THE EFFECT OF READING ALOUD ON THE UTTERANCES OF EARLY SET OF WORDS IN THE REHABILITATION OF A HEARING-IMPAIRED BOY WITH COCHLEAR IMPLANT: A CASE STUDY

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A Project entitled **The Effect of Reading Aloud on the Utterances of Early Set of Words in the Rehabilitation of a Hearing-Impaired Boy with Cochlear Implant: A Case Study** was written by Suzanne Abang Balla and submitted to the Faculty of Cognitive Sciences and Human Development in fulfillment of the requirements for the degree of Bachelor of Education with Honours (English as a Second Language).

It is hereby confirmed that the student has done
all the necessary amendments of the project for acceptance

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Abstract

The Effect of Reading Aloud on the Utterances of Early Set of Words in the Rehabilitation of a Hearing-Impaired Boy with Cochlear Implant: A Case Study

Suzanne Abang Balla

This study sought to find out the effects of reading aloud on the utterances of early set of words in the rehabilitation of a hearing-impaired boy with cochlear implant. The subject in the study is a hearing impaired boy who hears with a sensory hearing aid. Cochlear implantation was done one and half years ago. The study uses the reading aloud treatment (R.A.T) to provide spoken language to the subject. The reading materials contain four categories of words, namely, naming things and people; actions and events; describing or modifying things and personal or social words.

In the process of the rehabilitation, the reading materials were read to the subject. Then the subject read aloud by repeating what is been read. It is one of the strategies that can be used to support language development in all children.

The findings show that there is a great increase in the number of words uttered and imitated by the subject. The words were from the nominal category of words where the types of words were generally nouns. The subject was able to develop further to use the words in the correct contexts.

Abstrak

Kesan Kaedah "Reading Aloud" terhadap pemulihan penuturan seorang kanak-kanak yang telah menjalani Implan Koklear

Suzanne Abang Balla

Kajian ini bertujuan untuk mengkaji keberkesanan kaedah "reading aloud" terhadap pemulihan penuturan seorang kanak-kanak pekak yang telah mendapat implan koklear. Beliau mengguna alat pendengar sensori ini untuk mendengar. Pembedahan koklear ini telah dibuat satu setengah tahun yang lalu. Kajian ini mengguna kaedah "reading aloud" untuk memberi bahasa pertuturan kepada kanak-kanak ini. Bahan-bahan bacaan mengandungi perkataan daripada empat kumpulan perkataan iaitu "naming things and people; actions and events; describing or modifying things and personal or social words".

Dalam proses pemulihan tersebut, bahan-bahan bacaan telah dibaca kepada kanak-kanak tersebut. Beliau turut membaca bahan-bahan bacaan tersebut dengan meniru bacaan si pembaca. Ini adalah salah satu strategi yang boleh digunakan untuk membantu perkembangan bahasa di dalam semua kanak-kanak.

Hasil kajian menunjukkan bahawa terdapat peningkatan dalam jumlah perkataan yang boleh disebut oleh kanak-kanak tersebut. Perkataan-perkataan ini adalah daripada kategori perkataan yang nominal iaitu terdiri daripada kata nama. Beliau juga boleh mengguna perkataan-perkataan tersebut dalam situasi yang sebenar.

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LIST OF ABBREVIATIONS

R.A.T.	Reading Aloud Treatment

CHAPTER 1

1.0 Introduction

This chapter will focus on the background to the study, statement of the problem, research objectives and research questions, the significance of the study and definition of terms. The background of the study focuses on the differences in the language development in hearing and hearing impaired children with cochlear implantation. It further explains why and how the researcher decided to conduct the study of introducing the reading aloud treatment (R.A.T) as a rehabilitation activity for the sample. The statement of problem highlights the outcomes of other habilitation activities on the language development in cochlear implanted children. The research objectives look into the effect of R.A.T on the utterances while the research questions highlight the questions that relate the R.A.T to the language development of the sample. The significance of the study focuses on the importance of the study to society, educationists and authority while the limitation of the study discusses the problems that the researcher faced in the course of the study. Finally, the definition of terms present the terms used in the study.

1.1 Background to the Study

The language development in both the hearing and hearing impaired children in their early age begins similarly where they produced homogeneous sounds as in their crying, fussing and cooing. These sounds are used to

communicate socially and with their environment. However, as they progress into the babbling stage, the hearing impaired children will not progress to produce speech-like sounds as in vowel and consonant-vowel syllables (Steinberg, 1993, p. 4). Thus, these young hearing impaired children are unable to develop to produce language unless they are fitted with hearing aids. Today, children with sensor neural type of hearing impairment can have access to sound via cochlear implant. According to Erber as cited in Beiter and Estabrooks (Estabrooks, 1994, p.163), "cochlear implantation in very young children has brought the opportunity to detect, discriminate, identify, and comprehend spoken language so that many children can process some speech and language through learning".

The study comes about in response to the need to create societal awareness about cochlear implant and the benefits it brings to children with hearing impairment. The researcher who is a mother to a hearing impaired child with a cochlear implant finds that the community in which the family is residing in is unaware about the availability and benefits of cochlear implantation in hearing impaired children. There were many instances where people are ignorant and curious about the external gadgets worn by the sample. The unawareness of the society has caught the attention of the researcher that there is a need to enlighten the society on cochlear implantation and how a recipient of cochlear implant will benefit from the hearing gadgets. In fact, this study will look into how the device allowed the recipient to gain access to the world of sounds that subsequently contribute to development of speech.

Beside that, the researcher had numerous discussions with other parents of hearing impaired children with cochlear implant. These discussions and sharing of experiences lead the researcher to also conduct the study. One of the main concerns

of these parents was how to fit these children into the current education system where the system is unable to handle their needs. The teachers are not trained to tackle their language development; the facilities such as FM system are not provided in the classroom and the classroom enrolment is too big. A FM system is a wireless amplification device that consist of two parts namely a microphone worn by the teacher and a special hearing aid that can pick up signals from the microphone. In the classroom, when a teacher is teaching, his or her speech is transmitted directly to the students' ears. It is a useful device especially when the background is noisy and where there is a considerable distance between the teacher and the students.

It is very alarming and extremely worrying as the sample and those like him would deprive from developing their potentials along with other children due to their hearing impairment. Nevertheless, the cochlear implantation would allow them to have access to sound input and subsequently, to acquire language. So, if they are given the opportunities to integrate with the others, these children can develop like any other normal children. The school environment can give them the speech and linguistic skills that can eventually provide to them a greater social independence and better quality of life in the long run.

Thus, the researcher looks into this study in order to share these experiences with other members of the society, educationists and the authority. They need to understand how these hearing impaired children acquire language and hopefully, will be able to contribute indirectly to the development of language of these children. It is essential to create the awareness that these children can develop language skills if proper rehabilitation is given to them.

The difficulty to create that awareness leads the research to the introduction of R.A.T in this study. It is a demonstration of a supplementary habilitation activity to the speech therapies that the subject is attending. Many would think the needs in these children can only be met through clinical interventions. However, there are many activities where the surrounding community to the child can provide linguistic inputs to these children. One of them is reading aloud. Thus, this study will look at the effects of the R.A.T on onto the utterances of the subject.

1.2 Statement of Problem

A number of studies have assessed the impact of cochlear implantation on the language development in children. These studies looked into the benefits of cochlear implantation especially on language development and it cannot be denied that the benefits of cochlear implant were significant. Recipients of these sensory hearing aids have access to the world of sounds and thus, their auditory, speech and linguistic skills have improved. However, according to Abdi, et al. (2001), "the prelingually deaf children can never achieve 'normal' speech recognition or production ability since they have lost the time for learning these skills." In addition, Marschark, (1997, p.90) stated that, "even when hearing losses are discovered early and children have received hearing aids and intensive early speech therapy, deaf children's vocal babbling diverges from that of hearing children. Repetitive babbling may still occur; but it appears later and less frequently than in hearing children". The initial stage in language development in hearing impaired children is similar with hearing children, and normally parents of hearing impaired children are unable to detect the impairment at the early stage. It is only when these children do not progress from the babbling stage that parents aware of the problem

and that normally happened when children are between one to two years old. By then, the hearing impaired children have resolved to other means of non-vocal communication when they communicate with their parents and others around them. Subsequently, by the time they get to wear the hearing aids and have access to spoken language, they are older. It is only then will they start to babble while the hearing children who by then have developed to utter words or phrases. Since, the hearing impaired children have developed non-vocal form of communication, the needs to babble will not be as frequent as in hearing children. These indicate that the speech development in hearing impaired children who are fitted with hearing aids will not progress to be as the speech of normal children. However, most of those studies were clinically done by professionals in the field. This study is from a parental point of view where the study is carried out at home through a parent-child relationship. Hence, the researcher hoped to work on the subject by employing R.A.T as a supplementary rehabilitation activity to the speech therapies.

1.3 Research Objectives

The study aims to find out the effect of the reading aloud treatment on

a. the number of words that the subject will be able to utter within the period of study,
b. the categories of words that the subject will utter
c. the types of words that the subject acquire

1.4 Research Questions

It is hoped that this study will shed some lights into questions like:

a. Does the intended R.A.T have any effect on the language development of the subject?
b. What is the extent of the effects of the intended R.A.T. on the language development of the subject?

1.5 Significance of the Study

This topic of study was identified as being important due to the uniqueness of the case where hearing and speech rehabilitation which is done through cochlear implantation is not yet common within the community. This study hopes to create awareness and understanding to the society, educationists and authorities regarding the development of speech in a hearing impaired child fitted with cochlear implant. This is vital as the subject will be attending the mainstream of the education system in the future.

The finding of the study is of significant importance to create parental and educational awareness. Parents of hearing impaired children need to identify the types of hearing impairment in their child and be aware of the different types of hearing devices that are available. This is an act of being responsible and sensitive to the needs of their children as to ensure normal development in the child. The finding of the study is an invaluable experience that the researcher would like to share with other parents of cochlear implant children.

The advent of technology in the field of Science provides appropriate treatment of hearing loss in children. Today, hearing impairment can be detected at early age and the appropriate hearing aids can be provided to these children.

Cochlear implantation is a form of technology that has shown excellent results in hearing impaired children where they were able to acquire language skills. For instance, Beiter and Estabrooks (cited in Estabrooks, 1994, p.167) state that "all the children in North York General Hospital who have the cochlear implant have made significant gains in speech, language, auditory processing and spoken communication". With such significant achievement in acquiring language skills like these children, there will surely be an increase in number of recipients in the future. The finding of this study hopes to ease parental stress for those who would like to opt for cochlear implantation for their children in the future by giving a better understanding of the benefits and implications of cochlear implantation. The experience of doing the study is very much from a parental view point that the researcher hopes to share the first-hand experience with other parents and to those who have contact with hearing impaired children with or without cochlear implantation.

1.6 Limitations of the Study

There are certain limitations in this study that should be noted. Firstly, the subject may be unwilling to cooperate with the research during the reading sessions. The disciplinary problem can dampen the progress of the study. It is essential that there should be a level of self discipline and concentration on the part of the subject throughout the reading sessions.

Secondly, the well being of the subject throughout the period of the study needs to be considered in this study. When the subject is sick, he would be unwilling to participate in the reading sessions.

Thirdly, the speech perception of the subject will determine how the subject interpret the linguistic inputs acquire during the reading aloud sessions. The researcher cannot tell how the subject perceived the sounds that he hears. Are there really linguistic inputs that bring meaningful sounds to the subject or merely just noise?

Then, the operation of the hearing device is also an important factor in this study. Firstly, the subject and his speech processor need to undergo mapping sessions at an interval of three to six months. During these sessions, the speech processor is programmed to allow the appropriate amount of current needed to just hear a soft sound and a comfortably loud sound. This would enable the subject to perceive sounds that are around him (ibid. p. 160). However, the age and concentration span of the subject during the mapping sessions can affect the information needed to programme the speech processor. The subject might not want to cooperate in the activities required in the mapping sessions resulting in inaccurate input for the audiologist to programme the speech processor. Thus, in the course of the study, if there is inaccuracy in the programmes, the subject might not be hearing according to the appropriate "loudness" and that would surely affect sounds that he hears during the reading aloud sessions. The pitch of word sounds differs between the vowels and consonants. According to Marschark (1997, p. 26), vowels tend to fall in the lower frequency range while consonants fall in the higher frequency range and thus, the vowels are louder than the consonants. So, the mapping of the speech processor is vital in order to provide the appropriate programme that suits the needs of the subject.

Secondly, there could be operational problem with the hearing devices as it is environmental sensitive. Changes in weather can affect the programmes installed

in the hearing device and reinstallation of the programmes can only be carried out by sending the device to the audiologist at Universiti Kebangsaan Malaysia Hospital in Kuala Lumpur. This would take a few days to a week. Within that period, the subject would not be hearing and therefore, the reading sessions would not be fruitful.

Next, the utterances of the subject depend a lot on the type of sounds that he listens to. The subject should be listening to clear and well-articulated speech in order to obtain optimum results. The speech sounds are the first sounds that the subject would identify and relate to the things within the environment. For instance, if the subject hears a clear and well-articulated "*meow*", he will try to imitate closely to the sound he heard. Once he registers the sounds and able to establish the identification of object to the sound, he will use the sound to refer to a cat when he communicates to others. So, it is essential to provide clear speech sounds by providing well-articulated speech sounds during the reading aloud sessions. It is an enriching the listening experience that would contribute to the speech production of the subject.

1.7 Definitions of Key Terms

1.7.1 Cochlear Implantation

Cochlear implantation involves the implantation of electronic devices that "bypass the damaged inner ear/hair cells and directly stimulate the auditory nerves which send signals to the brain." (Murray, 2003)

1.7.2 The Categories of Words

According to Peccei (cited in Hudson, 2000, p.3), the categories of words refers to the classification of words into the types of concepts that they express such as naming things or people, actions or events, describing or modifying things and personal or social words. These words are those that are very much related with the child's daily life and world.

1.7.3 The Types of Words

This refers to the types of things children most likely to pick up when they first start to speak. (Peccei cited in Hudson, 2000, p.4). Most of these words are words that are used to refer to people, things, actions and qualities involved. In other words, these words are mainly nouns, verbs and adjectives (ibid, p.23).

CHAPTER 2

REVIEW OF LITERATURE

2.0 Introduction

In this chapter, the related literature will review the various stages in the language development in children and hearing impaired children; the medium and approaches used to communicate with hearing impaired children; the characteristics of hearing loss; cochlear implantation and the reading aloud activity. The language development in children will focus on how children learn language in terms of their speech development and how children with hearing impairments are deprived from this normal language development. This chapter will also look into the different hearing impairments and how these affect the language development in the utterances of a hearing impaired child. Finally, the review will look into the various language rehabilitation programs that are available for children with cochlear implants.

2.1 Language Development

2.1.1 Language Development in Children

The language development in children is complex as language is a complex system that has three structures namely, "speech sounds (phonology), meaning units (morphology) and rules for stringing them together (syntax)" (McLean and Snyder-McLean, 1999, p.7). The language development progresses in stages where it

begins with the speech sounds. A child will get to hear some speech sounds and they will identify and relate the sounds with the things and actions in their environment. When the child can identify and understand the meaning of the sounds, the child will be able to utter the words within the right contexts or situations. It is normal and essential for young children to imitate speech sounds during their early age. However, this does not demonstrate that he or she knows the meaning of the word. It is an attempt to communicate to the people and the sounds around him or her.

The language development during the early age happens very fast especially when the children are able to progress rapidly from using no words at all to using single-word utterances and then two- and three-word combinations just within a short span of time. This happens universally in all children and even the hearing impaired children have similar progress in their language development. According to Steinberg (1998, p.4), there is a parallel onset characteristic in the early stage of language acquisition for both the hearing and hearing impaired children. They produce simple vowel sounds such as "*ah*", "*ee*" and "*oo*" during the first two months of life (Marschark, 1997, p.89).

From two to three months old, they undergo the cooing stage where they produce a variety of non-speech sounds such as '*coo*', '*goo*' and '*ka*'. These are vowel-like sounds joint with consonant-like sounds that are produced mostly in the back part of the mouth (Marschark, 1997, p.89). In the process, they get to exercise their articulators and control their breathing (Steinberg, 1993, p.4). So, they respond to the people around them and the sound of the environment by crying, sucking, spitting, gurgling and making other indescribable noises. In fact, according to Lightbown and Spada (1999, p.1), scientists have found out that young

children are able to respond to human language even before they are able to babble. They can differentiate sounds like "*pa*" and "*ba*" in the early weeks and months of their life. Naturally, this ability is important for children in order to be able to proceed to the babbling stage of language acquisition.

During the babbling stage which typically occurs around six and eight months, the children get to produce speech-like sounds which are distinctive to the different languages they are learning. These clearer speech-like sounds are like "*mama*", "*dada*", and "*gigi*" and mainly repetitive sounds. Steinberg (1993, p.4) states that these are uttered with "the features of the intonation pattern of their language, as they tend to be". So, the sounds produced are similar to the rhythm, pitch and stress pattern of the language that they are exposed to. It is the first vocalization in the language acquisition in children.

As children reach around ten or eleven month, they utter their first word. The words are mainly frequently repeated words such as "*bye-bye*", "*mommy*", "*daddy*" and "*no*". These utterances may not be used in the correct context but they sound similar to adult words. The single word uttered can be used to refer to different things. For example, "*mama*" can mean "*mother*" or requesting for something as "*I want my mother*" (Steinberg, 1993, p.6). This is due to the fact that children imitate the sounds made by adults without really knowing the meaning of the words. Nevertheless, this depends on the physical and mental (cognitive) development in children (McLean and McLean, 1999, p.18). Physically, the development of the articulators such as the mouth and the throat is essential in the proper articulation of sounds. On the other hand, cognitively, some degree of brain development is also vital "since the creation of speech sounds must come under the control of speech areas in the cerebral cortex" (Steinberg, 1993, p.5). Once children