

## COMPREHENSION OF COMPLEX LITHUANIAN SYNTACTIC CONSTRUCTIONS: A STUDY OF TYPICALLY DEVELOPING CHILDREN AND CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER

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**Abstract.** The aim of this paper is twofold. First, to compare the comprehension of complex Lithuanian syntactic constructions (relative clauses, passive sentences, *wh*-questions) in typically developing (TD) children and children with developmental language disorder (DLD). Second, to display the characteristics of comprehension of these constructions that can be attributed to specific language features of Lithuanian.

This study demonstrates that both TD children and children with DLD have problems in comprehending passive sentences and *wh*-questions. TD children had fewer challenges in performing the relative clause comprehension task than the other tasks. However, children with DLD faced more difficulties in performing the relative clause task.

The results show that children are more likely to make errors in interpreting object but not subject sentences. Even though in Lithuanian syntagmatic relations are marked by inflections, it is still difficult for children to grasp the syntactic relations between the subject and the object in complex constructions.\*

**Keywords:** first language acquisition, syntax, morphosyntax, relative clauses, passive, *wh*-questions, Lithuanian

### 1. Introduction

It has been shown that typically developing (TD) children and children with developmental language disorder (DLD), across different languages (English, Italian, German, Hebrew, Dutch, French etc.) all have problems comprehending complex syntactic constructions, e.g. passive sentences, relative clauses (RC), and

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*wh*-questions (van der Lely 1996, Guasti et al. 2008, Contemori, Marinis 2013, Brandt et al. 2008, Arnon 2010, Metz et al. 2010, Sauerland et al. 2006, Armon-Lotem et al. 2016). Moreover, some studies state that during the process of child language development, it is often the case that children demonstrate language knowledge that is sufficient to support comprehension but insufficient for production (Faser et al. 1963, see Frizelle et al. 2019: 256). However, in the case of complex syntax, the opposite appears to be the case, with children's production superior to comprehension (Hakansson, Hansson 2000, see Frizelle et al. 2019: 256).

Research into the comprehension of complex syntax is a rather new and interesting endeavor in Lithuanian, whereas studies of the acquisition of Lithuanian have mainly concentrated on morphology analysis (Dabašinskienė 2015, Dabašinskienė, Kamandulytė-Merfeldienė 2017, Kamandulytė-Merfeldienė et al. 2021 etc.). It should also be noted that there is a lack of studies investigating developmental language disorder in Lithuanian children. This has particularly been relevant in recent years, as there have been attempts to develop child language assessment tools and language screening instruments. With regard to the above, the paper has two main aims. First, it seeks to compare the comprehension of complex Lithuanian syntactic constructions in TD children and children with DLD. The initial hypothesis is that children with DLD will experience more difficulties than TD children comprehending complex syntactic constructions (RC, passive sentences and *wh*-questions).

The second goal of this paper is to display the characteristics of comprehension of complex syntactic constructions that can be attributed to specific language features of Lithuanian. This will be carried out in order to find out whether language-specific features of Lithuanian as a highly inflected language help children grasp the complex syntactic relations between the subject and the object in RC, passive sentences and *wh*-questions.

Lithuanian is a morphologically rich and highly inflected language which belongs to the Baltic branch of the Indo-European language family. In Lithuanian, characterized by a free word order, syntagmatic relations in a sentence are marked by inflections; thus, the comprehension of syntactic constructions involves the comprehension of morphological features. Pilot Lithuanian studies have revealed that children with DLD are less sensitive than TD children to morphological information that is carried by affixes (Kamandulytė-Merfeldienė 2020). Research conducted by Dabašinskienė and Kamandulytė-Merfeldienė (2014) has shown that the comprehension of some complex syntactic structures (e.g., RC) is problematic for TD children up to the age of 5; however, 6–7-year-old TD children understand these types of sentences sufficiently well. On the contrary, a small-scale (unpublished) pilot study by the same authors provides strong evidence that RC are poorly understood by 6–7-year-old children with DLD. Thus, this paper raises the question of whether 6–7-year-old children with DLD grasp relationships expressed by morphological features in complex syntactic constructions (RC, passive constructions, *wh*-questions).

## 2. Theoretical background

Comprehension of RC, passive constructions and *wh*-questions have been widely investigated in a variety of languages. The studies find that these constructions are especially difficult for children with language impairment. Some studies examining sentence comprehension in children with DLD show that this process is related to phonological short-term memory skills. E.g., Stanford and Delage (2019) find that syntactic difficulties may form part of the SLD (specific learning difficulties) profile due to working memory limitations.

More and more research has recently been conducted linking the complex process of acquisition of syntactic structures to a usage-based approach. Diessel and Tomasello (2000, 2005) were the first to apply this approach in explaining the difficulties of using RC, stating that children are sensitive to input frequencies, i.e. the difficult acquisition of certain constructions is influenced by their infrequent use in ordinary language, and their errors are due to the adaptation of complex constructions into more commonly used simpler forms.

### 2.1. Relative clauses

Many previous and current studies are concerned with children's comprehension of RC in English (Sheldon 1974, Tavakolian 1981, Diessel 2004, Diessel, Tomasello 2000, 2005, Frizelle et al. 2019, etc.), but research has also been done on German, Italian, Greek, Hebrew, Romanian, Japanese, and other languages (Brandt et al. 2008, Guasti et al. 2008, Arnon 2010, Bențea 2012, Ozeki, Shirai 2005). Some studies of English and German suggest that children produce RC as early as around three years of age (Diessel, Tomasello 2000, Jisa, Kern 1998). However, other research of English suggests that comprehension of RC does not emerge until two to three years later (Villiers et al. 1979, Sheldon 1974).

It is argued that in English, the complex acquisition of direct object RC can be caused by an unusual word order, in which the verb is moved to the end of the sentence (e.g., *The man who the woman met*). However, even the scarce research on other types of languages in which RC are constructed through changes in case form (e.g. Romanian, German, Italian) confirms the same trend, showing a complex process of acquisition of RC (Brandt et al. 2008, Bentea 2012, Guasti et al. 2008).

The main way to indicate the RC's function in highly inflected languages is by changing the case form, meaning that the inflectional form of a relative pronoun is used to combine the independent clause and the RC (dependent clause). In Lithuanian, the RC always begins with a relative pronoun which follows the noun it describes. The relative pronoun agrees with the main noun in number and gender, but not always in case, e.g.,

- (1) Pirkau **knyg-ą**, **kur-i** labai įdomi.  
'I bought a **book:FM:SG:ACC** **that:FM:SG:NOM** is very interesting.'

RC are commonly classified based on two structural features: 1) the syntactic role of the HEAD, i.e. the main clause element that is modified by the RC, and 2) the syntactic role of the GAP, i.e. the element that is gapped or relativized inside the

relative clause (Diessel, Tomasello 2005). Although head and gap may serve any syntactic role, the literature on the acquisition of RC has concentrated on four particular types (Diessel, Tomasello 2005: 882); following this classification, we can provide examples in Lithuanian:

1. *SS relatives* (RC that modify the main-clause subject and include a subject gap):
  - (2) **Berniuk-as, kur-is** piešė mergaitę, išėjo namo.  
‘The **boy:MS:SG:NOM, who:MS:SG:NOM** drew the girl, went home.’
2. *SO relatives* (RC that modify the main-clause subject and include an object gap):
  - (3) **Mergait-ė, kur-ią** piešė berniukas, žaidė su draugais.  
‘The **girl:FM:SG:NOM, who:FM:SG:ACC** the boy drew, was playing with her friends.’
3. *OS relatives* (RC that modify the main-clause object and include a subject gap):
  - (4) **Berniuk-ą, kur-is** piešė, pakvietė draugai.  
‘The **boy:MS:SG:ACC, who:MS:SG:NOM** drew, was called by friends.’
4. *OO relatives* (RC that modify the main-clause object and include an object gap):
  - (5) **Berniuk-ą, kur-į** pamatė mergaitė, draugai pakvietė žaisti.  
‘The **boy:MS:SG:ACC, who:MS:SG:ACC** the girl saw, was invited to play.’

The research of Dabašinskienė and Kamandulytė-Merfeldienė (2014) showed that TD children aged 3;0–4;5 have difficulty perceiving the difference between RC expressing subjects and those expressing objects. At a later age, children already perceive the difference, but in the preschool age there are still errors in the interpretation of the object sentence. This study revealed that school-age TD children already correctly perceive the RC and do not confuse the meaning of subject and object. Up until now, there has been no research in Lithuanian on how children with DLD use and perceive RC.

## 2.2. Passive sentences

The acquisition of the passive structure is described in many studies. The first studies revealed that children find it difficult to acquire the passive structure, due to the complexity of the syntactic structure (Turner, Rommetveit 1967, Baldie 1976). Various studies (Gordon, Chafetz 1990, Marchman et al. 1991, Pinker et al. 1987, etc.) note that short passives, without an overt external argument, are easier than the full passive for TD English-speaking children; nonreversible sentences are easier in the passive than reversible ones, and actional passives are acquired earlier and more simply than nonactional passives.

Some studies on the production of passives, such as Brooks and Tomasello (1999) have shown that children aged 3–4 years can successfully produce passives

after training. Research on English-speaking children with SLI (van der Lely 1990, 1996, Bishop et al. 2000) show that the acquisition of passives is especially difficult for this group. Because difficulty in acquiring passives is one of the criteria which identify language impairment, passives are often included in standardized language development tests (TROG, Bishop 2003, GAPS, van der Lely et al. 2007).

In Lithuanian, the morphological passive is constructed with a verb-specific suffix. In short passive constructions, the external argument (the performer of the action) is generally omitted; however, in long passive constructions, the external argument is marked by a different case than the active form (genitive, see (2)).

(6) Maža mergaitė šukuojama mamos.

'The little girl:FM:SG:NOM is being groomed:PASS:PRES:FM:SG:NOM  
by her mother:FM:SG:GEN.'

Armon-Lotem et al.'s study on the comprehension of passive constructions in 11 typologically different languages, including Lithuanian, is likely the most comprehensive study on the topic to-date. That study offers two major findings. The first finding is the relative case, in which 5-year-old children across 11 different languages are able to comprehend short passive constructions. Their average performance on the short passive conditions was above 80% in all languages studied. The second and perhaps the more intriguing finding is the variation seen across the different languages in children's comprehension of full passive constructions: Catalan-, Lithuanian-, and Hebrew-speaking children scored much lower (mean of 34%–63%) compared to the other languages (mean 82%–89%). This variation stems from the specific characteristics of each language, and good mastery of passives by the age of 5 is not a universal, cross-linguistically valid milestone in typical language acquisition. (Armon-Lotem et al. 2016) Given that this was only the first study to analyze the acquisition of passives in Lithuanian, as well as the challenges posed to children by this construct, their comprehension is included in the study of complex syntactic constructions described in this article.

### 2.3. *Wh*-questions

Studies of various languages have shown that the acquisition of *wh*-questions is quite problematic. In interrogative sentences, *wh*-phrases occur in first position and relate to a gap further on in the sentence. In generative syntax, it is assumed that this is a case of filler-gap dependency in which *wh*-phrases move from their original position inside the clause to the beginning of the sentence (Metz et al. 2010: 27). This movement creates a gap in the underlying sentence structure, as illustrated in (8), which is the object question related to (7) (Metz et al. 2010: 27).

(7) The boy washes Mark.

(8) Who does the boy wash \_\_\_\_\_?



The complexity of *wh*-questions is evidenced by the fact that TD children aged 4 to 5 still make mistakes when formulating them. When asking questions in English,

preschoolers usually disregard the rules of word order. Although grammatically correct questions are characterized by inversion – a verb and/or an auxiliary verb precedes a noun, children often prefer the structure of a direct sentence (e.g., *When Lucy can yell?* (= *When can Lucy yell?*)) (Valian, Casey 2003: 118–119).

A full understanding of *wh*-questions is a rather late achievement, as it requires not only sufficient lexical and syntactic knowledge, but also the ability to focus one’s attention on what is unnamed, what is missing (Seidl et al. 2003: 424–425). Although most *wh*-question structures are acquired in the preschool period, both perceptual and production errors can also occur in later life, e.g. Italian children do not reach the adult level even at ages 10–11 (Belletti, Guasti 2015: 12). Compared to TD children of the same age, the comprehension of children with DLD lags behind by about 2 years (Belletti, Guasti 2015: 32–34).

The results of research on subject and object issues show a clear asymmetry between the comprehension of these questions. Studies of native English-speaking children show that object questions are more difficult to understand and that they are mastered later (Hanna, Wilhelm 1992: 90, Metz et al. 2010: 29–30). In Italian, it is also easier to comprehend and to produce subject questions (Belletti, Guasti 2015: 7).

Subject questions that require information about a grammatical subject and questions that require an object can consist of the same words that differ only in grammatical form (Lithuanian) or word order (English), such as:

- (9) Which bear knocked over the monkey? (Metz et al. 2010: 29)  
 ‘Kur-is:MS:SG:NOM lok-ys:MS:SG:NOM pargriovė beždžionę?’
- (10) Which bear did the monkey knock over? (Metz et al. 2010: 29)  
 ‘Kur-į:MS:SG:ACC lok-į:MS:SG:ACC pargriovė beždžionę?’

In Lithuanian, the grammatical meanings of subject and object are denoted by different cases, cf.:

Subject *wh*-question:

- (11) **Kas** stumia berniuką?  
 ‘Who:SG:NOM pushes the boy?’
- (13) **Kur-is** vaikas kutena mamą?  
 ‘Which:MS:SG:NOM child tickles mama?’

Object *wh*-question:

- (12) **Ką** stumia berniukas?  
 ‘What:SG:ACC does the boy push?’
- (14) **Kur-į** vaiką kutena mama?  
 ‘Which:MS:SG:ACC child does mama tickle?’

Sauerland et al. (2016) compared 18 languages, including Lithuanian, and the results for all of them (except for Hebrew and Polish) show that for children aged 4–6, object questions are more complex than subject questions. Although it was expected that the acquisition of object questions in Lithuanian would be less difficult than in English, due to the existence of the grammatically marked case category in Lithuanian, this was not confirmed by Sauerland et al. (2016). The aim of this article is to investigate whether there is a difference in the development of *wh*-questions in Lithuanian between children with typical development and children with DLD.

### 3. Methods and procedure

In order to investigate the comprehension of complex syntactic constructions in TD children and children with DLD, research on the comprehension of RC, passive sentences and *wh*-questions was carried out in the following groups:<sup>1</sup>

- 1) the main group of subjects, i.e., the group of monolingual Lithuanian-speaking children with DLD:<sup>2</sup>
  - a) age 4;6–5;5 (four years six months – five years five months; n = 40),
  - b) age 5;6–6;5 years (n = 40),
- 2) the control group, i.e., monolingual Lithuanian-speaking TD peers:
  - a) age 4;6–5;5 years (n = 40),
  - b) age 5;6–6;5 years (n = 40).

All these children were recruited from kindergartens in Kaunas in 2019. All tasks were carried out with test subjects by speech therapists from kindergartens in Kaunas, as well as speech therapists from the Speech & Language Therapy Center.<sup>3</sup> Before the testing procedure, informed parental consents, consisting of an information sheet, a certificate of consent and a sociolinguistic questionnaire, were collected.

The Raven's Coloured Progressive Matrices Test was performed on all the children. Children with below-average abilities (percentile rank 16–25) were not included in the research group (n = 10). The children were also subjected to the Bender Gestalt Test for the assessment of visual and motor abilities as well as visual memory. Children with below-average abilities were also excluded from the research group (n = 4).

**Relative clause task.** The picture selection task for comprehension of RC was developed in the international project CLAD (Crosslinguistic Language Diagnosis, coordinated by U. Sauerland and H. van der Lely). This test consists of 20 target items and 10 fillers presented in a slide format. Each test slide contains two items, from which the child must choose one. All the sentences tested are of simple structure and of the same length: they consist of the verb *parodyk* 'show:IMP', the object (e.g., *katę* 'a cat:FM:SG:ACC') and an RC that modifies it (e.g., *kuri žadina ežį* 'which:FM:SG:NOM is waking a hedgehog up' or *kurią žadina ežys* 'which:FM:SG:ACC is being woken up by a hedgehog').

**The passive task** was developed and tested in the project COST Action A33, chaired by U. Sauerland. Sh. Armon-Lotem, E. Haman, K. Jensen de López, M. Smoczynska and K. Yatsushiro prepared the design of the pictures and the test (Armon-Lotem et al. 2016). The research on Lithuanian described in the present article made use of a part of the aforementioned test consisting of 16 long passive sentences and 16 fillers – active sentences – presented in a slide format. Each test slide contains four items, from which the child must choose one.

Each set of pictures depicted three people from a set of four protagonists: two were directly involved in the action and one was a neutral observer (Armon-Lotem

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<sup>1</sup> The research is limited to the extent that factors of gender and SES (socio-economic status) are not included. Taking into account that language impairment is much more common in boys than in girls, there was no aim to balance the groups by gender. Also the effect of SES was not investigated, so this factor was not included.

<sup>2</sup> A diagnosis of DLD is made by speech therapists in Kaunas Pedagogical Psychological Service.

<sup>3</sup> The author would like to express her appreciation to psychologist Jūratė Lietuvnikienė, to the head of the Speech & Language Therapy Center psychologist and speech therapist dr. Vilma Makauskienė, and speech therapists Gintara Povilaitienė ("Vaikystė" kindergarten), Rūta Ordienė ("Giliukas" kindergarten), Daiva Mickuvienė ("Aviliukas" kindergarten), Laima Rickevičienė ("Vėrinėlis" kindergarten), and Alė V. Šoblinskienė ("Žara" kindergarten) for their help in collecting this research data. The author is thankful to the parents, children, and kindergartens that participated in this study.

et al. 2016). In the task, when the test stimulus was *The little girl is being fed by the grandmother*, the following mismatched events were depicted:

- a) Theta-role reversal, e.g., *The little girl is feeding the grandmother*.
- b) Wrong agent, e.g., *Big sister is feeding the little girl*.
- c) Neutral: The three protagonists in a neutral state (i.e., just sitting at the dinner table) (Armon-Lotem et al. 2016).

*Wh-questions task*. This test was developed and tested in the project COST Action A33 (chair U. Sauerland). The picture selection task adapted to Lithuanian and presented in a slide format consists of 20 target questions:

- a) 5 target subject questions *kas* ‘who:NOM’: *Kas prausia karalienes?* ‘Who is washing the queens?’
- b) 5 target object questions *ką* ‘who:ACC’: *Ką prausia karalienės?* ‘Who are the queens washing?’
- c) 5 target subject questions *kuri* ‘which:NOM’: *Kuri karalienė maitina fejās?* ‘Which queen is feeding the fairies?’
- d) 5 target object questions *kurią* ‘which:ACC’: *Kurią karalienę maitina fejās?* ‘Which queen are the fairies feeding?’

Each test slide contains four items. In addition to the target picture (*Who are the queens washing?*), three alternative pictures are shown as choices corresponding to three different types of misunderstanding. Specifically, these include the following (Sauerland et al. 2016): 1) a corresponding number error picture (*Who is the queen washing?*), 2) a reversal error picture (*Who is washing the queens?*), 3) a semantic verb error (*Who are the queens chasing?*) (Sauerland et al. 2016). All three tests were presented to all the children, but on different days.

## 4. Results

### 4.1. Relative clauses

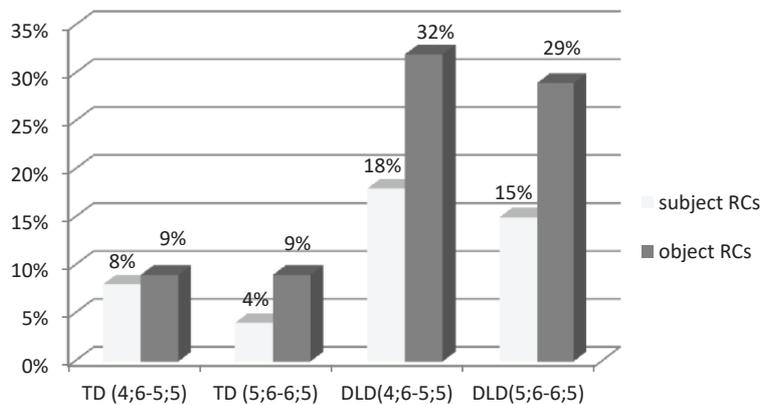
The study of children with DLD and TD peers revealed interesting results. As expected, the research on RC showed that children with DLD face more problems in comprehending these complex syntactic constructions. As shown in Table 1, 67 of the 80 TD children made 0–1 errors in subject RC. In the group of children with DLD, fewer informants, i.e., 43 children, made only 0–1 errors. Eleven TD children made 2–3 errors in the comprehension of subject RC, and more than twice as many children with DLD, i.e., 25 children, made that number of errors. Only two children in the TD group made over 4 errors in the comprehension of subject RC, but in the group with DLD, as many as 12 children had great difficulty in comprehending this type of RC.

Even greater differences are evident in the comprehension of object RC. Sixty-one TD children made 0–1 errors, but only 22 children with DLD coped well with this task (see Table 1). Thirteen TD children made 2–3 errors, but 28 children in the DLD group made that number of errors. Six TD children found it very difficult to comprehend object RC (> 4 errors), whereas this task was extremely challenging for 30 children with DLD.

**Table 1.** Results of the comprehension of subject RC and object RC

Relative clause type	Number of errors	TD children (n = 80)	Children with DLD (n = 80)
Subject RC (n = 10)	0–1 error	67	43
Subject RC (n = 10)	2–3 errors	11	25
Subject RC (n = 10)	> 4 errors	2	12
Object RC (n = 10)	0–1 error	61	22
Object RC (n = 10)	2–3 errors	13	28
Object RC (n = 10)	> 4 errors	6	30

The quantitative analysis performed by taking the children’s age into account shows that in three groups (TD 5;6–6;5, DLD 4;6–5;5, DLD 5;6–6;5), object RC were more difficult to comprehend than subject RC (Figure 1). When interpreting RC, children tend to assign to the relative pronoun the function of the subject, possibly due to its use before the verb.



**Figure 1.** Results of the comprehension of subject RCs and object RCs in the age groups (errors expressed in percentage)

As can be seen in Figure 1, TD children aged 4;6–5;5 erred similarly in choosing pictures that illustrate both subject RC and object RC (8% and 9% of errors, respectively). Older TD children (5;6–6;5) made fewer errors in comprehending subject RC than object RC (4% and 9%, respectively). It can be argued that children aged 5;6–6;5 improve in their abilities to comprehend subject RC, but object RC still cause problems for some children. However, when compared to children with DLD, it appears that both subject RC and object RC are perceived much better in TD children than in language impaired children. In the younger group of children with DLD (4;6–5;5), errors related to the comprehension of subject RC and object RC accounted for 18% and 32%, respectively, and they were very similarly (15% and 29%) distributed in the older group of children (5;6–6;5).

After statistical analysis (using F-statistics for one-way ANOVA), the comprehension of subject RC and object RC was assessed separately. Statistical analysis showed that the difference between the comprehension of subject RC in the age groups of 4;6–5;5 and 5;6–6;5 of TD children is statistically significant ( $p = 0.002$ );

however, the comparison of these groups did not reveal a statistically significant difference in the comprehension of object RC ( $p > 0.05$ ). This suggests that TD children significantly improve their comprehension of subject RC at the age analyzed, but not their comprehension of object RC. However, it should be noted that not even errors in the comprehension of object RC are not very common (9%).

Comparing the two groups of children with DLD, no statistically significant difference was found for either subject RC ( $p > 0.05$ ) or object RC ( $p > 0.05$ ). Consequently, in the case of children with DLD, no age-related progress was observed in the period analyzed, from 4;6 to 6;5, and the number of errors considerably exceeded the errors made by TD peers (see Figure 1).

When comparing language impaired children with their TD peers, statistically significant differences were found in the comprehension of object RC: between younger children with DLD (4;6–5;5) and their TD peers (4;6–5;5),  $p = 0.0001$ ; between children with DLD (5;6–6;5) and their TD peers (5;6–6;5),  $p = 0.0002$ . Thus, we can reasonably state that children with DLD of both age groups find greater difficulty in comprehending object RC than their TD peers. It remains a great challenge for them at least until the age of 6;5.

#### **4.2. Passive sentences**

The research into the comprehension of passive sentences reveals that this construction causes difficulties in both TD children and children with DLD. As shown in Table 2, in the group of TD children, 12 children made 0–3 errors (out of 16 passive sentences), 18 children made errors in 4–7 sentences, as many as 24 children made 8–11 errors, and 26 children even made more than 12 errors. So, although some children performed this test successfully, it was very difficult for most of them.

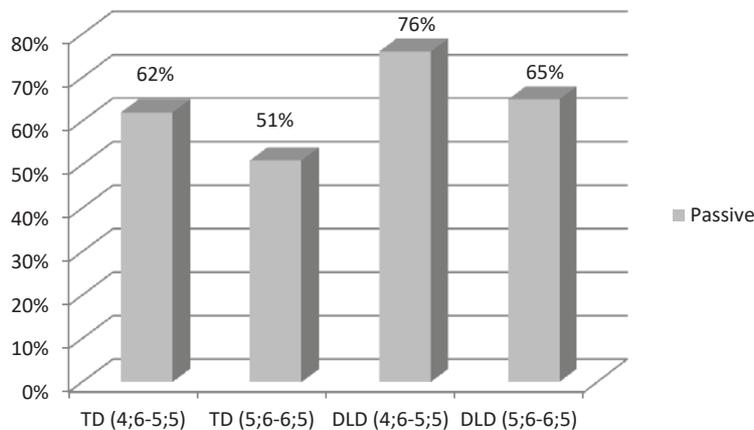
In the group of children with DLD, there were even fewer respondents who successfully completed the passive comprehension task. Only 3 children made 0–3 errors, 10 children made 4–7 errors, 24 children made 8–11 errors. As many as 43 children (more than half) made more than 12 errors in the passive comprehension task.

The average number of errors in 4;6–5;5-year-old children with DLD was 11.75, in older children with DLD (5;6–6;5) the average number of errors was 10.42. 4;6–5;5-year-old TD children made 9.8 errors on average, whereas the average number of errors in 5;6–6;5-year-old TD children was 8.07. It follows that the TD children's results are slightly better than those of the children with DLD, and that the number of errors decreases with age; however, the high number of errors in the group of older TD children suggests that most of them have not yet acquired the passive construction by 6;5 years. It should be noted that both in the group of TD children and in the group of children with DLD, there were cases where children chose a reverse picture. We could state that children often rely on the criterion of a typical word order. When interpreting passive constructions, children are likely to assign to the object the function of the subject due to the use of the object before the passive form of the verb.

**Table 2.** Results of the comprehension of passives (n = 16)

Number of errors	TD children (n = 80)	Children with DLD (n = 80)
0-3 errors	12	3
4-7 errors	18	10
8-11 errors	24	24
> 12 errors	26	43

Figure 2 shows the error rate in each group of children. As expected, the oldest TD children (5;6-6;5) performed the task best: in their group, passive comprehension errors accounted for 51%. Younger TD children (4;6-5;5) erred in 62% of cases. The older group of children with DLD (5;6-6;5) erred in 65% of the sentences. Younger children with DLD made more errors, accounting for as much as 76% of all cases.



**Figure 2.** Results of the comprehension of passives in the age groups (errors expressed in percentage)

Interestingly, the statistical analysis did not reveal differences between 4;6-5;5-year-old TD children and children with DLD of the same age. There was also no statistically significant difference between TD children and children with DLD aged 5;6-6;5. This suggests that the comprehension of passive constructions over the age period does not depend on the type of language development (typical or delayed) – both groups of children find these constructions difficult, although in the group of TD children, there are more children who successfully completed the passive comprehension task. Thus, it can be stated that while some TD children already have a good comprehension of passive constructions, for the majority of children it is a real challenge.

### 4.3. *Wh*-questions

The research carried out on the comprehension of *wh*-questions reveals that TD children are similarly in error in comprehending both subject and object questions. Table 3 shows that out of 80 TD children, 35 children made 0–1 errors in subject questions, and 29 children made 0–1 errors in the comprehension of object questions. The same number of children, i.e., 27 children, made 2–3 errors in the comprehension of both subject and object questions. 4–5 and more errors were made in subject questions by 18 TD children and in object questions by 24 TD children.

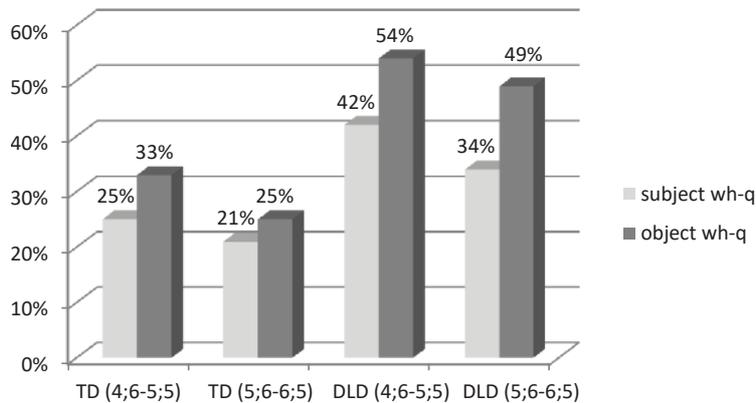
Slightly different tendencies are observed in the group of children with DLD. 10 of these children did not make an error or made 1 error in identifying the pictures referred to with subject questions, and only 2 children made 0–1 errors in comprehending object questions. 2–3 errors occurred with subject questions in the case of 38 children with DLD, and with object questions, in the case of 21 children with DLD. 32 children made 4–5 and more errors in comprehending subject questions, and as many as 57 children made this number of errors in their comprehension of object questions. All of this is evidence that children with DLD face more difficulties in comprehending object *wh*-questions than subject questions, although errors occur in the comprehension of both types of questions.

**Table 3.** Results of the comprehension of subject and object *wh*-questions

<i>Wh</i> -question type	Number of errors	TD children (n = 80)	Children with DLD (n = 80)
Subject (n = 9)	0–1 error	35	10
	2–3 errors	27	38
	4–5 errors	14	19
	> 5 errors	4	13
Object (n = 9)	0–1 error	29	2
	2–3 errors	27	21
	4–5 errors	18	31
	> 5 errors	6	26

Figure 3 shows the error rate for each group of children. TD children aged 5;6–6;5 and 4;6–5;5 made the fewest errors: 21% and 25% in their comprehension of subject questions and 25% and 33% in object questions. There is no statistically significant difference between these groups. Children with DLD made more errors: the 4,6–5,5-year-old group made 42% errors in the comprehension of subject questions; in object questions, 54% errors occurred. Older children with DLD aged 5,6–6,5 erred slightly less often (34% errors were made in subject questions, and 49% in object questions). The statistical analysis revealed no statistically significant difference between children with DLD in the two age groups.

Since the quantitative research revealed differences between the comprehension of subject and object questions, a more detailed statistical analysis was carried out to determine whether the comprehension of the questions with *kas* ‘who:NOM’ / *kq* ‘who:ACC’ and *kuri* ‘which:NOM’ / *kuriq* ‘which:ACC’ differs. When assessing the comprehension of questions with *kas* ‘who:NOM’ and *kq* ‘who:ACC’, it was found



**Figure 3.** Results of the comprehension of *wh*-questions in the age groups (errors expressed in percentage)

that object questions were statistically significantly more difficult for children with DLD aged 5;6–6;5 ( $p = 0.029$ ); however, the comprehension of questions with *kuri* ‘which:NOM’ and *kuriq* ‘which:ACC’ did not differ statistically significantly in this group.

In the group of TD children, no significant differences between the comprehension of questions with *kas* ‘who:NOM’ and *kq* ‘who:ACC’ and questions with *kuri* ‘which:NOM’ and *kuriq* ‘which:ACC’ were found; thus, difficulties in comprehending questions with *kq* ‘who:ACC’, which functions as an object, can be attributed exclusively to the development of language in children with DLD. This is also confirmed by a significant difference ( $p = 0.037$ ) between the comprehension of object questions *kq* ‘who:ACC’ in TD children (5;6–6;5) and children with DLD (5;6–6;5).

The error analysis shows that children usually choose a reverse picture. It suggests that when interpreting sentences, Lithuanian children often rely on the criterion of a typical word order. When interpreting *wh*-questions, children tend to confuse the possible question word expressed as the object with the subject because of the word order in the question (OVS), which is not typical of statements.

## 5. Conclusions

The research into the comprehension of complex syntactic constructions suggests that both TD children and children with DLD have problems in comprehending RC, passive sentences, and *wh*-questions. The results of this Lithuanian study are complementary to research in other languages which show that, at an early age, children are more likely to make more errors in interpreting object than subject sentences. This was confirmed by all three investigations, namely, of RC, passive sentences, and *wh*-questions. Even though syntagmatic relations in a sentence are marked by inflections in Lithuanian, and the object is marked by a special inflection, it is still difficult for children to grasp the complex syntactic relations between the subject and the object. This suggests that the fact that Lithuanian is a highly

inflected language does not help children grasp the complex syntactic relations between the subject and the object in RC, passive sentences, and *wh*-questions.

Difficulties in the comprehension of the object relations can be attributed to several factors. It has been claimed that children begin to comprehend and use complex constructions when their language processing ability is sufficiently improved, which happens as the child develops. In addition to language processing, it is important to remember the principle of frequency: according to longitudinal studies, subject sentences are more common in child-directed speech, and they also appear much earlier in the spontaneous speech of children than object sentences, which leads to easier comprehension of subject constructions. In addition, when interpreting sentences, Lithuanian children often rely on the criterion of a typical word order. This tendency was observed when analyzing the results of all three tests.

The analysis of TD children's results revealed that they had fewer challenges in performing the RC comprehension task than the other tasks. Most 5;6–6;5-year-old TD children performed this test successfully. However, children with DLD faced more difficulties in performing the RC task. Even the older group of children with DLD (5;6–6;5) often made errors, so it can be stated that up to 6;5 years, Lithuanian children with DLD have not yet mastered this construction.

For both TD children and children with DLD, the passive comprehension task was more difficult than the RC task. A large proportion of children experienced difficulties; the statistical analysis revealed no differences between 4;6–5;5-year-old TD children and children with DLD of the same age. There was no statistically significant difference found between 5;6–6;5-year-old TD children and language impaired children of the same age either. This suggests that comprehension of passive constructions during the period under investigation does not depend on the type of language development (typical or delayed) – for both groups, these constructions are difficult to grasp for at least up to 6;5 years. According to the usage-based approach, we can understand this difficulty by the rare usage of passive constructions in child-directed speech and by their unique and complex morphology.

The comprehension of *wh*-questions posed fewer challenges than the comprehension of passive sentences but more difficulties than the comprehension of RC in both TD children and children with DLD. There were a number of children in the TD group who successfully completed this task, but there were also children who did not cope with it. In line with the usage-based approach, we suggest that Lithuanian children often assume the typical and more frequent word order SVO, and they often tend to misinterpret the word order OVS, typical of *wh*-questions.

Summarizing the results of the study, it can be stated that the comprehension of some syntactic constructions poses problems even in TD children, at least up to 6;5 years of age. Although it was hypothesized that children with DLD would experience more difficulties than TD children in comprehending complex syntactic constructions (RC, passive sentences, and *wh*-questions), we can state that the hypothesis was partially confirmed. TD children made fewer errors in comprehending passive sentences and *wh*-questions, but there were no significant statistical differences between these groups. Therefore, constructions such as passive sentences and *wh*-questions should not be included in standardized language screening tests. It is the syntactic construction of relative clauses described in this article that should be included in such tests.

More research is needed to bring to light other factors that may play a role in the acquisition of complex syntactic constructions. Knowing that the p-value is affected by the sample size, a small sample size should be mentioned as a limitation of this study.

### Abbreviations

ACC	accusative
DLD	developmental language disorder
FM	feminine
IMP	imperative
MS	masculine
NOM	nominative
PASS	passive
PRES	present
RC	relative clause
SG	singular
TD	children typically developing children

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# LEEDU KEELE KEERUKATE SÜNTAKTILISTE KONSTRUKTSIOONIDE MÕISTMINE: EAKOHASE ARENGUGA JA KEELELISE ARENGU HÄIREGA LASTE KEELEKASUTUSE UURING

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Artiklil on kaks eesmärki. Esiteks võrrelda leedu keele keerukate süntaktiliste konstruktsioonide (relatiivlaused, passiivlaused, eriküsimused) mõistmist eakohase arenguga ja keelelise arengu häirega lastel. Teine eesmärk on kirjeldada nende konstruktsioonide mõistmisega seotud omadusi, mis on seostavad leedu keele kindlate tunnusoontega.

Keerukate süntaktiliste konstruktsioonide mõistmise analüüs näitas, et nii eakohase arenguga kui ka keelelise arengu häirega lastel on probleeme passiivlausetest ja eriküsimustest arusaamisega. Relatiivlause mõistmise ülesande täitmisel oli eakohase arenguga lastel vähem väljakutseid, kuid keelelise arengu häirega lastele valmistas ka nende mõistmine raskusi.

Leedu tulemused täiendavad teistes keeltes tehtud uuringuid, mis näitavad, et varases eas teevad lapsed tõenäolisemalt vigu lause objekti, kuid mitte subjekti tõlgendamisel. Seda kinnitavad kõik kolm, nii relatiiv-, passiivlause kui ka eriküsimusega seotud uuringuosa. Kuigi leedu keeles on lause süntagmaatilised suhted tähistatud käänetega, on lastel siiski raske mõista subjekti ja objekti suhteid keerukates konstruktsioonides. See osutab, et ka tugev flektiivsus, mis on omane leedu keelele, ei hõlbusta lastel hoomata keerulisi süntaktilisi nähtusi, nagu subjekti ja objekti suhted relatiivlausetes, passiivlausetes ja eriküsimustes.

Eakohase arenguga ja keelelise arengu häirega laste uuringu tulemusi kokku võttes võib väita, et mõne süntaktilise konstruktsiooni mõistmine tekitab probleeme isegi 6,5-aastastel eakohase arenguga lastel. Seetõttu ei tohiks standardiseeritud hindamistestidesse kaasata selliseid konstruktsioone nagu passiivlaused ja eriküsimused. Ainus selles artiklis kirjeldatud süntaktiline konstruktsioon, mis võiks sellistesse testidesse kaasatud olla, on relatiivlause.

**Märksõnad:** esimese keele omandamine, süntaks, morfosüntaks, relatiivlaused, passiivlaused, eriküsimused, leedu keel

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