Acta Linguistica Hungarica, Vol. 58 (1–2), pp. 24–38 (2011)
DOI: 10.1556/ALing.58.2011.1–2.2

"THE DOG CHASE THE CAT": GRAMMATICALITY JUDGMENTS BY HUNGARIAN-SPEAKING CHILDREN WITH LANGUAGE IMPAIRMENT*

ÁGNES LUKÁCS[a, b] – LAURENCE B. LEONARD[c] – BENCE KAS[b, d]

[a]Department of Cognitive Science,
Budapest University of Technology and Economics, Hungary

[b]Research Institute of Linguistics, Hungarian Academy of Sciences, Hungary

[c]Purdue University, USA

[d]Bárczi Gusztáv Faculty of Special Pedagogy, Eötvös Loránd University, Hungary

Corresponding author: Ágnes Lukács, address: Stoczek u. 2.,
H–1111 Budapest, Hungary, e-mail: alukacs@cogsci.bme.hu

Abstract: In a previous study of language production, a group of Hungarian-speaking children with language impairment (LI) committed a larger number of errors than typically developing peers on verb inflections that mark person, number, tense, and definiteness (Lukács et al. 2009b). However, the error forms produced often differed from the correct form by only a single dimension (e.g., person, number, tense, or definiteness) with no single dimension proving consistently problematic. In the present study, we sought to determine whether a similar pattern applied to the children's understanding of verb inflections, as reflected in a grammaticality judgment task. We compared the performance of 17 Hungarian-speaking children with language impairment (LI) between ages 8;0 and 11;9 with typically developing children between 6;10 and 11;1 years individually matched on receptive vocabulary raw scores (VC) and also to a control group of children matched on chronological age (AC; between 8;1-12;1). We obtained grammaticality judgments for 68 sentences, including 56 ill-formed sentences that contained a single error of person, number, tense, definiteness, or morphophonology. As the AC group performed at ceiling, the analysis focused on comparisons between the LI and VC groups. Besides comparing accuracy scores in the two groups, we tested how well performance could be predicted by a test of grammatical comprehension (TROG) and a measure of

* This research was supported by research grant R01 DC00458 from the National Institute on Deafness and Other Communication Disorders, National Institutes of Health (USA) to Laurence B. Leonard and by OTKA TS 049840 from the Hungarian National Science Foundation to Csaba Pléh. Ágnes Lukács was a grantee of the Bolyai János Research Scholarship of the Hungarian Academy of Science. The authors are grateful to the children in the Dr Nagy László Institute of Special Education in Kőszeg for their participation. We also thank the speech therapists in both institutions for their help with screening and organization and Miklós Győri for his helpful comments on the manuscript.

nonword repetition ability obtained prior to the administration of the grammaticality judgment task. There were no significant group differences in the accuracy of grammaticality judgments. Both groups recognized well-formed sentences, and agreement errors of number, person or definiteness, significantly more accurately than tense or morphophonological errors. Although there was no difference between performance levels of the LI and the VC groups, we found differences between the two groups in the types of measures that were most closely tied to performance on the grammaticality judgment task. Performance in the LI group was strongly associated with nonword repetition span, while in the VC group, TROG performance was associated with grammaticality judgment performance. These results suggest that the same level and pattern of performance can be supported by different background mechanisms in typical and atypical language development.

Keywords: language impairment, Hungarian, agreement, grammaticality judgments

1. Introduction

Many children with language impairment (LI) exhibit significant limitations in their use of verb inflections. These limitations are especially striking in Germanic languages, but seem somewhat less dramatic in languages with a rich verb inflection system such as Italian or Spanish. The types of verb inflection errors produced by children with LI also seem to vary according to the language being acquired. In English, German, Dutch, Swedish, and French, correct use of finite verb inflections seems to alternate with the inappropriate use of infinitive forms in finite verb contexts (Rice–Wexler 1996; Leonard et al. 1997; Oetting–Horohov 1997; Marchman et al. 1999; Norbury et al. 2001; Redmond 2003; Rice et al. 1997; Jong 1999; Leonard et al. 2004; Paradis–Crago 2001). In English, this is seen when children with LI alternate between, for example, *Mommy likes ice cream* and *Mommy like ice cream.* These errant productions do not appear to be simple omissions. In English, infinitives are bare stems. In languages that employ overt inflections for infinitives, the substitutions take the form of an overt infinitive inflection replacing an overt finite inflection (e.g., *spring-a* 'to run' in place of *spring-er* 'runs' in Swedish).

In contrast, in null-subject languages with a rich verb inflection system (like Hungarian), most errors are substitutions of one finite inflection in place of another. Furthermore, the majority of these substitutions can be characterized as 'near misses'. For example, in Italian, children with LI are more likely to use a first person singular inflection in place of a first person plural inflection than to use a third person singular inflection. Yet, the latter will be the most frequent substitute in contexts that require use of a third person plural inflection. When tense as well as person and number are marked on the verb, these near misses are even more apparent (Bortolini et al. 1997). For example, in Spanish, a child with LI might produce a third person singular past form or a third person plural present form in contexts requiring a third person plural past form (Bedore–Leonard 2001).

We recently reported a similar finding for Hungarian-speaking children with LI (Lukács et al. 2009b). Hungarian was an especially valuable language to study because verbs are inflected not only for person, number, and tense, but also for definiteness. Whereas the verb must agree with the subject in person and number, it must agree with the direct object in definiteness. Thus, four dimensions must be considered in selecting the appropriate verb inflection. We found that the children with LI were less accurate than typically developing peers. However, all 24 inflections examined were used by the children both in correct contexts and as (incorrect) substitutes for other inflections. Errors that differed from the correct form by a single dimension constituted the most frequent error, even though by randomly selecting a suffix, differences in two or three dimensions actually had higher probabilities, given the verb inflection system of Hungarian. Strikingly, no substitute differed from the correct form by four dimensions even though all 24 inflections were occasionally used as a substitute at some point.

Along with errors of person, number, tense, or definiteness, the children with LI also produced errors in morphophonology, expressing the correct set of features but using an incorrect allomorph in doing so. In a subsequent study, we noted that Hungarian-speaking children with LI also have difficulty with the morphophonology of noun use, as when the children sometimes correctly expressed the plural and accusative case of a noun but failed to alter the phonological form of the stem to accommodate these inflections as is required for many nouns (Lukács et al. 2009a).

The pattern of errors seen in the productions of Hungarian-speaking children with LI clearly reflect a significant degree of grammatical knowledge on the children's part. Without such knowledge, substitutions would be haphazard, or the children would resort to the overuse of a default form. Instead, most errors approximated the correct form. We attributed the errors of the children with LI to processing limitations. Given a relatively large number of dimensions (person, number, tense, and definiteness) that had to be considered for the retrieval of the correct form, these children sometimes retrieved a form that was similar to the correct form in its composition, yet differed in one detail, with no particular dimension standing out as highly problematic. The purpose of the present study was to further evaluate this assumption of processing limitations as a basis for the verb inflection errors that are seen in Hungarian-speaking children with LI.

If processing ability is severely taxed when children with LI must consider a relatively large number of dimensions, the resulting difficulties should not be confined to production in the moment. These difficulties should adversely affect the degree to which the inflections are learned and incorporated into the children's grammars. When children hear inflections in the input, they must hypothesize the dimensions that these inflections reflect. Inflections that require multiple dimensions to be considered require more processing resources and, for this reason, will be learned more slowly if these resources are limited. As a result, the strength of the representations of these inflections in the grammars of the children (i.e., the degree to which they are learnt and incorporated into the child's grammar) will be lower than the representations of the same inflections in the grammars of typically developing children. Weaker representations are likely to be more difficult to retain in comprehension tasks as well as more difficult to retrieve in production tasks. In the present study, we employ a grammaticality judgment task to test this assumption. Specifically, we present children with both well-formed sentences and sentences that are ungrammatical in a single dimension. If the processing limitation view is correct, children with LI should occasionally miss the errors in the ungrammatical sentences but show no extraordinary difficulty with any particular dimension. Their performance profile across error types should approximate that of a group of younger typically developing children.

A second goal of the present study was to see whether measures of grammatical comprehension and verbal short-term memory predict accuracy in judging the grammaticality of sentences in children with LI and in typically developing children to the same degree. We assume that measures of grammatical comprehension such as those found in picture-pointing tasks would serve as a significant predictor for typically developing children's success in distinguishing grammatical from ungrammatical sentences. The amount of variance would probably be due to differences in the task employed (such as picture-pointing versus grammaticality judgment) and the particular composition of items in the two tasks. However, the general type of skill likely to be the most relevant in both cases is the child's understanding of grammar.

For children with LI, other types of predictors may also prove important. If, as we have assumed, processing difficulties are involved in children's language impairment, measures of such skills might account for unique variance in the children's grammaticality judgment performance. This does not imply that processing abilities do not play a role in typical development (TD), but we expect that the task we employed would not tax TD children's processing abilities to a great extent at this age.

In the present study, we use a test of nonword repetition along with a grammatical comprehension measure as predictors of the children's success in judging the grammaticality of sentences that differ in accuracy (grammatical, ungrammatical) and type of error (error of person, number, tense, definiteness, morphophonology). Nonword repetition places demands on verbal short term memory, an area of processing that is often found to be vulnerable in children with LI (see e.g., Bishop et al. 2006; also see e.g., Archibald–Gathercole 2007 on a more complex approach and the need for further specifications). For a language such as Hungarian, such a measure may prove especially revealing because inflected Hungarian nouns and verbs often involve extended phonological sequences that must conform to rather complex morphophonological rules. Retention of these sequences would seem to be a prerequisite to learning and comprehension as well as to retrieval for production.

2. Materials and methods

2.1. Participants

The experimental group consisted of 17 Hungarian-speaking, monolingual children diagnosed with language impairment between ages 8;0 and11;9. Inclusive criteria for the language impaired group were significant deviation from age norms (−1.5 SD) on two out of the following four language tests: a test of grammatical comprehension (Test for the Reception of Grammar, TROG, Bishop 1983), a test of receptive vocabulary (Peabody Picture Vocabulary Test, PPVT, Csányi 1974), a sentence repetition test (Hungarian Sentence Repetition Test/Magyar Mondatutánmondási Teszt, MAMUT, Kas–Lukács in preparation) and a test of nonword-repetition (Racsmány et al. 2005). The four screening tests were selected partly for practical reasons (these are the only language tests in Hungarian that have either age norms or data from a large sample of children available), but they also have theoretical motivation: they focus on specific functions that are systematically found to be impaired in SLI (grammatical comprehension (TROG), vocabulary (PPVT), verbal short term memory (nonword repetition) and grammatical production (sentence repetition; also taxing verbal STM). Children with an IQ below 85 (Raven et al. 1987), or a history of hearing impairment or any neurological conditions were excluded from the study.

Performance of the LI group was compared to two control groups, one matched individually on receptive vocabulary (PPVT) scores, the other matched individually on chronological age. Data for the three groups are summarized in Table 1.

Table 1

Data for the language impaired (LI) and the control groups matched on vocabulary scores (VC) and on chronological age (AC). Significant differences are shown in shading (both significant at $p < 0.001$; nonword repetition: $F(1,33) = 27.64$, $\eta^2 = 0.515$; sentence repetition: $F(1,33) = 16.78$, $\eta^2 = 0.351$)

	LI	VC	AC
N:	17	17	17
Mean age (range)	10;2 (8;0–11;9)	7;11 (6;10–11;1)	10;2 (8;1–12;1)
Mean PPVT score (range)	105.00 (77–150)	103.47 (76–150)	
Mean TROG scores	71.35	72.31	
Mean nonword repetition scores	3.76	6.18	
Mean sentence repetition	27.06	36.94	
Mean LAPP scores (productive vocabulary)	34.82	33.69	

Statistical comparisons confirmed that the LI and VC groups were not only highly similar in receptive vocabulary but also in their performance on the TROG. Note that it would be misleading to conclude that the children with LI had no deficit in vocabulary and grammatical comprehension; their scores were matched to those of TD children who were more than two years younger on average. Scores on a vocabulary production measure are also provided in Table 1. The LI group and younger TD children did not differ on this measure. On the other hand, differences favoring the younger TD children were seen on both the sentence repetition measure and the nonword repetition measure.

2.2. Method

2.2.1. Grammaticality judgments

We tested sensitivity to morphological errors by reading sentences to children, and asking them to judge the grammatical well-formedness of the sentence according to the following instruction: "Small children often make errors when they speak. Did you know that? I know a two year-old, and now I am going to read you some of what he said. After each sentence, tell me whether he said it right or not. If he made an error, also correct the sentence he said."

Participants had to tell whether the sentence was ok or not ok, and if their answer was no, we asked them to correct them. Sentences were depicting imaginary scenarios—describing actions carried out by animals. The main focus of the study was sensitivity to agreement errors. Only errors on a single dimension were included, and these were complemented by a set of sentences with morphophonological errors to test performance on non-agreement errors as well.

The test battery contained 68 sentences, in the following categories:

(1) well-formed sentences ($N = 12$)

Az oroszlán kergeti a lovat.
'The lion chase-pres.3sg.def the horse'

(2) sentences with agreement errors ($N = 48$)

(a) definiteness errors ($N = 16$)
*A majmok mostak a hintát.
'The monkeys wash-past.3pl.indef the swing'

(b) person errors ($N = 16$)
*A nyulak építetek egy várat.
'The rabbits build-pres.2pl.indef a castle'

(c) number errors ($N = 8$)
*A tehenek épít egy alagutat.
'The cows build-pres.3sg.indef a tunnel'

(d) tense errors ($N = 8$)
*Tegnap a kutyák tolnak egy ágyat.
'Yesterday the dogs push-pres.3pl.indef a bed'

(3) sentences with morphophonological errors ($N = 8$)

*Az oroszlán a toronyt építi.
'The lion builds the tower-acc' (grammatical: *tornyot*)

2.2.2. Comprehension of grammatical structures

The Hungarian adaptation of the original TROG (Bishop 1983) is being standardized (by Ágnes Lukács, Miklós Győri and Sándor Rózsa) on children from 4 to 12 years of age.[1] Items assess the children's comprehension of increasingly more difficult grammatical structures. The test consists of 20 blocks, each with 4 sentences of the same construction (such as sentences with comparatives, postmodified subjects and embedded clauses). The test has a booklet containing 80 pages, each with 4 pictures, and on each page the child must point to the picture that matches the sentence spoken by the experimenter. A block is considered completed if the child responds correctly to all 4 pictures in the block. Performance is measured in terms of number of blocks correctly completed.

2.2.3. Nonword repetition

The nonword repetition test (Racsmány et al. 2005) requires the repetition of meaningless but phonotactically licit strings of Hungarian phonemes. The test contains 36 nonwords between 1 and 9 syllables in length. Each length is represented by 4 nonwords. The phonological structure of the nonwords does not reflect frequency distributions of Hungarian phoneme sequences, but the test avoids sequences that would be articulatorily difficult for speakers. The span of the participant is the highest syllable number for which s/he could correctly repeat at least 2 out of the 4 nonwords.

3. Results

3.1. Grammaticality judgments

A judgment was considered correct if it involved accepting a correct sentence or rejecting an ungrammatical one. Rejecting an ungrammatical sentence was scored as correct even if the child could not correct the sentence. The children's performance is summarized in Figure 1, based on percentage correct for each item type. As can be seen from the figure,

[1] We thank Professor Dorothy Bishop for providing us with the TROG for this purpose. Thus far, 600 typically developing children have been seen as part of the norming process; the scores for the children with LI were compared against the values obtained for the typically developing children.

the AC group performed at very high levels of accuracy. An analysis of variance (ANOVA) revealed a significant main effect for group, $(2, 48) = 14.26$, $\eta^2 = 0.343$, $p < 0.001$, with the AC group showing significantly greater accuracy than the two remaining groups.

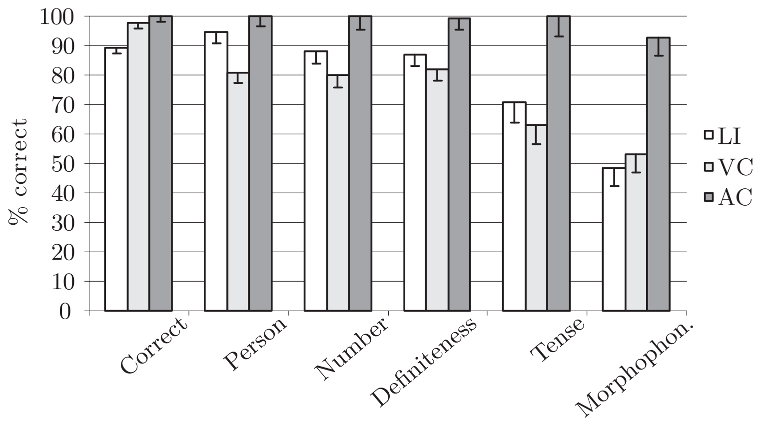

Fig. 1

Performance of the LI, VC and AC groups on different types of errors in the grammaticality judgment task

For the main analysis for accuracy we calculated A' for agrammatical sentence types to adjust for a possible bias of children accepting sentences rather than rejecting them (cf. Linebarger et al. 1983).[2] The A' data were then analyzed using a general linear model ANOVA with Group as a between-subjects factor and Error type (fully grammatical, tense error, definiteness error, person error, number error, morphophonological error) as a within-subjects factor. A summary of the A' findings appears in Figure 2. Again, there was a main effect for Group, $F(2, 46) = 18.04$, $\eta^2 = 0.440$, $p < 0.001$, owing to the greater accuracy on the part of the AC group. Because the ceiling level performance of these children distorted the data, the ANOVA was re-calculated after excluding this group. The

[2] Following Rice et al. (1999), we used the formula described in Linebarger et al. (1983) to calculate scores: $A' = 0.5 + (y - x)(1 + y - x)/4y(1 - x)$ where y represents the correct judgements of grammatical sentences (“hits”) and x the incorrect judgements of ungrammatical sentences (“false alarms”). A strong tendency to reject sentences will result in an A' value approximately around 0, a tendency to accept sentences result in an A' value of around 0.5. An A' value close to 1.0 shows good discrimination between grammatical and ungrammatical.

LI group maintained 17 participants, but only 15 children were included in the VC group, because of divisions by zero. The ANOVA did not show a significant main effect for Group, $F(1, 30) = 2.742$, $\eta^2 = 0.084$, n.s. Error type had a significant main effect, $F(4, 120) = 19.79$, $\eta^2 = 0.397$, $p < 0.001$, but the interaction of Group and Error type was not significant $F(4, 120) = 1.17$, $\eta^2 = 0.038$, n.s. Bonferroni-adjusted pairwise comparisons showed that the performance on the following error types differed significantly. Morphophonological errors were the most difficult to detect for both groups, with A' scores for this item type lagging significantly behind definiteness errors ($p < 0.001$), number errors ($p < 0.001$), and person errors ($p < 0.001$), but they did not differ from tense errors. Tense errors were significantly more difficult than number ($p < 0.05$) or person ($p < 0.01$) errors. All other pairwise differences were nonsignificant.

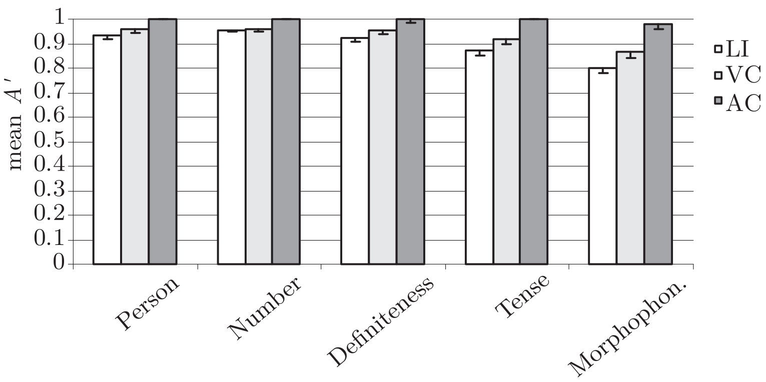

Fig. 2

A' values of the LI, VC and AC groups on different types of errors in the grammaticality judgment task

3.2. Potential predictors of grammaticality judgment performance

To determine whether grammatical comprehension as measured by the TROG or nonword repetition ability were associated with the children's accuracy in making grammaticality judgements of verb inflections, we included them in stepwise regression analyses. Only variables that showed a significant correlation ($p < 0.05$) with the target variable were entered into the analysis. Table 2 shows results for the two groups for the VC and LI groups. The ceiling level performance of the AC group obviated use of regression analyses for these children. For the VC group, TROG scores modeled performance best, explaining 38.5% of variance in the data, while nonword repetition did not show a significant correlation with GJ performance. For the LI group, nonword repetition span proved to be the best model, explaining 34.3% of variance in the data; for this group, TROG scores did not show a signfiicant correlation with GJ performance.

Table 2

Models of performance by individual differences in the LI and VC groups

		Beta	Sig	R^2
VC	TROG	0.653	<0.01	0.385
LI	Nonword repetition	0.619	<0.01	0.343

4. Discussion

The LI group showed significantly lower accuracy in their grammaticality judgments than their same-age TD peers. Relative to the VC group, the children with LI were similar not only in their overall accuracy, but also in their profile of performance across item types. However, the LI and VC groups differed in the factors that were predictive of performance on the grammaticality judgment task. For the VC group, a grammatical comprehension measure explained a significant amount of variance. For the LI group, in contrast, nonword repetition ability proved to be the primary predictor. Thus, despite the similar accuracy levels of the LI and VC groups, the factors proving predictive differed, with no overlap.

These results seem most compatible with a processing limitation view of LI, for several reasons. First, the children with LI showed performance levels that were very similar to those of TD children (viz., the VC group) who were approximately two years younger than the children with LI. The similar performance profile across item types for these two groups suggests that the children with LI were not disproportionately weak in select areas of grammar. Instead, they were only relatively weak in the same areas that proved weakest in the VC group as well. Importantly, errors were distributed across all item types; the children with LI occasionally accepted sentences containing a person error, a number error, a definiteness error, a tense error, or a morphophonological error. Such errors resemble the "near-miss" errors reported for Hungarian-speaking children with LI in production (Lukács et al. 2009b). These errors were productions of a form that differed from the target form by only one dimension, but the particular dimension in error varied from item to item.

For the children with LI, as with the children in the VC group, items containing tense errors were more likely to be incorrect than most other item types. This relative difficulty might also have an explanation in terms of processing demands. Note that in the items with errors of person, number, or definiteness, the violation was proximal. That is, either the subject and immediately following verb differed in person or number, or the verb and the immediately following direct object differed in definiteness. In contrast, for items containing a tense error, the entire subject–verb–direct object sequence showed correct agreement. The sentence was ungrammatical because the temporal adverb preceding the subject indicated that past, rather than present tense should be used with the verb. Such a violation was distal and therefore required retention of the temporal information appearing in sentence-initial position to determine that the verb (appearing after the subject) was not in the proper form.

The factor serving as a significant predictor of the LI group's grammaticality judgment accuracy—nonword repetition ability—can also be interpreted within a processing limitation framework. Nonword repetition requires the retention of sound sequences. Hungarian is a language that involves the detection and retention of sound sequences to a greater extent than most languages. Specifically, attached to the verb stem are tense and agreement inflections that reflect a variety of morphophonological patterns. Adult-like ability requires not only an attention to grammatical accuracy, but also to which allomorphs must be used and how they must be modified according to the phonological context. Given that the children with LI made more errors on item types that contained morphophonological errors than on item types containing local agreement errors, it is clear that they were far from mastery levels in their grasp of the morphophonology of their language. For these children, it is possible that difficulty with the retention of sound sequences was part of their problem. However, nonword repetition did not serve as a good predictor of the typically developing group's grammaticality judgements. A plausible reason for this is the significantly higher average level and smaller within-group variability of nonword repetition abilitiy. It seems that the VC children have reached the level of phonological processing ability required for this specific sentence processing task while the LI children as a group have not. Yet VC children did not outperform the LI children in the experimental task, as would be predicted on the basis of the difference in nonword repetition ability. We assume that there is another factor, namely, school routine, that might contribute to the results and represent a counter-balance in favour of the LI children. Judging the grammaticality of sentences requires not only the processing of the sentence, but also a conscious reflection on the structure, that is, a kind of metalinguistic consideration. Children must have a notion of linguistic error and a routine in recognizing and correcting them. Since this kind of task typically emerges in school settings, and the VC group consisted of children who were on average two and a half year younger than the LI children, this difference in school experiences might have counterbalanced the effect of differences in phonological ability.

We are somewhat surprised that the grammatical comprehension measure (TROG) was not a significant predictor of the grammaticality judgment performance of the children with LI, as it was for the VC group. Even if difficulty with sound sequences was an important factor for the LI group, we had assumed that the grammatical nature of the TROG and our judgment task would result in a stronger relationship between the two measures. To be sure, the difference in tasks (picture-pointing versus judgment) would reduce the amount of variance that could have been explained by the grammatical comprehension measure.

It is also true that the item emphasis of the two measures differed to a considerable degree. Our grammaticality judgment task emphasized tense, agreement, and morphophonology, whereas the emphasis of the TROG is on syntactic structure (e.g., postmodified subjects, center-embedded relative clauses, comparative structures etc.). Given the relationship between the two measures seen for the TD children, it appears that one common route in learning is one in which language structure and morphosyntax/morphophonology are learned as complementary components of grammar or in which progress in one component is used to benefit the other.

Although our data do not allow conclusions on developmental pathways, we speculate that for the children with LI, a different learning route seems possible. Specifically, it appears that these children's learning of morphosyntax/morphophonology was more tied to sequential phonological information than to (syntactic) structural information. This may be an alternative route to grammatical learning that is not unique to the LI population. However, given that this route has thus far only been associated with a group of children diagnosed with language learning problems, additional research is needed to determine whether a relationship between memory for sound sequences and grammatical inflection ability might serve as a clinical marker of language impairment, or whether it simply reflects one of several learning routes that any child—typical or language impaired—might adopt.

References

Archibald, Lisa M. D. – Susan E. Gathercole 2007. Nonword repetition and serial recall: Equivalent measures of verbal short-term memory? In: Applied Psycholinguistics 28 : 587–606.

Bedore, Lisa – Laurence B. Leonard 2001. Grammatical morphology deficits in Spanish-speaking children with specific language impairment. In: Journal of Speech, Language, and Hearing Research 44 : 905–24.

Bishop, Dorothy V. M. 1983. Test for the reception of grammar. The author's publication.

Bishop, Dorothy V. M. – Caroline Adams – Courtenay F. Norbury 2006. Distinct genetic influences on grammar and phonological short-term memory deficits: Evidence from 6-year-old twins. In: Genes, Brain and Behavior 5 : 158–69.

Bortolini, Umberta – Cristina M. Caselli – Laurence Leonard 1997. Grammatical deficits in Italian-speaking children with specific language impairment. In: Journal of Speech, Language and Hearing Research 40 : 809–20.

Csányi, F. Yvonne 1974. Peabody szókincsteszt [Peabody Vocabulary Test]. Bárczi Gusztáv Gyógypedagógiai Főiskola, Budapest.

Jong, Jan de 1999. Specific language impairment in Dutch: Inflectional morphology and argument structure (Groningen Dissertations in Linguistics 28). Groningen University, Groningen.

Kas, Bence – Ágnes Lukács in preparation. Magyar Mondatutánmondási Teszt [Hungarian Sentence Repetition Test]. Ms.

Leonard, Laurence B. – Julia A. Eyer – Lisa M. Bedore – Bernard G. Grela 1997. Three accounts of the grammatical morpheme difficulties of English-speaking children with specific language impairment. In: Journal of Speech, Language and Hearing Research 40 : 741–53.

Leonard, Laurence B. – Kristina Hansson – Ulrika Nettelbladt – Patricia Deevy 2004. Specific language impairment in children: A comparison of English and Swedish. In: Language Acquisition 12 : 219–46.

Linebarger, Marcia – Myrna Schwartz – Eleanor Saffran 1983. Sensitivity to grammatical structure in so-called agrammatic aphasics. In: Cognition 13 : 361–92.

Lukács, Ágnes – Laurence B. Leonard – Bence Kas 2009a. The use of noun morphology by children with language impairment: The case of Hungarian. In: International Journal of Language & Communication Disorders 6 : 1–26.

Lukács, Ágnes – Laurence B. Leonard – Bence Kas – Csaba Pléh 2009b. The use of tense and agreement by Hungarian-speaking children with language impairment. In: Journal of Speech, Language, and Hearing Research 52 : 98–117.

Marchman, Virginia – Beverly Wulfeck – Susan Ellis Weismer 1999. Morphological productivity in children with normal language and SLI: A study of the English past tense. In: Journal of Speech, Language, and Hearing Research 42 : 206–19.

Norbury, Courtenay F. – Dorothy V. M. Bishop – Josie Briscoe 2001. Production of English finite verb morphology: A comparison of SLI and mild-moderate hearing impairment. In: Journal of Speech, Language, and Hearing Research 44 : 165–78.

Oetting, Janna B. – Janice Horohov 1997. Past-tense marking by children with and without specific language impairment. In: Journal of Speech, Language, and Hearing Research 40 : 62–74.

Paradis, Johanne – Martha Crago 2001. The morphosyntax of specific language impairment in french: An extended optional default account. In: Language Acquisition 9 : 269–300.

Racsmány, Mihály – Ágnes Lukács – Dezső Németh – Csaba Pléh 2005. A verbális munkamemória magyar nyelvű vizsgálóeljárásai [Hungarian tools for examining verbal working memory]. In: Magyar Pszichológiai Szemle 4 : 479–505.

Raven, John – John Court – John C. Raven 1987. Raven's progressive matrices and Raven's colored matrices. H. K. Lewis, London.

Redmond, Sean 2003. Children's productions of the affix *-ed* in past tense and past participle contexts. In: Journal of Speech, Language, and Hearing Research 46 : 1095–109.

Rice, Mabel L. – Karen Ruff Noll – Hannelore Grimm 1997. An extended optional infinitive stage in German-speaking children with specific language impairment. In: Language Acquisition 6 : 255–95.

Rice, Mabel L. – Kenneth Wexler 1996. Toward tense as a clinical marker of specific language impairment in English-speaking children. In: Journal of Speech, Language, and Hearing Research 39 : 1239–57.

Rice, Mabel L. – Kenneth Wexler – Sean M. Redmond 1999. Grammaticality judgments of an extended optional infinitive grammar: Evidence from English-speaking children with specific language impairment. In: Journal of Speech, Language, and Hearing Research 42 : 943–61.