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Comparison of written language abilities between adult deaf and young deaf children

Abstract

The purpose of the current study was to compare for the first time in Cyprus deaf and hard of hearing (d/hh) children's written ability with that of adult d/hh persons. One group consisted of young children who were between 12–13 years of age and with congenital hearing losses (mean 80 dB HL in the better hearing ear at .5, 1, 2, 4 kHz), but without additional disabilities, who were attending the last grade of various general high schools in Cyprus (N = 11). They were trained orally in general schools, which they attended exclusively. The comparison group consisted of 11 adult d/hh persons (mean 75 dB HL in the better hearing ear at .5, 1, 2, 4 kHz), all of whom were between 41–58 years of age, without any disabilities; they all are signing Deaf and had attended the school for the deaf in Cyprus. All participants were asked to produce written texts on topics of common interest (about everyday life). The analysis of the written texts was both quantitative and qualitative. Regarding the quantitative analysis, the written language was analysed by focusing on a) text content and structure, b) syntax, and c) vocabulary. Qualitative analysis was applied for further elaboration on the characteristics observed in the texts of the sample. This study revealed that d/hh children reached better levels of competence in written Greek compared with adult d/hh people, at least for the investigated aspects. The findings of the study may be of importance for educators and policy makers in Cyprus and elsewhere.

Keywords: deaf and hard of hearing children, deaf adults, written language, Cyprus

Porównanie pisemnych umiejętności językowych między dorosłymi głuchymi osobami a młodszymi głuchymi dziećmi

Streszczenie

Celem obecnego badania było dokonanie pierwszego na Cyprze porównania umiejętności pisania osiąganych przez głuche i niedosłyszące dzieci (ang. d/hh) oraz takie same osoby dorosłe (d/hh). W skład jednej grupy wchodziły dzieci między 12–13 rokiem życia, z wrodzoną utratą słuchu (średnia 80 dB HL w lepiej słyszącym uchu przy 0,5, 1, 2, 4 kHz) lecz bez dodatkowych niepełnosprawności, które uczęszczały do ostatniej klasy różnych, ogólnokształcących szkół średnich na Cyprze (N = 11). Były one nauczane wyłącznie metodą oralną w szkołach ogólnych, do których uczęszczały. Grupa porównawcza składała się z 11 osób dorosłych (d/hh) (średnia 75 dB HL w lepiej słyszącym uchu przy 0,5, 1, 2, 4 kHz), z których wszystkie miały od 41–58 lat, bez żadnych niepełnosprawności; wszystkie one są osobami

głuchymi posługującymi się językiem migowym i uczęszczały do szkoły dla głuchych na Cyprze. Wszystkich uczestników poproszono o napisanie tekstów na tematy ogólne (dotyczące życia codziennego). Analiza napisanych tekstów miała charakter ilościowy oraz jakościowy. W odniesieniu do analizy ilościowej, analizując język pisany położono nacisk na a) treść i budowę tekstu, b) składnię oraz c) słownictwo. Analiza jakościowa została zastosowana w celu dalszego szczegółowego omówienia cech zaobserwowanych w tekstach badanych. Badanie wykazało, że dzieci (d/hh) osiągnęły lepszy poziom kompetencji pisemnej w języku greckim w porównaniu z osobami dorosłymi (d/hh), przynajmniej w analizowanych aspektach. Wyniki tego badania mogą być znaczące dla nauczycieli i decydentów na Cyprze oraz w innych krajach.

Słowa kluczowe: dzieci głuche i niedosłyszące, głuche osoby dorosłe, język pisemny, Cypr

Introduction

It is documented in the literature that deaf and hard of hearing (d/hh) children face a number of difficulties with written language (Antia, Reed & Kreimeyer 2005; Fabretti, Volterra & Pontecorvo 1998; Makarona & Lampropoulou 2005). The results of a number of studies provide evidence for the expected parallels between d/hh children's reading and writing performance (Marschark 1993; Schirmer 2000). It has also been suggested that d/hh children's literacy development does not proceed at a pace considered average for hearing students (Holt 1993; LaSasso & Mobley 1997; Musselman & Szanto 1998; Yoshinaga-Itano & Brown 1981).

In summary, a variety of studies have documented the fact that the written language of d/hh students differs from that of their hearing peers in the components of language, specifically of syntax, semantics, and pragmatics (Antia et al. 2005; Fabretti et al. 1998; Maxwell & Falick 1993; Nolen & Wilbur 1985; Yoshinaga-Itano & Downey 1992). Specifically, d/hh children lag behind their hearing peers in their syntactic constructions; they produce shorter sentences with simpler syntactical structures (Subject-Verb-Object structure). Makarona and Lampropoulou (2005) point out that sometimes the order of words in the sentence reflects a less complicated way of writing due to the non-conventional grammatical and syntactical structures they use. D/hh children also encounter problems with subordinate clauses and they face significant difficulties comprehending truncated passives.

Similarly, d/hh children's vocabulary is limited; they are unaware of multi-meaning words, which comprise two-thirds of the words that appear in spoken and written context (Luetke-Stahlman 1998). They mainly use nouns and verbs but rarely adjectives, articles, adverbs and auxiliary verbs. Finally, they face problems in grammatical morphology, including omissions of functional words, inappropriate word substitutions, and additions of various morphemes.

Besides the syntax of written language, a number of studies has shown that d/hh students exhibit difficulties with the cohesion of ideas in writing (Antia et al. 2005), since they have the tendency to access texts sentence by sentence rather than view the text as a whole (Makarona & Lampropoulou 2005). Notably, Maxwell and Falick (1992) found in their study that d/hh students' compositions were less frequently conceptually linked than those of hearing students.

It has been documented in the literature that d/hh children do not have the same experiences as their hearing peers as a result of hearing loss. However, it has

been shown that what happens in the early years of literacy learning is very important as these experiences are said to be critical for the future success of hearing children (Mayer 2007). Marschark points out that for many d/hh individuals "writing is often seen as a laborious, sentence-by-sentence task, rather than an attempt at verbal communication. With such a view of writing, it should not be surprising that deaf children fail to use pronouns correctly, to use definite and indefinite articles, or to be concerned with intersentence issues of verb tense and agreement." (1993, p. 223). Webster (1986) ascribes the failure of d/hh children to make use of discourse structure in their writing to the lack of rules of conversation that are usually acquired from monitoring on-going verbal interactions.

Svirsky et al. (2000) suggest that d/hh children lag behind their hearing peers in respect to their lexical-semantic and syntactic-morphological abilities regardless of whether the d/hh children use oral or sign communication. This difference has been attributed in previous studies to the fact that d/hh children lack informal experiences; specifically it has been argued that "d/hh children miss out on different things that happen around them, which would be picked up by hearing children as part of their incidental learning" (Nunes 2004, p. 154).

Regarding the d/hh children's mode of communication, most studies have found that orally educated students have better written language abilities than students who communicate manually (Geers & Moog 1989; Moores & Sweet 1990), although some studies support the opposite claim (Yoshinaga-Itano, Snyder & Mayberry 1996). Regarding the effect of educational placement on d/hh students' language abilities, academic achievement of d/hh students attending general schools is higher than that of those attending special schools throughout the years (Allen 1986; Kluwin 1993), although there are exceptions (Karchmer & Mitchell 2003; Antia et al. 2005).

A number of studies suggest that the writing ability of d/hh children is a neglected topic (Fabretti et al. 1998); most of the relevant research has been carried out in English speaking countries (Yoshinaga-Itano & Downey 1992). Antia and her colleagues stress that "overall, there is little information on the writing achievement of d/hh students in public schools, specifically those who attend general-education classrooms and those with mild or moderate hearing losses." (Antia et al. 2005, p. 247).

Only a couple of relevant studies with d/hh adults have been conducted (Fabretti et al. 1998; Makarona & Lampropoulou 2005). Those studies have shown that d/hh adults face specific difficulties in grammatical aspects, which are not different from those of d/hh pupils. These difficulties were attributed to deafness and not exclusively to the adult's limited experience with written language (Fabretti et al. 1998; Makarona & Lampropoulou 2005).

However, there are no studies in place that compare the writing abilities of d/hh children with those of d/hh adults. This comparison would add to the literature and inform current educational practices for d/hh children, since the factors that differentiate the linguistic abilities of d/hh adults and d/hh children who attend different types of schools and are taught through different methods could be revealed. In Cyprus, there is also no available data on the writing ability of adult d/hh people, and there is only sparse literature on the writing ability of Cypriot

d/hh children (Hadjikakou, Georgiadou, Odysseos, Konnikou & Theodorou 2010). Bearing in mind the value of international perspectives on the writing abilities of d/hh people and the lack of any such research in Cyprus, this article compares for the first time Cypriot d/hh children's writing abilities with that of adult d/hh people.

Method

Participants

One group consisted of young children between 12–13 years of age (M = 12.63, SD = .50) with congenital hearing loss (mean 80 dB HL in the better hearing ear at .5, 1, 2, 4 kHz) but without additional disabilities (N = 11). They were trained orally in general schools, which they attended exclusively. Out of these children, four were boys and seven were girls. The comparison group consisted of 11 adult d/hh people (mean 75 dB HL in the better hearing ear at .5, 1, 2, 4 kHz), all of whom were between 41–58 years of age (M = 48.90, SD = 5.20) without any disabilities; they are all signing Deaf and had attended the school for the deaf in Cyprus.[1] The children were recruited through the Pancyprian Association of Parents of Children with Hearing Loss; the adult d/hh people were recruited through the Cyprus Federation of the Deaf.

Design and analysis

Our participants were asked to write an essay, for a maximum of 30 minutes, on the following topic: "How I usually spend my weekend."

The task was administered individually to each participant by a member of the research team. As part of the instructions, each participant was told that he/she would be given five minutes to ask for clarifications (e.g. to pose questions about unknown words in the essay's title). He/she would then have 30 minutes in which to write. Having confirmed that he/she was clear about the procedure, he/she was given in a written form the essay's topic. He/she was given five minutes to read the title, and ask for clarifications. At the end of this time he/she began writing.

The analysis of the written text was both quantitative and qualitative. The analysis of the written samples was similar to that employed in a Greek study by Makarona and Lampropoulou (2005), investigating similar issues. It involved three categories of written language: a) text content and structure (clear statement of topic and text structure, use of transitional markers, clear paragraphing, consistent register). Calculations were based on the presence or absence of these elements in each of the text samples; b) syntactic structure (correct use of sentences, correct use of complex sentences). Calculations examined the ratio of correctly used sentences and complex sentences to the total number of sentences in each text; and c) vocabulary (type-token ratio). Calculations examined the total number of different words used in each text. SPSS was used to analyse and process the data.

Qualitative analysis was also employed for a further description of some characteristics observed in the texts of our sample, mainly regarding morphology, syntax, and grammar.

[1] The upper "D" is used to refer to Deaf adults, who belong to the Deaf community, are signing Deaf and are considered culturally Deaf.

Results

Quantitative data

Content and organization of text. Table 1 shows that young d/hh children did better than adult d/hh people in all areas regarding the content and organization of the text (with the exception being consistent register). Specifically, descriptive statistical analysis showed that 72.7% of the young d/hh children wrote about the required topic in a comprehensive and clear way, compared with 68.1% of the d/hh adults. Regarding the use of paragraphs, 81.8% of the young d/hh children created paragraphs, compared with 49.9% of the d/hh adults. Non-parametric comparisons (Mann-Whitney Test) between the mean ranking of young and adult d/hh people in how clearly they stated the topic and used paragraphs, showed no significant differences. Both young and adult d/hh people used at least one transitional marker. Regarding the consistency of register (consistency in style and phrasing), 90.9% of both adult and young d/hh children consistently used the same person (e.g. consistently singular or plural when addressing a person or more than one person, respectively).

Table 1. Characteristics of the d/hh children and adult deaf participants' written language in percentages (%) in terms of text content and structure

	d/hh children	d/hh adults	*p*-value
Clear statement of topic			
YES	72.7%	68.2%	.66
NO	27.3%	31.9%	
Transitional markers (conjunctions)			
YES	100%	90.9%	.32
NO	0%	9.1%	
Use of paragraphs			
YES	81.8%	40.9%	.083
NO	18.2%	59.1%	
Consistent register (consistency style & phrasing)			
YES	90.9%	90.9%	1
NO	9.1%	9.1%	

Syntax. Regarding syntax, two syntactic structures were examined: a) correct use of sentences and b) correct subordinate clauses. We considered as correct sentences those which were clearly structured and carefully focused, containing at least one V (verb) and one S (subject). For example, a sentence considered correct was the following "*On Sundays I usually cook and have some rest,*" while the following sentence was considered incorrect, "*My hobby football,*" which was not clearly structured (no V-S), and not carefully focused.

In regards to subordinate clauses, they were considered correct if sentences begun with a subordinate conjunction or a relative pronoun, contained both a subject and a verb, and were attached to a main clause (since the subordinate clause alone does not form a complete sentence). The following sentence was considered to contain the correct use of a subordinate clause "*When we arrived home we all went*

for sleep so as to wake up the following day for school", and the following one as incorrect *"So that we go to the cafeteria communication and football,"* because the participant's subordinate clauses are attached to each other, and not to a main clause.

It was found that the mean of correct sentences used by the d/hh children in their texts was .92 (*SD* = .09), while the mean of correct subordinate clauses was 0.42 (*SD* = .17). Respectively, the mean of correct sentences used by the d/hh adults was lower, 0.58 (*SD* = .39), and the mean of subordinate clauses was .32 (*SD* = .23). Finally, the children used more words per sentence (*M* = 12.09, *SD* = 1.62) than the adults (*M* = 8.44, *SD* = .94). However, the Mann-Whitney Test showed a statistically significant difference only in the mean scores between adult and young d/hh children in the use of correct sentences (z = -2.722, p = .006).

Vocabulary. Both d/hh and hearing participants' vocabulary assessment was based on two aspects: a) the ratio of content words to a functional word and b) the proportion of different words used in the whole text. Adult d/hh participants used more content words (*M* = 2.09, *SD* = 1.65) than the d/hh children (*M* = 1.39, *SD* = .32). Regarding the proportion of different words used in the whole text, adult d/hh people used more different words (*M* = 0.84, *SD* = .09) than the children (*M* = .62, *SD* = .09). The Mann-Whitney Test showed a statistically significant difference only in the mean scores between adult and young d/hh children in the use of different words (z = -3.646, p < .0001).

Qualitative data

Besides the statistical analysis of the texts, qualitative analysis was applied to further analyse some characteristics observed in the texts of the d/hh participants, mainly regarding syntax and grammar. The Greek language is grammatically and syntactically quite complex. For instance, verbs, nouns, adjectives, articles, participles, pronouns, and adverbs are conjugated, and congruence is required between the subject (personal pronoun) and verb, adjective and noun, article and noun. A modification of endings is required accordingly (e.g. for pluralization and for noun cases). Accents are also used in writing. As a result, in a few of the texts produced by d/hh children and adults attendant mistakes were observed (see Appendices).

In general, the texts produced by adult d/hh people were short and the vocabulary was poor. They produced shorter sentences with simpler syntactical structures (Subject-Verb-Object). Additionally, in some cases, the following points were noted: 1) omissions of articles, pronouns and conjunctions (for instance, "*I go to the croft with brother"* instead of *"I go to the croft with my brother",* and *"To clean yard my house"* instead of *"To clean the yard of my house"*), 2) pleonastic use (e.g. *"every the weekend I do the rest"* instead of *"every weekend I rest", "I play cards and I play backgammon"* instead of *"I play cards and backgammon"*) and unnecessary additions (e.g. *"I have four my children", "sometimes every Sunday I go to the church"*, instead of *"I have four children", "sometimes on Sunday I go to church" or "every Sunday I go to the church"*), 3) coining of words ("*titles letters"* instead of *"subtitles"*) 4) substitutions (for instance, substitution of the right article with a different one – *"to the following day"* instead of *"the following day"*) 5) significant difficulties in comprehending truncated passives (some participants instead of using the verbs in passive form, used them in the active form or the other way round (e.g. "to *be prepared* the

clothes" instead of "*to prepare* the clothes"). Finally, in some texts the participants created phonetically similar but non-existent words (edekse[2] in place of edeikse).

The texts produced by the young children were longer than those produced by adult d/hh people. D/hh children used both active and passive voice and relative, subordinate, and pronominal clauses. In their texts there was a wide use of articles, pronouns, adverbs, auxiliary verbs, and adjectives. However, in both adult and young d/hh participants' texts the accents were not marked on the right syllable, and one sentence was written as one paragraph.

Discussion

Writing is one of the most complex and difficult tasks for d/hh students to master (Antia et al. 2005; Fabretti et al. 1998; Makarona & Lampropoulou 2005). This study showed that d/hh children reached better levels of competence in written Greek compared with adult d/hh people, at least for the aspects investigated.

The following reasons may explain the fact that young d/hh children scored higher than adult d/hh people. First, all young d/hh children have better access to spoken Greek than adult d/hh people. The d/hh young children have had hearing aids ever since their hearing loss was detected, whereas the adult d/hh people are not hearing-aid users.

Next, the young d/hh children had attended exclusively general schools. It has been reported in the literature that the writing achievements of d/hh children who attend general schools are higher than those of d/hh peers in schools for the deaf (Karchmer & Mitchell 2003) and rather similar or slightly worse than the achievements of their hearing peers (Antia et al. 2005; Hadjikakou et al. 2010; Musselman & Szanto 1998). In previous studies carried out in Cyprus, the low academic level offered at the only school for the deaf on the island has been pointed out in the past (Hadjikakou, Christodoulou, Hadjidemetri, Konidari & Nicolaou 2009; Hadjikakou & Nikolaraizi 2008); it is possible that our participants were not provided during their schooling with all the necessary vocabulary, experience, and knowledge.

Lampropoulou and Makarona stress that d/hh adults "graduate from school lacking sufficient written language skills and their problems, especially in relation to syntax, do not seem to improve as they grow older or as they make more use of the written language" (2005, p. 131).

The writing ability of the participants (both of the d/hh children and the d/hh adults) in this study is better than that reported in corresponding research on d/hh adults' writing ability (Lampropoulou & Makarona 2005), in most of the areas examined (see Table 2).

Concerning the content, the percentage of subordinate sentences reported in d/hh children's texts was 100% and in d/hh adults' texts – 90.1%, whereas in the study by Lampropoulou and Makarona (2005) this was 56.2%. As far as consistency of register (consistency in style and phrasing) is concerned, it was reported in 90.9% of both the d/hh children's and d/hh adults' texts, whereas the respective percentage in the texts produced by Lampropoulou and Makarona (2005) was

[2] The examples are presented in Greek with Latin characters because they cannot be rendered in English.

68.5%. Despite the fact that the adult d/hh people in the study by Lampropoulou and Makarona (2005) created paragraphs 54.3% of the time, the respective percentage in our study was much higher (81.8%) for the children, but lower (40.9%) for the adults.

Table 2. Characteristics of the Greek adult deaf participants' written language in percentages (%) in terms of text content, structure, syntax, and language as reported in the study by Makarona and Lampropoulou (2005)

	Percentage (%)		**Percentage (%)**
Clear statement of topic		Correct sentences	
YES	73.3%	Average	52.3%
NO	6.6%		
Transitional markers (conjunctions)		Correct subordinate clauses	
YES	56.2%	Average	9.7%
NO	23.8%		
Use of paragraphs		Variety of words used in the whole text	
YES	54.3%	Average	.88%
NO	25.7%		
Consistent register (consistency style & phrasing)		Content words per functional word	
YES	68.5%	Average	2.31%
NO	11.4%		

With regard to syntax, this study has shown that the percentage of correct sentences used by d/hh pupils was 92% and that the mean of the correct subordinate clauses was .42. The mean of the correct sentences (.52) reported in the study by Lampropoulou and Makarona (2005) was similar to that of the adults in our study (.58), whereas the mean of the correct subordinate clauses in that study was much lower (.09) compared to .32 reported in this study.

As far as vocabulary is concerned, the mean of different words (.88) reported in the study by Lampropoulou and Makarona (2005) was similar to that of the adults in our study (.84), and higher than the mean of different words produced by the d/hh children (.62). This may be explained by the fact that vocabulary increases as the d/hh children get older.

It must be noted that the qualitative analysis of the texts showed that some of the participants experienced difficulties in areas of contextual language (e.g. morphology, syntax) emphasizing the variation in this area among d/hh people, as has been similarly reported in other studies (Antia et al. 2005). The results of this study must be interpreted with caution and several limitations must be noted. The sample was small and the measure of writing was limited to a single essay. Given that a standardized written test for the deaf population is not available in Greek, a persuasive essay was asked of our participants. Increasing the number of samples as well as varying the genres (e.g. narrative, expository, etc.) would add further depth to the analysis. Similar studies which were carried out in much bigger countries also enrolled a small number of participants (Fabretti et al. 1998; Lampropoulou & Makarona 2005); hitherto, despite the fact that the sample was rather small, this

study provided us with valuable information on the writing capabilities of these age groups for the first time in Cyprus.

We can conclude from this study that the writing achievements of adult d/hh people lag behind those of d/hh children, since they did not have the same educational opportunities when they attended the school for the deaf in the past, compared to the opportunities that young d/hh children do now. Additionally, advancements in technology, early intervention, and educational approaches may have increased young d/hh children's access to language. This study shows that life-long learning courses should be developed and delivered for d/hh adults. Specifically, d/hh adults should enjoy access to adult education and training programmes (such as literacy and numeracy programmes), interpreter support, and tutorials with teachers of d/hh children. Technology (e.g. e-learning, teleconferencing) could be helpful for them, if they cannot be physically present.

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Tables

Appendices

1. An adult's written sample

"On Saturday I make housework of the house and in the evening sometimes to the cafeteria with friends to tell the news. On Sunday, I cook easily and rest. In the evening I go the visits to see my brother and my friends. When I have wedding I go and the christenings."

2. A child's written sample

"On Saturday morning, at about 8 o'clock I woke up, went to the toilet, and washed my face and teeth. After a few minutes, the grandfather came to my home and we went together to my father's plot, watered the trees, and cut some vegetables. Then, we

returned to my grandfather's house, I saw my brother, and we went together to play football with our friends. Then, it was time for lunch and together with my brother we went to my grandmothers' and had lunch there. In the evening at about 7:30 we went to McDonald's because a classmate had her birthday and there were the rest of the class, we had dinner, talked together and had fun (…)".