

Vol 3 Issue 3 Sept 2013

Impact Factor : 1.2018 (GIS)

ISSN No :2231-5063

Monthly Multidisciplinary
Research Journal

*Golden Research
Thoughts*

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RNI MAHMUL/2011/38595

ISSN No.2230-7850

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GRT **PREDICTORS OF SPEECH INTELLIGIBILITY OF
STUDENTS WITH HEARING IMPAIRMENT:
IMPLICATIONS FOR INCLUSION IN NIGERIA**



**Eskay, M. (Ph.D.) , Ngwoke, D. U. (Ph.D.) , Chikelu, R. (M.Ed), Ngwoke,
A.N. (Ph.D.) And Nosike, U. (M.Ed)**

Department Of Educational Foundations University Of Nigeria, Nsukka

Abstract: Speech intelligibility is considered as the most practical measure of communication skills for children with hearing impairment as well as their peers with normal hearing. Contentious efforts should be made through inclusive education to improve on the predictors of speech intelligibility in order to promote not just communication skills but positive attitude, personality growth and academic excellence for all learners.

Keywords:Intelligibility , Implications , communication , academic excellence .

INTRODUCTION:

Man as a social being makes use of language. Since it helps man to think, speak and convey ideas, it is regarded as the most important component in interpersonal communication. Moreover, the importance of hearing and listening is highly indisputable in language acquisition. This explains why children who are unable to acquire the symbolic systems of language have challenges.

Hearing impairment can be defined as full or partial decrease in the ability to understand sounds (Girgin and Ozsoy, 2008). Individuals with hearing impairment have limited ability to hear which might hinder them from utilizing the spoken language effectively (Girgin, 2003 & Smith 2007). In other words, those children who are unable to hear or speak oral language have a more limited ability to communicate. Difficulty in communication is a major issue for rejection, withdrawal, bias and exclusion. In a study carried out a decade ago by Kreimeyer (1992), it was discovered that deaf/hard of hearing children encounter difficulties acquiring spoken language, which often affect their communication abilities, social development and, in turn, the children's friendship relations and social feelings. Moreover, Haller and Montgomery (2004) and Thorpe (2004) pointed out that even mild hearing loss in one ear can cause a student to struggle academically. This limitation is enough to adversely affect the child's educational performance. It is also identified that a greater percentage of students who are deaf or hard of hearing drop out of school compared to their peers without disabilities (Gallouet Research Institute, 2005). These explain the importance of spoken language communication.

A main factor in spoken language communication is speech intelligibility. Speech intelligibility is defined as the accuracy of what an individual with hearing impairment delivers through speech and the intelligibility of this speech

by a normal listener (Girgin & Ozsoy 2008). That is to say, being able to understand someone's speech is partly determined by the listener's experience. Speech intelligibility is a crucial factor in interpersonal communication. It can be seen as most practical measure of communication skills. In this respect, predictors of speech intelligibility carry utmost importance in investigating communication skills and planning interventions for children with hearing impairment in regular classrooms and for their overall well being.

Predictors of Speech Intelligibility of Children with Hearing Impairment

Research has proved overtime that no two individuals are the same (Guild, 2001; McAdams, 2001; Hall, 2002; Mulroy&Eddinger, 2003). The same holds for children with hearing impairment especially as it regards the issue of speech intelligibility. First and foremost, the degree of hearing loss is often regarded as a good predictor of speech intelligibility. Researches support that as the degree of hearing loss increases, the intelligibility of speech decreases (Svirsky et al 2002). Yosihinaga-Itano & Sedney (2002) in their study found that the speech of those with profound losses was not intelligible and for those with mild to severe losses, the speech of 82 percent was intelligible. Moreover, Smith maintains that children whose speech intelligibility ranges between 75 and 100 have a less serious hearing loss. In fact, with just few exceptions, most studies prove that the level of hearing loss is the most fundamental variable that affected speech intelligibility.

Individuals who are pre-lingually deaf or hard of hearing become deaf before they understand or speak language. They either are born deaf or lose their hearing as infants. Their ability to hear language affects seriously their

ability to speak and communicate with others and their understanding of themselves. Individual who are post lingually deaf experience hearing losses after they have learned to speak and understand language. One can out rightly affirm that the age at which hearing impairment occurs is a strong determinant in a child's ability to use language. However, in a recent study carried out by Svirsky et al (2002), it was found that among prelingual hearing impaired, who were wearing hearing aids, the residual hearing was a significant predictor of speech intelligibility. In a similar vein, Hall (2002) in his recent study reveals that the level of hearing loss measured through an audiometer cannot robustly predict speech intelligibility. Rather, children's proficiency of speech processing is a better predictor. More specifically, the proficiency of children to use the residual hearing in order to perceive speech is a better predictor.

The point made so far is that those aforementioned are predictors of speech intelligibility irrespective of the controversy as to which one is better than the other. Moreover, according to Smith (2007), the communication mode used by the family makes a difference in the speech intelligibility of children with hearing loss. Deaf parents (parents who are deaf and also have a deaf child) often use sign language as their native language and as such teach it to their infant through the normal developmental process. Deaf children of Deaf parents learn sign language during their infancy. On the other hand, many hearing families, once their child's deafness or hearing loss is identified, choose to learn and use some combination of oral language and a manual communication system so that they can communicate more fully with their child. For those children who rely on sign language as their primary means of communication, spoken language can be much difficult.

Nevertheless, it has also been discovered that the speech production patterns of students with hearing impairment interfere with the speech fluency and intelligibility to a serious extent. There are deficiencies in syntax, phonology, semantics and morphology of most languages of some students with hearing as a result of insufficiencies in hearing and listening ((Girgin and Ozsoy, 2008). Most students with hearing impairment are under impaired listening conditions because of their hearing loss. On the other hand, an individual listening to the speech of students with hearing impairment is under impaired listening conditions as well. The duration of a

sound serve as an indispensable clue to discriminate sounds in such conditions. Thus, the right sound duration is an important predictor of speech intelligibility. In a study conducted by Haller & Montgomery (2004)

in which they investigated the relationship between speech intelligibility and the use of abnormal duration in speech. They conducted a study with 29 children with severe hearing loss. These children were given training to improve their speeches in terms of sound duration. In the end, it was revealed that children's speech intelligibility improved almost 56 percent in addition, listener's ability to understand the speech of student with hearing impairment increased to a larger extent.

The points so far made is that though controversy

surrounds which predictor of speech intelligibility is most paramount, recent researches have beyond doubt that level of hearing loss, communication mode used in the family, right sound duration of vowels in most languages, proficiency to use residual hearing, among others. It can also be deduced that early identification and intervention make a tremendous difference in the speech intelligibility of children with hearing impairment.

Importance of Speech Intelligibility

Speech intelligibility has a significant effect on the child's well being in school. Good speech intelligibility enhances positive attitude of non-experienced listeners (as it is the case with some parents, students (pupils) towards children with hearing loss. Speech intelligibility increases peer's attitudes towards children with hearing loss, their cognitive abilities and their personality features (Monsen 1983). Smith (2007) also affirmed this when he asserted that a relationship exists between a person's speech ability and how others perceive that persons overall abilities. According to him, as ratings of intelligibility go down, ratings of cognitive competence and personality decline.

It appears therefore that children with hearing impairment no matter the level of impairment need to be included in the regular school where spoken language is the major communication mode. It also appears therefore, that such children must exhibit a high level of speech intelligibility in order to establish friendships. This is because in most cases for children with hearing loss, communication ability and especially the ability to use spoken language for communication constitute a central factor affecting social relationships, particularly with hearing individuals and also give them full access to the general education curriculum.

Inclusive Education and the Child with Hearing Impairment

Inclusive education, according to United Nations Education, Scientific and Cultural Organization (UNESCO, 2007), is a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, culture and communities and reducing exclusion from education and from within education. This implies educational opportunities for all children, the right of each child to receive help in learning to the limits of his capacity, whether that capacity is small or great. This also implies that mere enrollment or physical proximity of children with hearing impairment with their peers in regular classroom does not necessarily indicate inclusion.

The first step towards inclusion should be the early identification process of individuals who may or may not show signs of any impairment. A comprehensive identification involves team work comprising the parents, families, teachers, professionals and so on. Magnuson (2000) and Sussman et al (2004) noted strongly that young children who have profound hearing loss who were early identified and received intervention services have much better outcomes than those who do not. It pays off a better reading achievement and speech abilities in later years

(Smith, 2007).

Moreover, recent studies have proved that babies identified before they are six months old experience half the delays of those identified after they are 18 months old (Yoshinaga – Itano & Apuzzo 1998; Hoover 2000 & Sussman et al 2004). Early identification allows for services to children and their families to begin immediately and sets the stage for better language and cognitive development. Interventions through the use of different hearing aids can help even children whose hearing loss is profound fall at a mild functional level (Smith, 2007). In other words, it is not odd to say that early identification and intervention make the greatest difference in language, cognition and social skills of children with hearing impairment in regular classrooms.

The regular classrooms should be enriched with spoken language communication mode and in addition manual communication to take care of individual needs and abilities of children with hearing loss. For instance, including children with hearing loss in the regular classroom where spoken language is the major communication mode will enhance their communication skills. However, effort should be made to consider the socio emotional impact on the child related to feeling constantly different and possibly less coherent or lonelier, while in the company of hearing peers. Since the language learning environment is an important predictor of language proficiency, oral communication should be highly encouraged more in schools. Children with hearing impairment could be grouped together with their peers with normal hearing in assignments involving oral presentation. This will no doubt lower stigma and increase proximity to potential social partners and enable them gain exposure to spoken language. In addition, the use of total communication allows the children to communicate in whatever mode is easiest and most effective.

Moreover, contentious efforts should be made by the school to train children who have hearing loss in speech production. Ability of each child to use residual hearing proficiently in speech production promote speech intelligibility and so effort should be made to build on what the child has already. That is to say, those teachers in regular classrooms should be adequately trained in speech production and drills to enable them give tremendous assistance. Smith (2007) noted that the teacher should articulate words very well, speak more slowly, and repeat information among others.

Inclusive education involves team work. The teacher must seek the help of specialists who can provide suggestions about activities that foster better speech and language. The teacher must also work with parents of children with hearing loss. The child's parent can help teachers come to a better understanding of their child's preferred learning styles especially as it regards communication mode. Teachers must remember that each child is unique and must emphasis on each child's unique needs.

Including children with hearing loss in a regular classroom will help those children with normal hearing understand better the spoken language of children with hearing loss. In addition, it enhances positive attitude in children with normal hearing towards children who have

hearing loss. In a study carried out in Israel by Zandberg (2005) , finding has shown that the attitudes of hearing children who were exposed to students with hearing impairment were more positive than those of hearing children who had not been exposed to deaf or hard of hearing children.

CONCLUSION

Speech intelligibility is a significant factor in the child's ability to communicate through spoken language. Predictors of speech intelligibility abound and include level of hearing loss, proficiency in using residual hearing, communication mode used in the family, among others. Early identification and adequate intervention make a very significant difference in positively acting upon predictors of speech intelligibility and in fact, the over all well being of both children with hearing loss and their peers with normal hearing. Teachers, parents and specialists, through team work should provide the necessary support and accommodation to work on those predictors of speech intelligibility. The government should consolidate effort in providing the facilities especially hearing aids, employ specialists in the school system and adequately train the classroom teachers to effectively handle those unique differences among learners found in regular classrooms.

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