

# REFERENTIAL COMMUNICATION OF DEAF AND HARD OF HEARING CHILDREN ATTENDING PRE-PRIMARY AND PRIMARY SCHOOLS

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## ABSTRACT

Previous findings regarding the development of referential communication skills of deaf and hard of hearing (d/hh) children are limited and not conclusive. The aim of the present study was to investigate the oral referential communication skills of a sample of d/hh children from Cyprus and Greece. The speaking and listening abilities of 56 d/hh children (mean age = 9.41 years, s.d. = 2.04, age range: 6-13 years old) were assessed using the referential communication task battery. The results showed that d/hh children have difficulties in detecting and resolving ambiguity while listening, whereas, as speakers they perform at an average level. Older children were found to be more competent in (a) conveying adequate messages as speakers and (b) resolving ambiguity in oral messages as listeners. Additionally, significant differences in referential communication were found as a result of the type of the school attended by d/hh pupils and, in specific, d/hh children from general schools achieved higher scores on the ambiguous message evaluation scale than d/hh pupils from special schools for the deaf. The results of this study have implications for revising and improving the current teaching methods for d/hh children in order to become competent communicators and autonomous learners in an inclusive school and, also, in other social environments.

## INTRODUCTION

Referential communication is a speaker-listener interaction in which information is exchanged. It involves the ability to provide and understand information, construct and interpret messages in such a way that the communicative intent of the interlocutors is effectively conveyed (Bunce, 1991, Lloyd, 1994, 1997). Glucksberg, Krauss and Weisberg (1966) first described referential communication as the ability to use verbal symbols to indicate referents. Referential communication is not a simple process of mere exchange of information. It requires that the child is able to reflect on and think about language and to understand that communication has pragmatic rules and collaborative nature (Bonitatibus, 1988; Falkman & Hjelmquist, 2006).

Research on the development of referential communication in children has revealed associations with several cognitive, language-related and social factors including the acquisition of procedural knowledge (Camaioni & Ercolani, 1988; Whitehurst & Sonnenschein, 1985), the increase of information-processing capacity (Asher, 1979), the acquisition of meta-communicative skills (Flavell, 1993), the employment of pragmatic rules (Surian, 1991), literacy (Olson, 1994), the ability to interpret meaning (Carpendale & Chandler, 1996) and the growth of

social understanding (Maridaki-Kassotaki & Antonopoulou, 2011; Reschers & Perez-Pereira, 2007).

Referential communication is the type of communication which characterizes classroom teaching and learning, and any kind of information exchange aiming at mutual understanding and knowledge building. It is “one of the simplest and most fundamental social uses of language” (Krauss, 1979, p. 51). Educating children, therefore, to develop their referential communication ability (i.e. to be able to make themselves understood and understand the meaning of others) in an effective and autonomous manner is, without any doubt, one of the key aims of the school (Lloyd et al., 1992). Children who are competent speakers and listeners are found to perform better at school, to have better interpersonal skills and better peer relationships (Gifford-Smith & Brownell, 2003).

Previous findings regarding the development of referential communication skills of d/hh children are fairly limited and not conclusive. A number of studies, for example, have shown that d/hh primary school aged children’s performance on tasks that demand referential descriptions is as good as the performance of hearing children of similar age (Ibertsson et al., 2009; Lloyd et al., 2001; Most et al., 2010). Other studies (Arnold et al., 1999; Lloyd et al., 2005; Toe & Paatsch, 2010), however, have found that d/hh children’s referential communication skills are poorer when compared to age-matched hearing controls. Arnold et al. (1999) attributed d/hh children’s difficulties in referential communication to a possible lack of understanding of the procedure that has to be followed within a referential communication event or a delay due to experienced failure or learned helplessness.

Given the scarce research on oral communicative ability and deafness in Cyprus and Greece, the present study sought to evaluate d/hh pre-primary and primary aged pupils’ referential communication skills. Additionally, demographic variables such as the age of the d/hh participants and the type of educational placement were considered in the examination of d/hh children’s referential speaking and listening capacity.

## **METHOD**

### **Participants**

Fifty six d/hh children from Cyprus and Greece were enrolled in the present study. Information about the participating children’s age, gender and socio-economic familial background is presented in Table 1.)

Table 1: Demographic characteristics of the d/hh children (n=56)

Demographic variables		mean	s.d.
Age		9.41	2.04
		<i>f</i>	%
Gender	Boy	32	57.1
	Girl	24	42.9
Mother education	University	30	53.6
	Secondary school	26	46.4
Father education	University	21	37.5
	Secondary school	35	62.5
Mother employment	Employed	43	76.8
	Unemployed	13	23.2
Father employment	Employed	50	89.3
	Unemployed	6	10.7

The d/hh children did not have any other disabilities. Thirty one (55.4%) of them attended mainstream schools and the remaining 25 (44.6%) were from special schools for the deaf. Five children were deaf, 25 children had severe hearing loss and 26 had moderate hearing loss. For most d/hh children hearing loss was first detected at 2 years of age (mean  $_{HL\ detection\ age} = 2.27$  years old, s.d. = 2.90). Most d/hh children (64%) communicated orally with their parents and siblings as well as at school with their teachers and peers. Children whose first language was not Greek were excluded from the study. Parental social status was largely white-collar.

### Research tools

Children's referential communication skills were assessed with the referential communication task battery described by Lloyd, Mann and Peers (1998). The battery comprises 29 main items and 2 warm up items. Each item displayed colored pictures of everyday objects or situations such as clowns, houses, children playing with balls etc. The use of familiar objects or situations within the referential communication tasks increased the likelihood that children's referential communication performance will not be confounded by factors such as restricted vocabularies or limited level of semantic awareness.

The battery's items vary in the number of pictures they display and, furthermore, within each item pictures were similar differing only on a number of critical attributes including shape, color, size, quantity and change of state. Thirteen items assess children's ability to convey adequate messages in the role of speaker, 13 items assess children's ability to respond successfully to ambiguous messages in the role of listener and another 3 items assess children's ability to respond successfully to adequate messages. In the role of the speaker, the child must

describe orally a target picture among a number of similar pictures, whereas, in the role of the listener, the child must choose the target picture which is described by the experimenter. The experimenter's informative messages reveal the information the child needs in order to identify the target picture, whereas, ambiguous messages do not convey successfully the necessary information.

A questionnaire with information about d/hh children's demographic characteristics (age, gender, age of hearing loss, type of schooling, communication at home and in the school, parents' education and employment status etc.) was also used.

## Procedure

The head teachers of the participating schools were contacted and explained the purpose of the present study. The d/hh children whose parents provided a written consent were included in the study (response rate 65%). Children were tested individually in a quiet room in their school and the experimenter followed a standard protocol of instructions. Individual testing lasted 20 minutes.

## RESULTS

Table 2 shows the descriptive statistics for d/hh children's referential communication performance.

*Table 2: Mean percentages correct and standard deviations of d/hh children's (n=56) responses to the referential communication battery tasks*

Referential communication tasks	mean percentage correct	s.d.	min	max
Ability to convey adequate messages as speaker	62.9	18.66	25.71	100
Ability to respond to ambiguous messages as listener	28.26	24.08	0	93.62
Ability to respond to adequate messages as listener	88.09	20.52	33.33	100

According to the results, d/hh children appear to exhibit serious difficulties in detecting and resolving ambiguity as listeners in referential communication whereas as speakers tend to perform at an average level with few difficulties. A repeated measure analysis between the referential communication tasks showed that d/hh children achieved significantly lower scores in the listener-ambiguous messages subscale [ $F_{(2, 110)} = 165.49, p < 0.001$ ].

Table 3 presents differences in referential communication performance between the d/hh children who are educated in inclusive general schools and those who attend special schools for the deaf.

*Table 3: Mean percentages correct, standard deviations and mean differences for the performance on the referential communication battery tasks of the d/hh children who attend mainstream inclusive school settings and those who attend special schools for the deaf*

Referential communication tasks	D/hh children who attend inclusive general school (n=31)		D/hh children who attend special school for the deaf (n=25)		Mean differences	
	mean (%)	s.d.	mean (%)	s.d.	$t_{54}$	$p$
Ability to convey adequate messages as speaker	70.04	19.41	54.06	13.40	3.49	.001*
Ability to respond to ambiguous messages as listener	41.59	22.53	11.74	13.47	5.83	.000**
Ability to respond to adequate messages as listener	86.02	22.41	90.66	18.05	-.840	.405

$p < 0.05$ , \*\*  $p < 0.01$

Independent group comparisons revealed that d/hh children who attend general inclusive schools performed significantly better on the referential communication tasks assessing ability to respond to ambiguous oral messages as listeners and ability to convey adequate information as speakers, than d/hh children who receive education in special schools.

Finally, a significant positive correlation was found between d/hh children's ability to convey informative oral messages as speakers and their age ( $r=0.327$ ,  $p<0.05$ ) which means that as d/hh children grow older they become more successful in responding to speaker-related referential communication tasks.

## DISCUSSION

The present study sought to evaluate Cypriot and Greek d/hh pre-primary and primary aged pupils' referential communication skills. Additionally, differences in referential communication skills between d/hh children who attend inclusive general schools and d/hh peers who are educated in special schools were examined. Finally, a correlation between d/hh children's age and referential communication performance was also considered in the examination of d/hh children's speaking and listening skills.

The findings reported in the present study indicate that d/hh children encounter difficulties in referential listening and, in particular, in their ability to detect ambiguity and respond successfully to oral messages as listeners. These results are similar to those found in previous studies examining referential communication in hearing impaired children (Arnold et al., 1999; Lloyd, 1999, Toe & Paatsch, 2010). D/hh children's speaking ability, their ability to formulate and deliver informative oral messages, was found to be better than their listening ability and to reach an average level.

The results of this study have implications for revising and improving the current teaching methods for d/hh children, and for enhancing their integration into their society with increased linguistic, emotional, and professional benefits.

## REFERENCES

- Arnold, P., Palmer, C., and Lloyd, J. (1999). Hearing-impaired children's listening skills in a referential communication task: An exploratory study. *Deafness and Education International*, 1, 47–55.
- Asher, S. (1979). Referential communication. In G. J. Whitehurst and B. J. Zimmerman (Eds.), *The functions of language and cognition*. London: Academic Press.
- Bonitatibus, G. (1988). Comprehension monitoring and the apprehension of literal meaning. *Child Development*, 59, 60-70.
- Falkman, K. W., and Hjelmquist, E. (2006). Do You See What I Mean? Shared Reference in Non-native, Early Signing Deaf Children. *Journal of Deaf Studies and Deaf Education*, 11(4), 410-420.
- Gifford-Smith, M. E., and Brownell, C. A. (2003). Childhood peer relationships: social acceptance, friendships, and peer networks. *Journal of School Psychology*, 41, 235–284.
- Glucksberg, S., and Krauss, R. (1967). What do people say after they have learned how to talk? Studies of the development of referential communication. *Merrill-Palmer Quarterly*, 13, 309-316.
- Ibertsson, T., Hansson, K., Maki-Torkko, E., Willstedt-Svensson, U., and Sahlen, B. (2009b). Deaf teenagers with cochlear implants in conversation with hearing peers. *International Journal of Language and Communication Disorders*, 44, 319–337.
- Lloyd J. (1999). Hearing-impaired children's strategies for managing communication breakdowns. *Deafness and Education*, 1, 188–199.
- Lloyd, J., Lieven, E., and Arnold, P. (2001). Oral conversations between hearing-impaired children and their normally hearing peers and teachers. *First Language*, 21, 83–107.
- Lloyd, P. (1994a). Children's communication. In R. Grieve and M. Hughes (Eds.), *Understanding Children* (5th ed.) (pp. 51-70). Oxford: Blackwell.
- Lloyd, P. (1994b). Referential communication: Assessment and intervention. *Topics in Language Disorders*, 14, 55-69.
- Lloyd, P., Boada, H., and Forns, M. (1992). New directions in referential communication research. Special Issue: Developmental psychology in Europe. *British Journal of Developmental Psychology*, 10, 385–403.

Lloyd, P., Mann, S., and Peers, I. (1998). The growth of speaker and listener skills from five to eleven years. *First Language*, 18, 81-103.

Most, T., Shinga-August, E., and Meilijson, S. (2010). Pragmatic abilities of children with hearing loss using cochlear implants and hearing aids compared to hearing children. *Journal of Deaf Studies and Deaf Education*, 15, 422–437.

Reschers, M., and Perez-Pereira, M. (2007). Referential communication abilities and Theory of Mind development in preschool children. *Journal of Child Language*, 34, 21-52.

Toe, D. M., and Paatsch, L. E. (2010). The communication skills used by deaf children and their hearing peers in a question-and-answer game context. *Journal of Deaf Studies and Deaf Education*, 5(3), 228-241.