

FACTORS CONTRIBUTING TO READING IN DEAF AND HARD- OF- HEARING SECONDARY SCHOOL STUDENTS

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Abstract

Reading has been a challenge for deaf and hard- of- hearing students (hh) and an area of inquiry for many researchers in the field. Looking at the factors and the reading mechanisms that differentiate the good from poor deaf/ hh readers could help educators design appropriate educational programs that could help students overcome reading difficulties. The purpose of this study was to examine the factors related to reading comprehension of deaf/ hh students, and differentiate good from poor readers.

The sample consisted of 24 deaf/ hh adolescents attending a special secondary school for the deaf. Students were tested in the following areas: Sign and spoken language skills, reading comprehension and phonological awareness, reading motivation and reading amount, and reading and metacognitive reading strategies used.

Results indicated that reading comprehension had a statistically significant negative relation according to age, and a positive relation with efficacy, importance, and competition. It appears that deaf readers use phonological awareness only in tasks, and not while reading. The results are discussed in terms of their implications for curricula development and teaching.

Reading has been a challenge for deaf/hh and an area of inquiry for many researchers in the field. Student related factors and characteristics such as age, level of hearing loss, educational placement, language of education, language used at home, supportive parents, socioeconomic status of parents, educational level of parents, attending early intervention programs, seem to have a strong impact in differentiating good from poor readers. (Limbrick et al, 1992, Leybaert, 1993, Wilson & Hyde, 1997, Wauters et al, 2006, Calderon, 2000).

Phonological awareness, which is generally considered necessary for successful reading, is a difficult skill for a deaf child to acquire (Marschark et al, 2002, Monreal & Hernandez, 2005, DesJardin et al, 2009). Research regarding deaf/ hh children does not show a clear relation between phonological awareness and reading (Paul, 2003). Phonological awareness seems to be the result of reading rather the prerequisite (Musselman, 2000, Stewart & Clark, 2003, Kyle & Harris, 2006, 2011, Mayberry et al, 2011, Marschark & Hauser, 2012). Successful deaf/ hh readers are found to use a combination of alternative modes of word recognition, such as lipreading, fingerspelling, sign language, etc (Musselman, 2000, Perfetti & Sandak, 2000, Marschark et al, 2002).

Early language (oral or sign) acquisition is also important for reading comprehension (Limbrick et al, 1992, Goldin- Meadow & Mayberry, 2001). Deaf/ hh children usually show delayed language development and do not internalize language structures that writing language represents (Webster, 1986, Moores, 1987, Rodda & Grove, 1997, Lampropoulou, 1999, Musselman, 2000). According to some researchers oral

language skills assist deaf/ hh children to learn vocabulary and syntactic structures that lead to reading ability (Musselman, 2000, Marschark et al, 2012). On the other hand, sign language skills assist deaf/ hh children in gaining general world knowledge, and in implying reading strategies, develop metalanguage skills and improve comprehension (Musselman, 2000).

Further research reveals that deaf/hh children face difficulties in reading comprehension, even for simple sentences (Monreal & Hernandez, 2005). They may be able to recognize every word separately, but are unable to understand the meaning of the whole sentence (Bunch, 1987, Paul, 1998, Kelly et al, 2001). The reading comprehension research focuses, apart from prior knowledge, on cognitive and metacognitive reading strategies (Paul, 1998, 2003, Ducharme & Arcand, 2011). According to findings young deaf/ hh children cannot rely on the context for conclusions and for word recognition (Livingston, 1997) and do not use monitoring comprehension (Strassman, 1992), neither they use looking for and back as strategies of metacognitive control, but just as to find optical similarities to answer questions (Strassman, 1997, Paul, 2003).

Of great significance is the reading motivation which reflects the aims and values that influence reading behavior (Parault & Williams, 2010). Internal motives are strongly related to successful reading comprehension and to positive attitudes towards school and learning (Guthrie et al, 1999, Parault & Williams, 2010). Of the same importance is the reading amount, which has to do with the frequency and the amount of time focused on reading for various issues and purposes (Guthrie et al, 1999). Reading is also considered to be a school task. Students relate reading only with homework and school related activities, not for personal enjoyment (Pitcher et al, 2007, Herzig, 2009).

The purpose of this study was to examine the factors related to reading comprehension of deaf/hh students attending special schools for the deaf, that predict, and differentiate good from poor readers, and indicate any improvements throughout school years.

Sample

The sample was 24 deaf/ hh students of special secondary school (Gymnasium N=11 and High School N=13) without additional disabilities. The mean of their age was 18,29 and the mean of their hearing loss was 84,58 dB in the better ear. Most of the students (N=20) were prelingually deaf/ hh. Regarding mode of communication 10 of them, were bilingual, nine used Greek Sign Language (GSL), four were oral and one used a combination of signs and speech. Six of the families had attended early intervention program. Regarding parental hearing status: nineteen students had hearing parents, four Deaf parents and one had one hearing and one Deaf parent. Most of the parents were graduates of High School, and most of them were Greek in nationality.

Method

Demographic data of students and their families were collected from their school files. Their oral language ability was assessed individually by a speech therapist, and their Greek Sign Language (GSL) Skills by a Deaf teacher of GSL. Reading comprehension was examined using selected texts from their class' textbooks (different for each class). Irrelevant sentences were added to the text. Each student

was asked to find the main idea, the irrelevant sentences and to answer content questions; this process was followed by Kelly et al (2001). During the assessment of comprehension students were questioned about the reading and metacognitive strategies they used according to questions of Strassman (1992) and Banner & Wang (2011). Motivation and reading amount were assessed in small groups with questionnaires. For motivation the questionnaire of Wigfield, Guthrie and McGough (1996) was used. This instrument measures the 11 dimensions of motives (challenge, competition, compliance, curiosity, efficacy, importance, aesthetic enjoyment, recognition, social reasons, work avoidance and grades). For the reading amount the questions of Parault and Williams (2010) were used. Phonological awareness was assessed individually with a test consisting of four different tasks including recognition of words and pseudowords and matching of initial and final phonemes to letters (Perfetti & Sandak, 2000, Luetke- Stahlman & Nielsen, 2003, Dillon et al, 2012).

Results

Analyzing data in SPSS revealed that one student succeeded the maximum grade in reading comprehension. This student was excluded from the sample, and was studied individually, as a case study.

Results indicated that from the examined factors reading comprehension had statistically significant relation negative with age ($p=0,01$), and positive with efficacy ($p=0,046$), importance ($p=0,022$), and competition ($p=0,033$).

Regarding reading and metacognitive strategies, deaf/ hh students faced difficulties understanding the meaning of the texts, which resulted in some students ($N=7$) not answering content questions and only 3 students found the main idea. None of the students found the irrelevant sentences. Specifically, they didn't use connections between elements through the text, and they didn't have any prior knowledge of the issues of the texts.

Regarding metacognition most students mentioned ways to deal with difficult points of the texts, such as searching in a dictionary, through internet, reread sentences many times, look at the contexts; translate in sign language and asking the teacher for assistance. No differentiation between good and poor readers was found. Differentiation was found between younger and older students. High school students mentioned strategies, while gymnasium's students didn't understand these questions. Additionally, regarding the definition of reading and of good reader, their answers showed that they related reading only with school work and that a successful reader is the one who understands all the words, find the meaning of the whole text and has imagination while reading a story.

Findings of differentiation through school years showed:

- a) A small improvement each year regarding reading comprehension, language (oral or sign) ability and phonological awareness.
- b) In gymnasium some students (36,4%) preferred oral/ total communication and others (36,4%) sign language, while in high school most (50%) were bilingual and 41,7% preferred sign language.
- c) Deaf/ hh students of gymnasium were higher in most of the dimensions of motivation, particularly in efficacy (54,5%), curiosity (72,8%), importance (81,9%), recognition (72,8%) and grades (72,8%). Students of high school were higher only in the dimension of compliance (16,6%).
- d) Deaf students of gymnasium read more for school, while high school's students read more for pleasure.

Examining the predictive factors for reading comprehension with regression analysis was found that only age (0,06) appeared to be predictive factor.

Finally, the student with the maximum grade in reading comprehension was examined as case study. This student was prelingually deaf, had Deaf parents and a Deaf brother and his ethnicity was Greek. His father graduated from primary education and his mother from high school. Both parents were working. The student mentioned that until 3 years of age he lived with his Deaf parents and hearing grandparents. He communicated using sign language with his Deaf parents, while at the same time his grandmother read to him pictured stories. During preschool and school age his parents read to him every day and they had an active role in his education. Regarding the methods used to learn reading he used mainly a whole language approach, and visual recognition for words rather than phonological awareness. He reported that he usually asks for help from his parents and teachers when facing difficulties in reading or unknown words. It is worth mentioning that his phonological awareness grade was 39 with maximum grade 40.

The student now reads quickly using automatically word recognition mechanisms. He also uses metacognitive strategies connecting elements from different courses and sources. Computers played an important role for him, as an educational tool, a source of information and enjoyment. The student self-characterizes himself bilingual, because he has Deaf and hearing friends and can communicate with them either way. Competence in both languages (oral and sign) was also obvious in the test of language ability. The student believes he is a good reader, because he is able to understand correctly the meaning of the texts by looking at the context and the whole meaning. Finally, he defines reading as a way of enriching his knowledge. He is motivated by almost all the dimensions except for compliance and work avoidance and he mentions that he reads mostly for pleasure. He also reported that his parents have high expectations of him, demanding hard work and preparation to succeed. Additionally, they trust him and respect his opinion.

Discussion

The present study showed that deaf/ hh students' reading is based on internal motives. Similar results have been found in Deaf adults by Parault & Williams (2010). Nevertheless, their comprehension was low, despite findings that internal motives are related to successful reading comprehension (Guthrie et al, 1999, Parault & Williams, 2010). This concludes that deaf/ hh students do have motives to read, but they cannot activate them at school. A suggestion to design educational materials that are authentic and easily achieved and challenge interest might increase motivation to read. The activation of motivation should begin as early as possible, as it was found that deaf/ hh students of gymnasium are more motivated than high school students that never received early incentives to read. Regarding reading strategies, deaf/ hh students focus on word recognition separately as revealed also by Kelly et al (2001), perhaps due to way of teaching them or due to their limited world knowledge. Additionally, they are unable to connect difficult elements of the text and to make conclusions. This result has been found in other studies as well (Strassman, 1992, Oakhill & Cain, 2000). This finding shows that teaching strategies need to be administered clearly and systematically. The emphasis on teaching strategies was also apparent from the finding that there was no differentiation between successful and poor readers in phonological awareness. The investment of teaching using clear and systematic strategies must be considered to yield successful deaf/ hh readers.

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