

Identifying developmental language disorders in bilingual children: a pilot study for developing an Estonian sentence repetition task

Marika Padrik^{a1}, Virve-Anneli Vihman^b, Olga Fil^c

^a *Institute of Education, University of Tartu*

^b *Institute of Estonian and General Linguistics, University of Tartu*

^c *Logopeediakliinik*

Summary

The identification of language impairment in bilingual children is less straightforward than in monolingual children, as can be seen from misdiagnoses leading to either over- or under-representation in speech and language therapy. Based only on the child's second language, it is difficult to form an expert opinion on the cause of language difficulties: language impairment can be overlooked if difficulties are assumed to come from second language learning, or difficulties with second language learning can be mistakenly ascribed to language impairment (Marinis et al., 2017; Paradis et al., 2021). Bilingual children's language development differs from monolingual development and involves greater variability, due to factors such as age of onset, length of exposure and quantity and quality of input. Moreover, bilinguals should be assessed in both of their languages. A lack of bilingual norms and standardised tools for the assessment of bilinguals is an obstacle to accurate identification and timely intervention.

Based on tools developed by the international LITMUS research network (*Language Impairment in a Multilingual Society*, initially formed through the European Union's COST programme) for assessing bilingual children across many languages (see Armon-Lotem et al., 2015; www.bi-sli.org), this study aims to develop the first version of a sentence repetition assessment in Estonian. More specifically, the study sets forth the goal of identifying which sentence structures and sentences are suited for a sentence repetition task designed to assess children's language processing abilities, in order to identify developmental language disorder (DLD) among bilingual children. In order to be suited for the task, specific sentences and sentence structures must be shown to be feasible for typically developing (TD) bilingual children, and must enable differentiation

¹ Institute of Education, University of Tartu, Jakobi 5, Tartu, 51005 Estonia; marika.padrik@ut.ee.

between TD and DLD bilinguals. We set out the following research tasks and hypotheses:

Task 1. To compare sentence repetition accuracy among 5 to 6-year-old TD and DLD monolinguals and bilinguals and determine which sentences and sentence structures are appropriate for the test.

Hypothesis 1: Bilingual children were expected to perform with lower accuracy than monolingual children.

Hypothesis 2: Bilingual children were expected to have greater difficulty with sentence structures which occur less frequently in the input and place greater demands on language processing. These include complex sentences with subordinate clauses and sentences with complex grammatical forms.

Hypothesis 3: Monolingual DLD children were expected to have lower scores on the task than monolingual TD children, and bilingual DLD children were expected to score lower than bilingual TD children. Previous results are mixed regarding whether sequential TD bilinguals should be expected to score higher or lower than age-matched monolingual DLD children (see Hallap et al., 2014; Morgan et al., 2013; Orgassa & Weerman, 2008). In summary, we expected the following results: monolingual TD > bilingual TD; monolingual TD > monolingual DLD; bilingual TD > bilingual DLD; bilingual TD > monolingual DLD (no hypothesis formulated).

Task 2. To identify changes to be made in the task. The final version of the task will include 30 sentences for norming, selected on the basis of results of the longer initial version. Sentences will be selected based on those for which (a) bilingual TD children scored with high accuracy; (b) bilingual DLD children performed more poorly, making it possible to differentiate between bilingual TD and DLD.

Method

Participants consisted of 76 children aged 5;0–6;11, across four groups (see Table 1): Estonian monolingual TD ($n = 29$), Russian-Estonian bilingual TD ($n = 20$), Estonian monolingual DLD ($n = 20$), and Russian-Estonian bilingual DLD ($n = 7$). When tested on the Russian version of the sentence repetition task, the initial group of Russian-Estonian bilingual DLD children ($n = 13$) turned out to include 6 TD children. Because of restrictions during the global pandemic, it was not possible to recruit more bilingual DLD children to replace the TD children. This finding underscores the necessity of developing and validating distinct diagnostic assessments for bilinguals, in order to reduce overrepresentation of bilingual children in speech and language therapy.

Children were asked to repeat 64 sentences based on 14 sentence structures. Following Marinis & Armon-Lotem (2015), we included sentence structures which are known to be difficult for DLD children across languages as well as those known to be difficult specifically in Estonian. Responses were scored on a four-point scale based on the errors made in sentence repetition, including word substitution, word deletion and changes in word order. Exact repetition scored 3 points, 1 error scored 2 points, 2–3 errors scored 1 point, and 4 or more errors scored 0 points.

Results and discussion

Overall average scores for each participant group and each sentence structure can be seen in Figure 1. Mono- and bilingual TD children followed similar patterns, with monolinguals' scores per sentence structure ranging 91.1% – 97.7% and showing low variability ($M = 5.59$ - 17.0 ; $SD = 0.49$ - 2.2). Bilinguals' scores were significantly lower than monolinguals, 47% – 72.1% and much more variable ($M = 3.2$ - 12.55 ; $SD = 2.1$ - 4.5).

The structures with highest scores for bilingual children (64% and over, in which every sentence scored over 50%), were categorised as the easiest structures. Easy structures were the following: simple negative, realis conditional, object questions, simple sentences with adjective-noun agreement, coordination with *and/but*, simple possessive structure.

Sentence structures on which bilingual TD children scored between 55% – 64%, were classed as medium difficulty, and they all included some sentences with average scores under 50%. Medium difficulty structures were: simple modals, impersonals, complex interrogative pronouns (*milline X* 'which X', *kellelt/kellele* 'from/to whom'), subject relatives, simple sentences with trans-lative case.

Difficult sentence structures were those on which the bilingual TD group had accuracy scores of 47% – 52%, and each included 2 or 3 sentences with less than 50% accuracy. These were: irrealis conditional, complex sentences with object subordinate clause, object relatives.

Monolinguals with DLD scored lower than both TD groups, in the range of 31.25% – 63.83%. Bilingual DLD children had the lowest accuracy, with scores in the range of 25.71% – 56.19%, and only three sentence structures with average scores over 50% (simple negative sentence, realis conditionals and simple sentences with adjective-noun agreement).

A total of 13 sentences were removed because they proved too difficult for the bilingual TD group. Based on the remaining sentences, we found statistically significant differences between the TD monolinguals and bilinguals ($p < .001$)

and the monolingual TD and DLD groups ($p < .001$). The bilingual TD and DLD groups, although clearly distinct based on visual inspection of Figure 1, did not show statistically significant differences, and neither did the two DLD groups. This is most likely due to low power because of small group sizes.

Hypothesis 1 was confirmed: The bilingual TD group performed with lower accuracy than the monolingual TD group. This was expected, as many of the bilinguals had only been exposed to L2 Estonian since entry into preschool, roughly two years. This confirms the importance of devising norms for assessing bilinguals separately from monolingual norms.

Hypothesis 2 was also confirmed, with more complex sentences and sentences with more complex word forms proving to be more difficult. Results from the study confirm that this task is likely to be useful for diagnostic purposes.

Hypothesis 3 was not fully confirmed, because of insufficient group sizes, but the results show tendencies in the direction of the hypothesised results. The monolingual DLD group had significantly lower accuracy scores than the TD group on all structures and sentences. DLD children showed difficulties with language processing: they were able to repeat 5/8 simple sentence structures and one coordinated clause with over 50% accuracy. Most sentence structures proved to be difficult. All complex sentences except *and/but* coordination were difficult. The complexity of morphological forms also played a role in accuracy. The bilingual DLD group had lower scores than bilingual TD, although the difference was not statistically significant. Both DLD groups showed great variability, but they also showed difficulties with the same structures. A further study with larger group sizes is needed before norming can begin with a shorter task.

Keywords: bilingual children, sentence repetition, developmental language disorder, assessment, Estonian, sentence structures.