SLI in Bilinguals: Testing Complex Syntax and Semantics in German

Tatjana Lein, Cornelia Hamann, Monika Rothweiler, Lina Abed Ibrahim, Solveig Chilla, and Hilal San

1. Introduction

In recent research on language development, attention has been focused on bilingual first language acquisition (2L1) or the acquisition of a second language (L2) early in life, i.e. early and late child L2 (cL2). Especially in the case of cL2 it has been observed that children exposed to their L2 only in kindergarten or preschool might have delays or show (transitional) error patterns in L2 which resemble the patterns described for Specific Language Impairment (SLI) as characteristic in that language (see Håkansson and Nettelbladt, 1996 and much subsequent research). This leads to a problem of over- and underdiagnosis which has been highlighted by authors such as Genesee, Paradis and Crago (2004), Paradis (2010), de Jong (2008), Hamann (2012), Grimm and Schulz (2014), Tuller et al. (2015), Armon-Lotem (2010) and many more. The overlap in phenomena and the ensuing diagnosis difficulties pose a problem for theories of language development but also have practical implications for educational policies and health care programs: typically developing (TD) children might need special support to catch up in their L2 development whereas bilingual children with a genuine language impairment will need special diagnostic tools and speech and language therapy.

We adhere to the term and classic definition of SLI here and use the well-known exclusionary criteria. Accordingly, we consider SLI to be a disorder in the development of language in the absence of recent episodes of otitis media and other forms of hearing loss, of neurological, sensorimotor, cognitive or developmental difficulties, and of socio-emotional disorders (Bishop, 1997; Leonard, 1998/2014; Paradis, 2010; Stark & Tallal, 1981). Since Tomblin et al. (1997) it is assumed that about 7% of five-year-old children are affected – which would naturally extend to children having to master two languages and, given the nature of the impairment, would affect both languages of a bilingual child. A missed diagnosis, excluding a child from therapy, will clearly have consequences for her further education and ultimately impact society as a whole. Overdiagnosis of a typical bilingual child as a child with language impairment – probably the more frequent case due to the use of monolingual norms in standardized tests – will likewise influence educational choices and be costly on the individual and social levels. Reliable identification of SLI also in bi- and multilingual children is therefore important from a theoretical and a practical viewpoint and this study aims to contribute to this endeavor.

Ideally, a bilingual child should be tested in her two languages. This, however, is often not feasible (see Paradis, 2010; Hamann, 2012), so that recent research efforts have concentrated on developing

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tasks which can be administered in the majority language but will not disadvantage bilingual children, i.e. avoid areas which are known areas of overlap and are difficult for bilinguals or L2 learners of a particular language and also serve as diagnostic criteria for SLI. Subject verb agreement has been identified as a marker for SLI in German by Clahsen (1991), Chilla (2008) and Rothweiler, Chilla and Clahsen (2012), but has also been observed to be difficult for L2 children, at least when Age of Onset (AoO) is later than four (Prévost, 2003; Rothweiler, 2006; Tracy & Thoma, 2009; Schwarze, Woijtecka, Grimm & Schulz, 2015). The omission of object clitics in French serves as a clinical marker for monolingual SLI in French (Jakubowicz, Nash, Rigaut & Gérard, 1998; Paradis, Crago & Genesee, 2003), but clearly overlaps with difficulties in L2 children (White, 1996; Paradis, 2007; Hamann & Belletti, 2006). COST Action IS0804, in particular, aimed at developing tasks which avoid L2 difficulties, do not depend on the diagnostic criteria of one language only, and can be used cross-linguistically. These tests have become known as LITMUS tasks: **L**anguage **I**mpairment **T**esting in **Mu**ltilingual **S**ettings. The present study uses two such tasks developed within this COST Action, the Sentence Repetition Task (SRT) for German (Hamann, Chilla, Ruigendijk & Abed Ibrahim, 2013) and the Exhaustivity task (EXT) (see Schulz & Roeper, 2011 and Schulz, 2015). It investigates to what extent these tasks are suited to identify SLI in monolingual children, but, crucially, also in early child L2 learners.

The paper is organized as follows: Section 2 introduces the two tasks giving background as well as details about the specific procedures used, with 2.1. describing the (German) SRT and 2.2. explaining the EXT. Section 3 focuses on the groups of participants. The result section 4 starts with enumerating the different comparisons relevant for our analysis and then presents the results of the two tasks separately and in comparison. Discussion and conclusion follow in section 5.

2. The Tasks: Sentence Repetition (SRT) and Exhaustivity (EXT) - Background and Procedure

Given that morpho-syntax is strongly affected in monolingual children with SLI (Leonard, 1998/2014), it seems counterintuitive to move away from language specific morpho-syntactic tests for bilinguals. However, building on the notion of computational complexity allows to include morpho-syntactic markers and still construct cross-linguistic tests by using structures found to be problematic for children with SLI in many languages, such as Wh-movement, relative clauses and passives. Sentence Repetition Tasks are easy to administer, allow the inclusion of many different structures and thus are ideal for cross-linguistic comparison.

A more radical decision is to move away from morpho-syntax all together and investigate phenomena of computational semantics such as the interpretation of questions. This, under usual assumptions, should not disadvantage bilinguals since such interpretative abilities, once acquired, should be available in the second language even after only little exposure. This, and the interpretation of questions in particular, has already been exploited by the DELV-test (Seymore, Roeper & de Villiers., 2005; de Villiers, Roeper, Bland-Stewart & Pearson, 2008) since the usual morpho-syntactic markers for SLI were not suited for African American English. The focus here is on the fact that Wh-questions contain variables and thus require an exhaustive answer, which poses a particular problem for many children with SLI, see also Roeper & Schulz (2011). More recently the acquisition of exhaustivity has been investigated cross-linguistically by Schulz and colleagues and was developed into the Exhaustivity Task during successive COST Actions, see Schulz (2015). An open question is, however, to what extent the exhaustive interpretation depends on the parsing of the L2 sentence and, simply put, the mastery of the L2 morpho-syntax of questions.

Both these tasks are included in the test battery that our Franco-German research project *Bilingual Language Development* (BiLaD) is using for the collection of comparative data.[1] We are investigating bilingual children with French and German as target languages and Arabic, Portuguese and Turkish as L1s. The following reports on a comparison of German tasks only.

[1] The research collaboration consists of a French group in Tours and three German groups (Bremen, Oldenburg and Heidelberg).

2.1. The German Sentence Repetition Task

2.1.1. Background and earlier findings

It is well established that SRTs have good sensitivity and specificity to distinguish typical children and children with SLI (Conti-Ramsden, Botting & Faragher, 2001) and that they do not only measure (phonological) working memory, but tap into morpho-syntactic knowledge if they are complex enough (Polišenská, Chiat & Roy, 2014; Vinther, 2002). Additionally, they allow to identify specific syntactic difficulties and error patterns (Szterman & Friedmann, 2015; among others). For these reasons, LITMUS SRTs were developed including structures that are difficult for children with SLI across languages, such as object Wh-questions, complement clauses, passives, subject and object relatives, and structures that are difficult in a particular language, such as topicalization or the relation of subject verb agreement with V2 and the sentence bracket in German (Marinis & Armon-Lotem, 2015; Hamann et al., 2013). First evidence that such LITMUS SRTs identify both monolingual and bilingual children with SLI is provided in Marinis and Armon-Lotem (2015) and in Tuller et al. (2015) for Arabic-French children.

2.1.2. Specific Procedures for the German SRT

The German SRT was developed in a long version for older children and a shorter version for the age range investigated in the BiLaD project. The shorter version contains three levels of complexity according to LITMUS construction principles, each level containing 15 sentences, with three items per condition. There are two initial training items, the rest of the items is presented in pseudo-randomized order for research purposes, but can be presented in levels for diagnostic use. The sentences are controlled for syllable length, number of lexical DPs and verb frequency. A number of nouns were chosen that are familiar to children through every day use, fairy tales, children's books or popular children's programs and films. These nouns were used recurrently in the test. The first level contained five conditions testing for subject verb agreement, tense and the sentence bracket (1). Case marking is tested implicitly only. The second level contained 5 conditions testing for bare object Wh-questions (2), object Wh+NP questions (3), finite (4) and non-finite complement clauses and coordinate structures. Level 3, with the most complex structures, contained topicalization (5), long passives, subject relatives and object relatives with (6) and without intervening lexical DPs. The task is administered in a computerized version[2] with rows of numbers that can be clicked for playing each sentence and with a smiley appearing at the end of each row. It takes about 10 minutes to administer. Some of the structures are illustrated in (1)-(6).

(1) Sentence bracket:
Der Prinz <u>hat</u> die Prinzessin <u>umarmt</u>.
the prince has the princess hugged
'the prince hugged the princess'

(2) Bare WH:
<u>Wen</u> umarmt der Pinguin heute?
who(acc-m) hugs the(nom-m) pinguin today
'whom does the pinguin hug today?'

(3) WH+NP:
<u>Welchen Clown</u> besucht der Zauberer?
which(acc-m) Clown visits the(nom-m) magician
'which clown does the magician visit?'

[2] The LITMUS tools include two such computerized versions, one for older children and a "quest" version for younger children and a shorter test. We decided to use the version with the number buttons because it was deemed to be less distracting.

(4) Finite complement clause:
Der Clown möchte, dass die Frau den Mann besucht.
the clown wants, that the woman the(acc-m) man visits
'the clown wants that the woman visits the man.'

(5) Topicalization:
Den Arzt fotografiert der Bauer gerne.
the(acc) doctor photographs the(nom) farmer voluntarily
'the farmer likes to photograph the doctor'

(6) OR with intervention:
Ich sehe den Roboter, den der Bäcker malt.
I see the(acc) roboter who(acc) the(nom) baker paints
'I see the roboter who(m) the baker paints'

Though different measures were explored for the evaluation of the SRT (see Marinis & Armon-Lotem, 2015), Tuller et al. (2015) showed that an "identical repetition" rating is a very useful measure. We therefore adopted this rating and counted a sentence as 1 if it was repeated correctly, i.e. no lexical or structural errors occurred. We allowed phonological errors, so that sentences repeated with one or more phonological errors were still counted as an identical repetition. All other errors changed the rating for the sentence to 0.

2.2. The Exhaustivity Task

The EXT takes sentential semantics, the exhaustivity of Wh-questions, as possible basis for the identification of SLI. The interpretation of questions is difficult since questions cannot be interpreted off the surface structure and it is crucial that an operator-variable dependency be established so that the Wh-word stands in the correct thematic relation with the verb via the variable. Additionally, the semantics of questions, due to the nature of variables, formally, is the list of answers (see Hamblin, 1973; Karttunen, 1977). This "list" reading is called exhaustive reading since the meaning of a question has been understood whenever an exhaustive list is given as the answer. It has long been established that children with SLI have difficulties with the production and interpretation of questions (van der Lely, 1998; Friedmann & Novogrodsky, 2011) so that more recently the exhaustive property has been investigated in a series of studies.

The tasks that were developed, specifically the LITMUS-task of Schulz (2015), present pictures paired with questions. In a situation/picture where the mother, the father, the grandparents and the boy are all sitting on chairs and the girl is standing, a single Wh-question as in (7a) requires an exhaustive answer, i.e. the list: the grandmother, the grandfather, the father, the mother, the boy. Answers such as "the mother" or "the father and the boy" are infelicitous in such a context. Paired Wh-questions as in (7b) almost always require exhaustive answers, i.e. they require a list of subject-object pairs, and triples as in (7c) likewise require an answer in the form of a list of subject-object-object triples. Some languages, among them German, use a special exhaustivity marker *alles* 'all' to facilitate the exhaustive interpretation, see (7d).

(7) a. Simple Wh-question
Wer sitzt auf einem Stuhl?
who(nom) sits on a chair(dat-m)
'Who is sitting on a chair?'

b. Paired Wh-question
Wer isst was?
who(nom) eats what(acc)
'Who is eating what?'

c. Triple Wh-question
Wer gibt wem was?
who(nom) gives whom(dat) what(acc)
'Who is giving what to whom?'

d. Wer trinkt alles einen Saft?
Who(nom) drinks all a juice
'Who all is drinking juice?'

Cross-linguistic work in 15 languages showed that typical monolingual children master exhaustivity for single Wh-questions around the age of five, whereas paired Wh-questions are acquired somewhat later, but are mastered around the age of six, Schulz (2013). Triple questions pattern with paired questions cross-linguistically. Schulz and Roeper (2011) established that the task is well suited to identify monolingual German children with SLI within an age range of five to seven. Wojtecka and Schulz (2011), however, found that German 5-year olds with SLI do not master single Wh-questions (73% correct) and have great difficulties with paired Wh-questions (49%), a difficulty that persists until the age of seven. Tuller et al. (2015) reported that the task identified SLI in Arabic/French bilingual children and that error patterns in monolingual and bilingual typical children are similar and are different from the error patterns found in children with SLI.

2.2.1. Specific Procedures used in the EXT

The computerized LITMUS Exhaustivity task used in this study contains 10 control and 20 test items in total, 8 single Wh-questions, 8 paired Wh-questions and 4 triple Wh-questions. Administration of the task took 10-20 minutes. Note, that special care was taken in the recording of the paired questions such as (7b) in order to avoid an interpretation of *was* 'what' as an indefinite pronoun *(et)was* 'something' instead of an interrogative pronoun. We coded for recurrent error patterns, illustrated here for paired Wh-questions like (7b) as described by Schulz and Roeper (2011): giving a single pair (8a), giving an exhaustive subject list (8b), giving an exhaustive object list (8c), or providing a single subject (8d). We do not consider questions of type (7d) in this study.

(8) a. # The girl an apple (single pair)

b. # Mother, grandmother, father, girl (exhaustive subject list)

c. # Ice cream, cake, banana, apple (exhaustive object list)

d. # The girl (single subject)

3. Participants

The project targets children between the ages of 5;6 and 8;11. We propose to ultimately test 16 groups with 12 children each, 8 groups in France and 8 groups in Germany. We have started data collection for 92 children in Germany, and will present data for these two tasks from 30 children. In this study we can, thus, establish 6 groups. The first two groups are the monolingual TDs and monolingual children with SLI, then there are three groups of bilingual children (Arabic/German, Portuguese/German and Turkish/German) who are typical in that they are not in therapy, i.e. they have not given rise to concerns of parents or educators. The last one is a group of bilingual children with Arabic, Portuguese or Turkish as L1 and German as L2 who we call Bi-SLI for the time being since they have been diagnosed as having SLI by professional speech-language therapists and are attending language therapy.[3] There are 5 children in each group.

[3] See Tuller et al. (2015) about such an initial classification and possible reclassifications according to the criteria layed out in Thordardottir (2012).

Table 1: Participant groups, age-range, L1 and AoO

Group	Age	Mean Age/m	N	L1	AoO
Mo-TD	5;6-6;4	71.8	5	German	0
Mo-SLI	5;8-7;4	74.8	5	German	0
Bi-TD (-A)	7;6-8;9	95.6	5	Arabic	<4;0
Bi-TD (-P)	5;9-8;3	80.8	5	Portuguese	<4;0
Bi-TD (-T)	5;8-8;1	78.6	5	Turkish	<4;0
Bi-SLI	5;7-8;3	78	5	Turkish (n=4) Arabic (n=1)	<4;0

Since we have not finished data collection for Bi-SLI children so far, we grouped bilinguals together regardless of their L1 in the Bi-SLI group. Subsequently, we ran tests on the relevant comparisons and did not find statistically different behavior in the bilingual groups distinguished by their L1. We therefore group them together as the Bi-TDs so that this group has 15 members and we are comparing only 4 groups statistically. Note, that ages roughly correspond in each group with the exception of the Arabic/German TD group, in which all children are older than 7;0. In the other groups only one or two children are older than 7;0. Table 1 sums up these data and shows that all the bilingual children are early L2 speakers or bilingual from birth.

4. Results

As mentioned in the introduction, the aim of the present study is to determine whether these two tasks are suitable to identify SLI in bilinguals. The first question therefore is whether these tasks, especially the new German SRT, can identify SLI in monolingual German children. For the EXT this has been established already, but we aim to corroborate the finding. For each task, we therefore compare the Mo-TD group to the Mo-SLI group. We then check whether bilingual and monolingual typical children behave more or less alike in a comparison of Mo-TD and Bi-TD. Comparing Mo-SLI to Bi-TD allows us to judge whether these tests can avoid the usual overlap problem. Finally, a comparison of Bi-TD and Bi-SLI will answer our overall question. These comparisons will be illustrated and analyzed in the following sections, first for the SRT and the EXT separately, then in a comparison of the tasks.

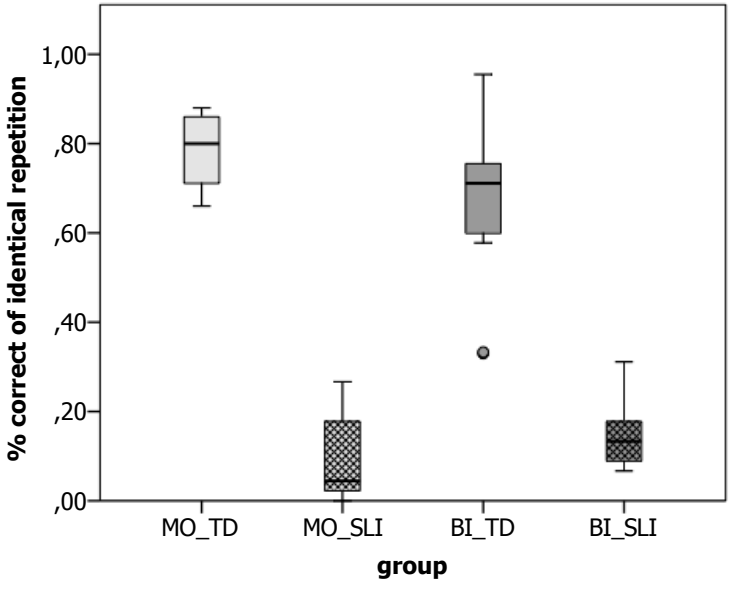

Fig. 1 SRT: % correct of identical repetition

Using the measure *identical repetition* (see 2.1.2.), we arrive at the distribution shown in figure 1 where monolingual and bilingual typical children pattern alike and are clearly doing better than

monolingual and bilingual children with SLI. For further analysis we used a Kruskal-Wallis H test and a Mann-Whitney U test with Bonferroni corrections. This analysis showed that, as a first important result, monolingual TDs and monolingual children with SLI were significantly different (*Z*: -2.611, *p* = 0.048, Bonferroni-corrected). The two typical groups (monolingual and bilingual) did not show any significant difference (*Z*: -1.267, n.s., *p* > 0.05). Importantly, typical bilinguals were significantly different from monolingual children with SLI (*Z*: -3.277, *p* = 0.006, Bonferroni-corrected). The two groups with SLI (monolingual and bilingual) did not show any difference (*Z*: -1.048, n.s. *p* > 0.05), whereas among the bilingual children the group with SLI performed significantly lower than the typical group (*Z*: -3.277, *p* = 0.006, Bonferroni-corrected). Figure 1 also shows that there are no outliers in the monolingual groups or the Bi-SLI group, whereas there are two outliers in the Bi-TD group.

Turning now to the results of the exhaustivity task, we first analyzed the different question types (single-Wh, paired-Wh and triple-Wh). No differences were found in the performance on single Wh-questions. All groups showed means between 75% and ceiling performance. However, only in the groups with SLI did we find children whose performance was at 0. This result, given the age range of the children, conforms to previous findings.

A group comparison for paired and triple Wh-questions showed interesting differences and similarities. Figure 2 shows the percentage of correct interpretation of paired Wh-questions by the four different groups. Monolingual typical children are clearly different from monolingual children with SLI (Mo-TD perform at ceiling, 100% correct, whereas monolingual children with SLI are at the 0% level with one exception in each group, Mann-Whitney *U*: 0.000, *p* = 0.048, Bonferroni corrected). Though the Bi-TD children show a wide range in their performance, the task seems to be very difficult for bilinguals in general (3 Bi-TDs were 0% correct, and 2 Bi-TDs were only 25% correct) and the Bi-TDs are not better than the bilingual children with SLI, even if the means are different (Mann-Whitney *U*: 22.500, *p* = 0.197).

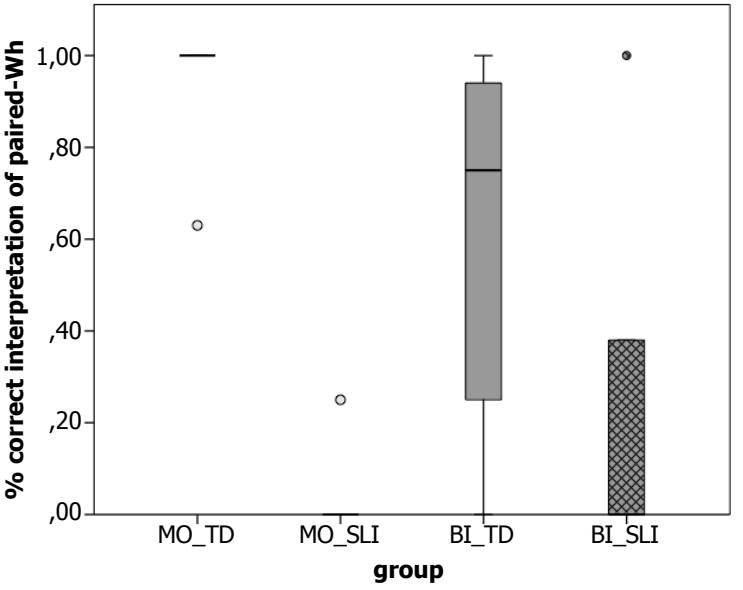

Figure 2: EXH - % correct interpretation of paired-Wh

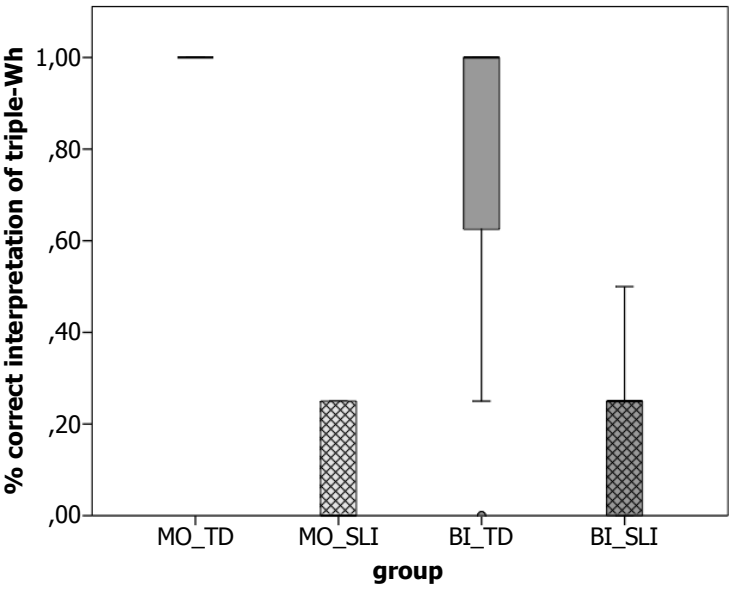

Figure 3: EXH - % correct interpretation of triple-Wh

As figure 3 shows, performance in the triple Wh-questions can again clearly differentiate the Mo-SLI from the Mo-TD group (Mann-Whitney *U*: 0.000, $p = 0.048$, Bonferroni corrected). This condition can additionally differentiate Mo-SLI from Bi-TD children (Mann-Whitney *U*: 8.000, $p = 0.048$). Figure 3 also shows that Bi-TD children are better than Bi-SLI children, the difference to the Bi-SLI group does not reach significance, however (Mann-Whitney *U*: 10.500, $p = 0.09$). In fact, two of the Portuguese Bi-TD children had 0% correct in this condition and the Bi-SLI child with the highest score reached 50% (which here is 2 items correct).

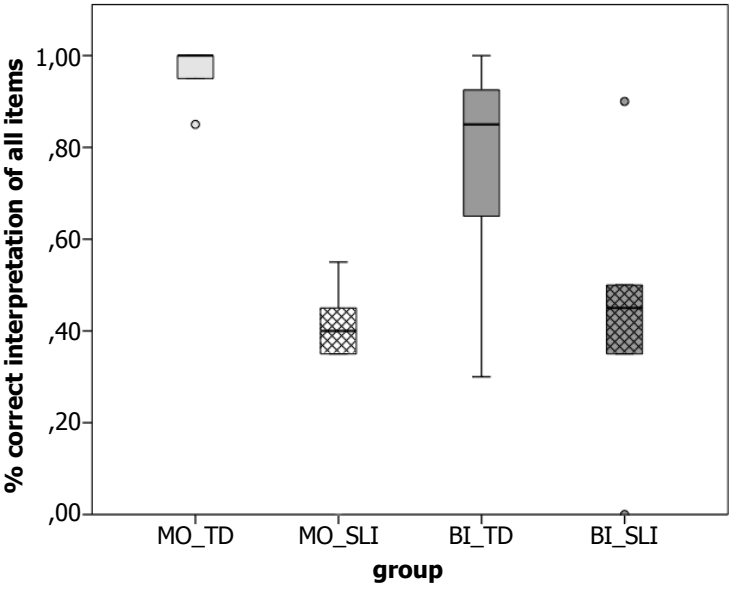

Figure 4: EXT- % correct interpretation of all items

If overall accuracy in the exhaustivity task is analyzed, we see a similar pattern to the triple condition as figure 4 illustrates. There are the same two significant differences, between Mo-TD and Mo-SLI (Mann-Whitney *U*: 0.000, $p = 0.048$, Bonferroni corrected) and between Mo-SLI and Bi-TD (Mann-Whitney *U*: 8.000, $p = 0.048$, Bonferroni corrected). All other comparisons are non-significant, in particular there is an overlap in the Bi-TD and Bi-SLI groups. Interestingly, only in the two groups

with SLI we find a child each with a 0% correct performance in the overall task. However, there is also one Bi-SLI child who performs at 90% correct.

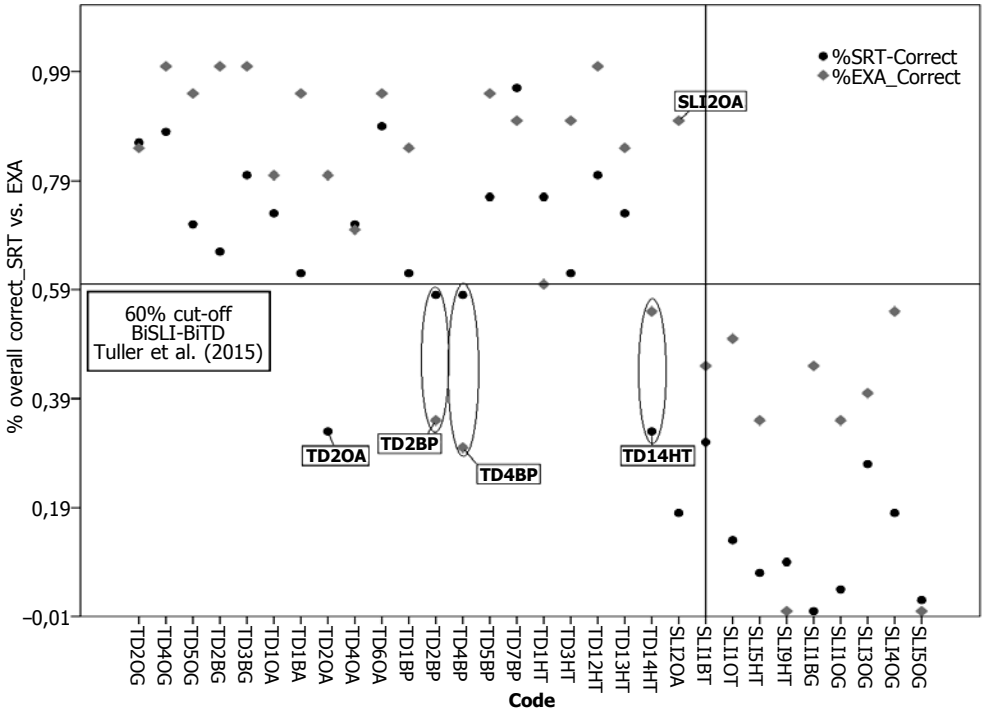

Figure 5: Comparison of SRT and EXT – identical repetition and overall correctness score

Though the SRT seems to allow the desired differentiation whereas the EXT does not, a comparison of individual children's performance in the two tasks (identical repetition in the SRT and % overall correct in the EXT) demonstrates that with a cut-off criterion of 60% correct performance as suggested by Tuller et al. (2015) for a classification as *at risk for SLI*, the two tasks would identify the same children as at risk, see the lower right corner of figure 5 and the 3 Bi-TDs on the left side below the 60% line: TD2BP, TD4BP, TD14HT. A Spearman (nonparametric) correlation analysis yielded a strong correlation between identical repetition accuracy values and EXT overall accuracy scores (N=30, $r = 0.745$, $p < 0.001$). There are only two cases where the tasks differ in their results: TD2OA would be at risk according to the SRT but not in the EXT, and SLI2OA would not be at risk according to the EXT but at risk in the SRT. TD2OA may be a special case since she was tested with the longer version of the SRT, and SLI2OA is the oldest child with SLI. For all these unclear cases additional evaluation of standard L1 and L2 tests will be decisive.

5. Discussion and Conclusion

The SRT clearly taps the relevant structures for identifying SLI in German since typical monolinguals perform significantly better than monolingual children with SLI. This shows that the test is well constructed and can be used as a diagnostic tool for monolingual children in the age range investigated here. It also corroborates that SRTs, and SRTs constructed along the COST guidelines in particular, are indeed an adequate tool and reliably identify SLI. The test, especially the measure of identical repetition investigated here, also avoids the overlap problem: typical bilinguals perform significantly better than monolingual children with SLI. Most importantly, however, the task clearly differentiates bilingual typical development and bilingual SLI. The discussion of the outliers additionally seems to indicate that the task shows good sensitivity and reasonable specificity (no outliers in the Bi-SLI group and 2 outliers among the 15 Bi-TD children). This is very much in accordance with research on SRTs in other languages constructed along the same principles (Marinis & Armon-Lotem, 2015; Tuller et al., 2015). Note, however, that in the present study the findings so far

are based on a classification solely given by the fact that some of these bilingual children are in therapy and others are not. Final calculations will thus have to be deferred until the bilingual children are (re)classified by L1 and L2 standardized tasks.

The other task we focus on here, the EXT, taps into interpretation knowledge and is very promising for the identification of SLI in bilinguals since such knowledge should be transferred to the L2 once it is acquired in L1. For monolingual German children we can confirm previous results presented in Schulz and Roeper (2011) who found that German children with SLI acquire the exhaustive reading of single Wh-questions later than typically developing children and have difficulties with paired and triple questions till at least the age of seven. Our data do not show differences in single Wh-questions due to ceiling effects, which can be explained by the age of the children. Differences in the performance of monolingual typical children and children with SLI appear, however, in the paired and triple conditions and also if all items are considered together.

Yet, our findings show that bilingual children have great difficulties with paired Wh-questions as in (7b). We do not have data on how these children would perform in an exhaustivity test in their L1 but speculate here that knowledge of exhaustivity is not as easily transferred to L2 as one could have assumed or is harder to acquire when a child is confronted with two linguistic representations of question semantics. It is also possible that the bilingual children have not yet acquired the subtle distinction of the indefinite and Wh-pronoun *was* 'what', which is often only introduced by stress and intonation. Interestingly, these bilinguals achieve higher scores in triple questions so that the performance in triple questions can distinguish bilingual typical children and monolingual children with SLI. Unfortunately, none of these question types shows a different performance of typical bilingual children and bilingual children with SLI. We must therefore conclude that the EXT does not identify SLI in bilinguals, at least not in the age range we investigated or in these particular language pairs. This is in accordance with recent findings of Schulz (2013), who shows that only at age 6;7 and older Bi-SLI children can be distinguished from Bi-TD children with the EXT. This could mean that the performance of the younger children in our groups is responsible for the overlap we see in our data. It can be speculated that the performance of the younger typical bilingual children is also influenced by difficulties with the L2 morpho-syntax of questions which have not been resolved yet.

The comparison discussed so far seems to show that the SRT provides a more reliable identification of SLI in bilingual children between the ages of 5;6 and 8;9. However, a comparison of performance in the two tasks shows a strong correlation. Looking at individual children, the same typical bilinguals who perform below a 60% cut-off in the SRT also are below cut-off in the EXT, with only one exception. This opens the question of a common cause for the similar performance. From what other researchers have found (Schulz, 2013), performance in the EXT is not correlated to working memory and, surprisingly, neither is the SRT in French (Tuller et al., 2015). Nevertheless, correlation analyses between a working memory measure and each of the two language tasks (SRT; EXT), have to be run in order to exclude potential working memory effects before we can establish other possible causes.

We speculate here that the tasks might tap into the same kind of language abilities or at least use overlapping abilities. Such abilities would include the decoding of case and agreement information and the parsing of operator-variable chains. It is indeed possible that the interpretation of questions by bilinguals does not only depend on the realization that exhaustive answers are required but presupposes other language skills in the L2 which simply might not be firmly acquired yet.

It is also possible that the analysis of more data from bilingual children with SLI and a careful reevaluation of the status of these children will reveal a greater sensitivity and specificity of the EXT in bilingual populations. In particular, it is necessary to evaluate the performance of these children in standard L1 and L2 tests with the cut-off points adjusted according to dominance criteria and then reevaluate the sensitivity and specificity of both tasks. Further analysis of age groups, of error patterns as well as an investigation of the possible influence of L1 will provide a better basis for the identification of SLI in bilinguals with the help of this SRT and the exhaustivity task.

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