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The use of negative inflections by Finnish-speaking children with and without specific language impairment

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Abstract

Children with specific language impairment (SLI) have difficulty expressing subject-verb agreement. However, in many languages, tense is fused with agreement, making it difficult to attribute the problem to agreement in particular. In Finnish, negative markers are function words that agree with the subject in person and number but do not express tense, providing an opportunity to assess the status of agreement in a more straightforward way. Fifteen Finnish-speaking preschoolers with SLI, 15 age controls, and 15 younger controls responded to items requiring negative markers in first person singular and plural, and third person singular and plural. The children with SLI were less accurate than both typically developing groups. However, their problems were limited to particular person-number combinations. Furthermore, the children with SLI appeared to have difficulty selecting the form of the lexical verb that should accompany the negative marker, suggesting that agreement was not the sole difficulty.

Introduction

Across many different languages, the use of subject-verb agreement morphology is highly problematic for children with specific language impairment (SLI). For example, children with SLI have been reported to make less use of subject-verb agreement than younger typically developing peers in such languages as English (Rice & Wexler, 1996), German (Rice, Noll, & Grimm, 1997), Dutch (de Jong, 1999), French (Paradis & Crago, 2001), Hungarian (Lukács, Leonard, Kas, & Pléh, 2009), and Finnish (Kunnari, Savinainen-Makkonen, Leonard, Mäkinen, Tolonen, Luotonen, & Leinonen, 2011).

Declaration of interest

The authors report no declaration of interest.

In some of these languages, subject-verb agreement (hereafter, agreement) is fused with tense (e.g. in English, *is* and *-s* express both third person singular and present tense). As a result, it is sometimes difficult to isolate the difficulty with agreement from the well-documented difficulty that these children also have with tense. However, this difficulty with agreement apart from tense is seen relatively clearly in agglutinating languages, in which an agreement inflection follows a separate tense inflection in a sequence.

An example of such a language is Finnish. Kunnari, Savinainen-Makkonen, Leonard, Mäkinen, Tolonen, Luotonen, and Leinonen (2011) found that Finnish-speaking preschoolers with SLI were significantly less accurate in using agreement inflections than a group of younger typically developing (TD) children as well as a group of same-age TD peers. For example, these children were less accurate than both groups in using first person singular verb inflections when used as the only inflection attached to the stem (e.g. *istu-n* '[I] sit') and when these inflections followed a past tense inflection in a sequence (e.g. *istu-i-n* '[I] sat').

There are two prominent accounts of the grammatical deficits of children with SLI that focus on weaknesses with agreement morphology. One of these is the agreement deficit account of Clahsen and his colleagues. Although initially broad-based to include problems with case assignment and determiner-noun agreement as well as subject-verb agreement, additional evidence prompted a narrowing of this account to focus on subject-verb agreement in particular (Clahsen, Bartke, & Göllner, 1997; Clahsen & Dalalakis, 1999; Eisenbeiss, Bartke, & Clahsen, 2005). According to this account, when children experience difficulties with agreement, they often choose one particular form as a default; correct productions are assumed to have been learned on a rote basis.

Although the provisions of the agreement deficit account are largely compatible with the evidence from many languages, it seems unable to handle two facts about SLI. First, in null-subject languages such as Italian and Spanish, subject-verb agreement inflections are not as severely compromised in children with SLI. In these languages, only copula and auxiliary forms are especially weak. Second, the agreement deficit's assumption of rote forms is not consistent with findings that children with SLI are capable of adding appropriate agreement inflections to novel verbs, at least on an inconsistent basis (e.g. Leonard, Eyer, Bedore, & Grela, 1997).

A second prominent account for dealing with weaknesses in agreement morphology is the extended optional infinitive account of Rice, Wexler, and their colleagues (Rice & Wexler, 1996; Rice, Wexler, & Hershberger, 1998), expanded subsequently by Wexler, Schütze, and Rice (1998), and Wexler (1998, 2003) to acknowledge the contributions of agreement distinct from those of tense. This general approach seems to hold two advantages over the agreement deficit account. First, it is assumed that the grammars of children with SLI possess agreement and tense; the chief problem is that these grammars allow for optional use of these features. Thus, correct use will be seen on occasion and these utterances will be the product of a grammar rather than the result of rote memory. Second, Wexler's (1998, 2003) expansion of this approach provides a means of accounting for the fact that both inflections and function words marking agreement are inconsistently used in languages such

as English and German, whereas only function words expressing agreement show inconsistency in languages such as Italian and Spanish.

According to Wexler (1998, 2003), grammars possess the functional categories of Tense (T) and Subject-Verb Agreement (AGR) and in languages such as English and German, checking must occur at each functional category to permit the expression of fused tense-agreement forms such as English copula *is* and third person singular *-s*. Children with SLI are assumed to go through a protracted developmental period during which checking can occur at only one of these functional categories. For a morpheme such as English past tense *-ed*, the morpheme can be produced if checking occurs at T only, because this morpheme does not simultaneously express agreement. If checking were to occur only at AGR, on the other hand, the inflection *-ed* would not appear in the child's utterance. For fused morphemes such as *is* and *-s*, on the other hand, failure to check at either T or AGR will result in frequent omission of the morpheme, because these morphemes mark both tense and agreement.

Crosslinguistic differences are expected because, according to Wexler (1998, 2003), null-subject languages such as Italian and Spanish require checking only at T for fused tense-agreement inflections. Therefore, the constraint against checking at both T and AGR is not at play and these inflections can be produced without special difficulty. On the other hand, Wexler assumes that function words marking tense and agreement such as copula and auxiliary forms do require checking at both T and AGR and therefore are vulnerable to omission by children with SLI just as they are in Germanic languages.

In this paper, we explore the use of agreement forms by children with SLI in a different context, when the agreement function is fused, not with tense, but with negation. In Finnish, an affirmative statement such as 'I sit' is formed by adding an agreement inflection to the lexical verb stem, as in *istu-n*. However, for the negative counterpart 'I don't sit', the negative marker, not the lexical verb is inflected, as in *e-n istu*; the lexical verb appears as an inflectional stem. This is the form of the stem to which inflections are added.

The importance of this question rests in the fact that negation represents a grammatical category (NEG) with certain functional category properties even though it lacks features of tense and agreement. Because negation and agreement are fused in Finnish, the outcome of a failure to check at AGR is not clear. Given that NEG possesses the semantic feature of negation, it is unlikely that children will omit the negative marker altogether. Two other alternatives seem more likely. First, if checking is not needed for the NEG feature, checking at AGR will constitute only a single checking operation. In that case, children with SLI might consistently use the correct negative form, expressing appropriate agreement with the person and number of the subject. Alternatively, if checking at NEG is required, children with SLI might alternate between a correct negative form (assuming AGR is checked) and a default negative form (if AGR is not checked).

The agreement deficit account is more limited in its predictions. Correct productions are assumed only for those forms occurring frequently enough in the input to be learned by rote. More typically, children with SLI are expected to make use of a default negative form.

To enable proper interpretation of how negation and agreement interact in negative marker use by Finnish-speaking children with SLI, we compare these children's use with that of both typically developing children matched for age and a group of younger typically developing children who have not yet approached adult-like use of this form. We begin with an overview of the negative marker system in Finnish.

Negation in Finnish

In Finnish, negation is expressed by using an inflected form that serves as an auxiliary verb, agreeing with the subject in person and number (see Karlsson, 1999, Miestamo, 2011 for a more detailed description). The negative form *e-* (e.g. *hän ei keinu* 'he/she does not swing') is used in all tense-aspect-mood contexts except the imperative. In imperative contexts, the form *äl-* is employed (e.g. *älä keinu* 'do not swing!'). In the present tense, the inflected negative marker is followed by a lexical verb in 'inflectional' stem form. This is the form of the stem that inflections are added to. For example, the first infinitive form (TA-infinitive) of 'to sit' is *istua*; the inflectional stem is *istu*. The first infinitive is the dictionary form of verbs. In the past tense, the lexical verb is in the form of a past participle. Table 1 illustrates the paradigm for negation applied to the lexical verb *istua* 'to sit' in present tense, the tense employed in the current study.

Within present tense, Finnish makes significant use of colloquial forms for first person plural and third person plural. For first person plural, the negative marker *ei* can be used, in combination with the passive form of the verb (with no agreement marking), as in *ei istuta*. For third person plural, the form used for third person singular can be used colloquially, as in *ei istu*. Colloquial forms are used frequently by all social classes and age groups in Finland, though Standard Finnish is used in literature, including the story books that adults read to young children.

Finnish negation in typical language development

Relatively few studies have been devoted to the acquisition of negation by typically developing Finnish-speaking children. Toivainen (1980) analyzed the morphological development of 25 children aged 1–3 years. By age 1;8, the first negatives consisted of a negative marker unaccompanied by a lexical verb (e.g. *ei*, *en*). Although the imperative mood was more common than the indicative amongst the affirmative verb forms at this early age, the indicative negative *e-* was much more common than the imperative *äl-*. The combination of the negative marker with the lexical verb emerged by age 1;10–2;4 (e.g. *ei ota* 'does not take', *ei tule* 'does not come', *en laula* '[I] do not sing'). In most instances, children used the negative form *e-* instead of *äl-* even in imperative contexts.

The relatively early use of negation was also illustrated in a recent study by Stolt (2009), who studied the appearance of different morphological inflection types using a longitudinal sample of 35 children (at the ages 1;6 and 2;0). Based on spontaneous speech samples, Stolt found that by age 1;6 the only negative form used by these children was the third person singular indicative negative form (5.7%). By age 2;0, 65.7% of the children were using the third person singular present indicative negative form, 28.6% were using the first person singular present indicative negative form, 5.7% were using the third person singular perfect

negative indicative form, and 2.9% were using the colloquial version that employs the passive form of the lexical verb, the third person singular past negative, and the second person singular imperative negative. When the use of negation was evaluated more generally by parents' completion of the Finnish CDI (Lyytinen, 1999), the figures were even higher; 8 of the 35 children (22.9%) at age 1;6, and 33 of the 35 children (94.3%) at age 2;0 were reported to be using some kind of negative construction.

Negation in Finnish SLI and related evidence

To our knowledge, data on the use of negative markers by Finnish-speaking children with SLI are extremely limited. The only study even making reference to the use of negatives seems to be a case study of a 7-year-old boy reported by Leiwo (1977). This child used only the third person singular form *ei* for every person (e.g. replacing *en sano* '[I] do not say' with *ei sano* 'does not say'). The child also employed a self-created negative form, *ai*, often placing it after the lexical verb in a construction that already contained a negative marker (e.g. *ei sano ai* 'does not say not'). Such use of double negatives is not permissible in Finnish.

Kunnari and her colleagues have reported on other morphosyntactic details in the language use of Finnish-speaking children with SLI. These investigators found that children with SLI were less accurate than both age controls and younger typically developing children in the use of (affirmative) verb inflections involving tense and agreement (Kunnari et al., 2011), and in the use of case suffixes that appear at the end of nouns (Leonard, Kunnari, Savinainen-Makkonen, Tolonen, Mäkinen, Luotonen, & Leinonen, in press). Common to both studies was the conclusion that the children with SLI displayed not only a weakness in agreement, but also in handling the complexities of the morphological paradigm when colloquial forms and/or morphophonological alternations rendered the paradigm less uniform and thus less transparent. For example, in colloquial speech, first person plural can be expressed with a passive form that shows a distinction in tense but not number. In third person plural past contexts, the third person singular past can be used, as can a verb stem. Kunnari et al. found that errors were more likely in those aspects of the verb paradigm that were more opaque in this respect. Leonard et al. found that children with SLI had difficulties marking case on nouns but also had identifiable problems making the phonological changes in the noun stem that were needed for suffixation.

Method

Participants

Forty-five Finnish-speaking children served as participants, divided into three groups of 15. These children had also been participants in the Kunnari et al. (2011) study of verb inflection use described earlier. The children in all three groups were from very similar socioeconomic backgrounds. The first group consisted of children with SLI, ranging in age from 4;0 to 6;6 (10 boys and 5 girls, *M* age = 5;2). These children were recruited from the area of the Northern Ostrobothnia Hospital District in Finland. The Ethical Committee of this Hospital District approved the study. This particular age range was selected because it constitutes the age range in which morphosyntactic deficits are well documented in children

with SLI across languages (Leonard, 1998, 2009). Four years is the approximate age at which a diagnosis of language impairment is first made in Finland.

Each of the children in this group met the criteria for SLI. They scored above 85 on a measure of non-verbal intelligence (the WPPSI-R, Wechsler, 1995), passed an oral-motor examination, and a hearing screening (20 dB at 250, 500, 1000, 2000, 4000, and 6000 Hz). No child showed evidence of frank neurological dysfunction or impaired social interactions, and none had a history of chronic otitis media. All 15 children in this group scored at least 1.25 *SDs* below chronological age level (M standard score = 62.53, SD = 9.35) on a test of expressive language, the Finnish standardization of the Reynell III (Edwards, Fletcher, Garman, Hughes, Letts, & Sinka, 1997). According to preliminary data available for the Finnish adaptation of the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981), the scores for all 15 children fell at least 1 *SD* below the mean for their age. Based on a 100-utterance spontaneous speech sample, the children's mean lengths of utterance (MLUs) in words averaged 3.02 (SD = 0.82) and their MLUs in morphemes averaged 4.23 (SD = 1.24). All children demonstrated the ability to produce each of the speech sounds required for the grammatical suffixes under investigation with at least 80% accuracy – an accuracy level often employed in previous research on grammatical morpheme use by children with SLI (e.g. Leonard et al., 1997). The children also showed evidence of producing words that matched the length of the inflected forms of interest in the present study.

The second group of 15 children served as typically developing age controls. These children were attending day nurseries in Oulu; permission to study them was received from the Head of the Day-Care and Family Work Unit of the City of Oulu. All children were reported to be developing in a typical fashion according to parental and teacher report. They ranged in age from 4;1 to 6;3 (8 boys and 7 girls, M age = 5;2). Hereafter, we refer to this group as the TD-A group. The age of each participant in this group was within 3 months of age of a child in the SLI group. These children's standard scores on the Finnish standardization of the Reynell III averaged 101.20 (SD = 14.87). Their MLUs in words averaged 3.72 (SD = 0.80) and their MLUs in morphemes averaged 5.40 (SD = 1.16), based on a 100-utterance sample of spontaneous speech. All children in the TD-A group scored within 1 *SD* of their age based on the preliminary data for the Finnish adaptation of the PPVT.

The third group of 15 children were younger typically developing children, ranging in age from 3;5 to 3;11 (9 boys and 6 girls, M age = 3;8), hereafter referred to as the TD-Y group. These children were attending the same day nurseries as the TD-A children. All 15 children scored within normal limits on the Finnish standardization of the Reynell III (M = 96.64, SD = 8.49) and within 1 *SD* of the mean for their age based on the preliminary data for the Finnish adaptation of the PPVT. Based on a 100-utterance sample, these children's MLUs averaged 3.51 (SD = 0.66) and 5.08 (SD = 0.97) in words and morphemes, respectively. The TD-Y children were recruited to assist us in determining whether any weaknesses observed in the use of negative markers by the children with SLI resembled a developmental pattern seen at an earlier age.

Procedure

The children's use of negative markers was examined in a 48-item task, with 12 items each devoted to the assessment of first person singular, first person plural, third person singular, and third person plural, all in present tense contexts. The verbs selected for the task were those that require no morphophonological changes in the word stems when tense/agreement inflections are added to the affirmative form of these verbs. All of the verb stems ended in the vowel /o/, /u/, or /y/. For first person singular and plural items, the experimenter introduced the child to a clown hand-puppet who was described as always being very cranky and who preferred to do the opposite of what the experimenter's own bear hand-puppet liked to do. The experimenter asked the child to play the role of the clown, by responding to the bear's descriptions with a negative. For first plural items, the experimenter played the role of two bear puppets and the child played the role of two oppositional clowns. Practice items were provided to ensure the children understood the task. For one-half of the first person singular items and one-half of the first person plural items, the person-number of the subject required in the child's response was the same as in the experimenter's preceding description, as in (1a) and (1b). For the remaining first person singular and plural items, the subject of the child's response differed in number from the subject in the experimenter's description, as in (1c) and (1d).

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(1) a. Experimenter: I watch T.V.	Child: I don't watch T.V.
b. Experimenter: We stand	Child: We don't stand
c. Experimenter: I speak	Child: We don't speak
d. Experimenter: We sing	Child: I don't sing
-

Third person singular and plural items were structured in a different manner. The child was told that the experimenter and child would be sending mail, in two different versions. In one version, an event that actually occurs would be described; in the other version, the described event would not be occurring. The experimenter produced the affirmative description, and provided the subject of the next description that the child was to complete in the negative. Half of the third person singular and plural items employed the same subject in the experimenter's and child's description, as in (2a) and (2b); for the remaining half, the subject of the child's description differed in number from that of the subject in the experimenter's description, as in (2c) and (2d).

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(2) a. Experimenter: This dog sits, but this dog...	Child: doesn't sit
b. Experimenter: These people stand in line, but these people...	Child: don't stand in line
c. Experimenter: This boy floats, but these boys...	Child: don't float
d. Experimenter: These bears live in the house, but this bear.	Child: doesn't live in the house
-

Scoring

A response was considered correct if it reflected both the appropriate negative marker and the appropriate form of the lexical verb. Given the high frequency of colloquial use for first

person plural and third person plural, responses for these items were considered correct if they matched either Standard Finnish (e.g., *emme istu*, *eivät istu*) or colloquial Finnish (e.g., *ei istuta*, *ei istu*). When errors occurred, we noted whether they occurred on the negative marker, the lexical verb, or both.

If a child produced an unrelated response it was regarded as unscorable. If a child produced an elliptical response that included the negative but not the lexical verb, it was treated as use of a correct negative (provided that it agreed with the subject in person and number). For each of the four item types, the three groups of children were highly similar in the number of items that were scorable. For first person singular, the mean number of scorable items (out of 12) for the SLI, TD-Y, and TD-A children were, respectively, 10.13, 11.07, and 10.80. The corresponding means for first person plural were 10.00, 10.87, and 10.47. For third person singular, the means for the SLI, TD-Y, and TD-A groups were 11.07, 11.47, and 11.33, respectively. For third person plural items, the corresponding means were 11.00, 11.27, and 11.20. Because unscorable responses occurred in the data, analyses employed the percentage of correct responses relative to all scorable responses rather than the raw frequencies of correct responses.

Reliability

We assessed both intra- and interjudge reliability by selecting and re-scoring (without access to the original scoring decisions) the responses from three children in each group chosen randomly. Intrajudge scoring agreement for the SLI, TD-A, and TD-Y groups was 95.5%, 98.6%, and 97.9%, respectively. The corresponding interjudge scoring agreement for the SLI, TD-A, and TD-Y groups was 93.7%, 98.0%, and 93.4%, respectively.

Results

Two analyses of variance (ANOVA) were performed, one on the singular forms (first, third), the second on the plural forms (first, third). Separate analyses were conducted because the plural forms, unlike the singular forms allowed two possible versions (Standard, colloquial), whereas only a single form is used in Finnish for the singular forms. For the analysis of the singular forms, Participant Group (SLI, TDY, TDA) served as a between-subjects variable, and Person (first, third) served as a within-subjects variable. Arc-sine transformations were applied to the percentage correct data to meet assumptions of the ANOVA. The main effect for Participant Group was not significant, $F(2, 42) = 2.34$, $p = .11$, $\eta^2_p = .10$. However, person was significant, $F(1, 42) = 4.99$, $p = .03$, $\eta^2_p = .11$. The children produced a higher percentage of correct responses for third person singular items than for first person singular items. The Participant Group x Person interaction was not significant, $F(2, 42) = 1.27$, $p = .29$, $\eta^2_p = .06$. A summary of the children's scores can be seen in Table 2.

The ANOVA for plural forms also employed Participant Group (SLI, TDY, TDY) as a between-subjects variable and Person (first, third) as a within-subjects variable. In this instance, a significant main effect for Participant Group was observed, $F(2, 42) = 6.86$, $p = 0.003$, $\eta^2_p = 0.246$. The children with SLI were less accurate than both the TDY children ($p = 0.049$) and the TDA children ($p < 0.001$). The two TD groups did not differ. Neither the

main effect for Person, $F(1, 42) = 0.23$, $p = 0.637$, $\eta^2_p = 0.005$, nor the Participant Group $\times$ Person interaction, $F(2, 42) = 0.07$, $p = 0.930$, $\eta^2_p = 0.003$, was significant. A summary of these results also appears in Table 2.

The preceding analysis indicated that the SLI group made more errors than the two TD groups on first person plural and third person plural items. It also seemed important to determine if the groups differed in the types of errors made. For first person plural items, 7% of the scorable productions of the children with SLI had an incorrect lexical verb form that was accompanied by either a correct or incorrect negative marker. Such errors constituted only 2% of the scorable productions of the TDY children. No such errors were seen on the part of the TDA children. Errors of this type (using the verb *istua* as examples) included *en istumme* and *ei istumme*, in which the negative marker is incorrect in the first instance and correct (for colloquial use) in the second instance but in both cases the lexical verb is inflected for first person plural instead of being in stem form. Other examples are *ei istui* and *ei istua* in which the negative marker is correct in colloquial use but the lexical verb is either in an inappropriate finite form (third singular past) or in infinitive form. For the TDY group as well as the SLI group, 1% of the scorable responses involved the children producing the negative marker used in Standard Finnish together with the lexical verb inflected for first person plural, as in *emme istumme*. The lexical verb should be inflected only in affirmative utterances.

For third person plural items, 16% of the scorable responses of the children with SLI involved the use of the (colloquially correct) negative marker *ei* in combination with an incorrect lexical verb form, as in *ei* with *istuu* (third singular), *istuvat* (third plural), and *istua* (infinitive). The corresponding percentage for the TDY children was 7%. Less than 1% of the scorable productions of the TDA children on the third plural items took this form. Less than 1% of the scorable responses of the children with SLI involved a production of the type *ei istunut*. This form would be an appropriate colloquial production in a past, rather than present tense context. No child in either TD group produced a response of this type.

Discussion

We divide our discussion of the data into two major topics. First, we consider whether the weaknesses seen in the children with SLI are primarily limited to problems with agreement, or reflect instead problems with the broader negative marker + lexical verb combination. Then, we examine the issue of agreement more closely, to determine whether existing accounts of subject-verb agreement difficulty in SLI are adequate to handle the observed findings.

Problems extend beyond agreement

It is clear that the problems of the children with SLI were not limited to agreement. For both first person plural and third person plural, these children were less accurate in their use of the lexical verb as well as the negative marker. Most notable among these differences was the difference between the SLI group and the two TD groups in their accuracy on the lexical verb in third person plural items. The lexical verb form in this instance is the stem (e.g. *istu*) in both Standard Finnish and colloquial Finnish. In third person plural items, children with

SLI were more likely than other children to produce the wrong form of the lexical verb. Instead of producing the lexical verb as the stem *istu*, the children with SLI sometimes produced such lexical forms as *istuu* or *istua*. Curiously, some of these children's errors involved producing the lexical verb in first person plural or third person plural form even though it followed the negative marker. Thus, the problem in these instances was not agreement itself, but expressing agreement in the wrong part of the negative marker + lexical verb construction.

It seems clear, then, that the children's difficulty was not limited to the features of agreement. However, given the many errors on the negative marker – the element that marks agreement – we have reasons to suspect that agreement was also an important part of the problem, even if it was not the sole source of difficulty for the children with SLI. Earlier, we suggested that difficulty with agreement would most likely lead the children to make use of a default form – a negative form that lacks features of person and number. The most likely marker to be used as a default was *ei*, both because of its frequent appearance in the input as either a third person singular or as a colloquial alternative for first person plural and third person plural. Indeed, many of the children's productions made use of *ei*. However, as noted earlier, *ei* was often accompanied by an inappropriate lexical verb form. In these instances, it was easier to assume that it was the lexical verb form that constituted the error in the children's production. The one context in which we could regard the use of *ei* as clearly inappropriate was first person singular, as *en* is the only appropriate negative marker in this context. However, the children with SLI were relatively accurate on first person singular items (87% correct) and did not differ from either the TDY or the TDA children in their use of this form.

An alternative explanation for the findings is that, perhaps, the children with SLI had special difficulties with plural agreement in particular. Note that the differences between the children with SLI and the TDY children were found for the plural forms but not the singular forms. The argument would be that, although many of the errors on plural items involved an inappropriate lexical verb form, *ei* was the usual negative marker in these instances and might have served as a default, devoid of agreement.

Unfortunately, it is difficult to find independent evidence that supports this interpretation, given that *ei* in plural contexts is acceptable as a colloquial form. It is true that, based on findings from inflections, plural forms are sometimes more difficult than singular forms for children with SLI. In their study of (affirmative) finite verb inflections in Finnish, Kunnari et al. (2011) observed that most of the differences between the children with SLI and the younger TD children were seen for plural inflections. Select findings from other rich-inflection languages seem relevant to this question, especially for languages such as Italian, Spanish, and Hebrew in which plural number verb inflections do not compete with colloquial forms that could obscure the singular-plural distinction. For example, Bortolini, Caselli, and Leonard (1997) found that Italian-speaking children with SLI were less accurate than younger TD children in their use of third person plural verb inflections. These investigators attributed this finding to the fact that most verbs inflected for third plural require a change from the usual penultimate stress pattern of Italian. Consistent with this possibility, Bortolini et al. found no differences between these two groups in the use of first

person plural inflections. In a study of Spanish-speaking children, Bedore and Leonard (2001) found no difference in the use of either first plural or third plural inflections between children with SLI and younger TD children. Verbs carrying these inflections conform to the canonical stress pattern of Spanish. Dromi, Leonard, Adam, and Zadunaisky-Ehrlich (1999) found no differences between Hebrew-speaking children with SLI and younger TD children in the use of plural verb inflections. Thus, the evidence for a special weakness with plural agreement is not very compelling.

Can current proposals of agreement deficits accommodate the findings?

The two prominent accounts that address agreement deficits in children with SLI are the agreement deficit account of Clahsen and his colleagues (Clahsen et al., 1997; Clahsen & Dalalakis, 1999; Eisenbeiss et al., 2005) and the elaboration of the extended optional infinitive account, especially Wexler's (1998, 2003) proposal of a constraint on the number of functional categories that can be checked. The errors seen in our SLI data do not appear to conform to those expected based on the agreement deficit account. As we already noted, default forms did not appear to be involved, as the negative marker for first person singular was used with relatively high accuracy, comparable to the accuracy seen in the two TD groups. It is doubtful that this accurate use reflected rote learning, because our first person singular items employed a variety of different verbs that *en* had to be combined with. Furthermore, some of the errors involved double marking of agreement (e.g. *emme istumme*) or marking agreement on the wrong component (e.g. *ei istumme*). Such over-marking or misplaced marking is incorrect but represents an error in where agreement was expressed, not in whether it was expressed.

There were two possible outcomes in the data if Wexler's (1998, 2003) checking constraint approach provided an accurate account of the data. If checking was not required at NEG (given that it is a functional category with a semantic feature), checking would be required at only one category, AGR, which would not be problematic for children with SLI. As a result, children with SLI should not have differed from their typically developing peers. This outcome, of course, was not realized, especially for first and third person plural forms.

The second possibility was that NEG would be retained because of its semantic feature, but would nevertheless require checking. In this case, the children would alternate between correct use (if AGR was also checked) and use of a default negative form that lacked person and number features (if AGR was not checked). It is true that correct productions alternated with incorrect productions. However, as just noted, the incorrect productions cannot be easily viewed as default forms. Furthermore, it is unclear why the children with SLI would perform as well as their peers on first and third singular forms. This constraint would not operate so narrowly as to apply only to a particular combination of features (e.g. third person plural) within AGR.

Problems in coordinating agreement in a two-element construction

We suspect that the lower accuracy by the children with SLI is best attributed to the joint effects of marking agreement and coordinating agreement with an appropriate lexical verb form. Compounding the children's difficulty is the fact that the frequent use of colloquial

forms renders the negative paradigm less uniform. Consider, in particular, the fact that, in Standard Finnish, the lexical verb stem *istu* is the proper form to use for all person-number combinations. Yet the colloquial form in first person plural involves the selection of *istuta* rather than *istu*. Ironically, although the availability of a frequently used colloquial version could provide children with SLI with a ready means of expressing first plural in the negative, the fact that this version renders the paradigm less transparent could lead to confusion on the children's part.

A similar conclusion was reached by Kunnari et al. (2011) in their study of finite verb inflections by Finnish-speaking children with SLI and their typically developing peers. In that study, Kunnari et al. found that children with SLI were less accurate than younger TD children even when colloquial forms were scored as correct. These investigators proposed that a portion of the difficulty resided in the fact that colloquial forms rendered the verb inflection paradigm less transparent. For example, in colloquial use, the third person singular present form (e.g. *istuaa*) can also be used in third person plural contexts. Similarly, in the present study, the third person singular negative form (e.g. *ei istu*) can also be employed in third person plural contexts in colloquial use.

In summary, existing accounts of agreement deficits in children with SLI do not appear to be sufficient to handle the pattern of data exhibited by our Finnish-speaking participants in producing negative markers. Collectively, the type of use shown by the children with SLI suggests that the challenge for these children was the negative construction as a whole – figuring out not only the proper type of agreement to express (e.g. first person plural), but also determining where this agreement should appear (on the negative marker, not on the lexical verb), and determining the form that the accompanying non-agreement element should take (stem form, not inflected form).

Finnish negative markers possess particular characteristics that, to our knowledge, have not yet been studied in children with SLI acquiring other languages. Nevertheless, our findings have implications that extend beyond Finnish. It appears that the expression of subject-verb agreement can interact with the selection of other sentence elements, such that the agreement form, its accompanying element, or both might be adversely affected. Close examination of SLI data from other languages might well uncover instances of similar interaction effects.

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Table 1

Present tense verb inflections and negative marker + stem forms in present tense for the Finnish verb *istua* ('to sit').

	Affirmative	Negative
1 person sing	istun	en istu
2 person sing	istut	ette istu
3 person sing	istuu	ei istu
1 person plur	istumme	emme istu (Colloquial: ei istuta)
2 person plur	istutte	ette istu
3 person plur	istuvat	eivät istu (Colloquial: ei istu)

Table 2

Mean percentages of correct responses (with standard deviations) by the three groups of children.

Item Type	SLI	TDY	TDA
1 person sing	83.26 (27.09)	82.40 (22.12)	92.80 (9.42)
3 person sing	87.53 (19.83)	94.93 (10.56)	97.33 (3.90)
1 person plural	73.13 (34.55)	86.80 (22.38)	94.27 (10.97)
3 person plural	77.20 (29.75)	89.93 (14.17)	97.73 (5.18)