International Journal of Pediatric Otorhinolaryngology 96 (2017) 84–88

Contents lists available at ScienceDirect

International Journal of Pediatric Otorhinolaryngology

journal homepage: http://www.ijporlonline.com/

Story retelling skills in Persian speaking hearing-impaired children

Farnoush Jarollahi [a], Reyhane Mohamadi [a, *], Yahya Modarresi [b], Zahra Agharasouli [a], Shadi Rahimzadeh [c], Tayebeh Ahmadi [d], Mohammad-reza Keyhani [a]

[a] School of Rehabilitation Sciences, Iran University of Medical Sciences (IUMS), Tehran, Iran
[b] Institute for Humanities and Cultural Studies Professor, Tehran, Iran
[c] Department of Epidemiology, Shahid Beheshti University of Medical Sciences, Non-Communicable Disease Research Center, Tehran, Iran
[d] Department of Audiology, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

ARTICLE INFO

Article history:
Received 5 October 2016
Received in revised form
5 February 2017
Accepted 24 February 2017
Available online 1 March 2017

Keywords:
Hearing loss
Story retelling
Child
Language development

ABSTRACT

Objectives: Since the pragmatic skills of hearing-impaired Persian-speaking children have not yet been investigated particularly through story retelling, this study aimed to evaluate some pragmatic abilities of normal-hearing and hearing-impaired children using a story retelling test.
Methods: 15 normal-hearing and 15 profound hearing-impaired 7-year-old children were evaluated using the story retelling test with the content validity of 89%, construct validity of 85%, and reliability of 83%. Three macro structure criteria including topic maintenance, event sequencing, explicitness, and four macro structure criteria including referencing, conjunctive cohesion, syntax complexity, and utterance length were assessed. The test was performed with live voice in a quiet room where children were then asked to retell the story. The tasks of the children were recorded on a tape, transcribed, scored and analyzed.
Results: In the macro structure criteria, utterances of hearing-impaired students were less consistent, enough information was not given to listeners to have a full understanding of the subject, and the story events were less frequently expressed in a rational order than those of normal-hearing group ($P < 0.0001$). Regarding the macro structure criteria of the test, unlike the normal-hearing students who obtained high scores, hearing-impaired students failed to gain any scores on the items of this section.
Conclusions: These results suggest that Hearing-impaired children were not able to use language as effectively as their hearing peers, and they utilized quite different pragmatic functions.

1. Introduction

In recent years, there has been an increasing interest in seeking ways to evaluate children's language in a natural context. In Iran the study of language development skills in hearing impaired children is mainly focused on the development of early language skills and story retelling creates a valid way for assessing the effects of cochlear implant on complex linguistic use such as pragmatics. Pragmatic abilities, which refer to the actual use of language, are an important area in language. A number of researchers have reported that story retelling creates a valid way for assessing pragmatic and complex structures [1].

Compared with other language tests, storytelling provides professionals with more information because it is a type of speech with descriptions and commentary, which requires complex skills and abilities, including congruence between auditory and visual inputs, attention and concentration, listening, comprehension, memory, sentence formulation and understanding of the plot [2]. The analysis of storytelling provides a comprehensive picture of the child's pragmatic skills. In addition, children's pragmatic skills and difficulties can be screened easily and quickly through storytelling [2,3]. Analysis of storytelling can be employed as the best tool for screening permanent language disorders. Most preschool-aged children who fulfill the task poorly will show this flaw as a persistent academic impairment later in life [4].

Concerning the acquisition of reading and writing skills as well as those of social and communication, storytelling is also of

* Corresponding author. Speech and Language Pathology Department, School of Rehabilitation Sciences, Iran University of Medical Sciences (IUMS), Nezam Street, Shahid Shahnazari Street, Madar Square, Mirdamad Boulevard, Tehran, 15459134-87, Iran.
E-mail addresses: mohamadi.re88@gmail.com, mohamady.r@iums.ac.ir (R. Mohamadi).

http://dx.doi.org/10.1016/j.ijporl.2017.02.025
0165-5876/

importance. This method is widely applicable and has long been recognized. It activates the cognitive organization in the mind that is not accessible with observations and normal experimental tests [5]. Not only is it a useful and flexible tool for evaluating various linguistic defects, but also it can provide an accurate prognosis about the future of academic skills for the family and therapists [6].

As one of the subsets of storytelling, retelling a story is considered as a method of evaluation that can assess the form, content and pragmatic aspects of language inclusively [7]. In story retelling assessment, two aspects of macro and micro structures are investigated. Macro-structural elements consist of more general dimensions of the story, i.e. topic maintenance, explicitness, and event sequencing, the evaluation of which provides an overall outlook of the child's storytelling ability. In contrast, micro-structural elements comprise more subtle dimensions including conjunctive cohesion, referencing, syntax complexity, and utterance length [8,9].

Despite the aforementioned importance of analyzing story retelling, among various studies conducted on communication problems in hearing impaired children, particularly in the field of pragmatics [10], only very few studies have addressed the retelling aspect of stories [11]. In Persian language, similarly, little research has exclusively been conducted on pragmatics in children [12]. Accordingly, a preliminary study was carried out in this area by Ref. [13] in which, description of the pragmatic abilities of hearing impaired children was provided by five criteria of the story retelling test (including topic maintenance, explicitness, event sequencing, referencing and conjunctive cohesion). In their preliminary study, they investigated the pragmatic skills of 5 children (3 hearing impaired and 2 normal hearing children). They reported that the pragmatic skills of hearing impaired children were weaker than hearing children. They also pointed out the differences among hearing-impaired children's abilities. The difference in pragmatic skills showed the difference in the amount of hearing loss, kind of assistive device, effective use of remaining hearing, onset and quality of aural rehabilitation program, and other factors [13]. Apart from Jarollahi et al. there is a general lack of research in pragmatic skills of Persian hearing impaired children [13]. Therefore, This study seeks to obtain data with larger and more homogeneous samples in order to be more effectively used in education and rehabilitation of children. The present study aims to compare some pragmatic abilities of normal-hearing and hearing-impaired children using a story retelling test.

2. Methods

This comparative cross-sectional study was carried out to investigate the linguistic structure of 15 children with severe-to-profound severe sensorineural hearing loss (SNHL) and 15 normal hearing children using the story retelling test. All of the children were monolingual and Persian-speaking and met the following inclusion criteria: Their parents in both groups all had normal hearing. For all children with normal hearing, hearing was screened at 20 dB hearing level for the frequencies between 500 Hz and 2000 Hz at the time of data collection. Persian was the native language of all subjects. Control group children had normal hearing threshold in both ears. According to the medical records, children in both groups were excluded if they had history of delay in psychomotor milestones or history of diseases such as otitis media, epilepsy, convulsion, syncope and brain damage. Normal hearing children had no history of language impairment. The experimental group, on the contrary, were hearing-impaired and suffered from severe-to-profound SNHL as well as speech and language disorders caused by hearing loss, but not from further physical and mental disorders.

In the normal hearing and hearing-impaired groups, 47% (7 children) and 40% (6 children) were female, respectively, and the rest were male. Within the hearing-impaired group, 40% had been wearing bilateral behind-the-ear hearing aids (6 children). The mean hearing loss at the frequencies of 500 and 1000 Hz, with no hearing aids, was 87.8 dB (ranging from 75 dB to 110 dB); on average they had been wearing hearing aid for 42 months and receiving rehabilitation services for 38 months. Some 60% had cochlear implants (9 children). The mean hearing loss at the frequencies of 500 and 1000 Hz before implantation was 100.8 dB (ranging from 90 dB to 110 dB); on average, they had been using implanted prosthesis for 16 months, and had received rehabilitation services for 29 months before and after implantation at the time of testing. Approximately, 55.5% would go to ordinary schools and the rest to deaf schools. 15 normal hearing children (8 boys and 7 girls) between the ages of 80 and 88 months ($M = 83.4$, $SD = 2.8$) and hearing-impaired children (9boys and 6 girls) between the age of 80 and 89 months ($M = 84.4$, $SD = 3.5$) participated in the study. Of these, 6 hearing-impaired children wore hearing aid and 9 used cochlear implant. Duration of the use of hearing aid was 42 months and duration of the use of CI was 16 months. The History of aural rehabilitation duration mean in both groups (children with hearing aid and cochlear implanted children) was 32.8 ± 10.8.

To select the samples above, all students in two Baghchehban schools and Amir-Alam cochlear implant center in Tehran were chosen by one trained tester. Additionally, two regular schools were randomly selected from the same school districts among which the schools for hearing-impaired students had been selected. Samples of convenience who met the inclusion criteria were selected. After obtaining their parents' consent, the "*story retelling test*" was then carried out [14]. The test is developed for assessment of some expressive language skills of 6–7 years old children. The story which is called "naughty elephant" has a simple design and contains diverse content words which are acquired earlier in development. It consists of ten complex sentences, 8 types of conjunctions, 18 main information and ten sequencing events. The story has 10 pictures illustrated by professional cartoonist. Although the story is new for hearing impaired and Normal hearing children, the pictures and the subject is attractive for them. Children listen to the story while simultaneously demonstrating the actions with pictures. Ethical issues before and during the assessment procedure were considered. The test was done in a quiet setting with no distracting factors, with a live voice presentation. Trained to perform the test and the scoring competently enough, the examiner initially established rapport with students and then explained them how to do the test. To make the children become familiar with the procedure, a pilot story the structure of which was quite consistent with the original one was first narrated as the pretest to each child. Then, after recounting the original story, the children were asked to retell it.

In the story retelling test described above, with the content validity of 89%, construct validity of 85%, and reliability of 83%, seven linguistic features were analyzed and evaluated in the micro and macro structure subtests. Below are the criteria and the way they are scored [14]:

* **Topic maintenance:** whether or not most utterances of the child have topic coherence. A minimum score or weighted percentage of zero (<25%) and a maximum score of five (>75%) were assigned to it.
* **Event sequencing:** whether the majority of events are arranged in a logical order. A minimum score of zero and a maximum score of ten were assigned to it.
* **Explicitness:** whether enough information has been presented to the listener so as to make them fully understand the issue.