Open Access

Monika Rothweiler*, Manuela Schönenberger and Franziska Sterner

Subject-verb agreement in German in bilingual children with and without SLI

DOI 10.1515/zfs-2017-0005

Abstract: We investigated the acquisition of subject-verb agreement (SVA) in German based on spontaneous speech data from both typically developing (TD) and language-impaired (SLI) children learning German as a second language (L2), and from language-impaired monolingual children. Rothweiler et al. (2012) suggested that SVA is vulnerable in SLI. The intent of our study was to determine whether TD child L2 learners (cL2) in contrast to children with SLI do not have difficulties with SVA. Many studies report that cL2 acquisition can differ from monolingual (L1) acquisition and that the differences look similar to those of impaired L1 learners, which makes it difficult to distinguish cL2 learners who have SLI from those who do not. If such similarities were to be found in the acquisition of SVA in the two bilingual groups, SVA would be ruled out as a possible marker of SLI in cL2 learners. Three groups of children were compared: six Turkish-German early cL2 learners without SLI, and twelve children with SLI – six monolingual German children and six Turkish-German early cL2 learners. As in Rothweiler et al. (2012), all children were advanced learners and were therefore expected to have acquired SVA. We found that the unimpaired early cL2 learners had indeed successfully acquired SVA. In contrast, neither the monolingual nor the bilingual children with SLI succeeded in reliably producing correct SVA.

Keywords: child L2 acquisition (cL2), early age of onset, German, Specific Language Impairment (SLI), subject-verb agreement (SVA)

***Corresponding author: Monika Rothweiler,** Fachbereich 12, Universität Bremen, E-mail: rothweil@uni-bremen.de
Manuela Schönenberger, Département de linguistique, Université de Genève, E-mail: manuela.schoenenberger@unige.ch
Franziska Sterner, Fachbereich 12, Universität Bremen, E-mail: f.sterner@elbkinder-kitas.de

© 2017 Monika Rothweiler et al., published by De Gruyter.
This work is licensed under the Creative Commons Attribution 4.0 License.

1 Introduction

The acquisition of morpho-syntax by child second language learners (cL2) and by children with specific language impairment (SLI) show some similarities, and this complicates diagnosis of SLI in bilingual children (Armon-Lotem and de Jong 2015; Håkansson 2001; Paradis et al. 2003; Paradis 2010; Rothweiler 2004). Håkansson and Nettelbladt (1993) were the first to note that children learning Swedish sequentially from age 4 or later, and monolingual Swedish children with SLI showed similar difficulties with word order. Since then analogous findings have been reported for other languages and for other linguistic features (e.g. Armon-Lotem 2014; Chilla 2008; Chondrogianni et al. 2015; Marinis and Chondrogianni 2011; see Paradis 2010 for an overview). Such similarities can cause a dilemma for diagnosis: the deviant linguistic development of a child with SLI may be incorrectly attributed to L2 learning, while a child L2 learner may be misdiagnosed as having SLI. There is indeed evidence for such misdiagnosis (Grimm and Schulz 2014; Hamann 2012).

SLI is a disorder in language acquisition in the absence of clear primary deficits like hearing loss, physical or neurological anomalies, sensory-motor and socio-emotional or behavioral problems. Moreover, the impaired linguistic abilities cannot be attributed to a lack of language exposure or to a general cognitive delay (Leonard 2014). About 7 % of children are affected. Besides a delay in language development, children with SLI also show qualitative and quantitative differences in error patterns and error rates compared to their unimpaired peers. Cross-language investigations of the language deficits associated with SLI have yielded a number of linguistic markers for SLI that often differ from language to language. In many types of SLI and in many languages the acquisition of syntax is affected (Hamann 2015; Leonard 2014). Difficulties with the placement of finite and non-finite verbs have been reported for German (Clahsen 1991; Hamann et al. 1998; Rice et al. 1997), as well as difficulties with the acquisition or interpretation of complex sentences like subordinate clauses or wh-questions (Clahsen 1991; Hamann et al. 1998 for German; van der Lely et al. 2011 for English; Friedmann and Novogrodsky 2004 for Hebrew). Selective difficulties with (object) clitics have been proposed as a marker for SLI in languages with clitic pronouns (Bedore and Leonard 2001 for Spanish; Bottari et al. 2000 for Italian; Jakubowicz 2003 for French; Tsimpli 2001 for Greek). Furthermore, marking of finiteness, tense, or agreement has been reported to be vulnerable in children with SLI in various languages. Difficulties with tense marking in English have been noted in children with SLI (Rice and Wexler 1996 among others). For German-speaking children with SLI, subject-verb agreement (henceforth SVA) has been found to be impaired, even in children whose tense

marking is not affected (Clahsen et al. 1997; Rothweiler et al. 2012). Similar findings have been reported for English (Clahsen et al. 1997), for Italian (Bedore and Leonard 2001), for Greek (Stavrakaki et al. 2008) and for Dutch (Orgassa 2009; de Jong 2015; Verhoeven et al. 2011).

Unimpaired cL2 learners have been reported to show similarities with monolingual learners in the acquisition of morpho-syntax, but also dissimilarities (Chilla 2008; Paradis 2007; Unsworth 2008). Age of onset is possibly the most important factor in L2 acquisition. An early age of onset (up to age 4) may lead to an L1-like acquisition of a given structure while the acquisition may look different if the age of onset is after age 4 – the acquisition may take longer, be accompanied by more errors, or even remain incomplete (see Meisel 2009, 2011). However, other aspects of grammar acquisition may be affected even in cL2 learners with an early age of onset (see Schönenberger [2014] for article production in German). In the following, we will use the label "cL2" as a cover term for child learners. We will use the label "ecL2" for learners with an early age of onset (before age 4) and for cL2 learners with a later age of onset we will specifically mention this age.

When assessing a child's language it is crucial to be able to disentangle effects due to bilingualism from those due to language impairment, so that language therapy can be provided if necessary. SLI should be diagnosed in both of the child's languages because difficulties in only one language could also result from input deficits. There are several obvious questions. How does unimpaired cL2 acquisition differ from impaired cL2 acquisition? What role does age of onset play? Are symptoms of SLI aggravated by the acquisition of more than one language? These and other issues have been studied over the past 15 years by several groups (Armon-Lotem 2012; Armon-Lotem et al. 2015; Schwarze et al. 2015; Tuller et al. 2015). Armon-Lotem and de Jong (2015: 8) have noted that the best-established linguistic indicators of SLI are found in syntax and morphology.

Studies that try to disentangle effects of bilingualism from language impairment should ideally include four groups of learners, i.e. monolingual typically developing (TD) children, monolingual impaired children, bilingual TD children, and bilingual impaired children. However, most studies involve fewer groups, usually just two (e.g. Armon-Lotem 2014; Chondrogianni et al. 2015; Rothweiler et al. 2012). A few studies have used three groups (e.g. Chilla 2008; Clahsen et al. 2014; de Jong et al. 2010; Håkansson 2001; Marinis and Chondrogianni 2011), but hardly any have compared all four (e.g. Blom et al. 2013; Tuller et al. 2015). Past studies do not lend themselves to direct comparison, because they typically vary both in design (the groups of children studied, their ages of onset, and the set of input factors affecting L2), and in focus (the type of

language, and the grammatical phenomenon). Nevertheless, some grammatical phenomena have emerged from these studies that are found to be vulnerable in SLI in both L1 and L2 acquisition, but not in ecL2. One of these phenomena is SVA in German and in Dutch (de Jong et al. 2010; Rothweiler et al. 2012).

Our paper is organized as follows. Section 2 defines the objective of our study. Section 3 summarizes previous findings on the acquisition of SVA in German for different groups of cL2 learners. Section 4 gives an overview of the child participants in our study and details the analysis of the acquisition of SVA. Section 5 contains our findings. A discussion of the study and findings follows in Section 6, and our conclusions are presented in Section 7.

2 Objective of the study

Rothweiler et al. (2012) compared monolingual and bilingual children with SLI and found a similar deficit in SVA in both groups, thereby showing that at least some children with SLI have difficulties in this domain.[1] However, the authors did not include a control group of TD ecL2 learners, instead using results on unimpaired ecL2 acquisition from the literature. In the present paper we make a direct comparison by adding a group of unimpaired ecL2 learners that matches the impaired ecL2 learners in age of onset, acquisition background, and MLU. In our study we compare the acquisition of SVA in three groups of children: TD ecL2 learners, impaired ecL2 learners, and monolingual children with SLI. Just like most cL2 learners in Germany, our cL2 learners are 'early' learners with an early age of onset (between the ages of 3 and 4 years).

Diagnosis of SLI in Germany generally occurs between the ages 4 and 5 when first language screenings for monolingual and bilingual children are carried out in kindergartens. Since SVA is acquired early by monolingual German children (by age 3 at the latest, cf. Clahsen [1986]; Clahsen and Penke [1992]), and SVA is acquired fast by unimpaired ecL2 learners of German (within 18 months of exposure, cf. Chilla [2008]; Thoma and Tracy [2006]; Tracy and Thoma [2009]), a deficit in SVA may be indicative of SLI in bilingual children who have been acquiring German for more than two years.

Children with SLI may show delays in development as well as abnormal error frequencies or profile differences (Leonard 2014: 40–47). Clahsen (1991) and Clahsen et al. (1997) propose that SVA is a vulnerable domain in German SLI. Although the children with SLI in these studies produce the same types of

1 For the heterogeneity of children with SLI see, for example, van der Lely et al. (2011).

errors as TD children, they produce errors more often and for a longer period of time, and sometimes do not show any clear improvement at all. Children with SLI may show considerable improvement in their syntactic development but still not master SVA. This can be interpreted as a selective deficit, and has been found in many German-speaking children with grammatical SLI (see Clahsen 1991; Clahsen et al. 1997; Rothweiler and Clahsen 1994; Rothweiler et al. 2012). It has been found not only in young children but also in children up to the age of 10 (Dannenbauer and Kotten-Sederquist 1990; Hansen 1996; Rothweiler et al. 1995; see also Schöler et al. 1998). Some children appear to master SVA after therapeutic intervention (Hansen 1996). But others continue to show deficits in verbal morphology even after many years of therapy (Schakib-Ekbatan and Schöler 1995, for children as old as 17; cf. also Leonard et al. 2008). Despite these data, and although a deficit in SVA seems to be a prominent feature of SLI in German, we cannot conclude that such a deficit is indicative of SLI in cL2.

Based on the findings summarized above, we expect unimpaired ecL2 learners to master SVA just like monolinguals and to do so within their first two years of exposure to German. And in particular, we expect their performance to differ significantly from that of the two groups of children with SLI. Following Rothweiler et al. (2012) we will concentrate on a developmental stage in which the children have started to use wh-questions and subordinate clauses, which are referred to as "syntactically complex sentences". The production of at least some root wh-questions with V2 or subordinate clauses with a finite verb in clause-final position is taken to indicate that the children have progressed in their syntactic development, even if verb placement in these structures may not yet be error-free. By this developmental stage, SVA has been acquired by unimpaired monolingual children (Clahsen and Penke 1992; Clahsen et al. 1996). Isolated errors of SVA may still occur, but only during a transition period of a few months (Fritzenschaft et al. 1990). In contrast, children with SLI may still be struggling with SVA even after starting to produce complex sentences (see Rothweiler et al. 2012). Consequently, a deficit in SVA may be a suitable marker of SLI even at an advanced developmental stage (cf. de Jong 2015).

3 The acquisition of SVA in German

German SVA marks PERSON and NUMBER agreement. Agreement inflection (i.e. suffixation) on thematic verbs in the present tense is completely regular, as shown for *spielen* 'play' in Table 1. In spoken German the vowel [ə] for 1SG is

Table 1: Subject-verb agreement paradigm (present tense).

Person	stem + suffix
1SG	spiel(-*e*)
2SG	spiel-*s(t)*
3SG	spiel-*t*
1PL	spiel-*(e)n*
2PL	spiel-*t*
3PL	spiel-*(e)n*

often omitted (e.g. *ich spiel* instead of *ich spiele* 'I am playing') and the 2SG affix *-st* is often reduced to *-s* (e.g. *du spiels* instead of *du spielst* 'you are playing'). Furthermore, the 1PL and 3PL ending – written as *-en* – is usually pronounced as a syllabic sonorant /n/. We will refer to the 2SG suffix as *-s(t)* and the 1PL and 3PL suffix as *-n*. In contrast to thematic verbs, modal verbs in the present tense follow the preterite paradigm that differs from the present tense paradigm in that the 1SG and 3SG have zero inflection (*ich*/*er kann* 'I/he can', *ich*/*er ging* 'I/he went').

The acquisition of SVA in German has been well studied in monolingual children (e.g. Clahsen 1986; Clahsen et al. 1997). Clahsen and Penke (1992) show that PERSON distinctions are made before NUMBER is acquired, and that the suffix *-n* occurs early but is used as a default form for up to a year. This means that even when the correctness scores for all other inflections exceed 90 %, *-n* may still surface in any agreement context and thus does not yet encode SVA. In contrast, the suffix *-s(t)* occurs late and after all other inflections are produced, but is used correctly from the beginning. Shortly after the acquisition of *-s(t)* all other inflections of the paradigm are also used correctly. According to Clahsen (1986) and Clahsen and Penke (1992) SVA is acquired by age 3 at the latest.

In the last ten years, several studies of SVA in cL2 acquisition have uncovered important differences between ecL2 learners with an early age of onset (around age 3) and older cL2 learners with a later age of onset (after age 5). On the whole, ecL2 learners resemble L1 learners (Chilla 2008; Rothweiler 2006; Thoma and Tracy 2006; Tracy and Thoma 2009; Wojtecka et al. 2013). Rothweiler (2006) and Chilla (2008) showed that ecL2 learners cope well with SVA, but that there are individual differences in developmental speed. Some children had acquired SVA after only eight to nine months of exposure, while others needed up to 18 months. The acquisition of the individual inflections of the SVA paradigm closely resembles that in L1 acquisition. As a transitional phenomenon, some of the ecL2 learners overgeneralized *-0* forms in 3SG contexts

with thematic verbs and others overapplied the suffix *-t* to modal verbs in 3SG contexts (Chilla 2008; Rothweiler 2009; see also Wojtecka et al. 2013 for German; Blom and Baayen 2013 for Dutch). Such errors can occur in monolingual acquisition as well, although only a few cases have been reported (Clahsen 1986: 93).

The results on the acquisition of SVA in monolingual and early bilingual children suggest that SVA belongs to the core grammar of German. The core grammar is assumed to be acquired early in L1 and simultaneous bilingual (2L1) acquisition and is not affected strongly by input factors (Meisel 2011; Tsimpli 2014).

Children with a late age of onset (between the ages of 6 and 8) take much longer to acquire SVA than children with an early age of onset (Chilla 2008; Dimroth 2008; Haberzettl 2005; Sopata 2009). Although correctness scores are already high after a short period of exposure, overgeneralisation of inflections can be observed, including *-t* and *-s(t)*. Even after two years of exposure to German, SVA has not been fully acquired by these L2 children in contrast to ecL2 acquisition (Chilla 2008). Sopata (2009) found similar differences in Polish-German children, some with an age of onset as early as 3;8.

The *agreement deficit account*, proposed by Clahsen (1991), Clahsen et al. (1997) and Rothweiler et al. (2012), identified difficulties with SVA as a marker of SLI in German. Clahsen et al. (1997: 157) showed that not only do the monolingual children with SLI use many bare stem forms (*-0*), hence producing errors of omission, but they also often use suffixes incorrectly, which are errors of commission. In 13 spontaneous speech recordings of children with SLI, aged 5;8 to 7;11, they found commission errors with *-t* and *-s(t)* (17.5 %) and with *-n* (27 %) (Clahsen et al. 1997: 170). In unimpaired acquisition, SVA is acquired before complex sentences are produced. The L2 children in Rothweiler et al.'s (2012) study were advanced SLI learners – they already produced complex sentences – but they still struggled with SVA. Just like monolingual children with SLI, they too produced errors of omission and commission. The data from the two groups of SLI children in Rothweiler et al. are also used in our study.

4 Method

4.1 Participants

Spontaneous speech data from six ecL2 typically developing children (TD-L2), from six monolingual German-speaking children with SLI (SLI-L1), and from

six ecL2 children with SLI (SLI-L2) were examined. We used longitudinal data from at least two recordings and up to seven recordings (per child), covering at least two months and up to 21 months of observation. Table 2 provides an overview of the data (for individual data see Table A, Appendix).

The children were selected from a larger group according to the following criteria: (1) the children had reached a developmental stage at which they produced complex sentences (i.e. *wh*-questions or subordinate clauses); (2) the MLU ranged from 2.0 to 4.3; (3) the age range of both SLI groups ranged from ca. 4;6–8; (4) the age of onset in both L2-groups ranged from age 3 to 4. For most of the children in the two L2 groups earlier recordings exist in which wh-questions and subordinate clauses were not attested, so these data were excluded by criterion 1. The six SLI-L1 children were selected from a group of 19 children on the basis of criterion 1.

Although the TD-L2 and the SLI-L2 groups are similar with respect to age of onset, the SLI-L2 children had been exposed to German for a longer period of time by the time they started to produce complex sentences. The TD-L2 children did so after about 8 to 15 months of exposure to German, while the SLI-L2 children only did so after 15 months at the very least, and generally required a further 12 months. As a consequence the two groups differ in the age range covered, the SLI children being about one year older than the TD-L2 children.

For the L2 children, we interviewed both the parents and the kindergarten or elementary school teachers. From the parents we obtained information about a child's linguistic development in Turkish and the language spoken at home. The family language was always Turkish and the children grew up in an almost exclusively monolingual Turkish context. From the teachers we learnt about

Table 2: Data overview.

Group	Group size	Number of recordings	Age	AO	ME	MLUw
TD-L2	6	27	3;6–6;8 m: 57.9 *SD* 10.0	2;9–4;4 m: 41.2 *SD* 8.0	8–30	2.3–4.3 m: 3.2 *SD* 0.5
SLI-L1	6	22	4;8–7;11 m: 79.1 *SD* 9.4	0	56–95	2.3–4.1 m: 3.2 *SD* 0.5
SLI-L2	6	27	4;4–7;9 m: 66.2 *SD* 11.3	2;11–4;3 m: 40.3 *SD* 6.1	15–57	2.0–3.9 m: 2.8 *SD* 0.5

Note: Age = range, mean in months, SD; AO = age of onset [of exposure to German]; ME = months of exposure [to German]; MLUw = Mean Length of Utterance measured in words.

the German language environment. All L2 learners started to acquire German only once they started attending day care institutions. A Turkish-speaking and a German-speaking project member visited the child in the kindergarten to collect information about the language competence of the child in both languages, as well as to gain first-hand experience of the input situation for German. The German kindergarten staff always spoke German, and the classes always included many monolingual German children. All the L2 children spent at least 20 hours/week in kindergarten. We conclude that all children received a regular and a fairly rich input of German.

An ecL2 child was classified as belonging to the L2-SLI group after an informal assessment by the project members, based on language observations in both languages, the interviews with parents and teachers, and results from the T-SALT test (Acarlar et al. 2006) for some of the children (see Chilla and Babur [2010] for further details). From the parents, we learned that most of the children had started to talk late, and that they talked strangely compared to other children. All L2-SLI children achieved normal IQ scores in a non-verbal IQ test, or were assessed as being cognitively unimpaired by speech and language therapists. Furthermore, none of these children were reported to suffer from hearing loss or from obvious neurological dysfunction or motor deficits.

All SLI-L1 children attended special language therapy classes or received individual language therapy. They were independently diagnosed by speech therapists as having SLI and as not showing any obvious non-linguistic deficits. According to the clinicians' reports, their non-verbal cognitive abilities were within the normal limits for their chronological age, and there was no reported hearing loss, obvious neurological dysfunction or motor deficit (see Bartke [1998] for more information; Clahsen et al. [2014]).

4.2 Materials

Spoken production data from 76 recordings of about 45 minutes each, that involved free play sessions, were studied (TD-L2: 27, SLI-L2: 27, SLI-L1: 22) (cf. Table A, Appendix). The recordings of the TD children were made in the day care centers, and those of the SLI children in the institutions where they were receiving language therapy.

4.3 Data scoring and analysis

German SVA inflection marks PERSON (1, 2, and 3) and NUMBER (SG and PL) (cf. Table 1).[2] We examined the encoding of person and number features on verbs in sentences with overt subjects only, in contrast to e.g. Schulz and Schwarze (this volume), who also considered sentences that did not contain an overt subject. This is possible when elicited production data are considered as in Schulz and Schwarze's case in which the experimenter's question often predetermined the choice of subject in a child's answer. In spontaneous production data, however, the choice of subject is not predetermined. Four overt person and number affixes (*-e*, *-s(t)*, *-t*, and *-n*) and zero inflection, i.e. bare stems, were considered and were analysed from two perspectives:

(A) We looked at the different inflectional endings: *-0*, *-e*, *-s(t)*, *-t*, *-n* and calculated how often each occurred with the right kind of subject. This results in the percentage of inflected verb forms that are correct.

(B) We looked at 1SG and 1PL, 2SG and 2PL, 3SG and 3PL subjects and then calculated how often each occurred with an agreeing verb form, i.e. the morpho-syntactic encoding. This results in the percentage of subject contexts with correct, i.e. agreeing, verb forms.

These two complementary analyses lead to two different types of SVA values. As an illustration, consider the following examples: *das Kind weint* 'the child is crying', *das Kind weinen* 'the child be/are-1PL/3PL crying', *ich weinen* 'I be/are-1PL/3PL crying'. Analysis A results in a correctness score of 100 % for *-t* and 0 % for *-en*, while analysis B results in a correctness score of 50 % for 3SG contexts, and of 0 % for the 1SG context. Looking at the data from these two perspectives allowed us to identify first whether the meaning of an inflection has been acquired (A), and second whether the features on the verb that are required by the subject are fulfilled (B).

Although the number of participants in our study is small the groups were chosen to minimize heterogeneity. We used non-parametric statistical procedures, i.e. the Wilcoxon test for within-group comparisons and the Mann-Whitney test for between-group analyses. The mean for each group was the average of the participant means, where each participant mean was calculated over all samples from that child (see Tables B and C, Appendix).

2 Suppletive forms have a morphologically different status from agreement inflections. Rothweiler et al. (2012) observe that all the children with SLI in the study had acquired all forms of *sein* 'be' and used these correctly. Therefore, *sein* is not included in our analysis.

5 Results

5.1 SVA: Inflected verb forms

Table 3 presents mean accuracy scores and standard deviations in all three groups (for individual participant data see Table B, Appendix). Bare forms without an overt affix, as in *(ich) sag* '(I) say' are classified as *-0* forms. Each mean score represents the proportion of the total number of occurrences of a given inflection in a child's speech that was correct with respect to agreement. We analysed 2898 inflected verbs (that should agree with the subject) in the TD group, 2264 in the SLI-L1 group and 1561 in the SLI-L2 group.

The following observations can be made. First, all groups (and also each participant in a group) produced all five forms. Second, the TD children achieved from 90 to 100 % correctness for all inflections. In contrast, in the two SLI groups *-s(t)* and *-t* had high accuracy scores from 82 to 94 %, but the scores for bare forms, as well as for *-n* and *-e*, were considerably lower (between 58 % and 75 %), indicating difficulties with SVA (see Tables B and C, Appendix, for the contrast in accuracy scores between TD-L2 and SLI-L1/L2 in the individual data). Third, the mean correctness scores for inflection are significantly higher in the TD group than in each of the two SLI groups (TD-L2 vs. SLI-L1: $Z = 2.882$, $p = .004$; TD-L2 vs. SLI-L2: $Z = 2.722$, $p = .006$), but they are similar in the two SLI groups (SLI-L1 vs. SLI-L2: $Z < 1$). It is clear that the standard deviations in the TD data are lower than those in either SLI group. This is not unexpected considering the use of strong selection criteria for choosing the children in each

Table 3: Mean correctness scores of inflected verb forms per group (based on individual correctness scores in per cent) and standard deviations, with the raw numbers below.

	TD-L2	SLI-L1	SLI-L2
-0	92.45 (3.40)	75.78 (12.75)	73.60 (18.79)
	1395/1482	931/1262	625/903
-e	96.67 (8.16)	65.65 (26.17)	62.18 (18.32)
	46/47	43/80	41/61
-s(t)	100.00 (0.00)	93.33 (16.33)	82.52 (24.07)
	404/404	63/65	124/152
-t	97.85 (1.62)	89.72 (15.40)	94.75 (9.33)
	674/685	353/416	193/208
-n	89.22 (10.66)	58.53 (25.17)	62.15 (33.84)
	254/280	166/441	147/237
average	**94.90 (2.30)**	**72.85 (13.57)**	**75.38 (18.87)**

group. In contrast, considerable variation is still found in the SLI groups, as is typical of SLI populations.

Between-group comparisons for the individual inflections resulted in significant differences between TD-L2 and each of the two SLI groups for all inflections except *-t* and except *-(s)t* for TD-L2 vs. SLI-L1 (TD-L2 vs. SLI-L1 for *-0*: $Z = 2.567$, $p = .010$, for *-e*: $Z = 2.308$, $p = .021$, for *-n*: $Z = 2.402$, $p = .016$, for *-s(t)*: $Z = 1.000$, $p = .317$, for *-t*: $Z \leq 1$; TD-L2 vs. SLI-L2 for *-0*: $Z = 2.406$, $p = .016$, for *-e*: $Z = 2.823$, $p = .005$, for *-n*: $Z = 1.441$, $p = .150$, for *-s(t)*: $Z = 2.286$, $p = .022$, for *-t*: $Z \leq 1$). A comparison between the two SLI groups revealed no significant difference for any inflection (SLI-L1 vs. SLI-L2 for *-s(t)*: $Z = 1.607$, $p = .108$, for *-0*, *-e*, *-n* and *-t*: $Z \leq 1$).

The picture becomes clearer when the inflectional forms are grouped according to their status as finite inflections (*-s(t)* and *-t*), or potentially non-finite inflections (*-0*, *-e* and *-n*). Verbs inflected with *-s(t)* and *-t* yield finite verbs that unambiguously encode agreement features (Clahsen et al. 1997; Clahsen and Penke 1992; Rothweiler et al. 2012). In contrast, verb forms ending in *-n* or *-e* or with zero inflection could be non-finite, i.e. forms ending in *-n* could be infinitives and *-0* forms could be bare stems. The inflection *-e* is pronounced as a schwa [ə] and is used by (unimpaired) German-speaking children as phonological variant of *-0* and *-n*. On the other hand, *-0*, *-e*, and *-n* are also inflections of the SVA paradigm (see Table 1). Therefore, these forms are ambiguous between potentially non-finite and finite forms. Based on the verb position these ambiguous verb forms occupy, Schulz and Schwarze (this volume) argue that in their elicited data bare forms (*-0* and *-e*) are finite because they are generally found in the V2-position and that *-n* forms are non-finite because they are generally found in the clause-final position. This syntactic approach neglects the morpho-syntactic content of the inflections, i.e. whether or not the forms encode person and/or number features. Our approach, however, focussed on SVA. This means we concentrate on the morpho-syntactic features encoded, and not on what kind of position these forms occupy. We therefore do not know whether Schulz and Schwarze's analysis carries over to our data. Ideally, both types of analyses should be combined.

Between-group comparisons for the grouped inflections resulted in significant differences between the TD group and both SLI groups for *-0*, *-e*, and *-n* (TD-L2 vs. SLI-L1: $Z = 2.882$, $p = .004$; TD-L2 vs. SLI-L2: $Z = 2.722$, $p = .006$), but not for *-s(t)* and *-t* (TD-L2 vs. SLI-L1: $Z = 1.205$, $p = .228$; TD-L2 vs. SLI-L2: $Z < 1$).

The TD children coped well with all agreement inflections (see [1]). The children with SLI produced many correct forms (see [2]), but also agreement errors with default inflections (see [3a]–[3c]) as well as with inflections that unambiguously encode SVA (see [3d]/[3e]).

(1) correct SVA (TD-L2 children)

a. *das machen wir auf*
this make.1PL/3PL/INF we.1PL open
'We will open this one.'
(Faruk, ME8)

b. *jetz spiel ich nich mehr*
now play.1SG/STEM I.1SG no longer
'I won't play any longer.'
(Hande, ME11)

c. *aber hier fehlt noch ein*
but here lacks.3SG still one.3SG/M/F/N
'but one is still missing here'
(Meral, ME16)

d. *du nimmst die mädchen*
you.2SG take.2SG the girls
'You should take the girls.'
(Fikret, ME15)

(2) correct SVA (children with SLI)

a. *wir haben dat gespielt*
we.1PL have.1PL/3PL/INF that played
'We played that (game).'
(Rasim, ME23, SLI-L2)

b. *warum habt ihr das denn gemacht?*
why have.2PL you.2PL this then done
'Why did you do this?'
(Josef, SLI-L1)

c. *das kitzelt so*
this.3SG tickles.3SG/2PL so
'This is tickling.'
(Sebastian, SLI-L1)

d. *du steigs in eisenbahn*
you.2SG climb.2SG in railway
'You are getting onto the train.'
(Arda, ME26, SLI-L2)

(3) agreement errors (children with SLI)

a. *der wissen immer den weg zurück*
this.one.3SG know.1PL/3PL/INF always the way back
'He always knows the way back.'
(correct: *weiß*)
(Dieter, SLI-L1)

b. *du keine fahrrad fahren*
you.2SG no bicycle ride.1PL/3PL/INF
'You do not ride a bicycle.'
(correct: *fährst*)
(Rasim, ME30, SLI-L2)

c. *die maus fall runter*
the mouse.3SG fall.1SG/STEM down
'The mouse is falling down.'
(correct: *fällt*)
(Arda, ME16, SLI-L2)

d. *autos kommt dahin*
cars.3PL come.3SG/2PL there
'The cars go in here.'
(correct: *kommen*)
(David, SLI-L1)

e. *du nehmt die*
you.2SG take.2PL these/this.one
'You are taking these/this one.'
(correct: *nimmst*)
(Ferdi, ME29, SLI-L2)

Comparing the potential default inflections with the inflections *-s(t)* and *-t* within each group, we found significant within-group differences between the averaged scores for *-s(t)* and *-t* on one hand, and for the averaged scores for *-n* and *-e* on the other. Although the correctness rates for the two types of inflections are over 90 % in the TD children and are thus above the 90 %-threshold defined by Brown (1973) for the notion of *acquired*, the difference between 90.5 % (*sd* = 10.04) and 98.7 % (*sd* = 1.01) is significant ($Z = 2.20$, $p = .028$). This means that even the TD children use *-n* and *-e* as default forms to some extent.

The difference between the two inflection types is also significant in the two SLI groups (SLI-L1: $Z = 1.99$, $p = .46$; SLI-L2: $Z = 2.20$, $p = .028$) but it is more pronounced than in the TD group (SLI-L1: 56.48 [*sd* = 23.88] vs. 89.73 [*sd* = 13.77]; SLI-L2: 63.13 [*sd* = 28.34] vs. 88.67 [*sd* = 14.80]).

In order to find out whether the children in the TD group do stop using default inflections as do L1 learners, we checked whether they still use default inflections after two years of exposure to German. Table 4 gives an overview of the correctness scores for the data in the recordings at ME24 for four of these children. As can be seen from the table, *-0*, *-e*, and *-n* have lost their default function. The last recordings from the other two children (Hande and Meral) in this group were taken at ME18 and ME16 respectively, but even so contained only a few errors.

In the last recordings of the SLI-L2 group (with generally much longer exposure to German) the picture is strikingly different. This group showed more agreement errors for *-0*, *-e* and *-n* in the last recordings made after two or more years of exposure to German (see Table 5). However, two of the children – Arda and Erbek – reached high correctness scores of about 90 % in the last recordings, i.e. after three years of exposure to German. Although after two years of exposure to German they already reached high correctness scores of 100 % for *-t*, they were still struggling with this inflection: Arda ME24 used *-t* in only 63 % (5/8) and Erbek ME24 in only 80 % (12/15) of 3SG contexts requiring *-t*.

Table 4: Correctness of forms in per cent and raw numbers in 4 TD-L2 children after two years of exposure and in the last recording of 2 TD-L2 children.

	ME	***-0***	***-e***	***-s(t)***	***-t***	***-n***
Eser	24	98.1	100	100	100	100
		101/103	4/4	16/16	35/35	5/5
Faruk	24	98.7	100	100	100	100
		76/77	3/3	18/18	34/34	11/11
Fikret	24	100	100	100	100	100
		24/24	3/3	13/13	16/16	5/5
Gül	24	100	100	100	100	100
		40/40	3/3	28/28	8/8	4/4
Hande	18	94.3	100	100	95.2	94.7
		33/35	1/1	27/27	20/21	18/19
Meral	16	94.6	66.7	100	96	100
		35/37	2/3	10/10	24/25	4/4

Table 5: Correctness of forms in per cent and raw numbers in the SLI-L2 children in the last recordings.

	ME	*-0*	*-e*	*-s(t)*	*-t*	*-n*
Arda	36	90.9	–	100	100	–
		10/11	–	8/8	8/8	–
Devran	24	80.9	50	100	100	90
		38/47	1/2	5/5	5/5	9/10
Erbek	36	93.6	66.7	92.9	100	92.3
		44/47	2/3	26/28	25/25	24/26
Ferdi	31	33.3	0	100	54.5	28.6
		20/60	0/1	1/1	6/11	2/7
Rasim	30	78.7	100	92.3	93.3	61.5
		48/61	2/2	12/13	14/15	8/13
Sadi	57	76.9	0	100	100	100
		10/13	0/2	2/2	11/11	7/7

5.2 SVA: Morpho-syntactic encoding

The following analysis presents percentages of correct use of verb forms in obligatory contexts for person and number agreement. Three cases were distinguished: correct forms, potentially non-finite forms (*-0*, *-e*, *-n*), and agreement errors with *-s(t)* and *-t*. In utterances with a 2SG subject, for example, a child may produce the correct *-s(t)* form (1d/2d), a non-finite form (*-0*, *-e*, *-n*), as in (3b), or an agreement error (3e). Recall that in 1SG contexts *-0* and *-e* are correct but *-n* is not, while in 1PL and 3PL contexts *-n* is correct but *-0* and *-e* are not.

Table 6 shows the percentage of correct forms, potentially non-finite forms and agreement errors with *-s(t)* and *-t* for contexts that are required by the respective subject in a sentence. For 3SG subjects, an additional distinction was made between thematic verbs, which require the *-t* affix, and modal verbs and preterite forms (which are rare), which require a *-0* form (for individual data see Table C, Appendix).

The TD-L2 group produced almost 90 to 100 % of correct forms in all contexts. The SLI-groups performed well only in contexts for *-0* inflection (i.e. 1SG and 3SG *-0*). The low scores in all other SVA contexts indicate that SVA has not been acquired.

Between-group comparisons based on the percentages of correct forms in the seven contexts distinguished in Table 6 resulted in significant differences between TD-L2 and SLI-L1 ($Z = 2.88$, $p = .004$) and between TD-L2 and SLI-L2 ($Z = 2.24$, $p = .025$), but not between SLI-L1 and SLI-L2 ($Z < 1$). Additional between-group analyses in contexts requiring *-0*, *-e*, and *-n* and in contexts

Table 6: Inflected verb forms as morpho-syntactic encoding in per cent and raw numbers.

Contexts	correct forms – %			potentially non-finite forms – %			agreement errors – %		
	TD-L2	SLI-L1	SLI-L2	TD-L2	SLI-L1	SLI-L2	TD-L2	SLI-L1	SLI-L2
1SG	99	83	91.7	0.9	11.8	2.8	0.1	5.3	5.5
	1074/1085	706/851	531/579	10	100	16	1	45	32
2SG	97.1	53.8	60.2	2.4	41	37.4	0.5	5.1	2.4
	404/416	63/117	124/206	10	48	77	2	6	5
3SG *-t*	89.4	45.7	42.2	10.6	54.3	57.3	0	0	0.5
	660/738	349/763	187/443	78	414	254	0	0	2
3SG *-0*	99.5	95	99.3	0.5	3.9	0.7	0	1.1	0
	367/369	268/282	135/136	2	11	1	0	3	0
1PL	96.4	68.3	86.3	3.6	30.8	12.3	0	1	1.4
	132/137	71/104	126/146	5	32	18	0	1	2
2 PL	100	57.1	66.7	0	42.9	33.3	0	0	0
	14/14	4/7	6/9	0	3	3	0	0	0
3PL	87.8	67.9	50	6.5	25	45.2	5.8	7.1	4.8
	122/139	95/140	21/42	9	35	19	8	10	2

requiring *-s(t)* or *-t* revealed significant differences for both types of contexts for TD vs. SLI-L1 and SLI-L2 (TD-L2 vs. SLI-L1: $Z = 2.56$, $p = .010$; TD-L2 vs. SLI-L2: $Z = 2.88$, $p = .004$.). Again, no significant difference between the two SLI groups emerged ($Z = 0.801$, $p = .423$). The TD group outperformed both SLI groups in all SVA contexts.

6 Discussion

The intent of our study was to determine whether SVA is vulnerable in impaired but not in unimparied ecL2 German, a contrast that obtains between impaired L1 and unimpaired L1 German. While monolingual TD children have mastered SVA by age 3 at the latest, children with SLI may still be struggling with SVA even at school-age and even after they have started to produce complex sentences. Furthermore, it has been reported that the acquisition of SVA by ecL2 learners closely resembles that by L1 children, and that ecL2 learners with SLI resemble L1 children with SLI. Our study complements that of Rothweiler et al. (2012) by adding a group of TD ecL2 learners. Two additional aspects guided our research design: (1) we compared the acquisition of SVA in unimpaired and impaired cL2 learners with an early age of onset – at age 3 – because most cL2 learners in Germany share such an age of onset; (2) we investigated whether a deficit in SVA is still visible in children with SLI at a later stage of grammatical acquisition. If the latter is indeed the case then difficulties with SVA after at least two years of exposure to German can be taken as a marker of SLI in ecL2 learners. For this reason, we concentrated on a developmental stage in which the children already produced complex sentences, i.e. wh-questions or subordinate clauses.

We found that the performance of ecL2 learners of German is very similar to that of monolingual children. We did not focus on the developmental steps in the acquisition of SVA, but concentrated on an advanced stage of syntactic development, because by the time the first complex sentences are produced, the SVA paradigm has already been acquired by the ecL2 learners. Moreover, the performance of the unimpaired ecL2 learners was significantly different from that of both SLI groups. In contrast, the SLI-L1 group and the ecL2 group with children suspected of having SLI (based on an informal assessment) performed similarly, thus corroborating the suspicion that these ecL2 children indeed have SLI. However, two of the SLI-L2 children (Arda and Erbek) seem to have acquired SVA at a later stage (after a longer exposure to German). This finding can be interpreted in two ways: either these children do not have SLI

but are very slow TD learners, or these children have SLI but acquire SVA as a result of therapeutic intervention, as has been shown possible in some studies (cf. Dannenbauer and Kotten-Sederquist 1990; Hansen 1996; Rothweiler et al. 1995). On the other hand, Schakib-Ekbatan and Schöler (1995) found persistent morphological deficits, including verbal inflections, in adolescents who had been diagnosed with SLI as children. These authors used a grammatical judgement and correction task and a sentence repetition task, and these may reveal underlying deficits that are not apparent in spontaneous speech. Leonard et al. (2008) also reported difficulties with tense/agreement morphology persisting into adolescence.

As well as the low correctness scores for the potentially non-finite forms *-0*, *-e*, and *-n*, the children with SLI showed low correctness scores in the morpho-syntactic encoding for 2SG *-s(t)* and 3SG and 2PL *-t*. They also produced more agreement errors with *-s(t)* and *-t* than the unimpaired ecL2 learners. Therefore both groups of advanced learners with SLI show an SLI profile with persistent difficulties with SVA, although the problems are less pronounced than in children with SLI at an earlier developmental stage (see Clahsen 1991; Clahsen et al. 1997). As a group, the children with SLI differed substantially from the ecL2 learners in our study. While all unimpaired ecL2 learners acquired SVA after two years of exposure, at least four of the ecL2 children with SLI did not. It is known that some SLI children do not acquire SVA even after much longer exposure to German (cf. Schwarze et al. 2015). The present study adds one more piece of evidence that SVA is not vulnerable in unimpaired ecL2, while it may be in SLI L1 and SLI ecL2.

That SVA may be vulnerable in bilingual children with SLI is in agreement with studies in other languages (de Jong 2015 and Orgassa 2009 for Dutch; Stavrakaki et al. 2008 for Greek). Armon-Lotem (2014, for Hebrew) and Verhoeven et al. (2011, for Dutch) have shown that cL2 learners and L1 learners with SLI differ from unimpaired L1 learners, but they argue that the error profile in the children with SLI differs from that of unimpaired cL2 learners. Blom et al. (2013) did not find a specific error profile for SVA in Dutch SLI, but they found considerable variation.

Finally, we wish to address the influence of quantity and quality of input, and the impact of the age of onset, on acquisition in cL2. As described in Section 4, we obtained some information about the input for both languages, Turkish and German, and ensured that all the children were regularly exposed to German input. Many internal factors (e.g. chronological age, age of onset, language dominance, L1 background, language aptitude including verbal working memory skills) and external factors (e.g. length of exposure, amount and quality of input, social-economic status of the parents) are known to influence cL2

acquisition (Paradis 2011; Tuller et al. 2015). SVA belongs to the core grammar, and the core grammar is said to be acquired early in L1 and in simultaneous bilingual (2L1) acquisition, and is not affected strongly by input factors (Grimm and Schulz 2016; Meisel 2011; Tsimpli 2014). Core grammar phenomena are typically affected by age of onset (Tsimpli 2014). In our study, the ecL2 learners acquired SVA just like L1 learners. This agrees with Chondrogianni and Marinis (2011), who note that external factors like input quantity and quality are not decisive for the development of English tense morphology in cL2 learners, but that they are for vocabulary and complex syntax. It is expected that differences between cL2 and L1 acquisition become more pronounced with increasing age of onset for the L2 (see Meisel 2009, 2011: 205–206, 211–221). According to Meisel, the upper boundary for L1-like acquisition in the domain of morpho-syntax is an age of onset before age 4, thus dividing 'late' cL2 from 'early' cL2 which resembles 2L1 acquisition. As reviewed in Section 3, numerous studies have shown that this is indeed the case for the acquisition of SVA: an age of onset after age 4 leads to differences in acquisition with respect both to the speed of acquisition and to error patterns as compared to L1 acquisition. Based on the results presented here we conclude that a deficit in SVA may be used as a marker of SLI for at least a subgroup of children with grammatical SLI, provided they have been exposed to German from an early age.

7 Conclusions

Our results lead to the conclusion that difficulties with SVA can be used as one of several linguistic markers of SLI in L1 and ecL2 learners before school age (a large fraction of cL2 learners in Germany). Specifically, once children have started to produce complex sentences, their performance in SVA can help to distinguish between typical language development and language impairment. Early cL2 learners who have been learning German for more than two years but are still struggling with SVA should raise concern. Our results are relevant to both teachers and clinicians in Germany because they could contribute to the development of improved diagnostic procedures when assessing a child's language competence. SVA naturally fits in recently proposed assessment batteries (see de Jong 2015) that encompass tests for working-memory, linguistic tasks like language-specific sentence repetition (Armon-Lotem et al. 2015; Hamann 2012), and parental questionnaires for information on external factors (Chondrogianni and Marinis 2011; Tuller et al. 2015).

Acknowledgments: The research presented here was supported by the *Deutsche Forschungsgemeinschaft* (DFG, 'German Science Foundation'), by a grant to Monika Rothweiler for a research project on bilingual children with SLI at the University of Hamburg (SFB 538 "Multilingualism", 2002–2011). We are grateful to two anonymous reviewers for very helpful and detailed comments. We are also grateful to Harald Clahsen for making the L1-SLI data available to us.

References

Acarlar, Funda, Jon F. Miller & Judith R. Johnston. 2006. *Systematic analysis of language transcripts (SALT), Turkish (Version 9)* [Computer Software]. Language Analysis Lab: University of Wisconsin-Madison. (Distributed by the Turkish psychological association).

Armon-Lotem, Sharon. 2014. Between L2 and SLI: Inflections and prepositions in the Hebrew of bilingual children with TLD and monolingual children with SLI. *Journal of Child Language* 41(1). 3–33.

Armon-Lotem, Sharon & Jan de Jong. 2015. Introduction. In Sharon Armon-Lotem, Jan de Jong & Natalia Meir (eds.), *Assessing multilingual children. Disentangling bilingualism from language impairment*, 1–22. Bristol: Multilingual Matters Ltd.

Armon-Lotem, Sharon, Jan de Jong & Natalia Meir (eds.). 2015. *Assessing multilingual children. Disentangling bilingualism from language impairment*. Bristol: Multilingual Matters Ltd.

Bartke, Susanne. 1998. *Experimentelle Studien zur Flexion und Wortbildung: Pluralmorphologie und lexikalische Komposition im unauffälligen Spracherwerb und im Dysgrammatismus*. Tübingen: Niemeyer.

Bedore, Lisa M. & Laurence L. Leonard. 2001. Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research* 44(4). 905–924.

Blom, Elma & Harald R. Baayen. 2013. The impact of verb forms, sentence position, home language, and second language proficiency on subject-verb agreement in child second language Dutch. *Applied Psycholinguistics* 34(4). 777–811.

Blom, Elma, Jan de Jong, Antje Orgassa, Anne Baker & Fred Weerman. 2013. Verb inflection in monolingual Dutch and sequential bilingual Turkish–Dutch children with and without SLI. *International Journal of Language and Communication Disorders* 48(4). 382–393.

Bottari, Piero, Paola Cipriani & Anna Maria Chilosi. 2000. Dissociations in the acquisition of clitic pronouns by dysphasic children: A case study from Italian. In Susan Powers & Cornelia Hamann (eds.), *The acquisition of scrambling and cliticization*, 237–277. Dordrecht: Kluwer.

Brown, Roger. 1973. *A first language: The early stages*. London: George Allen & Unwin.

Chilla, Solveig. 2008. *Erstsprache, Zweitsprache, Spezifische Sprachentwicklungsstörung? Eine Untersuchung des Erwerbs der deutschen Hauptsatzstruktur durch sukzessiv-bilinguale Kinder mit türkischer Erstsprache*. Hamburg: Dr. Kovac.

Chilla, Solveig & Ezel Babur. 2010. Specific language impairment in Turkish-German bilingual children. Aspects of assessment and outcome. In Seyhun Topbas & Mehmet

S. Yavas (eds.), *Communication disorders in Turkish*, 352–368. Bristol: Multilingual Matters Ltd.

Chondrogianni, Vasiliki & Theodoros Marinis. 2011. Differential effects of internal and external factors on the development of vocabulary, tense morphology and morpho-syntax in successive bilingual children. *Linguistic Approaches to Bilingualism* 1(3). 318–345.

Chondrogianni, Vasiliki, Theodoros Marinis, Susan Edwards & Elma Blom. 2015. Production and on-line comprehension of definite articles and clitic pronouns by Greek sequential bilingual children and monolingual children with specific language impairment. *Applied Psycholinguistics* 36(5). 1155–1191.

Clahsen, Harald. 1986. Verb inflections in German child language. Acquisition of agreement markings and the functions they encode. *Linguistics* 24(1). 79–121.

Clahsen, Harald. 1991. *Child language and developmental dysphasia. Linguistic studies of the acquisition of German.* Amsterdam: Benjamins.

Clahsen, Harald & Martina Penke. 1992. The acquisition of agreement morphology and its syntactic consequences: New evidence on German child language from the Simone-corpus. In Jürgen M. Meisel (ed.), *The acquisition of verb placement*, 181–223. Dordrecht: Kluwer Academic Publishers.

Clahsen, Harald, Susanne Bartke & Sandra Goellner. 1997. Formal features in impaired grammars: A comparison of English and German SLI children. *Journal of Neurolinguistics* 10(2–3). 151–171.

Clahsen, Harald, Sonja Eisenbeiss & Martina Penke. 1996. Underspecification and lexical learning in early child grammars. In Harald Clahsen & Roger Hawkins (eds.), *Generative approaches to first and second language acquisition*, 129–159. Amsterdam: Benjamins.

Clahsen, Harald, Monika Rothweiler, Franziska Sterner & Solveig Chilla. 2014. Linguistic markers of specific language impairment in bilingual children: The case of verb morphology. *Clinical Linguistics and Phonetics* 28(9). 709–721.

Dimroth, Christine. 2008. Age effects on the process of L2 acquisition? Evidence from the acquisition of negation and finiteness in L2 German. *Language Learning* 58(1). 117–150.

Dannenbauer, Friedrich M. & Anni Kotten-Sederquist. 1990. Sebastian lernt SUBJ + MOD + XY + V(inf). Bericht von einer entwicklungsproximalen Sprachtherapie mit einem dysgrammatisch sprechenden Kind. *VHN - Vierteljahresschrift für Heilpädagogik und ihre Nachbargebiete* 59(1). 27–45.

Friedmann, Naama & Rama Novogrodsky. 2004. The acquisition of relative clause comprehension in Hebrew: A study of SLI and normal development. *Journal of Child Language* 31(3). 661–681.

Fritzenschaft, Agnes, Ira Gawlitzek-Maiwald & Rosemarie Tracy. 1990. Wege zur komplexen Syntax. *Zeitschrift für Sprachwissenschaft* 9(1–2). 52–134.

Grimm, Angela & Petra Schulz. 2014. Specific language impairment and early second language acquisition: The risk of over- and underdiagnosis. *Child Indicators Research* 7(4). 821–841.

Grimm, Angela & Petra Schulz. 2016. Warum man bei mehrsprachigen Kindern dreimal nach dem Alter fragen sollte: Sprachfähigkeiten simultan-bilingualer Lerner im Vergleich mit monolingualen und frühen Zweitsprachlernern. *Diskurs Kindheits- und Jugendforschung* 11(1). 27–42.

Haberzettl, Stefanie. 2005. *Der Erwerb der Verbstellungsregeln in der Zweitsprache Deutsch durch Kinder mit russischer und türkischer Muttersprache*. Tübingen: Niemeyer.

Håkansson, Gisela. 2001. Tense morphology and verb-second in Swedish L1 children, L2 children and children with SLI. *Bilingualism: Language and Cognition* 4(1). 85–99.

Håkansson, Gisela & Ulrika Nettelbladt. 1993. Developmental sequences in L1 (normal and impaired) and L2 acquisition in Swedish syntax. *International Journal of Applied Linguistics* 3(2). 131–157.

Hamann, Cornelia. 2012. Bilingual development and language assessment. In Alia K. Biller, Esther Y. Chung & Amelia E. Kimball (eds.), *Proceedings of the 36th annual Boston University Conference on Language Development (BUCLD),* 1–28. Somerville, MA: Cascadilla Press.

Hamann, Cornelia. 2015. Specific language impairment in German children. In Stavroula Stavrakaki (ed.), *Specific language impairment. Current trends in research*, 215–252. Amsterdam: Benjamins.

Hamann, Cornelia, Zvi Penner & Katrin Lindner. 1998. German impaired grammar: The clause structure revisited. *Language Acquisition* 7(2–4). 193–246.

Hansen, Detlef. 1996. *Spracherwerb und Dysgrammatismus. Grundlagen, Diagnostik und Therapie*. München: Reinhardt.

Jakubowicz, Celia. 2003. Computational complexity and the acquisition of functional categories by French-speaking children with SLI. *Linguistics* 41. 175–211.

de Jong, Jan. 2015. Elicitation task for subject-verb agreement. In Sharon Armon-Lotem, Jan de Jong & Natalia Meir (eds.), *Assessing multilingual children. Disentangling bilingualism from language impairment*, 25–37. Bristol: Multilingual Matters Ltd.

de Jong, Jan, Nazife Çavus & Anne Baker. 2010. Language impairment in Turkish-Dutch bilingual children. In Seyhun Topbas & Mehmet S. Yavas (eds.), *Communication disorders in Turkish*, 288–300. Bristol: Multilingual Matters Ltd.

van der Lely, Heather K. J., Melanie Jones & Chloë R. Marshall. 2011. Who did Buzz see someone? Grammaticality judgement of wh-questions in typically developing children and children with Grammatical-SLI. *Lingua* 121(3). 408–422.

Leonard, Laurence B. 2014. *Children with specific language impairment*, 2nd edition. Cambridge, MA: MIT Press.

Leonard, Laurence B., Carol A. Miller & Denise A. Finneran. 2008. Grammatical morpheme effects on sentence processing by school-aged adolescents with specific language impairment. *Language and Cognitive Processes* 24(3). 450–478.

Marinis, Theodoros & Vasiliki Chondrogianni. 2011. Comprehension of reflexives and pronouns in sequential bilingual children: Do they pattern similarly to L1 children, L2 adults, or children with specific language impairment? *Journal of Neurolinguistics* 24(2). 202–212.

Meisel, Jürgen M. 2009. Second language acquisition in early childhood. *Zeitschrift für Sprachwissenschaft* 28(1). 5–34.

Meisel, Jürgen M. 2011: *First and second language acquisition: Parallels and differences*. Cambridge: Cambridge University Press.

Orgassa, Antje. 2009. *Specific language impairment in a bilingual context. The acquisition of Dutch inflection by Turkish-German learners*. Amsterdam: LOT.

Paradis, Johanne. 2007. Second language acquisition in childhood. In Erika Hoff & Marilyn Shatz (eds.), *Handbook of language development*, 387–406. Oxford: Blackwell.

Paradis, Johanne. 2010. The interface between bilingual development and specific language impairment. *Applied Psycholinguistics* 31(2). 227–252.

Paradis, Johanne. 2011. Individual differences in child English second language acquisition. Comparing child-internal and child-external factors. *Linguistic Approaches to Bilingualism* 1(3). 213–237.

Paradis, Johanne, Martha Crago, Fred Genesee & Mabel L. Rice. 2003. French-English bilingual children with SLI: How do they compare with their monolingual peers? *Journal of Speech, Language and Hearing Research* 46(1). 113–127.

Rice, Mabel L. & Kenneth Wexler. 1996. Towards tense as a clinical marker of specific language impairment in English-speaking children. *Journal of Speech and Hearing Research* 39(6). 1239–1257.

Rice, Mabel L., Karen Ruff Noll & Hannelore Grimm. 1997. An extended optional infinitive stage in German speaking children with specific language impairment. *Language Acquisition* 6(4). 255–295.

Rothweiler, Monika. 2004. Spezifische Sprachentwicklungsstörung und früher Zweitspracherwerb. *VHN – Vierteljahresschrift für Heilpädagogik und ihre Nachbargebiete* 73(2). 167–178.

Rothweiler, Monika. 2006. The acquisition of V2 and subordinate clauses in early successive acquisition of German. In Conxita Lleó (ed.), *Interfaces in multilingualism*, 91–113. Amsterdam: Benjamins.

Rothweiler, Monika. 2009. Über den Zusammenhang von Lexikon, Grammatik und Mehrsprachigkeit: Was kann die Spracherwerbsforschung für die Praxis liefern? *Sprachheilarbeit* 54(6). 246–254.

Rothweiler, Monika & Harald Clahsen. 1994. Dissociations in SLI children's inflectional systems: A study of participle inflection and subject-verb-agreement. *Scandinavian Journal of Logopedics & Phoniatrics* 18. 169–179.

Rothweiler, Monika, Solveig Chilla & Harald Clahsen. 2012. Subject verb agreement in specific language impairment: A study of monolingual and bilingual German-speaking children. *Bilingualism: Language and Cognition* 15(1). 39–57.

Rothweiler, Monika, Stefan Pitsch & Julia Siegmüller. 1995. Spontansprachdiagnose bei Dysgrammatismus. *Die Sprachheilarbeit* 40. 331–350.

Schakib-Ekbatan, Karin & Hermann Schöler. 1995. Zur Persistenz von Sprachentwicklungsstörungen: Ein 10jähriger Längsschnitt neun spezifisch sprachentwicklungsgestörter Kinder. *Heilpädagogische Forschung* 21(2). 77–84.

Schöler, Hermann, Waldemar Fromm & Werner Kany (eds.). 1998. *Spezifische Sprachentwicklungsstörung und Sprachlernen*. Heidelberg: Winter.

Schönenberger, Manuela. 2014. The acquisition of determiners in child L2 German. *Folia Linguistica* 48(1). 169–224.

Schulz, Petra & Rabea Schwarze. This volume. How strong is the ban on non-finite verbs in V2? Evidence from early second language learners of German with and without SLI. *Zeitschrift für Sprachwissenschaft* 36(1).

Schwarze, Rabea, Magdalena Wojtecka, Angela Grimm & Petra Schulz. 2015. Finiteness and verb placement in early second language learners with SLI. In Cornelia Hamann & Esther Ruigendijk (eds.), *Language acquisition and development: Proceedings of GALA 2013*, 429–445. Newcastle: Cambridge Scholars Publishing.

Sopata, Aldona. 2009. *Erwerbstheoretische und glottodidaktische Aspekte des frühen Zweitspracherwerbs. Sprachentwicklung der Kinder im natürlichen und schulischen Kontext*. Poznan: Wydawnictwo Naukowe UAM.

Stavrakaki, Stavroula, Ioannis Vogindroukas, Euripides Chelas & Sonila Ghousi. 2008. Subject-verb agreement in SLI and child L2: A comparative approach to Greek SLI and

(un)impaired child L2. In Anna Gavarró & M. Joao Freitas (eds.), *Language acquisition and development: Proceedings of GALA 2007*, 413–423. Newcastle: Cambridge Scholars Publishing.

Thoma, Dieter & Rosemarie Tracy. 2006. Deutsch als frühe Zweitsprache: Zweite Erstsprache? In Bernt Ahrenholz (ed.), *Kinder mit Migrationshintergrund. Spracherwerb und Fördermöglichkeiten*, 58–79. Freiburg i. Br.: Fillibach.

Tracy, Rosemarie & Dieter Thoma. 2009. Convergence on finite V2 clauses in L1, bilingual L2 and early L2 acquisition. In Peter Jordens & Christine Dimroth (eds.), *Functional categories in learner language*, 1–44. Berlin & New York: Mouton de Gruyter.

Tsimpli, Ianthi M. 2001. LF-interpretability and language development: A study of verbal and nominal features in Greek normally developing and SLI children. *Brain & Language* 77(3). 432–448.

Tsimpli, Ianthi M. 2014. Early, late, or very late? Timing in acquisition and bilingualism. *Linguistic Approaches to Bilingualism* 4(3). 283–313.

Tuller, Laurice, Layal Abboud, Sandrine Ferré, Alice Fleckstein, Philippe Prévost, Christophe Dos Santos, Maureen Scheidnes & Rasha Zebib. 2015. Specific language impairment and bilingualism: Assembling the pieces. In Cornelia Hamann & Esther Ruigendijk (eds.), *Language acquisition and development: Proceedings of GALA 2013*, 533–567. Newcastle: Cambridge Scholars Publishing.

Unsworth, Sharon. 2008. Age and input in the acquisition of grammatical gender in Dutch. *Second Language Research* 24(3). 365–395.

Verhoeven, Ludo, Judit Steenge & Hans van Balkom. 2011. Verb morphology as clinical marker of specific language impairment: Evidence from first and second language learners. *Research in Developmental Disabilities* 32(3). 1186–1193.

Wojtecka, Magdalena, Rabea Schwarze, Angela Grimm & Petra Schulz. 2013. Finiteness and verb placement in German: A Challenge for early second language learners? In Jennifer C. Amaro, Tiffany Judy & Diego Pascual y Cabo (eds.), *Proceedings of the 12th Generative Approaches to Second Language Acquisition Conference (GASLA 2013)*, 211–221. Somerville, MA: Cascadilla Proceedings Project.

Appendix

Table A: Participant data.

Participant group	Name of child	Number of recordings	Chronological age	MLU (in words)	Age of onset of L2	L2 exposure (in months)
TD-L2	Eser	6	3;9–5;6	3.1–4.3	3;0	9–30
TD-L2	Faruk	6	3;6–4;10	2.6–4.2	2;9	8–24
TD-L2	Fikret	4	5;6–6;8	2.8–3.4	4;2	15–29
TD-L2	Gül	4	4;3–5;7	2.3–3.6	3;0	14–30
TD-L2	Hande	3	4;4–4;11	2.8–3.6	3;4	11–18
TD-L2	Meral	4	5;2–5;9	2.8–3.2	4;4	9–16
SLI-L2	Arda	4	5;1–6;8	2.7–3.5	3;7	16–36
SLI-L2	Devran	6	4;4–5;1	2.5–3.2	3;0	15–24
SLI-L2	Erbek	5	4;9–6;5	2.2–3.9	3;5	15–36
SLI-L2	Ferdi	3	6;8–6;10	2.3–2.4	4;3	28–31
SLI-L2	Rasim	7	5;0–5;7	2.5–3.3	3;0	23–30
SLI-L2	Sadi	2	7;5–7;9	2.0–2.8	2;11	53–57
SLI-L1	Benjamin	5	6;6–7;7	2.4–3.9		
SLI-L1	David	2	6;11–7;11	3.1–4.1		
SLI-L1	Dieter	5	6;0–7;2	2.8–3.6		
SLI-L1	Josef	3	6;8–7;8	2.9–3.1		
SLI-L1	Sebastian	5	5;4–6;6	2.7–3.5		
SLI-L1	Stefan	2	4;8–6;4	2.3–2.9		

Table B: Mean correctness scores of inflected verb forms (per child).

Participant group	Name of child	% correct				
		-0	*-e*	*-n*	*-s(t)*	*-t*
TD-L2	Eser	95.7	100	94.4	100	100
		427/446	12/12	84/89	114/114	172/172
TD-L2	Faruk	95.3	100	87.8	100	98.4
		464/487	11/11	79/90	73/73	251/255
TD-L2	Fikret	91.5	100	92.9	100	98.8
		151/165	14/14	26/28	80/80	84/85
TD-L2	Gül	94.7	100	94.7	100	95.9
		198/209	4/4	18/19	80/80	47/49
TD-L2	Hande	88.2	100	97.1	100	98
		67/76	1/1	34/35	31/31	48/49
TD-L2	Meral	88.9	80	68.4	100	96
		88/99	4/5	13/19	26/26	72/75
SLI-L2	Arda	88.4	83.3	58.3	100	100
		61/69	5/6	7/12	14/14	19/19
SLI-L2	Devran	71.8	62.5	28.8	53.2	100
		122/170	10/16	21/73	25/47	19/19
SLI-L2	Erbek	80.2	66.7	91.5	94.1	95.6
		85/106	6/9	43/47	32/34	43/45
SLI-L2	Ferdi	38.2	33.3	16.7	50	76.1
		63/165	2/6	2/12	3/6	35/46
SLI-L2	Rasim	73.7	77.3	77.6	97.8	96.9
		269/365	17/22	66/85	45/46	62/64
SLI-L2	Sadi	89.3	50	100	100	100
		25/28	1/2	8/8	5/5	15/15
SLI-L1	Benjamin	84.1	58.3	36.4	100	99.1
		244/290	7/12	32/88	29/29	105/106
SLI-L1	David	54.7	28.6	72.2	100	84.4
		88/161	6/21	13/18	4/4	54/64
SLI-L1	Dieter	69.4	48.1	21	60	97
		292/421	13/27	51/243	3/5	32/33
SLI-L1	Josef	82.6	87.5	89.7	100	97.3
		119/144	7/8	35/39	12/12	73/75
SLI-L1	Sebastian	73.7	100	66.7	100	60.5
		151/205	5/5	20/30	12/12	75/124
SLI-L1	Stefan	90.2	71.4	65.2	100	100
		37/41	5/7	15/23	3/3	14/14

Table C: Inflected verb forms as morpho-syntactic encoding (per child).

Participant group	Name of child	% correct						
		1SG	2SG	3SG *-t*	3SG *-0*	1PL	2PL	3PL
TD-L2	Eser	100	99.1	90.9	99.3	94.3	100	94.4
		297/297	114/115	169/186	142/143	33/35	3/3	51/54
TD-L2	Faruk	98.1	100	91.2	100	100	100	84.4
		356/363	73/73	249/273	119/119	41/41	2/2	38/45
TD-L2	Fikret	98.7	94.1	90.6	94.7	100	100	75
		147/149	80/85	77/85	18/19	23/23	7/7	3/4
TD-L2	Gül	100	98.8	83.6	100	100	100	66.7
		151/151	80/81	46/55	51/51	10/10	1/1	8/12
TD-L2	Hande	100	96.9	83.9	100	95.2	100	100
		45/45	31/32	47/56	23/23	20/21	1/1	14/14
TD-L2	Meral	97.5	86.7	86.7	100	71.4	X	80
		78/80	26/30	72/83	14/14	5/7	X	8/10
SLI-L2	Arda	96.7	87.5	69.2	100	100	100	33.3
		59/61	14/16	18/26	7/7	6/6	1/1	1/3
SLI-L2	Devran	73.6	80.6	19.4	100	75	X	50
		89/121	25/31	19/98	43/43	15/20	X	6/12
SLI-L2	Erbek	100	74.4	75.5	100	87	75	75
		61/61	32/43	40/53	30/30	40/46	3/4	3/4
SLI-L2	Ferdi	85.3	8.3	29.9	87.5	100	X	0
		58/68	3/36	35/117	7/8	2/2	X	0/4
SLI-L2	Rasim	98.4	60	46.2	100	87.3	33.3	36.4
		247/251	45/75	61/132	39/39	62/71	1/3	4/11
SLI-L2	Sadi	100	100	82.4	100	100	100	87.5
		17/17	5/5	14/17	9/9	1/1	1/1	7/8
SLI-L1	Benjamin	84.5	72.5	65.8	100	78.9	100	85
		196/232	29/40	104/158	55/55	15/19	1/1	17/20
SLI-L1	David	91	100	42.9	100	37.5	X	28.6
		61/67	4/4	54/126	33/33	9/24	X	4/14
SLI-L1	Dieter	81.8	13.6	12	87.7	72.2	0	73.1
		234/286	3/22	32/267	71/81	13/18	0/3	38/52
SLI-L1	Josef	95	52.2	80.5	100	100	100	100
		76/80	12/23	70/87	50/50	19/19	3/3	16/16
SLI-L1	Sebastian	71.7	52.2	70.1	92.2	40	X	48.5
		109/152	12/23	75/107	47/51	4/10	X	16/33
SLI-L1	Stefan	88.2	60	77.8	100	78.6	X	80
		30/34	3/5	14/18	12/12	11/14	X	4/5