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THE COMMUNICATION, SPEECH AND GESTURE OF A GROUP OF HEARING IMPAIRED CHILDREN

Joanna Hoskin and Ros Herman

**Speech and Language Therapy Department, Epsom General Hospital,
Dorking Road, Epsom, Surrey KT19
Department of Language and Communication Science, City University,
Northampton Square, London EC1V 0HB**

The communication skills, speech and gesture of twenty hearing-impaired children were assessed. The children were all being educated in a school using an oral/aural approach. The results of the assessments were compared. They indicated the importance of assessing gesture and speech separately for these children and comparing the use of both skills. More informal and formal assessment of gesture and the tools to complete this task effectively are needed to ensure that these children's communication skills are described accurately.

Introduction

In describing the communication skills of hearing impaired children, therapists often comment on a child's use of manual communication. Recent developments have increased awareness of the difference between gesture and sign (Corina et al 1992) and formal assessment of sign is now possible (Herman 1998). Researchers have shown that the early development of gesture for both hearing impaired and hearing children follows a similar pattern (Acredolo and Goodwyn 1994). There is less information available about children's use of gesture once their signed or spoken language is established. It has been shown that adult 'listeners' presented with a spoken message that is supported by gesture, use that gesture to enhance their understanding of the spoken message (Kelly et al 1999).

The purpose of this study was to assess the gestures used by a group of hearing impaired children and to consider how their use of gesture enhanced their communication. It was hypothesised that children with poor expressive verbal language skills and good social communication ratings on the Surrey Speech and Language Profile enhance their communication by using an increased amount of gestural communication compared to their peers.

Method

Twenty children were assessed by a Teacher of the Deaf and a Speech and Language Therapist using the Surrey Speech, Language and Communication Profile (McGregor and Cave 1996). The children were also assessed by the Speech and Language Therapist using The Renfrew Action Picture Test (RAPT) (Renfrew 1966). The RAPT assessment was carried out following the standard procedure and each child was videoed. The videos

were then analysed to give information scores for speech. In addition to this, the key information points identified in the RAPT were used to produce a form to record the amount of information given manually (using gesture or sign) by the children when the videos were watched silently. Gestures that give information were defined for this study as movements of the arms and hands that carried information for the rater. These included recognisable signs, gestures to demonstrate movement, direction or relative location, actions and representations of objects in the pictures. Although some children pointed to the pictures to try and clarify their meaning, these movements were not considered to be gestures as they did not convey information in their own right. The RAPT scores for each child were compared to calculate the additional information a child gave using gesture. This score was then added to their RAPT (speech) score to give the total number of items of information they gave using gesture and speech.

Results

The major findings of this study are within three areas;

- Measurement and comparison of the use of speech and gesture
- The identification of children with different language usage patterns and needs
- The links between expressive communication skills (speech and gesture) and a child's age and their level of hearing loss

Measurement and comparison of the use of speech and gesture

The correlation between the children's RAPT (speech) scores and their mean scores on the expressive language section of the Surrey Speech, Language and Communication Profile (Surrey Profile) shows that the Teacher of the Deaf and Speech and Language Therapist were able to discuss children's expressive verbal language and give ratings that correlate with the scores the children achieve on a standardised assessment.

Table 1. Comparison of expressive language section (Surrey Profile) mean score and Renfrew Action Picture Test information score (speech)

Surrey Profile (Expressive language section) mean score	
RAPT (speech) information score	Correlation coefficient
	-.632
	Significance (1-tailed)
	.002
	N
	20

The correlation shown between these scores is negative as for the RAPT a higher score indicates that a child was able to give more information but on the Surrey Profile a higher rating indicates a lower level of language skill.

The correlation between the mean score of the expressive language section of the Profile and the RAPT(gesture) shows that as verbal expressive language skills increase the use of gesture tends to decrease. This result supports the hypothesis of the study.

Table 2. Comparison of expressive language section (Surrey Profile) mean score and Renfrew Action Picture Test information score (gesture)

Surrey Profile (Expressive language section) mean score	
RAPT (gesture) information score	Correlation coefficient
	.470
	Significance (1-tailed)
	.019

The Identification of children with different language usage patterns and needs

By using three assessment tools-the Surrey Profile, RAPT (speech) and RAPT (gesture)- that highlight different strengths of the children, the results are able to show some differentiation between children and their preferred or possibly most effective method of communication. By comparing the total amount of information the children were able to give about the RAPT pictures (using speech and gesture) and their scores on the expressive language section of the Profile, three distinct groups emerged within the group of children studied. These groups were:

- Those who found it difficult to give much information – the three children in this group were among the youngest in the group
- Those who gave a lot of information but had poorer verbal expressive language skills- these children came from a wider age range and used their gesture to carry information that they did not give using speech
- Those who gave a lot of information and had better verbal expressive language skills- some of this group used quite a lot of gesture but to repeat or emphasise information they had already given verbally rather than to add new information. Other children in this group used little or no gesture.

The links between expressive communication skills (speech and gesture) and age or hearing loss

When the children's scores on each of these tests were compared within their age groups, the total information score showed the clearest increase with age.

Table 3. Comparison of Total Information scores by age

Age deviation	Total information score	Number of children	Standard
3	7	2	1.4142
4	29	1	.
6	28.5	1	.
7	23.9	5	9.6462
8	30.3	5	3.4387
9	32.3	3	2.0817
10	33	1	.
11	35.7	2	2.4749

As this study was carried out with a relatively small number of children, there was only one four year old and one six year old. Both these children had good expressive verbal language skills and their scores reduce the impact of the overall trend.

The amount of information given by speech generally increased with age but this trend was not as clear. There was no clear link between the amount of gesture used and age for this group of children.

When children's scores on each of the tests were compared within their hearing level groups the trend for total information scores and spoken information scores was to decrease with increased hearing loss. The differences in use of gesture with increased hearing loss were less clear. Those with a greater hearing loss did use more gesture than the other two groups. Within the sample over half the children (11) had a profound hearing loss. Only two had moderate losses and seven had severe losses. This means that more data was collected for comparison of children with profound losses. A clearer trend within the other two groups may have been seen if the sample had contained equal numbers of children in each hearing loss category.

Discussion

Within this study it was clearly shown that children with better expressive verbal language skills used less gesture than those with fewer verbal expressive language skills. Within the literature it is highlighted that all children, hearing and deaf, use gesture as part of the natural development of their communication and language skills. These results did not indicate that the gesture this group of children used was developmental in terms of their age but could indicate a developmental aspect in terms of effective use of language.

The results encourage us to link these children's use of gesture not only with theories about the development of gesture but also consider its use in terms of other areas of language development. Why are some children able to use gesture in order to be effective communicators and why do they need to? Is their use of gesture linked to their level of skill in speech perception or their other linguistic skills? These children understand the rules of communication and are adapting their output to ensure that they are successful. This study has shown that it is possible to assess children's ability to give information verbally, gesturally and when using a combination of both. The results indicate that it is important that we do this for hearing impaired children being educated in an oral/aural environment as both skills and their combined use show a different pattern of communication use for different children. This links with our need to gain a full picture of a child's skills through assessment. Only through understanding the relationship between the skills each child is using can we hope to plan and carry out appropriate intervention.

A child's ability to use verbal and gestural communication may indicate preferred learning styles and show how children are able to access and share information. By monitoring the relative changes in the use of these skills, a better picture of a child's overall development as a communicator emerges.

Implications of the study

For therapists to assess children's use of gesture a better understanding of the normal development of gesture in hearing and hearing impaired children is needed. From this we can begin to consider whether we observe sign development from gesture in orally educated children. In order to monitor the development of these gesture skills in hearing impaired or language disordered hearing children it will be important to develop assessments that can record and chart the development and use of gesture.

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