A study of Language development of hearing impaired children in reference to speech therapy

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Abstract: the present study attempts to explore the language development of hearing impaired children in reference to speech therapy. The target population were deaf students of age range 9-16 years with severe to profound hearing loss, out of which 40 students were selected by random sampling technique. A 2x2 factorial design was used where before and after speech therapy was matched with level of sex. Pre and post therapy assessment was conducted with the help of selected tools - An audiometer was used to measure the type and degree of hearing loss. Receptive-Expressive Emergent Language Test – third edition (REEL-3) developed by Kenneth et al. 1991, was used to assess the development of receptive and expressive language skills. Gestural scale was used to assess the expressive and receptive gestural skills of the hearing impaired children in different situation. A hearing aid which provides amplification of distant sound to hearing impaired children was also used. After individual scoring, cumulative scores of all the respondents on each assessment tools before and after speech therapy were compiled and calculated. Results indicate that pre and post therapy group differ significantly on expressive language development, receptive gestural skills, expressive gestural skills.

Introduction

Hearing is critical to speech and language development, communication and learning. The more the severity and the earlier onset of hearing loss have more serious effect on child’s development which results in delayed speech and language development (both receptive and expressive communication skills), causes learning problem results in reduces academic achievement, social isolation results in increased outburst of anger, low self confidence, frustration, embarrassment and depression, poor self concept, emotional problems.

After the detection of hearing loss, early intervention must be start as soon as possible. With the help of appropriate speech therapy, amplification device, support from parents, siblings, peers, teachers, relatives. Hearing impaired child can develop age appropriate language, literacy, academic skills, and social performance. It later on helps the hearing impaired child to successfully integrate into mainstream society and have choice in his/her future education, employment, independency, participating and contributing citizens in mainstream society.

Hearing impairment is a decrease in person’s ability to hear. The most severe form of hearing impairment is deafness. According to the National Institutes of Health, approximately three in every 1,000 children born in the United States have hearing loss. The majority of these children have parents who can hear. Having a hearing disability does not only affect a person’s hearing but it can have a lasting impact on person’s social and language development, as well. Many people with hearing impairment suffer from social isolation and mental disorders, such as depression. Delayed language and social skills will contribute to delayed personal and social development. According to Meadow (1980), social development and language acquisition are intertwined. She asserts that it is expected that deaf children whose language development is delayed, will have fewer opportunities for social interaction, both within and outside the family.

The problem in hearing impaired children begins as a sensory problem, may become a perceptual problem, speech problem, communication problem, cognitive problem, social problem, an emotional problem, an educational problem and ultimately a vocational problem (Northern & Downs 2002). Problems are further compounded by parental problems, difficulty in adapting to a society.
According to Craig (1990), children who are encouraged, nurtured and accepted by adults & peers will tend towards emotional health, while those who are abused, neglected or rejected are at risk when it comes to social and mental health difficulties.

A positive relationship was found between psychological variables and some of the independent variables such as hearing aids, speech intelligibility, academic development & communication methods used at school. After the detection of hearing loss, early intervention must be start as soon as possible. With the help of appropriate speech therapy, amplification device, and support from parents, siblings, peers, teachers, relatives, HI child can develop age appropriate language, literacy, academic skills, and social performance. This later on helps the HI child to successfully integrate into mainstream society & have choice in his/her future education, employment, independency, participating & contributing citizens in mainstream society.

The speech therapists plays a pivotal role in developing the speech and language development using various therapy approaches and help the child to develop communication skills as well. The role of speech therapist is to not only facilitate the speech and language development but also work on helping to communicate with hearing people using various approaches and develop social skills as well as self confidence and intervention into the mainstream. Speech therapists provide services to a wide range of persons with communication needs in a variety of settings.

Objectives of the study
The prime objective of the present study was to “study the Language development and Psychological adjustment pattern of Hearing Impaired children in reference to Speech therapy”. To achieve this objective following sub-objective is framed:

Hypotheses:
1. Subjects of pre therapy will differ from subjects of post therapy on expressive language development.
2. Subjects of pre therapy will differ from subjects of post therapy on receptive gestural skills.
3. Subjects of pre therapy will differ from subjects of post therapy on expressive gestural skills.
4. Boys and Girls will differ significantly on expressive language development.
5. Boys and Girls will differ significantly on receptive gestural skills.
6. Boys and Girls will differ significantly on expressive gestural skills.

Method
Sample: the study was conducted at Red Cross school for the Deaf, located in Jallandhar (Punjab). The target population of the study were deaf students of age-range (9-16)years from class 2nd to class 6th. It was expected that deaf students from this age group can express themselves more conveniently. The key informant of the study was the speech therapist. As per the information gained out of 128 children with severe to profound hearing loss, total of 40 students were selected by using random sampling techniques.

Research design: a 2x2 factorial design was used where before and after speech therapy subjects were matched with level of sex.

Tools used: inventories were selected on the basis of objective of the study. Since all the children were hearing impaired and have very little or no speech so following fairly established and standardised tools were used.
1. Audiometer is an instrument which is used to measure the type and degree of hearing loss using air conduction and bone conduction.
2. REEL-3 developed by Kenneth R. Bzoch, Richard League & Virginia L. Brown, (1991) was used to assess the development of receptive and expressive language skills.
3. Gestural Scale was used to assess the expressive and receptive gestural skills of the hearing impaired children in different situation.
4. Hearing AIDS is an instrument which provides amplification of distant sound to hearing impaired children was also used.
Procedure

Before starting the speech therapy pre therapy assessment was done on all 40 hearing impaired children. After sample selection all the children were contacted personally and were administered tools that were required for the study. First of all, each and every student’s hearing test was done by an audiometer, purpose was to find out the type and degree of hearing loss and the result were drawn on audiogram for further record. After the testing of hearing, all the children were assessed one by one with Receptive and Expressive Emergent Language (REEL). Gestural scale developed by Roma Pal (1985) was used to know the level of expressive language skills, receptive and expressive gestural skills by scoring with the help of respective manuals. After assessments were done the children were given high power body level hearing aid and made the child to maximise the use of hearing aid.

The post therapy assessments were done on all the children individually with the help of REEL, Gestural scale to know the level of expressive language skills, receptive and expressive gestural skills by scoring with the help of respective manuals. Cumulative scores of all the respondents on each assessment tools before and after speech therapy were compiled and calculated with the help of statistical tools. SPSS software was used to find mean, SDs, ANOVA to derive the results.

Results and discussion

By comparing the mean values obtained on pre and post therapy on all the variables, given in table 1. It was observed that mean values obtained on post therapy are relatively higher than pre therapy on Expression (REEL), Reception (Gestural), Expression (Gestural).

TABLE 2 shows analysis of variance for expression (REEL), Reception (Gestural), Expression (Gestural). The table revealed the following results.

The F-value of pre and post test for expression (REEL) appeared to be very high and statistically highly significant. It means that pre and post group differ significantly from each other on Expression (REEL).

The F-value of pre and post test on Receptive (Gestural) appeared to be highly significant. It means that pre and post group differ significantly from each other on Reception (Gestural). The F-value of pre and post test on expression (Gestural) appeared to be highly significant. It means that pre and post group differ significantly from each other on Expression (Gestural).

The first hypothesis of the study was “subjects of pre therapy will differ from post therapy on expressive language development”. To test this hypothesis F-value was computed shown in table no. 2. The obtained F-value of pre and post test appeared to be very high and statistically highly significant at 0.01 level. It means the level of expressive language development among pre therapy and post therapy subjects were found to be significantly different. The observation of mean values shown in table 1 revealed that subjects of post therapy scored higher mean values than pre therapy scores and this mean difference was observed to be significant and it can be said that there is real mean difference between pre therapy and post therapy on the pattern of expressive language development. So, it can be concluded that use of speech therapy increases the expressive language development significantly or the level of expressive language increases at higher degree as the therapy progress.

Hence, on the basis of obtained findings proposed hypothesis is accepted and it can be confirmed that subjects of pre therapy differ from post therapy on expressive language development and the expressive language improve after therapy. The present findings stands in line with earlier findings of Jacqueline et al (2012), who stated that Cued speech (CS) is a manual communication system that make use of visual information from speech reading combined with handshapes positioned in different places around the face in order to deliver completely unambiguous information about the syllables and the phonemes of spoken language.

The second hypothesis of the study was “subjects of pre therapy will differ from post therapy on receptive gestural skills”. To test this hypothesis F value was computed and shown in table 2. The obtained F value of pre and post therapy appeared to be very high and statistically significant at 0.01 level. It means pre and post group differ significantly from each other on Receptive gestural skills. The level of Receptive gestural skills significantly differed from each other. The observation of mean
values shown in table 1 revealed that post therapy scores were higher than pre therapy and this mean difference was observed to be significant. It can be concluded that use of speech therapy increases the receptive gestural skills significantly.

On the basis of obtained findings proposed hypothesis is accepted and it can be confirmed that subjects of pre therapy differ from post therapy on receptive gestural skills and the receptive gestural skills improves after therapy. The present findings stands in line with earlier findings of Donna J Napoli (2012), who stated that an alternative to speech-exclusive approaches to language acquisition exists in the use of sign languages where acquiring a sign language is subject to the same time constraints of spoken language development.

The third hypothesis of the study was “subjects of pre therapy will differ from post therapy on expressive gestural skills”. To test this hypothesis F value was computed and shown in table 2. The obtained F value of pre and post therapy appeared to be very high and statistically significant at 0.01 level. It means pre and post group differ significantly from each other on expressive gestural skills. The observation of mean values shown in table 1 revealed that post therapy scores were higher than pre therapy and this mean difference was observed to be significant. It can be concluded that use of speech therapy increases the expressive gestural skills significantly.

On the basis of obtained findings proposed hypothesis is accepted and it can be confirmed that subjects of pre therapy differ from post therapy on expressive gestural skills and the expressive gestural skills improves after therapy. Another study by Capone, N. C., & McGregor, K. K. (2004), stated that gestures serves as a function, including those of communication compensation and transition to spoken language.

The fourth hypothesis of the study was “Boys and Girls will differ significantly on expressive language development”. To test this hypothesis F value was computed and shown in table 2. The obtained F value was found to be insignificant, which shows no significant difference for expressive language development. It means that boys and girls have almost similar level of expressive language development. The observation of mean values shown in table 1 indicated that girls scored higher mean values than boys on expressive language development but this mean difference was not found to be statistically significant. It can be said that whatever the mean difference is observed that may be due to chance factor or we can say the no real difference existed between boys and girls on expressive language development. That means boys and girls do not differ significantly from each other on expressive language development.

On the basis of obtained findings proposed hypothesis is rejected and it can be confirmed that boys and girls do not differ from each other on expressive language development. The present findings stands in line with earlier findings of Andersson et al., (2000), in their study assessed 57 children who are deaf and found there are no gender differences in children who are deaf in terms of their psychosocial and language development.

The fifth hypothesis was “Boys and Girls will differ significantly on receptive gestural skills.” To test this hypothesis F value was computed shown in table 2. The obtained F value was found to be insignificant, which shows insignificant gender differences for receptive gestural skills. The observation of mean values, in table 1 indicated that girls scored lesser mean values than boys on receptive gestural skills but this mean difference was not found to be significant. It can be said that whatever the mean difference is observed that may be due to chance factor or we can say the no real difference existed between boys and girls on receptive gestural skills. That means boys and girls do not differ significantly from each other on receptive gestural skills.

On the basis of obtained findings proposed hypothesis is rejected and it can be confirmed that boys and girls do not differ from each other on receptive gestural skills. The present findings stand in line with earlier findings of Sipal (2002), tested 152 normally developing children and 147 hearing impaired children and reported that even though normally developing children showed significant gender differences for social, emotional and language development, such finding remain insignificant for the children who are deaf.
The sixth hypothesis was “Boys and Girls will differ significantly on expressive gestural skills.” To test this hypothesis F value was computed shown in table 2. The obtained F value was found to be insignificant, which shows insignificant gender differences for expressive gestural skills. The observation of mean values, in table 1 indicated that girls scored lesser mean values than boys on expressive gestural skills but this mean difference was not found to be significant. It can be said that whatever the mean difference is observed that may be due to chance factor or we can say the no real difference existed between boys and girls on expressive gestural skills. That means boys and girls do not differ significantly from each other on expressive gestural skills.

On the basis of obtained findings proposed hypothesis is rejected and it can be confirmed that boys and girls do not differ from each other on expressive gestural skills. The present findings stand in line with earlier findings of Sipal (2002), tested 152 normally developing children and 147 hearing impaired children and reported that even though normally developing children showed significant gender differences for social, emotional and language development, such finding remain insignificant for the children who are deaf.

This study has emphasised on language development in reference to speech therapy in hearing impaired children which proves that as the child develop language or other communication skills, significant improvement were seen- fear of talking with others were reduced. Children love to be mix up with teachers and express themselves. Gender differences were also studied and insignificant difference was found on language development. Boys and girls were found to be similar in language development after speech therapy.

| Table no. 1 Means and SDs of pre and post therapy on all the variables |
|-----------------------------|-----------------------------|
| Pre                         | Post                        |
| Mean                       | SD                          | Mean                       | SD                          |
| Expression(REELS)           | 10.80                       | 2.44                       | 13.15                      | 2.09                       |
| Reception (Gestural)        | 37.27                       | 7.03                       | 47.07                      | 7.70                       |
| Expression (Gestural)       | 24.12                       | 2.34                       | 34.67                      | 5.87                       |
| Social                     | 33.12                       | 1.43                       | 37.10                      | 2.46                       |
| Emotional                  | 55.95                       | 1.37                       | 52.30                      | 1.78                       |

| Table no. 2 Analysis of variance of pre and post therapy on Expression (REEL), Reception (Gestural), Expression (Gestural), Social and Emotional adjustment |
|----------------------------------|---------------------|---------------------|
| Expression (REEL)                | 103.23**           | Sex                 | 0.22                | 0.02                |
| Reception (Gestural)             | 36.59**            | 0.03                | 0.13                |
| Expression (Gestural)            | 21.28**            | 0.86                | 0.07                |

** - significant at 0.01, * - significant at 0.05

References