commencement of intervention. Children are diagnosed with hearing impairment at a later age in South Africa (Khoza-Shangase, Barratt & Jonosky, 2010). The audiologist routinely provides the parent with information regarding the different aural rehabilitation approaches subsequent to informing the parent of the child's hearing loss. Tye-Murray (2009) confirms that parents may pass through several stages of grief when they are informed of their child's hearing loss. The parent may not be able to absorb this information due to the stages of grief associated with any traumatic experience such as finding out that their child has a hearing loss. The parent may need further information regarding these aural rehabilitation approaches once they have accepted the child's hearing loss. Thereafter additional time may be required for the parent to make an informed decision regarding the best communication option for their child which results in further delay for the commencement of intervention.

**AVT 4:** *"What happens is that the child gets missed then the child gets referred to HI-HOPES um, they take on a different approach to oral um, then by the time the parent figures things out they don't know what options they have and I think that can be detrimental."*

### **Parental involvement**

All participants mentioned the importance of parental involvement during the aural rehabilitation programme in order for optimal success to be achieved by the deaf or HOH child. The amount of parent support was variable and differed from the Non AVT participants to the AVT participants. Most of the Non AVT participants reported little or no parental involvement as a result of transport issues which was seen as the main problem. Two Non AVT participants were employed at a school for the deaf. This resulted in the child receiving aural rehabilitation at school while the parents were at work resulting in no parental involvement. Two Non AVT participants were employed at a government hospital in Gauteng. The children were unable to attend regular aural rehabilitation sessions as they were unable to obtain transport to the hospital with their parents resulting in limited parental involvement.

**Non AVT 6:** *"No, our family involvement's very poor. So the families are not involved at all."*

Non AVT 8 reported contrasting findings as some parents were non-compliant which resulted in poor parental involvement, commitment and attendance of both the deaf or HOH child and the parents during aural rehabilitation sessions.

**Non AVT 8:** *“they stopped coming and they haven’t come for two years now, so the compliance there is really poor.”*

In contrast, Non AVT 8 commented that some of the parents were highly committed and attended every aural rehabilitation session with their child. A possible explanation for the differences in findings is the level of awareness of the parent and the knowledge that has been provided to the parent regarding the child’s hearing impairment.

**Non AVT 8:** *“I have other people that have de... newly developed that their children have a hearing loss and they’ve been fantastic, they come without fail;”*

**Non AVT 8:** *“But ja, they are relatively good I can say but let’s say out of, how many have I just mentioned? Um, about six or seven, maybe two or two parents or just maybe a little bit more problematic by getting them to come here than others;”*

**Non AVT 7:** *“Generally the higher educated family, like, not even like a families that have actually finished matric, not even going to get a degree, or families that are working, those are your families that will actually do the stuff. The families that have a little bit of a lower education and finish high school, they don’t really have a job now. I’m generalizing, but those are usually the ones we’re finding are not doing the things but the families that are slightly more educated, they are like, can understand why they have to do it. So they do it.”*

In addition, Non AVT 8 reported working closely with the HI-HOPES organization. Non AVT 8 referred some of the deaf or HOH children who were unable to attend the aural rehabilitation sessions on a weekly basis at the institution to HI-HOPES. This resulted in these children receiving weekly aural rehabilitation from a HI-HOPES representative at their homes.

**Non AVT 8:** *“And HI-HOPES um, are, see where, where the parents are lacking in certain to come here, HI-HOPES are picking up a lot of that slack for me so HI-HOPES see them every week.”*

Most of the AVT participants commented that the parent was only involved in one aural rehabilitation session per week. This was viewed as not being ideal and was considered the main contributing factor for AVT participants not conducting a formal AVT approach. The AG Bell Academy (2012) states that AVT promotes active parent or caregiver participation and



involvement in every session. In addition, the third and fifth principles of AVT advocate the use of a family-centred approach where the primary caregiver is instructed in order to provide maximal acoustic stimulation for the deaf or HOH child (Goldberg & Flexer, 2001). This is in accordance with the third pre-requisite of AVT which stipulates the need for full parent or caregiver involvement during AVT intervention (Chowdhry, 2010). Possible reasons for limited parental involvement reported by the AVT participants included transport issues and work responsibilities.

**AVT 2:** *“It depends. So for some of the children I see, I’d say the family involvement is great and for others I’d say it’s quite poor um, and not where it should be um, so, ja, we try to encourage as much as possible but often if the children are coming to school via transport then we don’t see the parents and the parents are not in therapy as much as we’d like. So for some kids it’s good and for others it’s not good;”*

**AVT 2:** *“I realize that in the South African context it is difficult to implement AVT because you need an intense amount of parent involvement and a lot of parents just can’t give that especially if there’s transport issues or they can’t get off work. So I think that that’s really, really challenging as that’s the essence of AVT is parent involvement;”*

**AVT 3:** *“I find parent commitment sometimes very difficult;”*

**AVT 3:** *“I definitely think it would be ideal if the parents could come to every single session, um, but parents have to work, so it’s understandable why they don’t;”*

**AVT 4:** *“I think any time if you can get a parent watching every session of yours, it’ll be ideal.”*

In addition, AVT 1 highlighted the importance of parental involvement during AVT. Parents were viewed to be more committed to AVT as well as the AV therapist which resulted in better communication between the parent and therapist. AVT 1 further reported that the majority of parents were actively involved in the AVT sessions although there were still a few parents that were uninvolved.

**AVT 1:** *“it’s better to involve the parents, far better on many levels. They’re more committed to therapy, they um, ah, are more committed to me, they ah, the communication is much better, um, so, ja, I can’t actually imagine doing therapy without the parent involvement um, anymore. But it is very difficult, yes, it is very difficult. You have uninvolved parents and ja.”*

### Carry-over into the home environment

Most of the AVT participants interviewed felt that the parents were able to carry-over what was covered in the AVT session into the home environment. This was attributed to the amount of parental involvement in the AVT session as well as the instruction provided by the AV therapist. The fourth, sixth and seventh principles of AVT highlight the need for integrating listening and spoken language into the child's daily environment (Goldberg & Flexer, 2001) which emphasizes the importance of carry-over and generalization into the home context.

**AVT 1:** *"I demonstrate, I guide, I hand over to the parent and we discuss and each session starts with what did you do at home, how did it go at home;"*

**AVT 3:** *"Ja, I feel that they are;"*[able to carry over what was covered in therapy into the home environment]

**AVT 4:** *"Most, they're able to do most of the things;"*

**AVT 5:** *"That also depends on your parent. Mmm. And the time that they have on their hands."*

Non AVT 7 and 8 reported similar findings to the AVT participants as most parents were able to take what was learnt in therapy and apply it in the home environment. In addition, home programmes and communication strategies were provided to encourage generalization into the home environment.

**Non AVT 7:** *"I teach the parent how to facilitate and the parent how to do things at home;"*

**Non AVT 8:** *"so I definitely think that a lot of it was carried over to home and when they come back they're very like, you know they wanna tell you exactly what they did and things like that so definitely think that, you know we, I do..., I don't give anything in paper but I do definitely give them communication strategies at home to improve their communication, reduce frustration but also to target the actual reason for aural rehab and just getting them to listen to environmental sounds and things like that."*

In contrast, Non AVT 6, 9 and 10 reported poor carry-over into the home environment. This may have been a direct consequence from little or no parental involvement in the therapy sessions. This resulted in minimal or no communication between the parent and therapist which may have a negative impact on the progress of the deaf or HOH child. Goldberg (1997) confirms

that the child may not make as much progress if the parent or caregiver is unable to commit to the amount of involvement required in aural rehabilitation.

**Non AVT 6:** *“we send home, with every new theme that we do, we send home a take home worksheet with all the vocab, some reading words um, and stuff that they can do at home to practice, like pointing out your local police station and um, but I haven’t had a question or a query or a thank you or anything on it in the whole of last year. So I don’t know if any of our parents do it;”*

**Non AVT 9:** *“I didn’t actually ever speak to them [parents] or have phone contact like that with them um, but I did send um, like little, like almost tips, home tips and also language stimulation advice. Um, it wasn’t necessarily specific to aural rehab though um, and just general care about the hearing aid. I never got any response from anyone. You write in the diary and then you don’t know if anyone actually reads it.”*

### **Language stimulation**

AVT 3, 4 and 5 encouraged language stimulation as part of the child’s daily routine in order to save time, reinforce what was covered during the AVT session and to make what was covered in therapy more functional for the child. In addition, the aims of the session were discussed with the parents before commencing with AVT and suggestions were provided at the end of the session as to how they can conduct this activity at home in a more natural setting. Estabrooks (1994) confirms the importance of AVT following natural speech and language development and focusing on daily routines to encourage listening.

**AVT 3:** *“I, in my session, because I always discuss my aims with the parent and then at the end of the session or after each activity I always say to them how you can do this at home;”*

**AVT 3:** *“we discuss how they can do it at more natural activities, how they can take that aim and do it, so that’s my homework. And if it’s something more formal, if they’re a bit older, I do send home like paper-based stuff sometimes;”*

**AVT 4:** *“I try and make sure that homework is something they can do just as the day goes on, not something where they have to sit down and do five minutes or ten minutes of homework;”*

**AVT 4:** *“But what I do give parents is that I often give them um, pictures or, or ideas of how to encourage the language while they’re in the car or while they are sitting down for supper, um, so it becomes part of their routine;”*

**AVT 5:** *“I try to create a learning opportunity for them here to actually feel comfortable to respond at home to the child’s language in a way that they will help the child to facilitate development.”*

### **School placement**

Most of the AVT participants emphasized the importance of school placement when selecting the most appropriate aural rehabilitation approach. The ninth principle of AVT refers to the mainstreaming and integration of children with hearing impairment into regular education settings (Goldberg & Flexer, 2001). The AV therapist guides parents in helping their child to develop intelligible spoken language through listening and coaches them in advocating their child’s inclusion in the mainstream school (Goldberg, Dickson & Flexer, 2010). Parents gain confidence that their child will benefit from the full range of educational, social and employment opportunities (Goldberg, Dickson & Flexer, 2010). The participants further reported that although AVT had been implemented, not all children would be mainstreamed. Mainstreaming is viewed as the ultimate goal of AVT (AVI as cited in Goldberg & Flexer, 2001) however other factors may determine whether the child can cope in a mainstream setting. These factors may include the aetiology of the hearing impairment, parent commitment, child’s learning potential and the age at which the child is diagnosed with hearing impairment. The aetiology of a hearing impairment is defined as the cause of hearing impairment (Gelfand, 2001).

**AVT 2:** *“One of the [AVT] principles speaks about inclusion, in terms of schooling into a mainstream school. That’s not always possible in our setting. Um, they often don’t go to mainstream schools. Um, they often do go to remedial or special needs schools so that principle’s not always happening;”*

**AVT 4:** *“It differs. Um, some hearing impaired kiddies, I mean I’ve had hearing impaired kiddies that have mainstreamed, I have hearing impaired kiddies that have gone to remedial setting and I have hearing impaired kids that have gone to a special needs setting. So it, it’s quite different because if their aetiology of the hearing impairment, it is how committed the parents are, it’s how the, the child’s learning potential, um, it’s also dependent on early detection. There’s a lo., there’s a variety of factors that will determine whether the child will be able to be ready for mainstream or remedial or special [school].”*

Non AVT 7 and 8 who were based at a government hospital in Gauteng reported the importance of appropriate school placement usually into a school for the deaf. These deaf or HOH children would continue to receive aural rehabilitation from a therapist based at the school for the deaf.

**Non AVT 7:** *“I think our youngest is two so they do need a way to communicate and the parents are anxious to start potty training and get them into a school;”*

**Non AVT 8:** *“we’ve also encouraged the appropriate school placements so a lot of the children are going to schools for the deaf and therefore we no longer have to see them and then they’ll be receiving the appropriate therapy elsewhere. So our end goal is to put them in appropriate schools so that’s what we’ve been doing.”*

Non AVT 6 and 10 who were based at a school for the deaf in Gauteng reported that the deaf or HOH children enrolled at the school would not mainstream. The school for the deaf promotes a bilingual-bicultural approach where Sign Language is viewed as the child’s first language with written English as the child’s second language. The definition of mainstreaming is when a child with hearing loss attends classes with normal hearing children (Tye-Murray, 2009). A mainstream school advocates the use of spoken language and some children may utilize support services such as FM systems (Tye-Murray, 2009) which contradicts the beliefs in the bilingual-bicultural approach.

**Non AVT 6:** *“where the kids are gonna go oral because that’s not what we do here;”*

**Non AVT 6:** *“our kids are not gonna mainstream or go remedial.”*

## CHAPTER 5

### Discussion

*This chapter will address the discussion of the findings of this study in relation to the themes presented in Chapter 4. The themes will be discussed in relation to literature from international and local sources. In addition, specific issues highlighted by the provision and relevance of AVT intervention in Gauteng, South Africa will be discussed.*

The research study was conducted to determine the relevance of AVT provided by audiologists in Gauteng, South Africa. In addition, the research study examined the differences between AVT and general paediatric rehabilitation therapies implemented by audiologists as well as the impact of language on the implementation of AVT. Furthermore, the study aimed at determining the challenges that were associated with training regarding formal and informal AVT as well as contributing factors which needed to be considered by audiologists for the deaf or HOH child when selecting the most appropriate aural rehabilitation therapy approach to be implemented.

### THEME 1: CHALLENGES

The second sub-aim of the study aimed to investigate the impact of language on the implementation of AVT. This was evident in the first main theme where participants identified challenges associated with the commencement and implementation of aural rehabilitation with deaf or HOH children. Among these themes was the challenge of bilingualism where the majority of children seen for aural rehabilitation or AVT presented with English as their second language. All of the identified themes will be discussed in further detail with emphasis on the impact of language in terms of bilingualism when implementing AVT.

Aim 2	Sub-themes
Impact of language	• Early detection and intervention
	• Amplification devices
	• Bilingualism
	• Resources

### **Early detection and intervention**

The late identification of hearing loss is a well-documented phenomenon (Eleweke, Gilbert, Bays & Austin, 2008; Gray, Jones, Shipgood & Court, 2003). The basis of early detection and intervention is timely diagnosis of a hearing loss and prompt intervention to provide the child with opportunities to develop language. Lack of awareness by primary care workers and parents can cause delays in the process. Early identification and intervention have been proven to be key factors in the effective acquisition of spoken language and the potential for developing age appropriate communication skills (Pittman, Lewis, Hoover & Stelmachowitz, 2005; Ramkalawan & Davis, 1992; Young, 2002; Yoshinago-Itano & Apuzzo, 1998). Similarly, with hearing impaired children, early intervention plays a crucial role in the effective development of linguistic, social as well as academic skills (Magnuson, 2000; Swanwick & Tsverik, 2007).

Research conducted by Van der Spuy and Pottas (2008) revealed that the average age of identification of hearing loss was about 23 months in South Africa. This is very late in comparison to the guidelines stated in the early hearing detection and intervention programmes (EHDI) by the HPCSA (2007), which emphasises that the diagnosis of a hearing loss should occur before four months of age. In addition, the study also revealed that the average age for participation in an early intervention programme was about 31 months of age in South Africa (Van der Spuy & Pottas, 2008). These findings are considered significantly late when compared to the recommendations set out by the EDHI programmes in the South African Position Statement which state that infants with hearing loss should receive intervention before 6 months of age and no later than 8 months of age (HPCSA, 2007). Findings obtained by Khoza-Shangase and Michal (2014) revealed that children's ages ranged from 3 months to 5 years 3 months with an average age of 2 years 5 months for the age at introduction into an aural rehabilitation programme. These findings were consistent with findings obtained by Swanepoel and Storbeck (2008) where the age of enrolment into an early intervention programme was 31 months. These findings are concerning and indicate a significantly delayed point of entry into aural rehabilitation (Khoza-Shangase & Michal, 2014). A number of recommendations have been proposed internationally and locally to lower the age of identification. Van der Spuy and Pottas (2008) suggest recommendations such as compulsory neonatal screening as well as regular education of parents and primary care workers on the key indicators and manifestations of a hearing loss in order to assist with early diagnosis.

In terms of early detection and intervention, participants revealed that the majority of deaf or HOH children seen for aural rehabilitation or AVT were diagnosed with hearing loss after four months of age. These children therefore commenced with aural rehabilitation at a later age due to their late diagnosis. Khoza-Shangase and Michal (2014, p. 2246) confirms that “delayed point of entry into aural rehabilitation is consistent with delayed identification” and highlights the importance of “universal neonatal hearing screening and/or targeted screening at the neonatal period to ensure early identification.” Late identification of hearing loss is viewed as not conducive to the implementation of AVT as early detection of hearing loss is considered a pre-requisite of AVT (Chowdhry, 2010). The participants reported that late identification of hearing loss had a negative impact on the fitting of amplification devices and subsequent intervention. AVT promotes the early and appropriate use of amplification in order for maximum benefits to be achieved (Goldberg & Flexer, 2001). Late identification of hearing loss therefore has a direct repercussion on the fitting of amplification which affects the commencement of intervention. AVT participants reported that children may not receive the optimal benefits of AVT due to late identification. The results suggest that detection and identification of hearing loss has a profoundly negative impact on the commencement of aural rehabilitation. Deaf or HOH children are therefore not being exposed to language in the form of an aural rehabilitation programme at a young enough age in order for optimal benefits to be achieved. This delay in intervention has a profound impact on the ability of the deaf or HOH child to develop spoken language.

AVT may therefore not be considered as the most ideal approach to be used in this context as the ultimate goal of AVT is to facilitate spoken language through listening (AG Bell Academy, 2012). In addition, AVT should commence at an early age as the child’s greatest facility for learning language occurs during the first two to three years of life (Chaikof, 2014). The majority of children only commence with AVT later than two years of age and have therefore lost out on this critical period for auditory development (Swanepoel & Storbeck, 2008; Van der Spuy & Pottas, 2008; Khoza-Shangase & Michal, 2014). AVT intervention may therefore not be considered relevant in South Africa as late identification of hearing loss and subsequent delayed intervention may be attributed to inadequate support services for early intervention in South Africa as is the case in many other developing countries (Olusanya et al., 2007). Furthermore, Van der



Spuy and Pottas (2008, p. S34) suggest that the “development of comprehensive and responsive early intervention services is in its infancy.”

### **Amplification devices**

Consensus was evident among all participants that the provision of amplification devices influenced the success of the aural rehabilitation programme, especially when implementing AVT. AVT focuses on auditory input rather than visual input, “early identification of hearing loss and optimal amplification in order to enhance access to the speech signal” (Caleffe-Schenck; Lim & Simser as cited in Fairgray, Purdy & Smart, 2010, p. 408). The advancements in amplification and cochlear implant technology have resulted in many listening opportunities and improved access to sounds for deaf or HOH children (Chowdhry, 2010).

All participants in this study described the delay in providing appropriate amplification for deaf or HOH children as a result of delayed identification of hearing loss and the length of time required to provide suitable amplification. Delays in the fitting of amplification devices have been attributed to financial, administrative or medical factors (Harrison & Roush as cited in Van der Spuy & Pottas, 2008). Financial factors included limited support from the government or medical aids; administrative factors included accessibility of appropriate services or service providers in the form of audiologists and medical factors included possible chronic otitis media (Harrison & Roush as cited in Van der Spuy & Pottas, 2008). In addition, possible reasons for the delay in diagnosis and amplification in South Africa include long waiting lists for amplification as well as administrative measures used in the public healthcare system (Khoza-Shangase & Michal, 2014). Swanepoel (2009, p. 159) confirms that there are many challenges regarding the distribution of rehabilitative services in the public healthcare system which include extensive “waiting lists and inadequate equipment.”

The fitting of appropriate amplification is essential for successful AVT intervention. In the South African context, parents often rely on public healthcare systems for hearing aids where a timely administration process precedes the availability and accessibility of hearing aids (Van der Spuy & Pottas, 2008). The procedure for receiving hearing aids from companies may therefore take a considerable period of time which affects the efficiency of providing hearing aids timeously

and is seen as a major factor in the delayed availability and accessibility of hearing aids (Khoza-Shangase & Michal, 2014). Khoza-Shangase, Barratt and Jonosky (2010) reported that 74% of audiologists indicated that limited parental knowledge contributed to the delay in diagnosis and amplification. Olusanya et al. (as cited in Khoza-Shangase, Barratt & Jonosky, 2010, p. 104) confirmed that limited parental knowledge in terms of hearing loss has “adverse effects on early intervention services, especially in developing countries” such as South Africa. There is an unequal distribution of audiologists between public and private health care sectors and insufficient audiologists are currently employed in the public sector resulting in increased caseloads (Khoza-Shangase & Michal, 2014). The busy schedules of audiologists employed in the public sector due to long waiting lists may contribute to delayed amplification as they have to attend to a higher patient load due to increased appointments (Khoza-Shangase & Michal, 2014). In addition, the public healthcare sector in South Africa provides hearing aids free of charge to children under the age of 6 years (Van der Spuy & Pottas, 2008, Swanepoel, 2009).

The private sector differs from the public healthcare sector as hearing aids are dispensed by the audiologist and the patient is responsible for payment of the device (Swanepoel, 2006). Many patients in the private sector have access to a private medical aid and are making use of the benefits provided by the medical aid facilities. They are making a higher monthly contribution towards the medical aid resulting in a wider range of benefits which includes a predetermined amount of cover for cochlear implantation. Swanepoel (2006) confirms that private medical aids have recently begun to contribute towards the payment of cochlear implants as well as the surgical procedure. There are currently several cochlear implant programmes conducted in South Africa. The first team performed cochlear implantation in 1986 (Swanepoel, 2006). The national number of cochlear implants have increased to “approximately 50 annual implants in 2003 and 77 annual implants in 2004 of which 17 were bilateral” (Swanepoel, 2006, p. 265). This suggests that cochlear implantation is becoming more popular in South Africa through the advancements in hearing technology.

In terms of cochlear implantation, Kerr (2011) confirms that it is not state funded in South Africa and only in certain cases will a public cochlear implant programme provide a child with one cochlear implant. Ling (1994, p. xix) suggests that children who have been “successfully fitted

with cochlear implants can usually benefit significantly from formal and informal types of AVT intervention.” Estabrooks (1994) confirms these findings as children who have successfully acquired spoken language have usually received treatment in the form of AVT following cochlear implantation.

Bilateral cochlear implantation is generally limited in South Africa due to associated financial implications. American Speech-Language-Hearing Association [ASHA] (2004) states that bilateral implantation is being studied in a limited number of cochlear implant recipients. Some benefits of bilateral cochlear implantation have been identified. The provision of bilateral cochlear implants provides children with the potential to develop binaural hearing which may improve localization of sound and perception of speech in noise (Lovett, 2010). Binaural hearing “maximizes directional hearing ability such as sound localization and alleviates the head shadow effect” (Gelfand, 2001, p. 462). Tyler et al. (as cited in ASHA, 2004) confirm that cochlear implant recipients experience enhanced speech understanding especially in noise and the primary benefit of bilateral implantation is sound localization. These spatial listening skills will assist children in becoming aware of and avoiding hazardous situations as well as improved understanding of speech in noisy environments at school and at home (Lovett, 2010). Another benefit of bilateral cochlear implantation is that the child will have a back-up device in the case where one implant has low batteries, a faulty sound processor or a malfunctioning electrode array (Lovett, 2010). This will allow the child to still receive some auditory stimulation while the one implant requires new batteries or is sent for repairs. Furthermore, bilateral implantation ensures that the “physiologically more-responsive ear will be stimulated” (Papsin & Gordon as cited in Lovett, 2010, p. 26).

In South Africa, the field of cochlear implantation has developed steadily with several centres now providing these services across the country (Swanepoel, Storbeck & Friedland 2009). Additionally, families from other sub-Saharan African countries who can afford to come to South Africa will bring their child for cochlear implantation at these centres (Swanepoel, Storbeck & Friedland, 2009). Research conducted by Khoza-Shangase and Michal (2014) focused on determining the types of amplification provided in the public sector in South Africa. The findings revealed that 5% of the participants in the study were fitted with cochlear implants (Khoza-Shangase & Michal, 2014). This low percentage of cochlear implant recipients may be attributed

to costs involved with cochlear implantation (Khoza-Shangase & Michal, 2014). Swanepoel, Storbeck and Friedland (2009) confirm that there are several persisting concerns relating to cochlear implantation within the South African context which include high costs associated with the cochlear implant, the surgery as well as follow-up services.

AVT is an effective intervention approach for children fitted with cochlear implants as AVT emphasizes the importance of audition and enhances the development of listening skills (Chowdhry, 2010; Beiter & Estabrooks, 1994). Research conducted by Hogan, Stokes, White, Tyszkiewicz and Woolgar (2008) aimed to evaluate AVT using a formal assessment of spoken language as an outcome measure. The results from the study revealed that approximately half of the children who commenced AVT using hearing aids were later fitted with cochlear implants (Hogan et al. 2008). This suggests that the hearing aids were not considered the most suitable form of amplification. The results further revealed that families of children who were fitted with cochlear implants “presented for AVT at a significantly younger age” (Hogan et al. 2008, p. 162).

Cochlear implantation can therefore be argued as the most suitable amplification for children who are enrolled in AVT intervention. The fitting of cochlear implants may result in earlier commencement of intervention. This is however not always possible within the South African context due to financial constraints. The findings obtained in this study suggest that the provision of optimal hearing technology and amplification devices is not currently in place in Gauteng. AVT may therefore not be considered as the most ideal aural rehabilitation approach to be implemented as Chowdhry (2010) states that AVT highlights the importance of fitting amplification devices at an early age. It is recommended by the standards proposed by the JCIH (2007) that evaluation procedures including hearing aid amplification must be in place before 3 months of age in order for intervention to commence by 6 months. This is not currently being achieved in South Africa as deaf or HOH children are receiving amplification at a much later age, averaging 30 months, as a result of delayed identification of hearing loss (Khoza-Shangase & Michal, 2014).

### **Bilingualism and resources**

The sub-themes of bilingualism and resources will be discussed concurrently as they directly influence each other. Participants had differing perspectives regarding available resources in the form of audiological equipment according to their place of employment. Participants employed in the government sector reported limited equipment and those employed in the private sector reported adequate equipment.

In addition, all participants reported an insufficient number of therapists and commented that more therapists were based in the private sector in comparison to the public sector in South Africa. The findings obtained in the current study are in accordance with findings obtained from international research (Enderby & Emerson, 1995; Hartley, 1998; Nippold, 2010) as well as local research (Penn, 2007; Swanepoel, 2006). Internationally, the challenges associated with the professions of audiology and speech-language therapy have been well documented. These challenges include providing services for people with communication difficulties who often have low priority in health care systems and limited availability of resources (Enderby & Emerson, 1995; Hartley, 1998; Nippold, 2010). In South Africa, these challenges are intensified as there are an insufficient number of qualified therapists to provide services to the South African population; therapists do not “represent the linguistic and cultural diversity of the country’s population and are unequally distributed between the private and public sectors” (Penn as cited in Pascoe and Norman, 2011 p. 2; Swanepoel, 2006). Khoza-Shangase, Barratt and Jonosky (2010, p. 104) argue that linguistic barriers may be the reason why parents are not provided the opportunity to select the mode of communication, since “the majority of audiologists in South Africa do not speak or understand languages other than English or Afrikaans.” Swanepoel (2006) argues that these challenges negatively affect the provision of adequate audiological services in South Africa. In addition, Swanepoel (2006, p. 265) states that “the number of qualified audiologists in South Africa is inadequate to meet the demand for services and many of these professionals enter the private sector for a more lucrative career.” Khoza-Shangase, Barratt and Jonosky (2010) confirm that the limited availability of audiological equipment in government hospitals and limited number of therapists allocated to the public sector contributes to the provision of habilitative services and are considered the main reasons for late diagnosis, delayed fitting of amplification devices and subsequent delayed intervention.

All participants acknowledged limited availability of therapy resources in other South African languages. This has a direct influence on the issue of bilingualism. Most therapists conduct aural rehabilitation in English as resources have not been developed in other languages and resources may not be contextually and culturally relevant. All participants reported that bilingualism impacts on the implementation of aural rehabilitation and AVT. Pascoe and Smouse (2012, p. 469) confirm that there is a considerable amount of literature available that “describes speech and language development and difficulties in English-speaking children.” In addition, a range of assessment and therapy materials have been developed mainly in the United Kingdom/ Europe and North America for English speakers (Pascoe & Smouse, 2012). In contrast, therapists “working with speakers of other languages lack such resources” (Pascoe & Smouse, 2012, p. 469). Furthermore, research conducted by Pascoe and Smouse (2012) confirm that little is known regarding the development of local South African languages and there are few speech and language assessments as well as therapeutic materials available in isiXhosa or other languages. This highlights an urgent need for the “development of contextually relevant assessments and resources for therapists working in South Africa” (Pascoe & Smouse, 2012, p. 471). Pascoe and Norman (2011) suggest that language is often viewed as the main barrier to contextually relevant resources as most therapists are aware of the need for more resources in local languages. The issue is not as straightforward as translating resources from English into other languages. Translating the language of a test does not make it appropriate for another population group, as the culture and context of the target population needs to be considered to avoid misinterpretation of results (Pascoe & Norman, 2011). Pascoe and Norman (2011) highlight the need for the development of more resources and further research is required to improve the quality of the resources available for local populations.

The findings from this current study are consistent with the findings obtained from the above-mentioned authors (Pascoe & Smouse, 2012; Pascoe & Norman, 2011). The results suggest that the lack of availability of contextually relevant resources in South Africa directly influences the language in which an aural rehabilitation approach is implemented which is predominantly in English. AVT advocates active caregiver involvement through family-centred intervention by instructing caregivers in ways to provide maximal acoustic stimulation which corresponds to the third principle of AVT (Goldberg & Flexer, 2001). In cases where the child’s first language is not

English, the AV therapist should encourage the child's caregiver to perform the same activity using the techniques and strategies provided by the AV therapist in the child's home language. The EHDI programmes in the South African Position Statement (HPCSA, 2007) confirm that resources are limited and there is a lack of health care professionals who are fluent in African languages in South Africa. In addition, the early intervention programme, in this case the aural rehabilitation programme, must be conducted in a way that ensures "communications with families are confidential, culturally sensitive, and in a language they are fluent in" (JCIH as cited in HPCSA, 2007, p. 14). This highlights the importance of conducting aural rehabilitation in the child's home language and AVT advocates that therapy should be conducted in the child's home language (Auditory-Verbal UK, 2014).

It should however be mentioned that only a small sample of audiologists were interviewed in this study. The audiologists recruited in this study resided and were employed in the Gauteng province, which may be better resourced than other provinces. These findings may therefore not hold true for therapists in South Africa residing in other provinces where there may be less available resources.

In conclusion, the results suggest that language directly impacts the implementation of aural rehabilitation specifically AVT. The language of the deaf or HOH child needs to be considered when deciding on the most appropriate aural rehabilitation approach. This study revealed that the majority of therapists are not conducting aural rehabilitation in the child's home language due to the lack of availability of contextually appropriate materials. In addition, the medium of instruction at most schools is English and qualified therapists are not fluent in other South African languages.

## **THEME 2: DIFFERENCES IN THERAPY APPROACHES**

The first sub-aim of the study aimed to explore the differences between AVT and general paediatric aural rehabilitation therapies conducted by audiologists. This was evident in the second main theme where participants identified two main differences regarding the use of therapy approaches. These differences included the contrast between formal and informal AVT as well as

the use of various paediatric aural rehabilitation approaches. These two differences emerged as sub-themes.

Aim 1	Sub-themes
<b>Differences between AVT and general paediatric aural rehabilitation therapies</b>	<ul style="list-style-type: none"><li data-bbox="850 411 1300 443">• Contrast of formal and informal AVT</li><li data-bbox="850 499 1373 573">• Paediatric aural rehabilitation therapy approaches</li></ul>

### **Contrast of formal and informal AVT**

A predominant finding emerging from the study is that informal AVT was implemented regardless of whether the participant had obtained LSL training. As part of the semi-structured interview, AVT participants were asked which of the AVT principles they perceived not to be relevant in the South African context. All participants reported that the third and fifth principles of AVT could not be adhered to in South Africa as most parents could not attend every AVT session due to work commitments and responsibilities. The third and fifth principles of AVT stipulate the use of a family-centred approach (Goldberg & Flexer, 2001) where caregivers are instructed and involved in each therapy session in order to continue therapy in the home environment and increase the spoken language development of the child. Goldberg (1997) confirms that the AVT depends highly on parental involvement and if parents are unable to commit to the intensity of involvement required, the child may not make as much progress (Goldberg, 1997).

From the current study, it was apparent that all AVT participants implemented AVT using an informal approach. The participants explained that a formal AVT approach could not be implemented as there was limited parental involvement. Parents could only attend one session per week due to work commitments and not every AVT session as stipulated in the principles of AVT (Goldberg & Flexer, 2001). As a result, not all of the nine guiding principles were adhered to resulting in the implementation of an informal AVT approach. Generally, when authors conduct international studies on the implementation of AVT with deaf or HOH children, a formal AVT approach has been implemented (Goldberg & Flexer, 2001; Lim & Simser, 2005; Fairgray, Purdy & Smart, 2010; Eriks-Brophy, 2004; Wu & Brown, 2004). The result obtained from this study is therefore not in accordance with international research.



Research conducted by Khoza-Shangase, Barratt and Jonosky (2010) investigated the current protocols and practices for early audiological intervention services in Gauteng government hospitals. The authors explored the perceived applicability of the principles of early intervention in the South African context. The participants comprised of various healthcare professionals including audiologists, speech therapists, paediatricians, ear, nose and throat specialists (ENTs) and nurses working in the neonatal and paediatric wards (Khoza-Shangase, Barratt & Jonosky, 2010). When the participants were asked whether or not they viewed the principles of early intervention to be applicable to South Africa, 21% felt that the principles were not applicable to the South African context due to issues such as “language barriers, cultural diversity, socio-economic factors, and lack of awareness and resources that affect the provision of audiology services in South Africa” (Khoza-Shangase, Barratt & Jonosky, 2010, p. 103). In addition, participants provided recommendations which included research into the effects of HIV/AIDS and its effect on hearing and communication development. Recommendations also included education of parents, especially in rural areas, regarding developmental milestones and detection of warning signs of ear pathology and hearing impairment (Khoza-Shangase, Barratt & Jonosky, 2010). Education campaigns aimed at promoting the professions of audiology and speech-language therapy were also viewed as an important recommendation (Khoza-Shangase, Barratt & Jonosky, 2010). The research further highlighted that educational campaigns are essential as the study revealed that limited parental knowledge may be a factor hindering effective early intervention services (Khoza-Shangase, Barratt & Jonosky, 2010). ASHA (as cited in Khoza-Shangase, Barratt & Jonosky, 2010) emphasizes that part of the role of an early intervention specialist is to promote public awareness and public involvement through education.

In addition, AVT participants were required to describe specific techniques and strategies that were implemented during the informal AVT sessions. Estabrooks (1994) states that AVT involves strategies, techniques and procedures which enable children with hearing impairment to learn to listen and understand spoken language in order to communicate through speech. All participants reported using most of the techniques identified by Simser (1999) which include the hand cue, acoustic highlighting, auditory feedback, pausing and waiting and natural sequential development. AVT 3 discouraged the use of the hand cue when preferential seating was implemented. By using preferential seating, a focus is already placed on listening and this

technique was therefore perceived as unnecessary. Participants reported that techniques including acoustic highlighting as well as pausing and waiting were considered the most effective when conducting AVT.

International research conducted by Fairgray, Purdy and Smart (2010, p. 423) indicated that the implementation of AVT techniques resulted in improved “outcomes for children with hearing loss in the areas of receptive language, phonological development, articulation, and listening in noise.” In addition, when AVT techniques were used as part of speech therapy, the speech production of the participants significantly improved as therapy moved in progressive steps from isolated sounds to word to phrase level (Fairgray, Purdy & Smart, 2010). Furthermore, the majority of participants showed improvements on the speech perception in noise test which can be associated with improved auditory discrimination (Fairgray, Purdy & Smart, 2010). AVT focuses on listening to speech and all participants were “aware that “concentrating” when they listened improved their ability to understand what others were saying” (Fairgray, Purdy & Smart, 2010, p. 428).

The findings from the current study are consistent with the findings made by the above-mentioned authors (Fairgray, Purdy & Smart, 2010). The AVT participants suggest that the implemented AVT techniques are effective when teaching the deaf or HOH child to listen which is in accordance with literature. In addition, significant improvements in the deaf or HOH child’s speech and language development were evident when AVT was conducted.

### **Paediatric aural rehabilitation therapy approaches**

The Non AVT participants in the study indicated using a combination of paediatric aural rehabilitation approaches. A few of the participants reported using some of the AVT techniques within the chosen paediatric aural rehabilitation approach. Dorman, Hickson, Murdoch and Houston (2009, p. 157) confirm that “although a particular AVT programme may adhere to all 10 of these principles, other education approaches may include some or all of these principles.” In addition, AVT techniques may be utilized as part of a different aural rehabilitation approach or even part of speech therapy. Research conducted by Fairgray, Purdy and Smart (2010) confirmed that speech therapy with a listening and spoken language focus resulted in an improved form of

intervention for children with hearing impairment. Furthermore, there were significant improvements in speech perception and production and in one measure of receptive language when AVT techniques were introduced as part of speech therapy (Fairgray, Purdy & Smart, 2010).

Non AVT participants further reported incorporating the listening hierarchy in order to identify the listening level at which the deaf or HOH child is functioning at as well as to report on the child's listening performance. Lim and Simser (2005, p. 309) confirm that AVT utilizes a hierarchy of listening skills, an expectation by therapist and caregivers that a child who is deaf or HOH can learn to listen and speak, as well as "educational, social and emotional integration with hearing peers." This is in accordance with Edwards and Estabrooks (1994, p. 66) who suggest that the hierarchy of listening skills "is a theoretical concept to permit an ordering of skills levels." The components of the listening hierarchy are associated with AVT which suggests that Non AVT participants incorporate certain aspects of AVT into other aural rehabilitation approaches.

In addition, many Non AVT participants introduced new concepts supplemented with Sign Language in order to provide a means of communication as the child begins to develop spoken language. This method was used by Non AVT participants based at the school for the deaf where the bilingual-bicultural approach was adopted. The bilingual-bicultural approach views Sign Language, specifically South African Sign Language (SASL) in the South African context, as the child's first language used in education with the written form of a spoken language as the child's second language (Marschark, 2001). These Non AVT participants further reported using Signed English in their aural rehabilitation approaches. Schow and Nerbonne (2013, p. 191) define Signed English as "signed in accordance with English grammar." The therapists reported that by implementing Signed English, the deaf or HOH children were exposed to spoken language while being taught in their first language of SASL.

Other approaches utilised by Non AVT participants included the use of the auditory-oral approach. The AG Bell Academy for Listening and Spoken Language (as cited in Dornan et al. 2009, p. 158) states that the major differences between AVT and approaches that seem similar such as the auditory-oral approach are "requirements that the parent (or main caregiver) must be present at each education session, and that the session must be individual for the child and parent/

main caregiver.” This is in contrast to other aural rehabilitation approaches in which it is not mandatory for the parent to be present, and a session may take place in a small or large group, or may be individual (Dornan et al. 2009).

A combination of aural rehabilitation approaches were used by Non AVT participants. These approaches were identified according to the deaf or HOH child’s listening level, the age of the child and whether the child had developed some spoken language as well as where the child attended aural rehabilitation such as at a school for the deaf.

**THEME 3: IMPLEMENTATION AND CONTRIBUTING FACTORS**

The third sub-aim of the study aimed to investigate challenges associated with training regarding formal and informal AVT. This was evident in the third main theme where participants identified factors that contributed to successful implementation of AVT and aural rehabilitation therapy approaches. All participants commented on the need for further training in the field of aural rehabilitation with focus on AVT in order to raise awareness regarding this therapy approach.

Aim 3	Sub-themes
<b>Challenges associated with training</b>	<ul style="list-style-type: none"> <li>• Further training</li> <li>• Financial responsibility</li> <li>• Factors for successful implementation of aural rehabilitation or AVT</li> <li>• Awareness and benefits of AVT</li> <li>• Emotional status of the parent</li> <li>• Parental involvement</li> <li>• Carry-over into the home environment</li> <li>• Language stimulation</li> <li>• School placement</li> </ul>

**Further training**

It is clear from the participants’ responses that there is an urgent need for further training in the area of aural rehabilitation with focus on AVT. AVT participants highlighted the importance

of completing the LSL course prior to working in the field of paediatric aural rehabilitation and felt that the training should be mandatory.

AVT professional training is available in South Africa through Listening and Spoken Language Skills (LSLS) (LSLS South Africa, 2011). The duration of the AVT training is one year and covers nine topics (AG Bell Academy, 2012) related to listening and spoken language interventions focusing primarily on AVT. In addition, the training considers application of the AVT approach in the South African context (LSLS South Africa, 2011). All AVT participants interviewed in the study had received LSLS certification through LSLS South Africa. Prior to the participants' enrolment in LSL training, they had obtained a degree in audiology and speech-language pathology from a recognized university in South Africa and were working with the paediatric population. LSLS South Africa (2011) stipulates that a degree in either audiology, speech-language pathology or education of deaf or HOH children forms part of the pre-requisites when enrolling for AVT training and the therapist must currently be working with these children.

All participants regardless of LSL certification suggested that more focus is required on aural rehabilitation at an undergraduate level. An increase in practical exposure to aural rehabilitation was also recommended prior to the final year of study. One participant argued that further training in aural rehabilitation should be considered as a postgraduate qualification even though a sufficient foundation is provided in undergraduate training. This is due to the complex nature of hearing impairment and the need for immediate commencement of aural rehabilitation. In addition, a qualified professional is required to provide the necessary training to prevent any further delay in the commencement of intervention.

In addition, participants reported that aural rehabilitation courses should be provided as part of continued professional development (CPD). The HPCSA (2014) stipulates that all healthcare professionals have a responsibility to continually update their professional knowledge and skills for the benefit of the patient or client. The HPCSA therefore implemented a CPD programme. Each audiologist is required to accumulate a total of 30 continuing education units (CEUs) annually and five of these units must be attributed to ethics, human rights and medical law

(HPCSA, 2014). Participants therefore suggested more courses and training on aural rehabilitation where AVT may be discussed.

Participants reported the need for further training to focus on aural rehabilitation being culturally and linguistically appropriate to the context of South Africa. AVT advocates that therapy should be conducted in the child's first language. A child's home language encompasses cultural and family values. Rhoades (2006) argues that proficiency in the language used at home has personal, family, cultural and academic implications. Children develop this proficiency between the ages of three and five. It is therefore essential that AVT targets and supports the language of the home (Auditory-Verbal UK, 2014). Furthermore, many professionals work with a number of families who have English as an additional language (Auditory-Verbal UK, 2014). AVT involves caregiver training which will assist families who primarily communicate in another language to learn the skills they need to develop their child's listening and speaking in their home language (Auditory-Verbal UK, 2014).

The language in which AVT is conducted is crucial in the South African context as most children acquire English as an additional language. Owens (2005, p. 7) defines language as a "socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols." Caregivers are therefore considered important members within the provision of AVT as the audiologist may require assistance to provide AVT in the child's home language. There are eleven official languages of South Africa which include English, Afrikaans, isiNdebele, Sepedi, Sesotho, Setswana, Siswati, Tshivenda, Xitsonga, isiXhosa and isiZulu (Department of Basic Education, 2010). The home language refers to the "language that is spoken most frequently at home" by the child's family (Department of Basic Education, 2010, p. 11). It is important that deaf or HOH children receive AVT intervention in their home language. AVT advocates family-centred intervention by instructing caregivers in ways to provide maximal acoustic stimulation (Goldberg & Flexer, 2001).

In addition, participants reported that most of the theoretical content refers to AVT conducted in developed countries which is considered an ideal environment. This highlights the lack of research in the area of aural rehabilitation in developing countries such as South Africa.

Fairgray, Purdy and Smart (2010) confirm that there is a limited amount of clear research findings to support the effectiveness of listening and spoken language therapies such as AVT. This is due to various factors described by Eriks-Brophy (as cited in Fairgray, Purdy & Smart, 2010). Participant groups are generally small and “heterogeneous with regard to the age of diagnosis and the type and length of intervention which reduces the ability to generalize outcomes from one group to another” (Eriks-Brophy as cited in Fairgray, Purdy & Smart, 2010, p. 429). In addition, literature reports are often anecdotal or retrospective and do not use comparison groups (Eriks-Brophy as cited in Fairgray, Purdy & Smart, 2010). Furthermore, diversity exists between different therapy approaches as well as therapy settings and may include hospital, school or home settings (Eriks-Brophy as cited in Fairgray, Purdy & Smart, 2010).

Brennan-Jones et al. (2014) reviewed research in order to assess the effectiveness of AVT in developing receptive and expressive spoken language in children with hearing impairment. Results from the review are in accordance with research conducted by Fairgray, Purdy and Smart (2010) confirming that there is a lack of studies addressing the use of AVT. Brennan-Jones et al. (2014) states that due to the lack of evidence in the reviewed research, conclusions cannot be made regarding the effectiveness of AVT intervention with hearing impaired children.

### **Financial responsibility**

Participants highlighted that both parents and therapists are responsible for additional expenses associated with the selected aural rehabilitation approach. Parents/ caregivers are financially responsible for the fitting of appropriate hearing technology, maintenance of the hearing devices, continuous aural rehabilitation sessions, transport and future schooling requirements. Within the health expenditure in South Africa, rehabilitation and preventative care receive lesser financial attention in comparison to curative measures and the treatment of life-threatening conditions (Khoza-Shangase & Michal, 2014). This suggests that achievement of rehabilitation in the form of EHDI goals in developing countries depends on a strong political will in the form of allocation of funds committed to EHDI, and this is often not the case in many developing countries including South Africa (Khoza-Shangase & Michal, 2014). Widespread implementation of EHDI programmes has not carried over into developing countries which contributes to “two thirds of the world’s children with hearing loss” (Olusanya, Luxon & Wirz as

cited in Khoza-Shangase & Michal, 2014, p. 2240). In countries such as India, China and South Africa where universal newborn hearing screening has not been implemented, hearing loss is often detected as a consequence of parental concerns regarding delays in speech and language development (Olusanya as cited in Khoza-Shangase & Michal, 2014). The detection period for hearing loss in these countries “usually occurs from two years and extends well into the adolescent years” (Olusanya as cited in Khoza-Shangase & Michal, 2014, p. 2240).

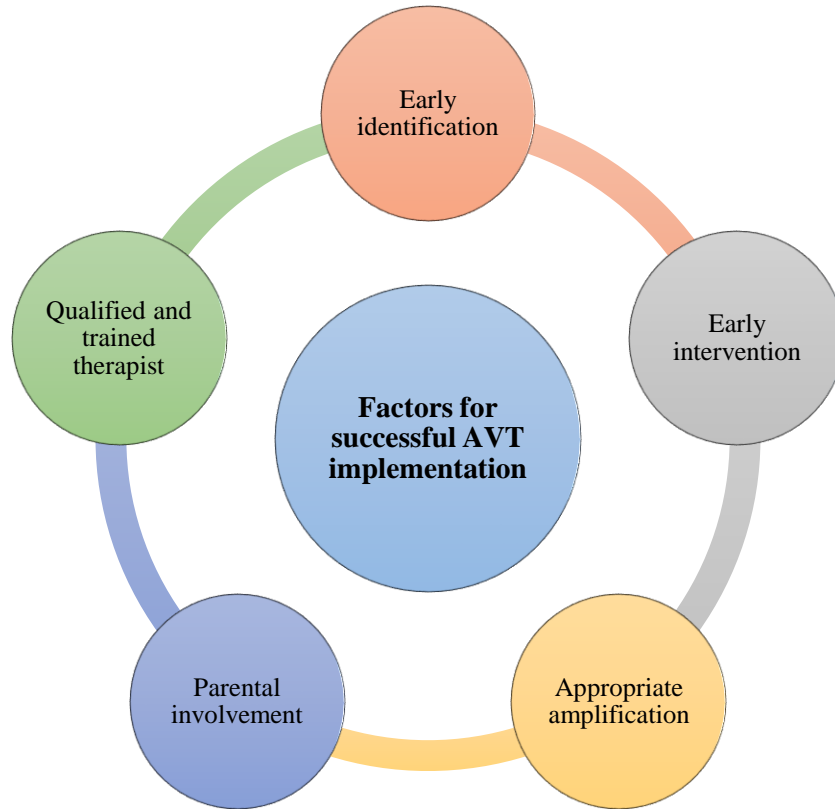
In addition, research conducted by Khoza-Shangase, Barratt and Jonosky (2010) revealed that only 26% of audiologists reported providing aural rehabilitation on a weekly basis. This may be due to a lack of resources such as poor therapist/ patient ratios and financial problems for patients which is common in developing countries such as South Africa (Khoza-Shangase, Barratt & Jonosky, 2010).

In addition to the financial responsibilities associated with parents, therapists are financially responsible for the cost of LSL training. The overall cost for the one year LSL course is R7500 which can either be paid upfront or in two installments (LSLS South Africa, 2011). In addition to the financial costs associated with the LSL training, the therapist has to devote a large amount of time throughout the duration of one year. Time is required for completion of assignments, therapy preparation, feedback sessions on assignments as well as attending lectures. The cost and time required for the LSL training may be a contributing factor for the limited number of therapists who have obtained the LSL certification in South Africa.

### **Factors for successful implementation of aural rehabilitation or AVT**

AVT participants stated several factors that contribute to the successful implementation of AVT in Gauteng. These factors included early identification and intervention, appropriate amplification, parental involvement and a qualified and trained therapist. These factors all emerged as sub-themes under the third main theme of implementation and contributing factors to successful AVT. These factors have been discussed in further detail in relation to literature from international and local sources in the discussion chapter. The factors for successful implementation of AVT are depicted in Figure 4.





*Figure 4.* Diagrammatic representation of factors for successful AVT implementation.

In contrast, most AVT participants reported that there was a factor which impeded successful implementation of AVT. This factor was the limited number of therapists who have participated in the LSL training in South Africa. The limited number of therapists with LSL certification has been discussed under the sub-theme of resources. This sub-theme emerged from the first main theme of challenges associated with the commencement and implementation of aural rehabilitation.

The AVI Strategic Plan as cited in Goldberg, Dickson and Flexer (2010, p. 129) raise concern regarding the practice of AVT as “only 8% of deaf or HOH children worldwide whose family desires a spoken language outcome have access to a qualified professional.” The field of AVT therefore “lacks an adequate number of prepared professionals” (Bess as cited in Morrison, Perigoe & Bernstein, 2010, p. 146). Goldberg, Dickson and Flexer (2010, p. 130) therefore highlight the need for a “global saturation of professionals” to assist families who choose listening and spoken language to communicate and to meet the needs for generations to come. In developed

countries such as the United States of America, Canada, England and Australia, AVT programmes are readily available and provided; however in a developing country such as South Africa, there are few audiologists with certified AVT qualification and training who are providing AVT (Khoza-Shangase & Michal, 2014).

### **Awareness and benefits of AVT**

Non AVT participants were required to provide their perspectives regarding current awareness of AVT in South Africa. One of the main concerns that emerged from the study was the lack of awareness of AVT. The results of the study revealed varied responses regarding the participants' awareness and knowledge of AVT. Some participants reported that AVT was not mentioned during the undergraduate qualification as they qualified prior to the commencement of AVT. AVT officially commenced in 2011 in South Africa (LSLS South Africa, 2011). One participant referred to AVT as auditory-visual therapy which displayed an unawareness of the term AVT. Auditory-visual therapy is a different therapy approach which combines audible speech with lip-reading. Another participant received a theoretical introduction regarding AVT. However, further information regarding the techniques and strategies used in AVT were not covered.

The AVT participants in the study indicated that the main benefit of AVT is that deaf or HOH children can follow typical developmental patterns of audition and language seen in normal hearing children. Lim and Simser (2005) confirm that children with hearing impairment who are mainstreamed will benefit from learning alongside children who present with normal hearing, speech and language as these children will serve as good role models in those areas. Additional benefits of AVT include the use of amplification devices including hearing aids and cochlear implants, a focus on audition providing important listening skills and the ultimate goal that the deaf or HOH child will be mainstreamed. Mainstreaming will be discussed further under the ninth sub-theme emerging from challenges associated with AVT implementation.

### **Emotional status of the parent**

Based on the findings of the study, most AVT participants reported that the emotional status of the parent may be a contributing factor to the success of the aural rehabilitation programme. These findings correlate with the findings and observations made by several authors

such as Chowdhry (2010); Lim and Simser (2005); Dornan, Hickson, Murdoch, Houston and Constantinescu (2010) who identified the emotional state of the family, not only the parent, as a variable affecting the outcomes of AVT. Researchers have found that for children with significant hearing loss who do not develop language skills commensurate with their peers, self-esteem and emotional development are often severely affected (Bat-Chava, Martin & Kosciw; Hintermair; Nicholas & Geers as cited in Dornan, Hickson, Murdoch, Houston & Constantinescu, 2010). This is further supported by local research conducted by Khoza-Shangase and Michal (2014, p. 2243) where the “failure to detect a hearing loss may result in significant consequences for the child’s speech and language acquisition, academic performance as well as social and emotional wellbeing” of the child including their family.

It should also be noted that most AVT participants reported that the emotional status of the parent may negatively impact the amount of parental involvement during AVT. Local research conducted by Van der Spuy and Pottas (2008) sought to identify the needs of parents of children who have been identified with hearing loss from diverse cultural backgrounds in the Western Cape in South Africa. The results indicated that parents perceived the diagnosis of their child as a “traumatic and emotional experience, which could be recalled in detail” (Van der Spuy & Pottas, 2008, p. S32). This emotional experience was not only evident at the time of diagnosis, but was described as a “long-term and on-going emotional process” (Van der Spuy & Pottas, 2008, p. S32). The results further highlighted that parents require assistance at the time of diagnosis to handle the emotional aspects associated with parenting a child with hearing loss (Van der Spuy & Pottas, 2008). Irrespective of cultural and linguistic diversity, parents reported that they were in need of on-going support, counselling and guidance provided by the audiologist (Van der Spuy & Pottas, 2008). At the time of diagnosis, parents expressed the major need to be in contact with other parents of hearing impaired children as they understood the value of shared experiences (Van der Spuy & Pottas, 2008). In addition, parents reported that they felt they had greater courage to share their emotional experiences with other parents of hearing impaired children.

The stages of grief as described by Tye-Murray (2009) include shock, denial, grief, guilt, anger and acceptance. The feeling of shock may be experienced as a feeling of confusion and bewilderment and may quickly be replaced by denial (Tye-Murray, 2009). One AVT participant

commented that some parents are initially shocked to be included in AVT. These parents may display feelings of anxiety and insecurity when conducting therapy as they are uncertain whether they are conducting therapy correctly. The next stage of grief is denial where parents and family members may deny that the child's hearing loss exists and therefore require time and support to accept the hearing loss (Tye-Murray, 2009). Grief may then occur as the parent realizes that their "ideal child has been lost" (Tye-Murray, 2009, p. 553). Grief may be perceived as a normal and healthy reaction as it allows the parents to deal with the painful reality (Tye-Murray, 2009). The stages of guilt and anger follows the denial stage and parents become convinced that they may be responsible for the child's hearing loss (Tye-Murray, 2009). The feeling of anger may be concealing true feelings of fear and inadequacy as the presence of hearing loss may restrict parents' options (Tye-Murray, 2009). The final stage of grief is the acceptance stage where parents begin to accept that their child's hearing loss is a reality and are willing to take constructive steps to deal with their child's hearing impairment (Tye-Murray, 2009). These constructive steps may include selecting appropriate amplification devices as well as the most appropriate communication option for the child. AVT participants reported that once the parent enters the acceptance stage, the parent is more involved and is able to conduct AVT more readily.

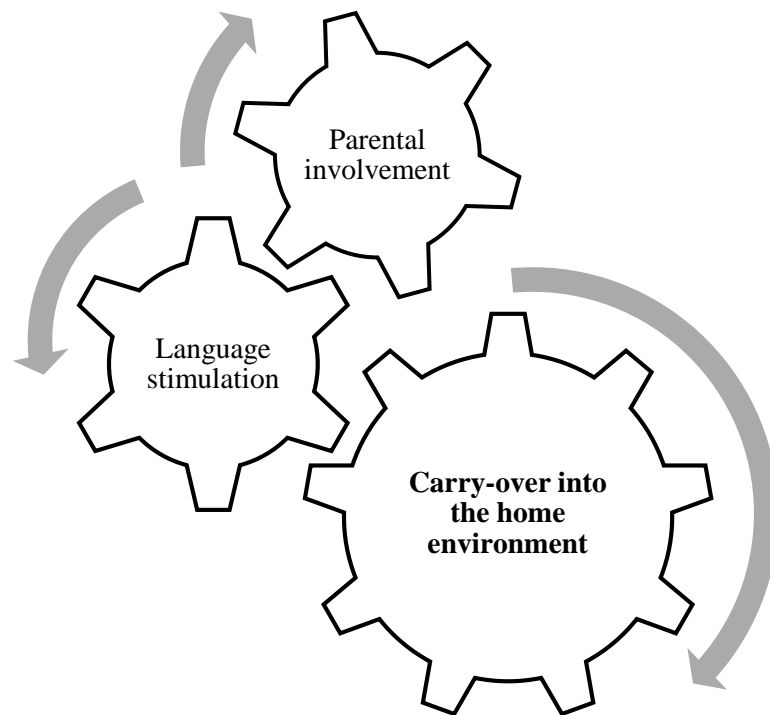
In addition, one AVT participant reported that the emotional status of the parent may be associated with a delay in the commencement of intervention. If the parents are in the denial stage, additional time and support is needed in order to accept the hearing loss (Tye Murray, 2009). This additional time may result in further delay in the commencement of intervention especially if the child has already been identified at a later age which is considered the reality in South Africa (Khoza-Shangase & Michal, 2014; Van der Spuy & Pottas, 2008; Swanepoel & Storbeck, 2008).

A further concern highlighted by Olusanya et al. (2007) is that delayed intervention may be attributed to inadequate support services available for early intervention in South Africa as is the case in many other developing countries. ASHA (as cited in Van der Spuy & Pottas, 2008, p. S31) stipulates that the "EHDI context necessitates that family-focused information and emotional support counseling should be infused into all interactions with families during the EHDI process and within every opportunity for paediatric audiologic practice thereafter." Swanepoel et al. (as cited in Van der Spuy, 2008) argues that in a developing country such as South Africa, early

intervention programmes should be family-centred within a community-based model of service delivery that is culturally congruent. This highlights the importance that information provided in the EHDI programmes must be culturally and linguistically appropriate. In addition, the role of the family in early intervention is essential to establish the child's preverbal skills and for them to accept the child's hearing impairment (Chowdhry, 2010).

### **Parental involvement, language stimulation, carry-over into the home environment**

The sub-themes of parental involvement and language stimulation were identified as two overriding factors in the success of carry-over and generalization into the home environment as depicted in Figure 5.



*Figure 5.* Overriding factors in the success of carry-over into the home environment.

A predominant finding that emerged from the study is that language stimulation was perceived by all participants as one of the key contributing factors in the successful implementation of an aural rehabilitation programme specifically AVT. Generally, when authors conduct studies on the relevance of AVT internationally, it is very rare not to delve into the effect that language stimulation has on the success of AVT. All AVT participants interviewed in this study stated that

language stimulation should be encouraged for all children especially those children presenting with hearing impairment.

Chowdhry (2010) states that research has shown that normal hearing infants learn the basics of their home language by the age of six months. During the first twelve months of age, they are listening to their environment and interact with their parents and family. By three years of age, most typically developing children have developed basic competencies in all areas. Baltimore (as cited in Chowdhry, 2010, p. 159) states that “a baby who is deprived of appropriate language stimulation during the first three years of life, can never attain optimal language function.” It is therefore imperative that parents encourage language stimulation at an early age for children who present with hearing loss. Through the implementation of AVT, parents/ caregivers develop skills to become the primary models for their child’s speech and language development (Chowdhry, 2010). In addition, the role of the family in early intervention is essential to establish the child’s preverbal skills and for parents and family to accept the child’s hearing impairment (Chowdhry, 2010). The parents become confident in their role as the primary language model and facilitator and learn skills for encouraging language stimulation within the AVT session which can be used in the home environment.

Cole and Flexer (as cited in Chowdhry, 2010, p. 159) argue that “if appropriate auditory and linguistic experience is provided to children who are deaf or HOH from an early age, then cognitive and listening functioning can be expected to follow the normal course of development.” This therefore confirms that if language stimulation is provided from an early age, then a deaf or HOH child may develop cognitive and listening functioning equivalent to a child who presents with normal hearing. Lim and Simser (2005, p. 309) confirm that “AVT is based on the notion that most children with mild to profound hearing loss can learn to communicate through spoken language if provided with appropriate amplification, and abundant listening and language stimulation to develop their hearing potential.”

The third and fifth principles of AVT emphasizes the use of a family-centred approach where primary caregivers need to be instructed in order to provide maximal acoustic stimulation and caregivers are viewed as models for spoken language development (Goldberg & Flexer, 2001).

This is in accordance with the third pre-requisite of AVT which stipulates the need for full parent or caregiver involvement during AVT intervention (Chowdhry, 2010). Language stimulation usually occurs mostly in the home or school environment where children are encouraged by their parents/ caregivers, siblings or teachers. Chowdhry (2010) confirms that parents/ caregivers and family members are the best people to develop spoken language through listening in the home in the natural environment. Popich (2003) raises concern that there has been an increase in the number of mothers in South Africa who are now working and as a result, many children are placed in day care facilities or are left at home with nannies or relatives. Goldberg (1997) argues that the child may not make as much progress if the parent or caregiver is unable to commit to the amount of involvement required in AVT. It is therefore crucial that parents who decide on AVT for their child are available for the AVT sessions as they have the closest relationship with the child.

AVT encourages and follows natural language and speech development through play and active involvement in everyday situations (Chowdhry, 2010). AVT should incorporate the child's daily routines in order to reinforce what was covered in AVT sessions and to provide meaning to everyday situations where natural speech and language development and listening is encouraged (Estabrooks, 1994). Listening becomes a way of life (Estabrooks & Samson as cited in Chowdhry, 2010). It is crucial that language stimulation is discussed within the AVT session and is directly associated with the carry-over of what was covered in the session into the home or school environment. Most AVT participants reported that the amount of parental involvement in the AVT session determined the success of carry-over and language stimulation provided in the home environment.

All participants mentioned the importance of parental involvement during the aural rehabilitation programme in order for optimal success to be achieved by the deaf or HOH child. The amount of parent support was variable and differed from the Non AVT participants to the AVT participants. Chowdhry (2010) identified family participation as a variable affecting the outcome of AVT. In addition, Non AVT 8 reported contrasting findings as some parents were non-compliant and some parents were highly committed. Those parents who were viewed as non-compliant displayed poor parental involvement and commitment to aural rehabilitation which negatively affected the attendance of both the deaf or HOH child and the parents during aural

rehabilitation sessions. Alternatively, those parents who were viewed as highly committed attended every aural rehabilitation session with their child. A possible explanation for the differences in findings is the level of education of the parent and the amount of knowledge that has been provided to the parent regarding the child's hearing impairment.

The level of education of the parent may affect the selection of the aural rehabilitation approach. Research conducted by Dornan, Hickson, Murdoch, Houston and Constantinescu (2010) investigated whether AVT was considered an effective approach for children with hearing impairment. These authors argued that deciding on a definition of socioeconomic level for matching purposes was difficult due to various perspectives and a number of different possible measures (Kumar et al. as cited in Dornan et al. 2010). The factors that were measured included family income, education level of parents and parental occupation (Marschark & Spencer as cited in Dornan et al. 2010). The highest level of education was used and the occupations were categorized according to those developed by Jones (2003) which included professional, manager, trade/ technical. The occupation category was found to impact on the vocabulary learning of a child with hearing loss (Hart & Risley as cited in Dornan et al. 2010). Research indicated that socioeconomic status is considered a significant predictor of better speech perception performance for children with hearing loss (Hodges, Dolan Ash, Balkany, Schloffman & Butts as cited in Dornan et al. 2010). Higher socioeconomic levels have been associated with higher reading and writing scores and a lower risk of academic delays (Geers; Martineau, Lamarce, Marcoux & Bernard as cited in Dornan et al. 2010). Low socioeconomic status has been reported as being associated with reduced academic opportunity and underachievement (Connor & Zwolan as cited in Dornan et al. 2010). Dornan et al. (2010, p. 378) "suggested that if only children from high socioeconomic groups attended education programmes, better outcomes for speech perception, language, reading, and writing would possibly result."

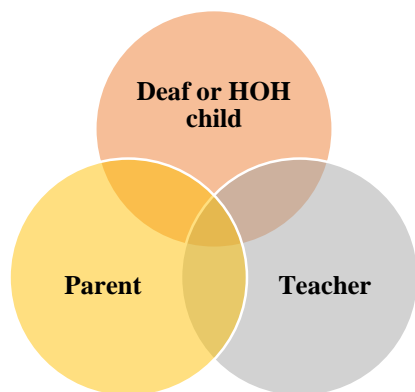
Most of the AVT participants commented that the parent was only involved in one aural rehabilitation session per week. This was viewed as not being ideal and was considered the main contributing factor for AVT participants not conducting a formal AVT approach. According to Hann (as cited in Brennan-Jones et al. 2014), the AVT approach may not be applicable for parents who are unable to participate fully in the programme. The AG Bell Academy (2012) states that



AVT promotes active parent or caregiver participation and involvement in every session. Possible reasons for limited parental involvement reported by the AVT participants included transport issues and work responsibilities.

In addition, AVT 1 highlighted the importance of parental involvement during AVT. Parents were viewed to be more committed to AVT as well as the AV therapist which resulted in better communication between the parent and therapist. AVT 1 further reported that the majority of parents were actively involved in the AVT sessions although there were still a few parents that were uninvolved.

The teacher and parent work closely alongside each other for short intensive sessions with the expectation that the parent will implement the programme in the home environment (Wu & Brown, 2004). In using this intensive approach, therapists and teachers of the deaf attempt to establish positive attitudes and high expectations in parents. The triangular relationship between the child with hearing loss, the parents, and the teacher is perceived by Harr (as cited in Wu & Brown, 2004) as one of the most important elements for a successful outcome. Research has shown that a “co-operative relationship between parents and professionals is influential in the child’s education, but even more importantly, that the congruence between the parents’ and teachers’ beliefs about the child and approach being used is critical” (Dromi & Ingber; Simser as cited in Wu & Brown, 2004, p. 6-7). The triangular relationship is illustrated in Figure 6.



*Figure 6.* Diagrammatic representation of the triangular relationship.

In contrast, the majority of the Non AVT participants reported poor carry-over into the home environment due to little or no parental involvement in the therapy sessions. This resulted in minimal or no communication between the parent and therapist which may have a negative impact on the progress of the deaf or HOH child. Goldberg (1997) confirms that the child may not make as much progress if the parent or caregiver is unable to commit to the amount of involvement required in aural rehabilitation.

Non AVT 7 and 8 reported similar findings to the AVT participants as most parents were able to take what was learnt in therapy and apply it in the home environment. In addition, home programmes and communication strategies were provided. This allowed the caregiver to continue with AVT in the home environment resulting in generalization from the therapy context to the home context. This is in accordance with the AG Bell Academy (2012) which states that caregivers become the primary facilitators of their child's spoken language development through the guidance, coaching and demonstration provided by the AV therapist. Levasseur (as cited in Brennan-Jones et al. 2014) confirms that AVT is the only approach whereby the parent is viewed as both the client and the child's primary therapist.

With reference to Figure 5, it is clear that parental involvement and language stimulation heavily influence the success of carry-over and generalization into the home environment. Carry-over also depends on the amount of instruction and guidance that the AV therapist provides to the parent within AVT. Estabrooks and Edwards (1994) confirm that parental or caregiver involvement is essential as they will provide the AV therapist with common expressions used in the home to ensure that generalization from the therapy session to the home environment occurs.

### **School placement**

The majority of participants reported that school placement was influenced by the selection of the most appropriate aural rehabilitation approach for the deaf or HOH child.

Mainstreaming, or full inclusion in a regular classroom, is one of the main outcomes of AVT (Chaikof, 2014). It is important for the deaf or HOH child to be exposed to normal speech and language models in the classroom (Chaikof, 2014). Academic success for a child with hearing

loss in mainstream education is linked to factors which include “education using listening and spoken language, a shorter period of hearing loss prior to amplification or cochlear implantation, and level of intelligence” (Dornan, Hickson, Murdoch, Houston & Constantinescu, 2010, p. 363). The deaf or HOH child will therefore succeed in mainstream education if the focus is on listening and if the child was identified early with a hearing loss and fitted with amplification immediately after diagnosis. Research conducted by Dornan et al. (2010) revealed that the majority of children showed no significant chronological age and language age gaps when entering mainstream education if they were receiving AVT from an early age. It is important that adequate support services are in place within mainstream education to ensure that the deaf or HOH child is developing cognitively, academically, communicatively, socially and emotionally (Estabrooks, 1994). These support services may include acoustic considerations, preferential seating, appropriate lighting, assistive devices, extra resources, more time and individualized instruction (Estabrooks, 1994).

Rhoades (2006, p. 5) suggests that the long term goals of AVT include “full assimilation of a communicatively competent child into the family system, academic grade school environment, and social fabric of the larger community.” Wu and Brown (2004, p. 6) further suggest that an additional long term goal is for the deaf or HOH child to grow up in an “environment that enables them to become independent, participating and contributing people in mainstream society.” In order to achieve this aim, AVT advocates for the inclusion of all children irrespective of their degree of hearing loss in mainstream educational settings (Wu & Brown, 2004). This will allow deaf or HOH children to “capitalize on and extend their spoken language development and have access to the regular academic and social curriculum” (Wu & Brown, 2004). In addition, AVT is a family-focused and parent-centred approach which involves mandated caregiver coaching in contrast to child-centred intervention (Rhoades, 2006). AVT utilizes a hierarchy of listening skills, an expectation by therapist and parents that a child with hearing impairment can learn to listen and speak and educational, social and emotional integration with hearing peers (Lim & Simser, 2005, p. 309).

The participants in the current study further reported that even though AVT had been implemented, most of the children would not be mainstreamed in the South African context due

to various factors. These factors as suggested by one AVT participant included the aetiology of the hearing impairment, parent commitment, child's learning potential and the age of identification. International research confirms that with early detection, early amplification and effective individualized AVT with caregiver participation, up to 80% of children who are deaf or HOH can potentially be successful in mainstream education and society. These findings were based on a study conducted by Lim and Simser (2005) at the Singapore General Hospital in Singapore.

The aetiology of the hearing impairment will impact on school placement. Hearing impairment is classified by aetiology, time of onset and the severity and degree to which the hearing impairment affects the child's sound reception (Lim & Simser, 2005). Gelfand (2001) defines aetiology as the cause of hearing impairment and is concurrent with the onset of hearing impairment. In terms of onset, hearing loss may be described as prelingual, perilingual or postlingual depending on the age at which the hearing loss occurred (Tye-Murray, 2009; Schow & Nerbonne, 2013). Prelingual refers to hearing loss present at birth or prior to the development of language (Schow & Nerbonne, 2013). Perilingual is a relatively new category used to describe the situation when hearing loss is acquired while the child is developing a first language (Schow & Nerbonne, 2013). Postlingual refers to a hearing loss that occurs after the acquisition of speech and language usually after the age of 5 years (Schow & Nerbonne, 2013).

International research conducted by Goldberg and Flexer (2001) revealed that all participants presented with bilateral severe to profound hearing loss of congenital or prelingual origin. Prelingual hearing loss was defined as hearing loss present at birth or before 3 years of age (Goldberg & Flexer, 2001). These participants were all "identified early, amplified quickly, and enrolled in early intervention programmes that emphasized an auditory-focused, family-centred communication habilitative approach" (Pollack as cited in Goldberg & Flexer, p. 412). The result of this early identification and intervention resulted in a high degree of complete or full mainstreaming, "typical" high school graduation milestones, and continued education often at "mainstream" colleges and universities (Goldberg & Flexer, 2001). The AV graduates who completed their postsecondary education routinely moved on to a variety of impressive

employment opportunities and were integrated into “mainstream” communities and societies (Goldberg & Flexer, 2001).

In the current study, most participants reported that children are being identified at a later age than is recommended by the JCIH (2007). As a result, late identification and intervention has a profound effect on the school placement and education of the deaf or HOH child resulting in most of the children not being mainstreamed in South Africa. The age of identification and subsequent amplification therefore contributes to the school placement for the deaf or HOH child. SASHLA (2011, p. 2) confirms that early detection and intervention benefits society by “reducing the costs of specialised education requirements, and by increasing the potential of the hearing impaired adult to be economically self-sufficient in adulthood.” The Department of Social Development has proposed guidelines for early childhood development services and states that “all children with disabilities have the right to inclusion, integration and mainstream facilities and all other benefits enjoyed by non-disabled peers” (Department of Social Development as cited in SASLHA, 2011, p. 6). However, these rights can only be attained and upheld through early identification and intervention for children with hearing loss (SASLHA, 2011). The South African policy guidelines therefore favour neonatal hearing screening but this policy has not yet been implemented.

Parent commitment and involvement in therapy has been highlighted as a contributing factor to the success of AVT implementation and influences school placement. This has been discussed in detail in the previous theme. Parental involvement directly influences the amount of language stimulation that the deaf or HOH child receives and the success of carry-over into the home environment.

In addition to the aetiology of hearing impairment and parent commitment, the child’s learning potential influences school placement. Schow and Nerbonne (2013) argue that a strong relationship exists between the degree of hearing loss and the degree of educational impact. Schow and Nerbonne (2013) state that if the hearing loss is more severe, learning will be more difficult. Moeller (as cited in Schow & Nerbonne, 2013, p. 273) confirms that “any type of hearing loss

presents the risk of academic failure and psychosocial difficulties, and no loss can be discounted as insignificant.”

International comparable studies focusing on parent and teacher expectations of deaf or HOH children being mainstreamed revealed that most children who are receiving AVT would be mainstreamed and integrated into regular education settings (Lim & Simser, 2005; Wu & Brown, 2004; Goldberg & Flexer, 2001). This finding was further substantiated by the participants’ reports in the current study and reveal that the reality in South Africa is that most deaf or HOH children would not be mainstreamed due to late identification and intervention.

## CHAPTER 6

### Conclusion

*This chapter discusses the concluding remarks and the implications, strengths and limitations of the study. Recommendations are provided for audiologists working in the field of aural rehabilitation focusing on AVT.*

This study aimed at determining the relevance of audiologists implementing AVT in Gauteng, South Africa. The in-depth analysis of the audiologist's narratives combined with the discussion of the various challenges associated with AVT and the highlighted contributing factors to the successful implementation of AVT provided further insight into the relevance of AVT in South Africa.

Goldberg, Dickson and Flexer (2010, p. 138) stated that the “landscape of deafness has truly been altered” through the international implementation of AVT. The opportunities for children who are deaf or HOH who are receiving AVT are advancing as these children are able to develop age-appropriate spoken language and literacy skills (Goldberg, Dickson & Flexer, 2010). The AG Bell Academy provides training in the field of AVT throughout the world resulting in an increased number of highly trained and qualified professionals (Goldberg, Dickson & Flexer, 2010). Research conducted by Khoza-Shangase and Michal (2014) revealed that there are a limited number of therapists with LSL certification who are implementing AVT (Khoza-Shangase & Michal, 2014). The most recent statistic is a total of 31 LSL therapists excluding the current group of therapists who are currently undergoing training (LSLS South Africa, 2015). This study therefore sought to determine possible reasons for limited certified therapists and whether AVT is perceived as relevant by certified LSL therapists who are conducting AVT in a developing country such as South Africa.

Although the current findings obtained from the study should be interpreted within the identified limitations in the research design such as the small sample size; these findings still have relevance and value for the successful implementation of AVT in the context of a developing country such as South Africa. The relevance of AVT in Gauteng, South Africa can be considered

questionable as not all of the AVT principles can be adhered to and due to several challenges highlighted by participants. The current study revealed differing perspectives amongst participants. One of the biggest challenges that was highlighted was the need for the implementation of newborn hearing screening programmes in an attempt to assist with the early identification and detection of hearing loss. The first principle of AVT highlights the importance of supporting and promoting programmes for the early detection and identification of hearing impairment including the auditory management of infants, toddlers and children who have been identified (Goldberg & Flexer, 2001). The results of the study indicated that early identification and intervention remains a significant area of concern and has not yet been achieved according to international standards proposed by the JCIH (2007) and local guidelines recommended by the HPCSA (2007). Interestingly, although there is a significant delay in identification and intervention, results from research conducted by Khoza-Shangase and Michal (2014) indicated that appropriate audiological intervention is provided at most government hospitals in Gauteng and includes individualized aural rehabilitation programmes. In addition, the majority of hearing impaired children receiving aural rehabilitation at government hospitals in Gauteng were utilizing an AVT approach which allowed these children to effectively communicate through speech (Khoza-Shangase & Michal, 2014).

In this study, it was observed that a further challenge was the provision of amplification devices. The provision of amplification devices is echoed in the second principle of AVT which highlights the importance of providing the deaf or HOH child with the earliest and most appropriate use of medical and amplification technology in order to achieve maximum benefits (Goldberg & Flexer, 2001). International research on AVT has confirmed that children who undergo cochlear implantation will receive the most noticeable benefits of AVT and will commence with AVT at a younger age (Hogan et al. 2008; Estabrooks & Sogwartz as cited in Chowdhry, 2010). The results from this study suggest the need for immediate provision of amplification devices subsequent to identification in order for these children to commence with intervention imminently.

An additional challenge was the aspect of bilingualism where many of the children who require aural rehabilitation are receiving therapy in their second language of English. This



highlights the need for the development of contextually and culturally relevant resources that embrace other languages native to South Africa.

In addition, it was apparent from the current study that full parental involvement cannot be obtained due to the reality in South Africa where the majority of parents have work responsibilities and are not present at each AVT session. These results therefore questioned the relevance of AVT in South Africa as the AVT approach is centred around full parental involvement and commitment to each AVT session.

All of the AVT participants in the study therefore stated that a pure AVT approach could not be administered in Gauteng, South Africa as not all of the AVT principles could be adhered to. As a result, an informal AVT approach was implemented and certain adaptations to therapy were made. In many cases, a combination of several aural rehabilitation approaches were utilized such as the use of the certain AVT techniques and the supplementation of Sign Language.

In addition, important clinical implications have arisen from the study. The key finding informing clinical practice is the requirement of the LSL certification when conducting AVT. All AVT participants stated the importance of mandatory LSL certification if therapists are working in the field of aural rehabilitation with deaf or HOH children. Furthermore, awareness regarding the benefits of AVT needs to be raised through the provision of additional courses. Many therapists in South Africa are not aware of AVT as this is considered a relatively new approach as the LSL training officially commenced in 2011 in South Africa (LSLS South Africa, 2011).

In summary, the findings of this study suggest a need for audiologists to play an active role in raising awareness of AVT in an attempt to encourage more therapists to enrol for the LSL training. In terms of intervention approaches implemented with deaf or HOH children, international research has proven that AVT is possibly the most effective intervention approach with the most noticeable benefit of these children learning to communicate through spoken language.

In conclusion, this study highlights the need for an increase in the number of certified LSL therapists in South Africa in comparison to the large amount of certified therapists internationally. There is a need for additional AVT comprehensive programmes to be implemented at various institutions in Gauteng. In addition, awareness regarding the successful implementation of AVT needs to be raised through additional courses as AVT is still considered a relatively new approach in South Africa. There is a need for the HPCSA to revisit and explicitly define the role of audiologists interacting with deaf or HOH children with the LSL qualification being a mandatory postgraduate pre-requisite for working in the field of aural rehabilitation. Furthermore, more emphasis is required on AVT at an undergraduate level where students are exposed to both the theoretical and practical aspects of using AVT principles in aural rehabilitation. This study therefore presents the relevance of AVT in Gauteng, South Africa. This study sought to explore the challenges, the impact of language and the contributing factors to the successful implementation of AVT as voiced and reported by therapists conducting aural rehabilitation with deaf or HOH children.

### **Clinical Implications**

The results obtained from the research study may have long-term implications for undergraduate and postgraduate degrees, continued professional development programmes as well as similar studies conducted on a larger scale in South Africa. The results obtained may be used to address the perceptions and needs of audiologists regarding AVT intervention. This will impact on the development of additional training programmes for AVT as well as the implementation of additional comprehensive AVT programmes at various institutions including hospitals, schools or centres in South Africa. In addition, it is anticipated that there may be implications for audiologists who are currently practicing AVT as well as audiologists who are using other paediatric aural rehabilitation approaches within the clinical setting.

Children with confirmed hearing loss should receive appropriate intervention at no later than six months of age (JCIH, 2007). These children must have some residual hearing in order for AVT to be effective (Goldberg & Flexer, 2001). It is important for the deaf or HOH child to commence with AVT at an early age as the child's greatest facility for learning language occurs

during the first two to three years of life (Chaikof, 2014). Audiologists should therefore be optimally equipped via LSL certification to provide effective AVT with deaf or HOH children.

### **Strengths of the Study**

This may possibly be the first study conducted on the relevance of AVT in South Africa by focusing on audiologists who have obtained the LSL certification. This study may therefore potentially add to the dearth of research in South Africa in the field of audiology more specifically aural rehabilitation with focus on the successful implementation of AVT.

The data and findings of the study are based on the semi-structured interviews conducted with the participants. The interviews allowed for rich detailed information and insights to be collected from the participants.

### **Limitations**

Previous research has indicated that there are a limited number of available comprehensive AVT programmes in South Africa as there are few certified AV therapists (Khoza-Shangase & Michal, 2014). There are currently a total of 31 certified LSL therapists in South Africa (LSLS South Africa, 2015). There is reportedly a further group of 12 therapists who are currently undergoing training (LSLS South Africa, 2015). The majority of these certified therapists reside in Gauteng. As a result, the study yielded a small sample of ten therapists from the target population as the study focused on audiologists currently practicing aural rehabilitation in Gauteng. The sample was further divided into five audiologists who had received the LSL certification and five who had not received the LSL certification.

This study can therefore not be seen as representative of all audiologists conducting AVT, as the experiences of other therapists implementing AVT in other provinces may differ from the experiences of the audiologists interviewed in this study. The results obtained from this study may therefore not be generalized beyond the context in which the data was collected as this study aimed to determine the relevance of AVT implemented in Gauteng, South Africa. International research conducted by authors regarding the implementation of AVT also recruited a small number of participants when a qualitative research design was utilized (Fairgray, Purdy & Smart, 2010).

### **Future research**

Currently not much is known about the successful implementation of AVT in South Africa. The current study explored the relevance of AVT in Gauteng, South Africa specifically the challenges and contributing factors associated with the implementation of AVT as perceived by audiologists who have obtained the LSL certification. It may be beneficial to conduct a similar study in other provinces in South Africa. Additional questions may be included in the interview schedule to obtain a more accurate perspective of the resources and equipment that is viewed as essential or in need by participants in order for AVT to be successful in South Africa.

Furthermore, a larger sample of certified LSL therapists may add more richness and information regarding the relevance of AVT across South Africa. A comparative study may also be conducted where two provinces in South Africa are selected according to where the most number of certified therapists reside.

AVT certification is offered to educators of the deaf, speech therapists as well as audiologists. It may be beneficial to conduct a comparative study on the perceived relevance of AVT in South Africa according to these three disciplines: educators of the deaf, speech therapists and audiologists. The study can focus on the perspectives of participants selected to represent each discipline in relation to their scope of practice and working with deaf or HOH children.

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**APPENDIX A**  
**ETHICAL CLEARANCE CERTIFICATE**



Research Office

**HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)**  
R14/49 Taylor

**CLEARANCE CERTIFICATE**

**PROTOCOL NUMBER H14/10/09**

**PROJECT TITLE**

Auditory-verbal therapy with deaf or hard-of-hearing children in Gauteng, South Africa

**INVESTIGATOR(S)**

Ms A Taylor

**SCHOOL/DEPARTMENT**

Speech Pathology & Audiology

**DATE CONSIDERED**

24 October 2014

**DECISION OF THE COMMITTEE**

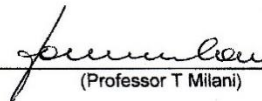
Approved Unconditionally

**EXPIRY DATE**

07/12/2016

**DATE** 08/12/2014

**CHAIRPERSON**


  
(Professor T Milani)

cc: Supervisor : Ms N Moroe

**DECLARATION OF INVESTIGATOR(S)**

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10000, 10th Floor, Senate House, University.

I/~~We~~ fully understand the conditions under which I am/~~we are~~ authorized to carry out the abovementioned research and I/~~we~~ guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

  
Signature

08 / 12 / 2014  
Date

**PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES**



**SPEECH PATHOLOGY AND AUDIOLOGY  
SCHOOL OF HUMAN & COMMUNITY DEVELOPMENT  
FACULTY OF HUMANITIES  
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**APPENDIX B  
INFORMATION DOCUMENT**

**Title: Auditory-Verbal Therapy with Deaf or Hard-of-Hearing Children  
in Gauteng, South Africa**

Dear Audiologist,

You have been invited to participate in a research study titled “Auditory-verbal therapy with deaf or hard-of-hearing children in Gauteng, South Africa.” The study consists of audiologists conducting aural rehabilitation with the paediatric population as part of their caseload.

My name is Ashleigh Taylor and I am a student registered for the M.A. Audiology at the University of the Witwatersrand. I am required to conduct a research study as part of the fulfillments of my degree. The study aims to explore the relevance of auditory-verbal therapy (AVT) provided by audiologists in Gauteng.

The aim of this study is to determine the current practice of audiologists conducting AVT in Gauteng in order to understand the relevance of AVT in South Africa. Morrison, Perigo and Bernstein (2010) stipulate that the field of AVT lacks an adequate number of trained AVT professionals internationally. In South Africa, there are currently few hospitals, schools or centres where comprehensive AVT programmes are provided (Khoza-Shangase & Michal, 2014). Furthermore, this study aims to investigate the challenges associated with AVT training in South Africa as research indicates almost half of the children (48.7%) who receive aural rehabilitation are enrolled in AVT (Khoza-Shangase & Michal, 2014). This suggests that AVT is a growing intervention programme used with deaf or HOH children in South Africa. In addition, this study

aims to explore the impact of language on the implementation of AVT and to identify which approach is considered the most effective for deaf or HOH children in Gauteng.

In order to obtain the necessary information, I hereby request your participation in the study. The study will consist of a semi-structured interview consisting of 30 questions that will take approximately 30 minutes to complete. The interview will be conducted at your place of employment to ensure that you are not inconvenienced in any way. In addition, the interviews will be audio recorded to assist in the accuracy of data transcription and subsequent analysis. These audio recordings will be transferred onto a password protected computer and will be stored for a period of five years.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with this research study. Information provided in your response to the semi-structured interview will be kept strictly confidential as research data will be used for the sole purpose of the study. Anonymity will be assured as no identifying details, or specific mention of the participant's identity will be used in the study. Should the researcher utilize direct quotes in the reporting of the research data, confidentiality of information will be assured by allocating a number to each participating audiologist. Post completion of the study, a debriefing session will be held with the participants to share the findings of the study if required.

You may withdraw from the study at any given time and should you choose not to participate in the study, you will not be disadvantaged in any way. In addition, you will not be penalized or discriminated against should you choose not to answer certain questions. Responses to the semi-structured interview will remain confidential and anonymity will be assured as no identifying details will be requested. There are no correct or incorrect responses as the researcher is investigating audiologists' opinions regarding AVT intervention.

Your participation in the study will be beneficial to the field of Audiology as it may have long-term implications for audiologists working in the field of Aural Rehabilitation. In addition, the findings obtained through your participation may be used to address the perceptions and needs of audiologists regarding AVT intervention.



The research study will be conducted by Ashleigh Taylor under the supervision of Mrs. N. Moroe and Ms. D. Pillay, lecturers in the Discipline of Audiology and Speech-Language Pathology at the University of the Witwatersrand. Should there be any queries, please contact the researcher, Ashleigh Taylor or my research supervisors.

Your participation in this study will be greatly appreciated.

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Ashleigh Taylor

Masters Research Student

B. Communication Pathology  
(Audiology) (UKZN)

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**SPEECH PATHOLOGY AND AUDIOLOGY  
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## **APPENDIX C INFORMED CONSENT DOCUMENT**

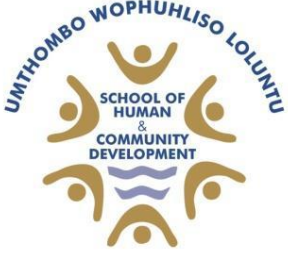
I agree to participate in a research study titled, “Auditory-Verbal Therapy with Deaf or Hard-of-Hearing Children in Gauteng, South Africa.” I understand that my participation in the study is voluntary and that I may withdraw from the study at any given time.

I \_\_\_\_\_ hereby declare that I understand the content of the research study as explained by the researcher and the information document and I am aware of the following.

- 1) I am aware of the research expectations.
- 2) I wish to participate on a voluntary basis and I am aware that I may withdraw from the study at any given time.
- 3) All personal information will be withheld from the results and therefore anonymity and confidentiality will be maintained.
- 4) All data will be accountable to the researcher and supervisor.
- 5) I have been informed of all the necessary contact details of the researcher and supervisors.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date



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**APPENDIX D**  
**INFORMED CONSENT DOCUMENT FOR RECORDING EQUIPMENT**

I agree to participate in a research study titled, “Auditory-Verbal Therapy with Deaf or Hard-of-Hearing Children in Gauteng, South Africa.” I understand that my participation in the study is voluntary and that I may withdraw from the study at any given time. I am aware that the semi-structured interview will be audio recorded to assist the researcher in accurate data transcription and analysis.

I \_\_\_\_\_ hereby grant permission regarding the use of recording equipment during the semi-structured interview.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**APPENDIX E**  
**INTERVIEW SCHEDULE**

**Auditory-Verbal Therapy with Deaf or Hard-of-Hearing Children in  
Gauteng, South Africa**

<b>Section 1: Biographical information of the audiologist</b>
<ol style="list-style-type: none"><li>1. What is the highest qualification that you have obtained?</li><li>2. At which university did you obtain your qualification/s?</li><li>3. In which year did you obtain your qualification?</li><li>4. How many years have you been practicing as an audiologist?</li><li>5. Please describe your current employment setting.</li><li>6. Are you employed full time or part time?</li><li>7. Have you received additional aural rehabilitation training with reference to AVT?</li><li>8. If yes, please provide further detail regarding the training.</li></ol>
<b>Section 2: Relevance of AVT provided by the audiologist</b>
<ol style="list-style-type: none"><li>9. Please describe your current caseload of children receiving aural rehabilitation.</li><li>10. How long have you been practicing aural rehabilitation with the paediatric population?</li><li>11. Do you feel that you are adequately trained to provide aural rehabilitation to deaf or hard-of-hearing (HOH) children? Please comment.</li><li>12. If you are involved in conducting AVT, do you think the nine guiding principles of AVT intervention are relevant to the South African context?</li><li>13. Which principles of AVT are not relevant and why?</li></ol>
<b>Section 3: AVT and general paediatric aural rehabilitation therapies</b>
<ol style="list-style-type: none"><li>14. What aural rehabilitation intervention approach are you using with deaf or HOH children?</li><li>15. Do you think that the method of intervention is effective?</li><li>16. If AVT is the chosen method, are you using formal or informal AVT?</li><li>17. Please describe the advantages that are evident with the chosen method of aural rehabilitation.</li><li>18. Please describe the disadvantages that are evident with the chosen method of aural rehabilitation.</li></ol>
<b>Section 4: Language of AVT in South Africa</b>
<ol style="list-style-type: none"><li>19. What is the home language of most of the children that receive aural rehabilitation within your current caseload?</li><li>20. How do you manage with the issue of bilingualism where the child does not use English as his or her home language?</li><li>21. Do you think that the language in which aural rehabilitation is conducted will impact on effective intervention? Why?</li></ol>

**Section 5: Evaluation of AVT as part of the intervention programme**

22. What techniques and strategies do you find most effective when conducting aural rehabilitation? Please provide examples.
23. Do you use any modifications when conducting aural rehabilitation specifically regarding AVT in the South African context?
24. Please comment on whether you think there are sufficient tools available when conducting aural rehabilitation in South Africa.
25. Do you think the available tools are age appropriate and culturally sensitive for children from various backgrounds in South Africa?
26. What challenges do you experience when conducting aural rehabilitation with deaf or HOH children?
27. What factors contribute to successful aural rehabilitation with deaf or HOH children?
28. In your opinion, what is needed for further training in aural rehabilitation specifically AVT with deaf or HOH children in order to improve your knowledge and skills?
29. What suggestions can be made to improve the implementation of aural rehabilitation in South Africa?
30. Please provide any additional comments regarding needs in terms of aural rehabilitation with reference to AVT in South Africa.