

Complex syntax intervention for Developmental Language Impairment

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Abstract

Intervention for children with Developmental Language Disorder appears to be beneficial and contributes to sustainable linguistic gains. This paper reports on a pilot intervention study carried out in Cyprus that examined the efficacy of language treatment targeting complex syntactic structures. Language skills of a nine-year old girl with DLD are described at two time points, before and after intervention. The child received therapy sessions based on MetaTaal therapy, and relative clauses were the targeted syntactic structures. Post-intervention measurements showed marginal improvement in relative clauses production and comprehension. Improvements observed in Complex Sentence Repetition Task and this might imply that the grammatical structures have emerged.

Keywords: DLD, relative clauses, metalinguistic approach, syntax

Introduction

The term Developmental Language Disorder (DLD) was proposed (Bishop, et al., 2016) to describe the language difficulties and functional limitations that may coexist or appear in children with oral language deficits such as poor school performance and difficulty in forming social relationships. According to the international literature, 7% of all typically developing children experience DLD (e.g. Tomblin, Records, & Zhang, 1996; Norbury et al., 2016).

Focusing on the language characteristics, DLD causes problems in various aspects of language such as phonology, morphology, word finding, syntax and pragmatics in comprehension and/or production (see Leonard, 2014 for a review). Although it becomes clear that DLD is characterized by great heterogeneity (Friedman, 2007; Leonard, 2017), problems with morphology and syntax affect the majority of children who experience the disorder (e.g. Fey et al., 2004; Leonard, 2014; Nippold et al., 2009). Most common difficulties are the production and comprehension of complex syntactic structures such as relative clauses (RCs). Children with DLD seem to struggle with the production and comprehension of RCs due to the many different types of the particular clauses, gender and subject/object agreement, different positioning of verbs in clauses among others (e.g. Novogrodsky & Friedman, 2006).

Speech and language intervention research highlights that it can bring positive outcomes not only in relation to the language abilities of the child but also in other domains such as school performance and social involvement etc.

(e.g. Lousada, et al., 2016; Hegazi, et al., 2020). Balthazar and her colleagues (2020) suggested that clinicians should select specific syntactic targets based on individualized analysis and implement implicit learning principles and explicit metalinguistic instruction. This can be attained by planned selection and organization of stimulus materials while activities using multiple modalities occur.

Recent studies have suggested that metalinguistic approaches which target complex syntax, such as Shape Coding and Colourful Semantics could be beneficial especially for older children with DLD (Zwitserslood et al., 2015). In 2015, Zwitserslood et al. (2015), used the metalinguistic and multimodal intervention programme called 'MetaTaal' using 'Lego Bricks' and showed that RCs production was improved significantly.

The aims of our study were to examine the effect of the metalinguistic treatment targeting complex syntactic structures on language performance and on the production and comprehension of RCs.

Methodology

In this study a 9;7 y.o girl, E., had been experiencing difficulties with oral expression and understanding, and had a profile consistent to the diagnosis of DLD. It is noted that E. had received speech therapy sessions in the past but she still experienced language struggles. During the first phase of this experimental study, three assessment sessions took place, in which language tests, standardized and experimental, were administered. The tests used for the purposes of this study were: The Bus Story Test (Renfrew, 1995), Sentence Repetition Task (Theodorou, et al., 2017) and RCs comprehension and production tasks (Theodorou & Grohmann, 2012), in order to note a baseline, and then compare those measurements after the intervention period. In order to confirm nonverbal intelligence scores within the average range Raven's Progressive Matrices test was administered. A summary table with the results before and after the intervention programme is given below.

During the second phase, 8 intervention sessions that targeted production and comprehension of RCs were carried out. The intervention programme was an adaptation of the 'MetaTaal' approach (Zwitserslood, et al., 2015). We modified the programme with the replacement of lego bricks by coloured cords that are used as stimulus material which represented words of various categories like subject, relative pronoun etc.. Each intervention session was devoted to explicit metalinguistic instruction and guided practice by using the proposed activities. Firstly, the child practiced with exercises aimed at the identification of different clause types and conjunctions in spoken language. Then, she started constructing subject and object RCs using the coloured cards. The next step was to create full sentences and connect them by using the cards. Then, she was asked to connect the two sentences by erasing the subject of the 2nd clause. After that, the participant had to create a simple Subject-Verb-

Object sentence and use the bridge card (that represented the relative pronoun *that* 'pu'), in order to create a subject or object relative clause. The next step was to create right branching subject and object RCs, where the small bridge was included which it represented coma in written speech and pause in verbal speech. Finally, the participant had to create center-embedded subject and object RCs also by using the guide. Important to note that, in all stages of the intervention programme different pictures were used, all the instructions were given orally and no homework or written task was given. Further, all complex sentences used in the treatment were drawn from a pool of sentences developed for the purposes of the project by the authors.

Results

Table 1. Pre and post intervention scores on language tasks

Language Tests	Pre intervention programme measurements	Post intervention programme measurements
The Bus Story Test	Mean Length of Utterance-Words: 10,6 Subordinated Clauses: 12	Mean Length of Utterance-Words: 9,2 Subordinated Clauses: 13
Complex Sentence Repetition Task	9/24	18/24
RCs production task	9/20	10/20
RCs comprehension task	17/32	16/32

Starting with the Bust Story Test that assesses narrative abilities, E.'s Mean Length of Utterances (MLU) was 10,6 words and she produced 12 subordinated clauses before the intervention programme. After the intervention programme E.'s MLU was 9,2 words and produced 13 subordinated sentences. With regards to the Complex Sentence Repetition Task, improvement was shown since she repeated correctly 9 out of 24 sentences before the treatment period and 18 after. Focusing on the the RCs comprehension and production tasks, comparing the number of correct answers no improvement is exhibited. As it is depicted in the table 1, E. comprehended 17 out of 32 RCs before the intervention programme and 16 after. The reduction in the number of errors concerns subject RCs. In addition, regarding the RCs production task, 9 out of 20 targeted sentences were produced before the intervention programme while 10 correct productions were noted after. It is important to note that the wrong answers in the second testing were only about object RCs. Specifically, a systematicity in the type of errors (reversal error) made in the comprehension task observed after the intervention programme, for the object RCs. As for the production task, the range of errors reduced, where high percentages of gap

filling and change of word order were noted. These two types of errors produced structures that approach the correct and targeted structure.

Discussion

The aim of this pilot study was to investigate the effect of the metalinguistic treatment targeting complex syntactic structures on language performance and on the production and comprehension of RCs.

Results suggest that the metalinguistic and multimodal intervention used here can produce improvements in Complex Sentence Repetition task. This might indicate that complex grammatical structures have emerged although the child cannot generate them simultaneously which is in line with the assumption that sentence repetition is an indicator of child's language ability (e.g. Marinis & Armon-Lotem, 2015; Polišenská et al., 2015).

As for the length of utterances, which is considered an indicator of the complex syntactic abilities, no improvement was observed. However, more analysis is needed that will examine potential differences in terms of the types of syntactic structures that E. used.

In conclusion, it is shown that the treatment approach used can be effective for children with DLD but more research is needed in order to maximize gains and enhance the impact to language growth.

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