Research Article https://doi.org/10.12973/eu-jer.13.1.367

European Journal of Educational Research
Volume 13, Issue 1, 367 - 377.
ISSN: 2165-8714
https://www.eu-jer.com/

# The Use of the Teddy Talk Test to Determine Speech and Language Development in Children Aged 4 to 5 Years

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*Received: June 16, 2023 ▪ Revised: August 1, 2023 ▪ Accepted: August 24, 2023*

**Abstract:** Speech therapy uses a combination of approaches to assess speech and language, including analysis of spontaneous speech, use of standardized scales and assessment by the child's parents and/or preschool teachers. In this paper, we present the Teddy Talk Test. Using a sample of sixteen children aged 4 to 5 years, we examined whether the test provided representative data on child language development. The parent questionnaire included information on the parents' education, the parents' native language, the child's gender and the language the parents speak with their child. It was found that the Teddy Talk Test has the characteristics of screening tests for speech and language: it is time-efficient, it covers receptive and expressive language tasks, and it allows for rapid assessment of speech and language in large numbers of children. However, since the Teddy Talk Test has not yet been evaluated, we do not know its value regarding sensitivity, specificity and predictive validity.

**Keywords:** *Screening test, speech and language testing, Teddy Talk Test.*

**To cite this article:** Skubic, D., & Brodar, J. (2024). The use of the teddy talk test to determine speech and language development in children aged 4 to 5 years. *European Journal of Educational Research*, *13*(1), 367-377. https://doi.org/10.12973/eu-jer.13.1.367

## Introduction

Assessing speech and language in the preschool years is challenging because each child develops at a different rate, which is reflected in speech and language. The goal of any speech and language assessment is to obtain information about a person's communication skills, and the pathways to that information may vary. We can undertake the assessment directly or indirectly, but it is best to combine different approaches that integrate analysis of a spontaneous speech pattern, use of standardised scales and assessment by parents and/or preschool teachers. It is preferable to use a screening test when assessing a larger number of children. A screening test is not an in-depth diagnostic tool; it is brief and allows for the identification of children with communication problems who require more in-depth speech-language therapy diagnosis. Few studies have examined the effectiveness of screening tests. The most obvious disadvantage of screening tests is their lower sensitivity than, for example, standardised tests. Nevertheless, screening tests are often used when many children need to be screened. In Slovenia, speech-language therapists already have some diagnostic tools for obtaining information about children's speech and language development, but these tools are often designed as internal material of the institution where the speech-language therapist is employed. Currently, *Preventive Speech Therapy for a 5-Year-Old Child* (PLP-5) (Gačnik et al., 2013) is commonly used just prior to school entry. Despite the increasing emphasis on early diagnosis, there is no screening test for younger children.

### *Diagnostics of Speech Development*

Evaluation is the process of gathering valid and reliable information in order to form an opinion about something. In speech-language therapy, the information gathered in the diagnostic process is used to make a diagnosis, determine the need for referral to other specialists, identify the need for therapy, determine the focus of therapy, determine the frequency and duration of therapy, and design the structure of therapy (e.g., individual or group therapy, with or without the parent/guardian present) (Shipley & McAfee, 2015). The assessment of a child's speech is a comprehensive process, as speech development is closely related to physical, emotional, social and especially cognitive development (Bloom, 1998; Nelson, 1996; Papalia et al., 2001).

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Many modern researchers (e.g., Hresko et al., 1999; Karmiloff & Karmiloff-Smith, 2002) emphasise the fact that it is best to combine different approaches that integrate analysis of spontaneous speech, use of standardised scales and assessment by the child's parents and/or teacher.

Standardised scales have the advantage of being valid and reliable in assessing a child's language development because they can be compared to a normative sample of children of the same age. Nevertheless, these scales are also limited, as they often only allow for the assessment of a specific area of language development, such as vocabulary or the acquisition of grammatical rules (Marjanovič Umek, Kranjc, & Fekonja, 2006). The type of assessment a clinician chooses to assess children has an impact on the outcomes (Cooper, 2015). When clinicians use a standardised test, they need to be aware of the possible psychometric flaws in the test and consider other types of objective or subjective forms of assessment (McCauley & Swisher, 1984). The final diagnostic decision should be the result of a cogent argument for the use of a particular standardised test (Cooper, 2015).

*The Screening Test*

The purpose of the screening test is to quickly identify those individuals who may have communication difficulties.

The speech screening test must be designed to cover both receptive and expressive language tasks. In English-speaking countries, various scales and tests have been developed and used for the purpose of language screening. e.g., Boehm Test of Basic Concepts (Boehm, 2001), Joliet 3-Minute Preschool Speech and Language Screen (Kinzler, 1992), Joliet 3-Minute Speech and Language Screen-Revised (Kinzler & Johnson, 1993), Kindergarten Language Screening Test (Gauthier & Madison, 1998). In selecting an appropriate screening test, we must consider several variables, such as the domains of language included in the test and the time required to score the test results. Many clinicians have also developed their own informal form of screening tool (Shipley & McAfee, 2015).

Many researchers still disagree on the use of a preschool speech and language screening tool. Wallace et al. (2015) reviewed 87 studies and 2 review articles examining the use of speech and language screening tests in children up to 5 years of age. They found that some screening instruments correctly and accurately identify children with a speech delay or language disorder, but that the tests differ in their specificity and sensitivity; no single screening test identifies the best characteristic, or at least the optimal age, for speech and language screening. The researchers did not determine whether a screening test can accurately identify children who need more detailed diagnosis and therapy. They suggest that research should be directed toward determining whether speech, language and other communication components are detected by a screening test.

*Assessment of Speech and Language in Speech Therapy in Slovenia*

Speech therapy in Slovenia is making progress and has an increasingly wide range of tools to help speech therapists assess children's speech and language development. It is important that the profession continues to develop diagnostics and create or adapt foreign questionnaires, tests and checklists that enable the identification of speech and/or language deficits and provide a more appropriate form of therapy.

Currently, speech therapists in Slovenia can use:

a) questionaries for parents:

- the *Speech Intelligibility Scale in Everyday Life* (McLeod et al., 2012) is a short questionnaire about children's intelligibility, intended for parents of preschool and school children. It can be used with monolingual and multilingual children;
- the *Questionnaire for Parents of Infants and Toddlers (Wetherby & Prizant, 2001) is a questionnaire for parents of children 6 to 24 months of age designed to identify children who need more detailed developmental assessment;*
- *Speech-Language Assessment of Three-Year-Olds: A Questionnaire for Parents and a Questionnaire for Speech and Language Therapists (Slokar, 2014) is a measurement tool that can identify at-risk children in the three-year-old population and enable speech and language therapists to implement preventive measures in the area of speech and language;*
- *the Sociopragmatic Skills Rating Scale (Girolametto, 1997, as cited in Penko, 2013), which assesses the sociopragmatic skills of children aged 12 to 26 months. Parents complete a questionnaire with 25 items on assertiveness and responsiveness;*
- *Assessment of Infant and Toddler Communicative Skills, List of Communicative Skills Development (LCSD): Words and Gestures and List of Communicative Skills Development (LCSD): Words and Sentences (Marjanovič Umek, Fekonja Peklaj, Kranjc, Grgić, Sočan, & Komidar, 2011). The instrument was created on the basis of the world-renowned tool The McArthur Bates communicative development inventories for parents' assessment of the communication* abilities of babies and toddlers. It is a standardized tool and adapted for the Slovenian language and Slovenian cultural environment and filled out by parents of babies and toddlers between the ages of 8 and 30 months;

b) a storytelling test for children aged from 3 to 6 years and from 6 to 9 years, such as *Storytelling Test: The Glove and The* Frog Prince (Marjanovič Umek, Fekonja Peklaj, Kranjc, Sočan, & Komidar, 2011). The Storytelling Test is an instrument for assessing children's storytelling in early and middle childhood. The Storytelling Test Glove is used to assess storytelling in children ages 3 to 6, while the Storytelling Test Frog Prince is used to assess storytelling in children ages 6 to 9;

c) a speech articulation test, such as Speech Articulation Assessment (Globačnik, 1999), which enables a relatively quick and systematic assessment of the number and type of errors in the area of pronunciation, since they determine the pronunciation of the voice in the initial, middle and final position of the word;

d) a language assessment such as SLO – LARSP (Skubic et al.: Slovenian Larsp, 2019) - with the SLO - LARSP profile, the speech therapist receives precise information about the morphological and syntactic structures in the child's speech and enables an assessment of the child's level of grammatical development;

e) a screening test for children who are soon-to-be pupils, such as *Preventive Speech Therapy Screening of a 5-Year-Old Child* (Gačnik et al., 2013), with which a speech therapist examines the communicative and linguistic abilities of a 5-year-old child and assesses whether the child would need a more in-depth speech therapy examination.

Some of the evaluation tools used by speech-language therapists in Slovenia are standardised, while others are not. Screening tests for younger children should also be taken into consideration. Speech-language therapists frequently use preventive speech therapy screening for 5-year-old children. The present article discusses the Teddy Talk Test for examining infants between the ages of 18 months and 5 years. Compared to other screening tests, such as the SLO – LARSP, the Teddy Talk Test is quick to perform and takes about 10 minutes. It can be used to get a quick indication of a child's comprehension level and often to collect a useful expressive language sample. With its simple tasks and pictures, it is easily transferable. However, it is not standardised.

## Methodology

*Research Design*

The Teddy Talk Test is a simple screening tool designed by Jo Darters, a speech therapist for English-speaking children between 18 months and 5 years of age. It enables a quick assessment of the child's speech and language. It can also be used with children for whom English is a second language and with children older than 5y0m whose intellectual level is comparable to typically developing children aged up to 5 years. The tool can be used by parents and professionals who want to monitor the child's communication abilities. For professionals who work with children aged under 5y0m, this tool enables speech and language assessment and helps determine whether it is necessary to refer the child for in-depth speech therapy diagnostics. The tool does not require additional training for use.

The test material of the Teddy Talk Test is stored in a bag. It contains an instruction manual, six pictures of verbs, six pictures to describe, and eight objects (a teddy bear, a spoon, a glass, a ball, a key, a shoe, a plastic duck and a comb). The items were chosen carefully, as they are familiar to the child; in the English language, they also allow the tester to assess those sounds that appear first in speech development.

The Teddy Talk Test is based on the Deryshire Language Scheme (Masidlover & Knowles, 1982) and enables structured observation of the child's response to increasingly complex instructions in structured play. It is divided into two parts: the first part tests understanding of spoken language and the second part tests the child's expressive language. Both parts are divided into tasks. In the first task of the first part, the tester checks the child's understanding of naming familiar objects; in the second task, s/he checks the child's understanding of verbs with the help of pictures; and in the third, fourth and fifth tasks, the tester uses objects to check the child's understanding of increasingly complex instructions (instructions with two, three or four pieces of information).

The part in which the tester checks the child's expressive language consists of two tasks. In the first task the child names objects, and in the second s/he describes pictures. It is recommended that the tester use an audio recorder during the task describing the pictures and transcribe the child's description of the pictures after completing the test.

The tester records the final findings of the expressive and receptive language testing on a form and compares them with the developmental scales. If necessary, s/he then decides on further examinations by other specialists or in-depth speech therapy diagnostics.

*Sample and Data Collection*

The sample was purposive and included 16 children from the Ciciban Kindergarten in Ljubljana: 7 boys (44%) and 9 girls (56%). The children were aged between 4y0m and 5y0m. Among the tested children, 5 (31%) were aged 4y10m at the time of testing, 3 (19%) were aged 4y8m, and 2 (13%) were aged 4y1m , while there was 1 child each (6%) aged 4y2m, 4y3m, 4y4m, 4y5m, 4y6m and 4y11m, respectively. Of the participants, 13 (81%) started attending kindergarten at 1 year of age, 2 started attending at 2 years of age (13%), and 1 (6%) at 3 years of age. Among the mothers of the tested children, 9 (56%) had completed secondary school and 7 (44%) had a university degree, while 10 of the fathers (63%)

had completed secondary school, 5 (31%) had a university degree and 1 (6%) had only completed primary school. The mother tongue of 12 of the mothers of the tested children (75%) was Slovenian, while 3 mothers (19%) were native speakers of Bosnian and 1 (6%) of Serbian. The mother tongue of 11 of the fathers (69%) was Slovenian, while 4 fathers (25%) were native speakers Bosnian and 1 (6%) of Serbian. Of the tested children, 12 (75%) lived in households in which Slovenian was spoken and 4 lived in households (25%) in which both Slovenian and Bosnian were spoken. Although a quarter of the children who participated in the study lived in a household where both Slovenian and Bosnian were spoken, we agreed to keep them in the study because we wanted to see if the results of the Teddy Talk Test of these children revealed expressive language skills in Slovenian (the phonology of Slovenian and Bosnian is quite similar). In addition, speech-language therapists in Slovenia do not have screening tests that can be used for bilingual children, and speech-language pathologists usually rely on their own knowledge and the tests available to them.

The data were collected at the Ciciban Kindergarten in Ljubljana. At the beginning of August 2021, we agreed with the kindergarten on the possibility of conducting testing in the age group from 4y0m to 5y0m and distributed consent forms for parents. The testing was carried out at the beginning of September 2021 in two kindergarten units in Ljubljana. For testing, we used the Teddy Talk Test, a translation of the test form and a speech-recording phone. In order to better interpret the data, a questionnaire was created for the parents of the participating children and sent to the kindergarten units. All of the completed questionnaires were received at the beginning of December 2021.

With the short questionnaire for parents, we wanted to find out the level of education of the mother and father, the mother tongue of the mother and father, the language that the parents speak with the child at home, how long the parents have lived in Slovenia, which country the parents are from, whether the child was born in Slovenia, the gender of the child and the age of the child when entering kindergarten. The obtained data enabled us to look for parallels with the results of the screening test for each individual child.

*Analyzing of Data*

A descriptive method was used for data analysis. The aim of the research was to determine the representativeness of the adapted version of Teddy Talk Test for the speech-language development of children between 4 and 5 years of age. The representativeness was checked for the areas of understanding, speech and communication, and sound-speech development. We wanted to find out whether the adapted Teddy Talk test is suitable for further adaptation and use in Slovenian speech and language practice. The test results of each child were checked with the developmental scale for 4- and 5-year-olds, which is part of the screening test manual.

## Results

Tables 1, 2 and 3 show the results of the Teddy Talk Test for a sample of sixteen children aged 4y0m to 5y0m for the domains of Comprehension (Table 1), Speech and Communication (Table 2), and Speech Sound Development (Table 3).

*Table 1. Teddy Talk Comprehension Test Results*

| **Child's code** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gender** | M | M | M | M | F | F | F | M | F | F | F | F | M | F | M | F |
| **Age: years and** | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y | 4y |
| **months** | 0m | 8m | 1m | 8m | 3m | 0m | 1m | 2m | 4m | 0m | 1m | 6m | 1m | 0m | 5m | 8m |
| **Word level** | 4 | 4 | 2-3 | 3-4 | 4 | 4 | 4 | 3-4 | 4 | 4 | 4 | 4 | 4 | 3-4 | 4 | 4 |
| **Level** | ✓ | ✓ | _ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Legend: Word level: No comprehension, 1 word level comprehension, 1–2 word level comprehension, 2 word level comprehension, 2–3 word level comprehension, 3 word level comprehension, 3–4 word level comprehension, 4 word level comprehension

Comprehension level: Lags = _, Within limits = ✓, Exceeds = +

*Table 2. Teddy Talk Test Results for Speech and Communication*

| Child's code | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gender | M | M | M | M | F | F | F | M | F | F | F | F | M | F | M | F |
| Age (in years, months) | 4y 10m | 4y 8m | 4y 10m | 4y 8m | 4y 3m | 4y 10m | 4y 11m | 4y 2m | 4y 4m | 4y 10m | 4y 1m | 4y 6m | 4y 1m | 4y 10m | 4y 5m | 4y 8m |
| He/she does not use words. | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| One word | / | / | / | / | / | / | / | / | / | / | / | A few | A few | A lot | / | / |
| 2-word sentences | / | / | A few | A few | / | / | / | / | / | / | A few | A lot | A few | A lot | A few | / |
| 3-word sentences | A few | / | A lot | A few | / | A few | A few | A few | A few | / | A lot | / | A lot | / | A lot | A lot |
| 4-word sentences | A few | A lot | A few | A lot | A lot | A few | A lot | A few | A few | A lot | A few | / | A few | / | A lot | A lot |
| Correctly formed sentences | A few | A few | A few | A lot | A lot | A few | A lot | A few | A lot | A lot | A few | A few | A lot | / | A few | A lot |
| Level | ✓ | ✓ | _ | ✓ | + | _/✓ | ✓/+ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | _ | ✓ | ✓ |

Legend: Predominant length of sentences in communication: Does not use words, one word utterance: A few/a lot, Two-word sentence: A few/a lot, three word sentence: A few/a lot, Four-word sentence: A few/a lot, grammatically correct sentences: A few/a lot

Communication and speech level: Lags = _, Within limits = ✓, Exceeds = +

*Table 3. Teddy Talk Test Results for Speech Sound Development*

| **Child's code** | | **1** | **2** | **4** | **7** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gender | | M | M | M | F | F | F | F | F | M | F | M | F |
| Age (in years, months) | | 4y 10m | 4y 8m | 4y 8m | 4y 11m | 4y 4m | 4y 10m | 4y 1m | 4y 6m | 4y 1m | 4y 10m | 4y 5m | 4y 8m |
| Speech sound develop-ment | Observations | We can observe that all of the speech sounds are present when describing the pictures. Speech sounds are articulated correctly. | | | | | | | | | | | |
| | Speech (comprehensi-ble, incomprehensi-ble) | Comprehensible | | | | | | | | | | | |

*Table 4. Teddy Talk Test Results for Speech Sound Development – Child's Code (3)*

| **Child's code** | | **3** |
|---|---|---|
| Gender | | M |
| Age (in years, months) | | 4y10m |
| Speech sound development | Observations | We can observe that the sibilants and fricatives (and affricates) are distorted when describing the pictures. Speech is fast, so it is frequently incomprehensible. |
| | Speech (comprehensible, incomprehensible) | Incomprehensible |

*Table 5. Teddy Talk Test Results for Speech Sound Development – Child's Code (5)*

| **Child's code** | | **5** |
|---|---|---|
| Gender | | F |
| Age (in years, months) | | 4y3m |
| Speech sound development | Observations | When describing the pictures, we can observe that the child frequently confuses the speech sounds /r/ and /l/, as well as the speech sounds /ž/ and /š/ with the speech sound /č/. |
| | Speech (comprehensible, incomprehensible) | Comprehensible |

*Table 6. Teddy Talk Test Results for Speech Sound Development – Child's Code (6)*

| **Child's code** | | **6** |
|---|---|---|
| Gender | | F |
| Age (in years, months) | | 4y10m |
| Speech sound development | Observations | We can observe that all of the speech sounds are present when describing the pictures. Speech sounds are articulated correctly. In her speech, the child occasionally substitutes the speech sound /ž/ for the speech sound /š/. |
| | Speech (comprehensible, incomprehensible) | Comprehensible |

*Table 7. Teddy Talk Test Results for Speech Sound Development – Child's Code (8)*

| **Child's code** | | **8** |
|---|---|---|
| Gender | | M |
| Age (in years, months) | | 4y2m |
| Speech sound development | Observations | When describing the pictures, we can observe that the speech sound /r/ is confused with the speech sound /l/. The speech sound /s/ is sometimes replaced by the speech sound /š/. When describing the pictures, we can observe that all of the speech sounds are present. Speech sounds are properly articulated. The child occasionally substitutes the speech sound /s/ for the speech sound /š/ in his speech. |
| | Speech (comprehensible, incomprehensible) | Comprehensible |

Table 1 shows the results for the comprehension domain. Eleven of the children tested understood the tasks for understanding objects and actions and instructions with four pieces of information, four of the children understood the tasks for understanding objects and actions and instructions with three to four pieces of information, and only one child understood the tasks for understanding objects and instructions with two to three pieces of information. Comparing the individual child's score to the developmental scale adopted from the Teddy Talk Test manual, children between the ages of 4y0m and 5y0m should be able to understand instructions with three to four pieces of information. We therefore found that the child who understood instructions with two to three pieces of information was behind in comprehension compared to his peers.

Table 2 shows the results for the speech and communication domain. According to the manual's developmental scale, eight of the children tested were within developmental limits in the speech and communication domain. We classified one girl (code 5) as above average because she formed mostly four-word and multi-word sentences with correct grammatical structure when talking about the pictures. Considering the age of the girl (4y3m) at the time of testing, we determined that she outperformed her peers in speech and communication. In the case of the second girl (code 9), we indicated that she was within the limits *and* that she exceeded them. This determination was made because the girl formed some grammatically correct sentences with three words and some with four words. Since the girl was aged 4y4m at the time of the test, we consider that she still exceeded her peers; at the same time, however, compared to the girl with code 5, and according to the developmental scale attached to the manual, she is within the limits of development in speech and communication.

The girl under code 11 in speech and communication assessment was rated as within developmental limits compared to her peers. This was determined based on the length of the sentences and the thematic vocabulary associated with the picture, as the girl was aged 4y1m at the time of the assessment and formed sentences with two, three or four words.

However, she used several foreign language terms for objects. When reviewing the parents' responses on the parent questionnaire, we found that the girl used both Slovenian and Bosnian words, as both parents indicated on the questionnaire that their native language was Bosnian and that they spoke Slovenian and Bosnian with the girl. It is completely normal that the girl uses both Slovenian and Bosnian words, as she hears and uses both languages every day.

We marked the children under codes 6 and 8 as retarded and within limits. Both used some three-word sentences and some four-word sentences when talking about the situation pictures. Not all of the sentences were grammatically correct. According to the manual, both of these children should fall into normal speech and communication development. However, it was determined that the girl with code 6 lagged behind her peers, as she was aged 4y10m at the time of the tests. We classified the boy with code 2 as lagging behind based on the developmental scale in the manual, although we felt that he was within developmental limits in the areas of speech and communication. Our decision was based on a more detailed review of the linguistic transcription when describing the pictures. The boy was aged 4y2m at the time of the test. When asked what was happening in the picture, he named the objects and actors and answered the questions meaningfully with sub-questions.

The children with codes 3 and 12 lagged behind their peers based to the developmental scale and according to our opinion. The boy under code 3 was aged 4y10m at the time of the study and formed mostly three-word sentences in spontaneous speech, as well as some two- and four-word sentences that were not quite correctly structured grammatically.

The girl under code 12 was aged 4y10m at the time of testing and formed many one- and two-word sentences in the free conversation task with pictures that were otherwise grammatically correct. Although we prompted her to speak, she was mostly silent.

Table 3 shows the children's results for the speech sound development domain. For twelve of the children, we did not find any deviations in the pronunciation of sounds during the tests, and their speech is fully intelligible. For the children under codes 3, 5, 6 and 8, deviations were found in the pronunciation of sounds.

The boy under code 3, who was aged 4y10m at the time of the test, pronounced sibilants and sibilant sounds in a distorted way. In addition, his speech was fast and therefore often unintelligible. The deviations in pronunciation were not completely normal: correct pronunciation should have already been adopted and the speech should have an appropriate speed.

The girl with code number 5 was aged 4y3m at the time of the examination and used the sound /l/ instead of the sound /r/, and in some places interchanged the sounds /š/ and /ž/ with the sound /č/. The speech deviations were normal for her age, and the girl's speech was intelligible despite the small deviations. The girl under code 6 was aged 4y10m at the time of testing and had a minimal deviation in speech: she replaced the /ž/ sound with a voiceless pair, the /š/ sound. This minimal deviation did not affect the overall intelligibility of her speech. The boy under code 8 was aged 4y2m at the time of the study and alternated the /r/ sound with the /l/ sound and sometimes the /ž/ sound with the /š/ sound in his speech. Considering the boy's age, these deviations are quite normal, and they did not affect the overall intelligibility his speech.

## Discussion

The Teddy Talk Test was used to assess comprehension, speech, communication and voice development in children aged from 4y0m to 5y0m. The results of the child sample indicate that most children have normal results or are within the limits of development according to the developmental scales.

In all three assessment areas, only one boy (code 3) scored lower than his peers. In this boy's case, we assume that he comes from a foreign language environment and therefore uses shorter sentences that are sometimes incorrectly structured grammatically. In the questionnaire for parents, however, the boy's parents indicated that their native language is Slovenian and that they speak Slovenian with the boy at home. Moreover, both parents indicated that they had completed secondary school. The boy was enrolled in kindergarten at the age of two, which means that he had been in the kindergarten group for almost three years at the time of the study. Based on the findings of several authors (Marjanovič Umek, Kranjc, & Fekonja, 2006); Ginsborg, 2006; Letts et al., 2013; Pace et al., 2017) who found a significant relationship between the socioeconomic status of the family or the mother's education and child's language acquisition, we can assume that the boy's use of words is at a lower level due to his parents' lower education. However, we have not performed statistical analysis to show the correlation between the parents' education and the child's language ability and therefore cannot confirm our assumption. We would therefore expect kindergarten to play a role in compensating for the child's family background, as noted by Marjanovič Umek, Kranjc, Fekonja, and Bajc (2006). The quality of kindergarten – a language-rich environment in which a lot is said and conversation is encouraged – helps to expand the child's vocabulary between the ages of 3 and 5 (Hansen & Broekhuizen, 2021).

The girl with code 14 scored lower in speech and communication. She was aged 4y10m at the time of testing and could form one- or two-word sentences in spontaneous conversation with pictures. She needed more prompting to describe the pictures and she did not respond to the questions with words or pointing on several occasions. In the questionnaire, the girl's parents stated that they had both completed secondary school, that their mother tongue was Slovenian, and

that they spoke Slovenian with the girl. The girl was enrolled in kindergarten at the age of 1. Like the case of the boy under code 3, we can assume that the lower number of statements produced by this girl when describing the pictures is due to her parents' education, but the correlation between a child's lower speech and communication results and parents' education is not definitely proven in this study, as we have not carried out a statistical analysis to show the correlation between the parents' education and the child's language ability.

In the case of the children under codes 3 and 14, we cannot say with certainty that the influence of education is the sole and only reason for the lower scores in the respective assessment area. We believe that for both of the children internal factors also had a significant influence on the result. They were not interested in the test and the girl showed signs of anxiety, so the teacher sat with her during the assessment. We must also consider the fact that the children were alone during the test and their parents were not present. In addition, the children were seeing the tester for the first time. We expected that many of the children would be more timid because of this and would not want to participate in a conversation as they normally would in a group or when talking with adults. Most of the children nonetheless participated without hesitation, but three of them (codes 3, 12 and 14) were more reserved and needed more encouragement during testing.

The parents of four of the children (codes 1, 6, 11 and 16) indicated in the questionnaire for parents that they speak Slovenian and Bosnian with their child. In the task of describing the pictures, the girls under codes 6 and 16 did not use foreign words, but only Slovenian words. The girls occasionally formed ungrammatical sentences, but this was the case for all of the children. Grammatical errors were caused by generalising the form of the verb in the singular to the form in the plural (e.g., *pijo* instead of *pijejo* for 'they drink') or generalising the noun in the plural (e.g., *vsi sadji* instead of *vse sadje* for 'all fruits'), incorrect use of prepositions (e.g., *po vlaku* instead of *na vlaku* – 'after the train' instead of 'on the train'), and inappropriate word order (e.g,. *Živalice se peljejo po vlaku pa žirafa bojo šle na vlak pa medvedek je zraven* – The animals are going on the train, but the giraffe is going on the train and the teddy bear is standing next to it). The boy under code 1 and the girl under code 16 used both Slovenian and Bosnian words when describing situation pictures. Konishi et al. (2014) emphasise that children learn what they hear the most; the frequency of hearing both languages – the mother tongue and the second language – is important for vocabulary acquisition in both languages as well as grammar. Grammatical skills in the second language are significantly related to the frequency of hearing the second language (Gollan et al., 2008; Hoff et al., 2012; Pearson et al., 1997). All four of the children in question come into regular contact with both languages at home and in the kindergarten environment. However, it is important that parents speak to the child in their native language. Strong first language skills serve as a transfer in second language acquisition (Salmona Madriñan, 2014). Cummins (2000) also points out that parents who are not proficient in a second language have a positive impact on the acquisition of second language grammar when they provide the child with rich linguistic input in the first language.

The Teddy Talk Test is a simply structured and transparent assessment tool that does not require special training by a speech therapist to use. Anyone who encounters a child between the ages of 18 months and 5 years can use it: parents, educators, special and rehabilitation educators, speech therapists, etc. Since it is designed as a game, the test administrator can obtain at least some information about the child's language development, even if the child is younger or very reticent. The scoring time is short, 10 to 15 minutes, and the compilation of the results in the findings sheet is quick, so the test is timesaving. The test manual is self-explanatory and requires no special training to administer. The manual also includes developmental scales designed so that one can monitor the child's development every six months, e.g., at 18 months, 24 months, 30 months, etc., while the period between 4 and 5 years is summarised in one developmental scale. The developmental scales are transparent and the items in the areas of comprehension, speech and communication, and voice development that are assessed with the Teddy Talk Test are specifically labelled. Key points are also provided for each developmental scale, indicating what the tester should look for at a particular age and when a referral to a speech therapist is necessary.

Since the reliability, validity and accuracy of the Teddy Talk Test have not yet been studied, the data obtained with this test are for informational purposes only.

The kindergarten years are the most turbulent time of development. Large differences are already observed between peers, and the differences between ages are even more pronounced: even an age difference of 3 or 6 months can greatly affect a child's linguistic competence, while the difference between 18 months and 5 years is extremely large when considering a child's language development. Therefore, the use of a screening test should not be the sole and primary assessment tool. The wide variability in children's language development, especially at preschool age, should be taken into account when assessing children, as early language difficulties are not necessarily indicative of later language disorders. In this regard, it is important to predict factors that require immediate assessment by a speech-language therapist, the so-called red flags (Ebbels et al., 2019). Jullien (2021) suggests several reasons for the lower effectiveness of current screening tests for speech and language: the variability of the gold standard or established assessment protocols against which screening tests are tested; the fact that screening tests are too insensitive or nonspecific; and the difficulty of establishing tests with predictive validity, especially in the first years of life, when language development is most variable and when various child development assessments are most needed. Like Jullien (2021), Wallace et al. (2015) suggest that it would be useful to develop a systematic, efficient and uniform screening test for speech and

language that would be part of the general developmental diagnostic programme for ages from birth to 5 years. No screening test can be evaluated on its own. Voigt and Accardo (2015) argue that even in paediatrics, screening tests are not an indicator of paediatric clinical assessment, but rather a chief complaint, as paediatricians have access to data on the child's entire medical, family and developmental history and can therefore make a reliable clinical assessment of the child's development.

The Teddy Talk Test is little studied in the foreign literature. However, it is important to highlight another of its advantages, which is that it provides guidelines for when to see a speech therapist for a particular age range. As Visser-Bochane et al. (2021) note, referral guidelines are often not part of the screening protocol and therefore depend on the decision of the tester.

## Conclusion

Given that the Teddy Talk Test meets most of the criteria for a screening test, we conclude that it is appropriate for a quick assessment of speech and language, but that it is not representative enough to draw conclusions about the child's language development. A screening test would therefore need to be combined with another assessment instrument or procedure, as well as a more detailed interview with parents or a questionnaire for parents. The main disadvantage of the Teddy Talk Test is that it has not yet been evaluated, so we do not know the values for its sensitivity, specificity and predictive validity. The test does not stand out from other screening tests; the controversy surrounding screening tests is still not settled in the world literature, so many authors advise caution in their use. Among other things, testers can enhance reliability with a questionnaire for parents.

The Teddy Talk Test is designed as a game and is therefore attractive for working with younger children. Since it covers a wide age range of kindergarten children, it would be useful to design additional tasks that are more representative of a particular age. This would also give the tester more information about the child's comprehension, language and communication to compare with the developmental scales. We suggest adapting the Teddy Talk Test for Slovenian-speaking children, as there is not yet a screening instrument in Slovenia that allows rapid assessment of speech and language for children under 4y11m of age.

## Recommendations

Several authors (Lavesson et al., 2018; Visser-Bochane et al., 2021; Wallace et al., 2015) note and suggest that parents should also be included in the screening protocol; parents' assessment of child speech and language development and screening test results are similar, implying that certain questionnaires are satisfactorily specific and sensitive for parents. Parental involvement in primary healthcare is useful in assessing children's speech and language development.

The Teddy Talk Test should be further investigated. It is necessary to establish its sensitivity, specificity and predictive validity with reference tests. The latter is a general problem of screening tests, as there is still insufficient evidence in the literature on the specificity and sensitivity of screening tests and they often depend on the subjective decision of the tester.

## Limitations

The form of the Teddy talk task is loose and based only on developmental scales. The assessment is left too much to the subjective judgment of the examiner. For the comprehension domain, the examiner decides on a three-level scale (retarded, within limits, overachieving), but the test does not include additional tasks for the overachieving level, so the examiner must additionally check comprehension if s/he thinks the child is outperforming his/her peers in the comprehension domain. Similarly, when assessing speech and communication, whether a child is falling behind, within or exceeding developmental limits depends on how many words s/he uses in sentences. However, the assessment form for speech and communication does not allow for assessment of sentence structure or word order. The number of sentences (one-word, two-word, three-word or four-word sentences) and the grammatical correctness of the sentences can only be rated by the examiner on a two-point scale: a little or a lot. Therefore, the assessment of speech and communication is, in our opinion, too generalised. In scoring, the tester must decide between two extremes – between very little or very much speaking – which means that the tester is deciding which child is a natural born speaker and which is not.

### Ethics Statements

The parents of participants provided their written informed consent to participate in this study.

### Acknowledgments

We would like to acknowledge the Ciciban Kindergarten in Ljubljana.

### Conflict of Interest

The authors declare that they have no conflict of interest.

**Funding**

No funding was available for this study.

**Authors Contribution Statement**

Skubic: Concept and design, drafting manuscript, final approval. Brodar: Data acqusition, data analysis/interpretation, critical revision of manuscript.

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