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Specific Language Impairment in Children: A Comparison of English and Swedish

Laurence B. Leonard,
Purdue University

Kristina Hansson,
Lund University

Ulrika Nettelbladt, and
Lund University

Patricia Deevy
Purdue University

Abstract

We report a cross-linguistic investigation of English- and Swedish-speaking children with specific language impairment (SLI) in an attempt to determine whether Wexler's (1998; 2003) (Extended) Unique Checking Constraint (EUCC) can account for the grammatical profiles of these groups of children. In Study I, a group of Swedish-speaking preschoolers with SLI showed greater use of finite verb inflections and copula forms than a group of English-speaking preschoolers with SLI, even though the two groups were carefully matched according to both age and severity of language impairment. In Study II, the same Swedish-speaking children with SLI showed high levels of appropriate verb-second use with finite verbs. However, they were less proficient in this regard than a group of younger typically developing Swedish children with similar mean lengths of utterance. The findings from both studies were generally compatible with predictions based on the EUCC. Issues in need of future investigation are discussed.

1. INTRODUCTION

In recent years, research on children with specific language impairment (SLI) has revealed some noteworthy cross-linguistic differences in the children's grammatical profiles. Many of these differences can be attributed to the fact that, although children with SLI have difficulty acquiring language, they nevertheless show a developmental profile that is consistent with the typology of the language they are acquiring. For example, in null-subject Romance languages such as Italian and Spanish, children with SLI make very few errors in their use of lexical verbs inflected for tense and agreement, though omissions of clitic pronouns are common (e.g., Bortolini, Caselli, and Leonard (1997); Bedore and Leonard (2001)). In French, a Romance language that does not permit null subjects, children with SLI also omit clitic pronouns (Paradis, Crago, and Genesee (2003)) but, unlike their counterparts acquiring

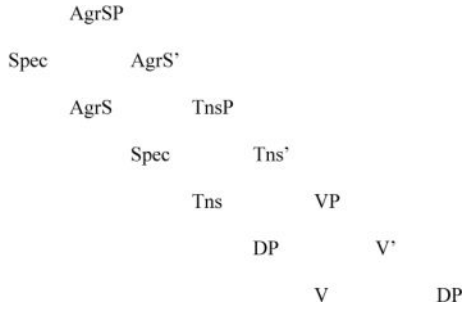
Requests for reprints should be sent to Laurence B. Leonard, Department of Speech, Language, and Hearing Sciences, Purdue University, Heavilon Hall, 500 Oval Drive, West Lafayette, IN 47907, USA., xdxl@purdue.edu.

Italian and Spanish, these children show an early stage of producing infinitive verb forms in contexts requiring finite verbs inflected for tense and agreement. In many Germanic languages, the protracted use of infinitive (or other non-finite) forms in place of finite verb forms is a hallmark of children with SLI. In languages such as German, these non-finite verb forms are verbs with infinitive or participle inflections (the latter without an accompanying auxiliary verb). In English, these non-finite verb forms are often bare stems that are taken to be infinitives. For example, in the utterance *Mommy drink tea*, the verb is regarded as comparable to *drink* in *I saw Mommy drink tea*.

Some of the cross-linguistic differences can be explained rather successfully by the Extended Optional Infinitive (EOI) account of Rice and Wexler (1996) and the elaborations of this account based on the Agreement/Tense Omission Model (ATOM, Schütze and Wexler (1996); Wexler, Schütze, and Rice (1998)) and Wexler's (1998; 2003) proposal based on the (Extended) Unique Checking Constraint. According to the original EOI account, children with SLI go through a protracted period during which they treat tense-marking as optional. During this period, productions such as *Yesterday Daddy play hockey* alternate with those such as *Yesterday Daddy played hockey* as a result of the child's grammar permitting sentences in which tense is either specified or not. However, Schütze and Wexler (1996) saw the need to expand this account because, along with producing utterances such as *She jump* in contexts requiring *She jumped*, children would sometimes produce utterances such as *Her jumped*. In the first instance (*She jump*), tense is seemingly omitted. However, in the second instance (*Her jumped*), agreement appears to be omitted. Specifically, because nominative case (*she*) is presumably licensed by agreement and the child produced *her*, agreement was apparently lacking even though tense was expressed through the past tense inflection. Thus, according to the ATOM, either agreement or tense may be optional for the child during this period.

It has been recognized that the grammatical profile for which the ATOM was originally designed does not apply to certain languages. As noted above, in languages such as Italian, children do not appear to pass through a stage of using non-finite lexical verbs in contexts requiring verbs with tense and agreement inflections. These languages possess a rich inflectional morphology and permit null subjects. Wexler's (1998; 2003) proposal of a Unique Checking Constraint (UCC) was formulated with the goal of explaining these cross-linguistic differences. Wexler's (1998; 2003) proposal falls within the minimalist framework of Chomsky (1995), with additional specifications. Wexler assumes a structure containing the functional categories Tense (Tns) and Subject Agreement (AgrS). In languages such as English, both Tns and AgrS have a non-interpretable Determiner (D) feature. Grammatical subjects are assumed to be represented as Determiner Phrases (DPs) that contain an interpretable D feature. The structure is illustrated in (1).

(1)



Checking of non-interpretable features is obligatory. Accordingly, the D feature on Tns attracts the subject DP, causing it to raise to the Specifier (Spec) position of TnsP for checking; and the D feature on AgrS attracts the subject to the Spec position of AgrSP where checking of the D feature occurs. Thus, in a language such as English, the D feature of DP checks against two functional categories, Tns and AgrS.

For null-subject languages such as Italian, Wexler assumes that only Tns carries a non-interpretable D feature; the D feature of AgrS is interpretable. Consequently, the subject raises to the Spec position of TnsP to check the (non-interpretable) D feature of Tns, but does not have to raise to the Spec position of AgrSP to check off a D feature. As we will see, this distinction between checking the D feature against two functional categories (as in English) or against only one (as in Italian) leads to significantly different predictions for the two languages.

Italian differs from English in its use of clitic pronouns, such as the direct object clitic *lo* in *Paula lo vede* 'Paula sees him.' The direct object clitic originates inside the VP, either as the clitic itself or as a phonetically null noun phrase (designated as *pro* in many linguistic accounts). This element has a D feature. To account for its surface position in the sentence, Wexler assumes that the clitic/*pro* passes through an intermediate position – the functional category Object Agreement (AgrO) – where it must be checked for accusative case (a non-interpretable feature). It then moves to its preverbal position, represented as the functional category Clitic within Clitic Phrase (CliticP). Within Wexler's framework, these movements can be viewed as checking the D feature twice (see Wexler, 2003, 55).

According to Wexler (1998; 2003) at an early stage of grammatical development, children's grammars deviate from those of adults because their grammars have the constraint that D features of DP can only check against one functional category. This constraint – the UCC – is responsible for several characteristics in early English and Italian development, and for the differences between the two.

For English, this constraint leads to the common profile of non-finite lexical verb forms produced in place of verbs inflected for tense and agreement (as in the example *Mommy like carrots* in place of *Mommy likes carrots*). Presumably, children at this stage of development can check the D feature at Tns or at AgrS. However, checking both violates the constraint. With one of the D features unchecked, a non-finite form results in contexts requiring present third person singular *–s* in the adult grammar. That is, even though the D feature was checked at, say, AgrS in the syntax, the inflection available to express agreement (*-s*) also

expresses (present) tense, which requires that the D feature be checked at Tns. If checking occurred at AgrS only, the realization of the inflection is blocked. In contrast, if checking occurs at Tns but not at AgrS in contexts requiring past *–ed* in the adult grammar, realization of the inflection is not blocked. However, without checking at AgrS, nominative case will not be licensed. For sentences containing pronouns in subject position, utterances such as *Her jumped* may result.

According to Wexler (1998), the particular choice of verb form used in a given structure is determined by the principles of Distributed Morphology (Halle and Marantz (1993)) and the forms available in the language. According to Distributed Morphology, the form representing the best option is the one which is maximally specified for morphosyntactic features but that does not include a feature not represented on the node. When the expression of the appropriate morpheme is blocked under the UCC, as in the case of English present third person singular *–s*, a non-finite form is the best option because it is not specified for any features and thus does not conflict with the features on either the Tns or AgrS node. Because the present third person singular *–s* is specified for both the present and third person singular features, inserting it into either the Tns or AgrS node would create a conflict of feature specification.

It is assumed that when the UCC applies, only AgrS or Tns is projected. The non-interpretable D feature of the projected functional category (Tns or AgrS) will be checked. Because the other functional category is not projected, there is no D feature to be checked. It should be noted that this view is quite different from proposals (e.g., Radford (1990)) that early child grammars lack functional categories such as AgrS and Tns. According to the UCC, AgrS and Tns are available but will not be projected in all cases; in the case of the ‘no functional categories’ approach, neither AgrS nor Tns is available to be projected.

If children’s productions were based solely on the UCC, sentences such as *She pushed me* and *Mommy likes carrots* would not occur. However, such sentences do occur in the child language data. Wexler (1998) proposes that there is a tension between the UCC and the “interpretive/conceptual” property according to which, given a Logical Form (LF), the child must choose a numeration that violates as few grammatical properties as possible. Thus, the utterance *Her pushed me* obeys the UCC, but violates the interpretive/conceptual property that requires both AgrS and Tns in a sentence. Conversely, *She pushed me* violates the UCC but conforms to the interpretive/conceptual property.

For Italian, the UCC does not lead to a production that deviates from adult grammar because the D feature of AgrS is interpretable, given that it is a null-subject language. Thus, with checking of the D feature at Tns, all of the necessary checking has occurred with no violation of the constraint. Therefore, this proposal correctly predicts that Italian-speaking children will consistently produce lexical verbs appropriately inflected for tense and agreement.

However, as noted above, direct object clitics in Italian are assumed to involve two checking operations. Given the UCC, checking will occur only once. According to Wexler, this

should result in high omission rates of clitics during this period of development. Based on the available evidence (Leonard and Bortolini (1998)), this prediction is quite accurate.

For typically developing children, the stage during which the UCC is operational is rather short-lived. However, for children with SLI, this period is protracted. In keeping with the name of its forerunner, the Extended Optional Infinitive account, Wexler (2003) notes that the term “Extended Unique Checking Constraint” (EUCC) might be appropriate.

In summary, the EUCC predicts the dominant grammatical profile of children with SLI acquiring a language such as English as well as those acquiring a rather different (Romance) language such as Italian. In the studies reported in this paper, we seek to determine whether the EUCC might lead to a greater understanding of the grammatical profile observed in children with SLI who are acquiring Swedish.

1.1. The EUCC and Swedish SLI

Recent work by Hansson, Nettelbladt, and Leonard (2000) suggests that Swedish-speaking children with SLI show a profile that differs from the profile seen for English and Italian. In a comparison among preschoolers with SLI, a group of same-age peers, and a group of younger typically developing children matched according to mean length of utterance (MLU), Hansson et al. found smaller differences among the groups than are reported for studies on English. For some of these morphemes (past tense inflections, copula forms), the Swedish-speaking children with SLI showed significantly lower percentages of use than both of the typically developing groups. However, even in these cases, the percentages of use exhibited by the children with SLI were considerably higher than is seen for their English-speaking counterparts. For example, the percentages of use for past tense inflections and copula forms averaged 86 and 72, respectively. Corresponding percentages for English-speaking children with SLI of the same age fall in the range of 20 to 50 (e.g., Leonard, Bortolini, Caselli, McGregor, and Sabbadini (1992); Rice, Wexler, and Hershberger (1998)). These apparent differences suggest important cross-linguistic differences between English and Swedish even though both languages are considered “optional infinitive” languages and, on a continuum of sparse-to-rich inflectional morphology, Swedish appears to be closer to English than many languages studied (see Phillips (1996)). However, before any conclusions can be reached, the important factor of severity of language impairment must be controlled. Within any given language, children with SLI of the same age can differ widely in severity. Likewise, it is also possible that children with SLI selected from any two different language groups might also differ in severity. A comparison between these groups, then, could greatly distort the results from whatever linguistic comparisons the researcher had intended. In the present study, we compare English- and Swedish-speaking children with SLI who are carefully matched for severity as well as age.

Another finding reported by Hansson et al. (2000) was a higher frequency of word order errors on the part of the Swedish-speaking children with SLI relative to both the same-age peers and the younger children matched for MLU. Specifically, all three groups of children sometimes, and appropriately, produced sentences with a constituent other than the subject in initial position. Although most of these productions by all three groups appeared to conform to one of the word orders permissible in Swedish, the children with SLI were more

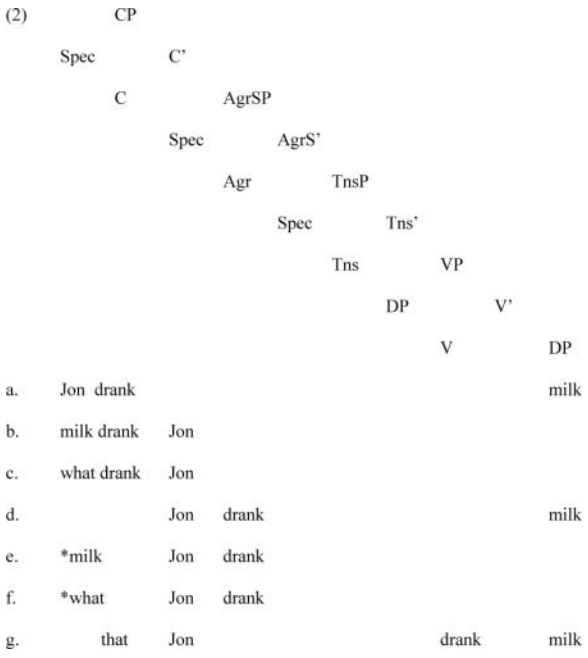
likely than the other two groups to produce a non-subject-initial sentence with an errant word order. Interestingly (and unlike the case for German, as will be noted below), the children with SLI typically used an appropriately tensed verb despite placing it in the wrong sentence position.

Could the EUCC contribute to our understanding of the pattern of use of finite verb morphology and word order reported by Hansson et al. (2000) for Swedish SLI? The studies reported in this paper are an attempt to answer this question. For a clearer understanding of the issues involved, we review several details of Swedish grammar that are especially pertinent to the EUCC.

1.1.1. Some Details of Swedish Grammar—In Swedish, present and past tense inflections and copula forms make distinctions according to tense but not agreement. Thus, both ‘I play’ and ‘She plays’ require the same present tense form (*jag leker*, *hon leker*) whereas both ‘I played’ and ‘She played’ require the common past tense form (*jag lekte*, *hon lekte*). Similarly, both ‘I am hungry’ and ‘He is hungry’ make use of the same present tense copula form, *är* (*jag är hungrig*, *han är hungrig*). Subjects carry nominative case, which appears in overt form only in pronouns. Unlike English, nominative case is the default case. For example, an appropriate response to a question such as ‘Who wants ice cream?’ would be *jag* ‘I’ in Swedish.

Swedish, like some other Germanic languages, is a verb-second language. The structure assumed for Swedish is given in (2).

(2)



As a verb-second language, Swedish involves the movement of a finite verb to C. We take the presence of lexical material in the Spec position of CP to be the necessary condition for movement of the finite verb to C. As stated by Wexler (1998), “It is a property of V2 languages that if Spec,CP is filled by some constituent then C must be filled by a finite

verb" (p. 38). The implication is that for a subject-initial sentence, two analyses may be possible. If the subject appears in the Spec position of CP, the verb will move to C (as shown in (2a)); alternatively, the subject may be in the Spec position of AgrSP, with the verb in AgrS (2d). (It should be noted that in both (2a) and (2d) the finite verb precedes the negative in Swedish main clauses. We acknowledge here that there are alternative views on the placement of the subject DP in subject-initial sentences. Some authors, such as Schwartz and Vikner (1996), assume that subject DPs are in the Spec position of CP, whereas other authors, such as Travis (1991), argue that subject DPs in subject-initial sentences are always in the Spec position of AgrSP (or IP) and the Spec position of CP is reserved for non-subject constituents.) Importantly, in either the Subject-DP-in-Spec-of-CP or the Subject-DP-in-Spec-of-AgrSP analysis, the non-interpretable D features of AgrS and Tns must first be checked by the subject DP. If, for pragmatic reasons, a direct object or adverbial begins the sentence, it will occupy the Spec position of CP and the subject will remain in the Spec position of AgrSP, as can be seen in (2b). The same is true for *wh*-questions in which the *wh*-word is a constituent other than the subject, as shown in (2c). Finally, in subordinate clauses, the complementizer occupies C, and the subject appears in the Spec position of AgrSP, as shown in (2g). However, the verb remains in V (as evidenced by the finite verb following rather than preceding the negative). In this instance, checking at AgrS and Tns is assumed to occur at LF (Holmberg and Platzack (1995)). It should be noted in this regard that Wexler (1998) has assumed that the EUCC can apply to checking at LF. It can also be seen that when a complementizer occupies C as in (2g), the Spec position of CP is unfilled; thus, the condition for movement of the finite verb to C is not in place.

1.1.2. EUCC Effects on the Swedish SLI Grammatical Profile—If the EUCC applies to children with SLI acquiring Swedish, the data should take on a predictable form. First, because present and past verb inflections and copula forms make distinctions according to tense but not agreement, checking at Tns only should not block use of these verb forms. When checking occurs only at Tns, AgrS is not projected. However, because nominative case is the default case in Swedish, the absence of AgrS will not be detectable. On the other hand, when checking occurs only at AgrS, a non-finite form of the verb will result. It is assumed that the non-finite form is not specified for any morphosyntactic features that would conflict with those represented in AgrS; therefore, it is the best option for insertion in such instances.

These characteristics of Swedish should lead to differences between Swedish- and English-speaking children with SLI. Specifically, Swedish-speaking children with SLI should show greater use of finite verb forms than their English-speaking counterparts. Consider first present tense inflections and copula forms. There are two conditions under which these forms can be expressed in Swedish. First, of course, the interpretive/conceptual property may win out over the EUCC, resulting in both AgrS and Tns being projected and the production of a sentence consistent with the adult grammar. Second, checking may occur at Tns only. Because the morphemes used for present tense inflections and copula forms do not involve agreement, their expression will not be blocked. There is only one condition under which a non-finite form will be produced; when checking occurs at AgrS only, Tns will not be projected and thus the use of present inflections and copula forms will be ruled out. In

contrast, present tense inflections and copula forms in English rely on checking at both AgrS and Tns for expression. Thus, only when the interpretive/conceptual property wins out will these morphemes be expressed. Under the remaining two conditions – checking at AgrS only or at Tns only – expression of these morphemes will be blocked.

The EUCC also permits predictions for the use of past tense inflections by Swedish- versus English-speaking children with SLI, as well as for verb-second use by Swedish-speaking children with SLI. Wexler (1998) and Poeppel and Wexler (1993) argue that children set the verb-second parameter correctly at a very young age. Specifically, when lexical material fills the Spec position of CP, a finite verb must move to C. Movement is not necessary when lexical material does not occupy the Spec position of CP. Consider now how the early correct parameter setting should interact with the EUCC. In (3) – (8), we provide the expected outcomes when the EUCC applies – where checking occurs at either Tns only or at AgrS only.

(3) $[_{CP}\ DP_j\ [_C\ Verb(+finite)_i\ [_{TnsP}\ t_j\ [_{Tns}\ t_i\ [_{VP}\ t_j\ [_V\ t_i\ ]]]]]]$

(4) $[_{CP}\ XP_k\ [_C\ Verb(+finite)_i\ [_{TnsP}\ DP_j\ [_{Tns}\ t_i\ [_{VP}\ t_j\ [_{V'}\ [_V\ t_i\ ]\ t_k]]]]]]$

(5) $[_{CP}\ [_C\ [_{TnsP}\ DP_j\ [_{Tns}\ Verb(+finite)_i\ [_{VP}\ t_j\ [_V\ t_i\ ]]]]]]$

(6) $[_{CP}\ [_C\ [_{AgrSP}\ DP_j\ [_{AgrS}\ Verb(-finite)_i\ [_{VP}\ t_j\ [_V\ t_i\ ]]]]]]$

(7) $*[_{CP}\ DP_j\ [_C\ [_{AgrSP}\ t_j\ [_{AgrS}\ Verb(-finite)_i\ [_{VP}\ t_j\ [_V\ t_i\ ]]]]]]$

(8) $*[_{CP}\ XP_k\ [_C\ [_{AgrSP}\ DP_j\ [_{AgrS}\ Verb(-finite)_i\ [_{VP}\ t_j\ [_{V'}\ [_V\ t_i\ ]\ t_k]]]]]]$

In both (3) and (4), lexical material appears in the Spec position of CP and a finite verb is generated because checking occurred at Tns (only). As noted earlier, because Swedish finite forms express tense but not agreement, the finite verb form can be produced even when AgrS is not projected, as in this case. In both of these cases, movement of the finite verb to C follows from the correct setting of the verb-second parameter. In (5) and (6), no lexical material appears in the Spec position of CP, and thus the conditions for movement of the verb to C are not present. In (5), checking occurs at Tns only, permitting the expression of the finite verb. The verb remains in Tns and the subject remains in the Spec position of TnsP. In (6), checking occurs at AgrS only. The result is a non-finite form. Because the Spec position of CP is unfilled, the conditions for movement of the verb to C are not present. Thus, the utterance is permitted by the child's grammar, with the non-finite verb in AgrS and the subject in the Spec position of AgrSP. However, (7) and (8) represent instances in which the derivation will crash – the sentence will not be permitted by the child's grammar. In each of these cases, lexical material (the subject or a non-subject) appears in the Spec position of CP, requiring movement of a finite verb to C. However, since checking occurs at AgrS only, a non-finite rather than finite form appears, which violates the parameter, leading the derivation to crash.

The outcomes in (3) – (8) have implications for Swedish relative to English. In Swedish, when the EUCC applies, there is only one case, shown in (6), in which a non-finite form is actually produced – when checking occurs at AgrS only and there is no lexical material in the Spec position of CP. Other potential instances of non-finite forms are obviated because they violate the verb-second parameter; these are the cases shown in (7) and (8). On the

other hand, instances in which checking occurs at Tns only – resulting in a finite form – will have three different ways of being produced, shown in (3) – (5). This 3-to-1 ratio not only reinforces our already-stated prediction that present tense inflections and copula forms in Swedish will be produced to a greater degree than their English counterparts, it also provides a basis for expecting that the Swedish-speaking children with SLI will show greater use of past tense inflections than will the English-speaking children with SLI. It is true that the English past tense, like the Swedish past tense, does not require checking at AgrS for expression. However, as the verb-second parameter is not applicable in English, there are no cases in which a non-finite form is suppressed. If checking occurs at AgrS only, the non-finite form will appear in AgrS and the subject will appear in the Spec position of AgrSP, essentially as in (6) for Swedish. If checking occurs at Tns only, a finite form will appear in Tns and the subject will appear in the Spec position of TnsP, much as in (5) for Swedish. Of course, the interpretive/conceptual property may on occasion over-ride the EUCC. However, this applies equally to English and Swedish.

The outcomes in (3) – (8) also have important implications for verb-second use by Swedish-speaking children with SLI. In cases (3) and (4), lexical material appears in the Spec position of CP, a finite verb appears as a result of checking at Tns (only), and thus the correct setting of the verb-second parameter leads to movement of the finite verb to C. When lexical material occupies the Spec position of CP and checking occurs at AgrS (only), on the other hand, as in (7) and (8), a non-finite verb results, movement of a finite verb to C is not possible, and the derivation crashes. Thus, there are no instances expected in which lexical material appears in the Spec position of CP and there is an error of production in either the sentence position of the verb or in its finiteness. This expectation seems consistent with the report by Hansson et al. (2000) that most non-subject-initial utterances produced by Swedish-speaking children with SLI seemed to be properly formed.

A finding of accurate verb-second use by Swedish-speaking children would have special importance because, to the best of our knowledge, there is no direct evidence that addresses the question of whether verb-second use can occur when the EUCC applies. To date, our assumptions about the interaction between verb-second use and the EUCC are based on findings from languages such as German (e.g., Poeppel and Wexler (1993); Rice, Noll, and Grimm (1997)). However, in these languages, finite verb forms express both tense and agreement, and hence depend on checking at both AgrS and Tns. When the EUCC applies, then, finite verb form use is blocked. If the Spec position of CP is unfilled, an utterance with a non-finite form will be produced. When, instead, the interpretive/conceptual property wins out, there is no constraint on the number of checking operations that can apply. A finite form results, which meets the conditions for verb-second use. Therefore, in a language such as German, verb-second use is seen only when the EUCC does not apply. Because Swedish finite verb expression can result from checking at Tns only, this language allows us to determine if verb-second occurs after application of the EUCC, that is, when finite verb use does not depend on the interpretive/conceptual property over-riding the EUCC.

1.2. The Goals of the Investigation

In this paper, we report two studies. In the first study, we examine possible differences between Swedish- and English-speaking children with SLI in an attempt to evaluate the EUCC. We examine three finite verb forms in each language. In Swedish, we included present tense verb inflections, past tense verb inflections, and present tense copula forms. In English, we included present third person singular *–s* inflections, past *–ed* inflections, and present tense copula forms. As noted above, the EUCC leads to the prediction that the Swedish-speaking children with SLI will make greater use of each of these finite forms than the English-speaking children with SLI, even when the two groups are closely matched on age and severity. As a control, we include a morpheme unrelated to Tns or AgrS in each language – the noun plural inflection. The EUCC provides no basis to expect a difference between the two groups on this morpheme type.

In the second study, we examine another important detail of the EUCC account as it applies to Swedish. According to this account, appropriate verb-second use should be quite frequent in the speech of Swedish-speaking children with SLI. As in German, appropriate use will be seen when the interpretive/conceptual property over-rides the EUCC. However, unlike German, the appearance of a finite verb form in Swedish can result from checking at Tns only, and the correct parameter setting that is assumed in this account should ensure that the finite verb will move to C if the Spec position of CP is lexically filled. If checking occurs at AgrS only and the Spec position of CP is lexically filled, the verb-second parameter will be violated and the sentence should not occur. We test these predictions in the second study. To assist us in the interpretation of the findings, we compare the data from the Swedish-speaking children with SLI with data from a group of younger typically developing Swedish children with comparable MLUs.

2. STUDY I: FINITE VERB MORPHOLOGY IN ENGLISH AND SWEDISH SLI

In this study, we test the prediction that finite verb forms will be used in a higher percentage of obligatory contexts by Swedish-speaking children with SLI than by English-speaking children with SLI. For present tense inflections and copula forms, this prediction is based in part on the assumption that, in Swedish but not English, the EUCC can be obeyed through checking at Tns only, which will not block expression of the finite verb morphology because the relevant Swedish morphemes make distinctions according to tense only. For past tense inflections, the prediction hinges on the assumption, as illustrated in (3) – (8), that the interaction of the EUCC and the verb-second parameter in Swedish results in the suppression of potential utterances with non-finite forms, or, conversely, that several scenarios allow for the production of finite verbs even when the EUCC applies. In English, there are proportionately fewer ways for past tense forms to occur. The issue of word order will be addressed in Study II.

2.1. Method

2.1.1. Participants—Twenty-eight children served as participants in the study. Fourteen of the children, eight girls and six boys, were monolingual Swedish-speaking children residing in Sweden. The remaining 14 children, seven girls and seven boys, were

monolingual English-speaking children living in the United States. All children had been diagnosed as impaired in language ability by a speech-language pathologist and had been determined to be eligible for language therapy. Each of the 28 children met the criteria for SLI, as noted below.

The 14 Swedish-speaking children ranged from 51 to 67 months of age with a mean age of 58.90 months (*SD* = 4.50). All children passed a hearing screening and an oral-motor screening, and scored within one *SD* of the mean for their age on the Swedish standardization of the Leiter International Performance Scale (Leissner, Nilsson, Nyström, and Wastesson (1962)), a test of nonverbal intelligence. According to parental report, no child had been diagnosed or suspected of having a social-emotional disturbance or impairment of neurological function.

The Swedish-speaking children's mean lengths of utterance (MLUs) in words ranged from 2.59 to 4.60, with a mean MLU of 3.71 (*SD* = 0.51). Each of these children scored more than 2 SDs below the mean for their age on the grammatical subtest of the Lund Test of Phonology and Grammar (hereafter, LuMat; Holmberg and Stenkvist (1983)). The items of this subtest are designed to assess children's production of verb inflections, noun plural inflections, possessive pronouns, prepositions, and negation, among others. Responses are elicited by showing the child pictures and asking the child questions or providing prompts that obligate the use of the grammatical forms of interest. Although the children exhibited below-age-level phonological skills, an assessment of their phonology revealed that all 14 children showed adequate use of the segments necessary to produce the grammatical morphemes under investigation. Hereafter, these children will be referred to as the SSLI children – Swedish-speaking children with SLI.

The 14 English-speaking children ranged in age from 48 to 66 months with a mean age of 58.40 months (*SD* = 5.40). These children passed both a hearing screening and an oral-motor screening. Each of these children scored within one *SD* for their age on a test of nonverbal intelligence, the Columbia Mental Maturity Scale (Burgemeister, Blum, and Lorge (1972)). There was no evidence, past or present, of neurological impairment, and no child had exhibited symptoms of social-emotional disturbance.

The MLUs in words of the English-speaking children ranged from 2.50 to 4.80, with a mean MLU of 3.73 (*SD* = 0.57). Each of these children scored more than 2 SDs below the mean for their age on the Structured Photographic Expressive Language Test – II (SPELT-II; Werner and Kresheck (1983)). Like the LuMat used for Swedish, the SPELT-II examines children's productions of verb inflections, noun plural inflections, possessive pronouns, prepositions, negation, and other grammatical forms. The method of eliciting responses is also highly similar to the LuMat; while showing photographs (rather than drawings), the examiner asks questions or provides prompts that are designed to obligate the use of the grammatical forms of interest. Each of the children showed evidence of producing the segments required for the grammatical morphemes examined in this study by demonstrating high accuracy on a test of these sounds in monomorphemic contexts (e.g., word-final [s] in *fox*, word-final [t] in *nest*). Hereafter, these children will be referred to as the ESLI children – English-speaking children with SLI.

The SSLI children had been participants in the study by Hansson et al. (2000) described above. The ESLI children were selected from a larger database of English-speaking children with SLI. The 14 ESLI children had been participants in a syntactic priming study reported by Leonard et al. (2000) or in a study of the use of aspect and modality by Leonard et al. (2003). As can be seen from the descriptive information provided above, we selected ESLI children from the larger database so that they would closely resemble the SSLI in chronological age, standard scores on a test of expressive grammar, and MLU in words. The distribution of girls and boys in the two groups was also similar. Because MLU in words may be influenced by somewhat different details of grammar in Swedish and English (e.g., greater use of progressive forms in English where Swedish uses simple present tense), chronological age and language test scores served as our primary basis for matching. However, the two languages do not differ dramatically in the grammatical phenomena that are expressed as function words (which influence MLU computed in words) and inflections (which do not). Both languages employ prepositions, negative particles, copula verb forms, auxiliary verbs (including modals), personal pronouns, and demonstrative pronouns. The two languages also use indefinite pronouns. However, in Swedish, definite articles are employed only when the following noun is accompanied by an adjective; otherwise, a definite suffix is attached to the noun. Finally, neither language permits null subjects. Given these similarities, it is probably not surprising that the MLUs of the children with SLI in each language were found to be significantly lower than those of typically developing same-age peers, and to closely resemble those of typically developing children approximately 24 months younger (Hansson et al. (2000); Leonard et al. (2000); Leonard et al. (2003)).

2.1.2. Grammatical Morphemes Examined in Swedish

2.1.2.1. Present and past tense inflections: Finiteness is manifested in tense-marking; there is no marking for subject-verb agreement in Swedish. Present and past tense inflections are added to the stem of the verb. The stem without inflection serves as the imperative. The present tense is formed by adding *–er* to the stem if the stem ends in a consonant (e.g., *spring-er* ‘runs’, *lek-er* ‘plays’, *bygg-er* ‘builds’) or *–r* if the verb ends in a vowel (e.g., *titta-r* ‘looks’, *sy-r* ‘sews’). For most verb stems ending in a consonant, the inflection is *–er*. However, for a subgroup of these verbs, the present tense form is the same as the stem (though different from the infinitive, see below). The regular past tense is formed by adding *–de* to the stem if the stem ends in a voiced phoneme (e.g., *titta-de* ‘looked’, *sy-dde* ‘sewed’, *bygg-de* ‘built’) or *–te* if it ends in an unvoiced phoneme (e.g., *lek-te* ‘played’). Irregular past tense forms do not have an inflection added, but often involve a vowel change (e.g., *spring-er* ‘runs’ – *sprang* ‘ran’).

2.1.2.2. Infinitives: The infinitive is a frequent substitute for present and past tense forms in the productions of young typically developing children and children with SLI. The infinitive is formed by adding *–a* to the stem if it ends in a consonant (e.g., *spring-a* ‘to run’, *lek-a* ‘to play’, *bygg-a* ‘to build’). However, if the verb stem ends in a vowel, nothing is added (e.g., *titta* ‘to look’, *sy* ‘to sew’).

2.1.2.3. Present copula: The present copula form is *är*, pronounced [ɛ]. Like other verbs, the copula marks tense but not agreement. Unlike the case for English, the form used for the copula is not also employed as an auxiliary verb.

2.1.2.4. Noun plural inflections: Number is expressed on nouns through the use of inflections for plural added to the stem. The plural inflections vary according to the declension of the noun. The plural inflections used with indefinite nouns are: *-or* (e.g., *flicka – flick-or* 'girl – girls'); *-ar* (e.g., *pojke – pojk-ar* 'boy – boys'); -(*e*)*r* (e.g., *banan – banan-er* 'banana – bananas', *sko – sko-r* 'shoe – shoes'); *-n* (e.g., *äpple – äpple-n* 'apple – apples'). For some nouns, plural number is not distinguished from the singular form (e.g., *tåg – tåg* 'train – trains').

2.1.3. Procedure—For both groups of children, the initial sessions with the child were devoted to the administration of the language and non-language test battery, and a play period designed to obtain a 100-utterance sample of the children's spontaneous speech. For children meeting the selection criteria, additional sessions were scheduled, during which a longer spontaneous speech sample was obtained. Our target speech sample size was approximately 500 complete, intelligible, non-imitative, and non-elliptical utterances from each child. For the SSLI children, the mean speech sample size was 488 utterances. The smallest sample for this group was 332 utterances. For the ESLI children, the mean sample size was 575 utterances, and the smallest sample for the group was 306 utterances. All speech samples were audiorecorded, and notes were taken during sampling to assist in interpretation.

2.1.4. Analysis—The spontaneous speech samples from both the SSLI and the ESLI children were transcribed and coded using Systematic Analysis of Language Transcripts (SALT, Miller and Chapman (1986)), using the coding conventions appropriate to the particular language. For each language, the samples were examined for obligatory contexts for regular present tense inflections (present third person singular inflections in the case of English), regular past tense inflections, present copula forms (*är* for Swedish, *is*, *are*, *am* for English), and noun plural inflections. We also inspected the speech samples to ensure that all children were consistent in using infinitive forms in contexts that required them. In the case of Swedish, we included only those verbs whose infinitive forms represented the addition of the infinitive (*-a*) suffix to the stem (e.g., *spring-a* 'to run', *lek-a* 'to play'); the stems of all of these verbs end in consonants. We excluded any verbs whose present tense forms were identical to their stem forms. To rule out the possibility that phonological difficulties with [r] would be interpreted as problems with present tense inflections, we also excluded from analysis those verbs whose present tense and infinitive forms differed solely on the appearance or absence of word-final [r] (e.g., *tittar – titta*). All of the verbs included for analysis employ *–er* as the present tense inflection. The *–er* inflection differs from the infinitive *–a* in vowel quality as well as the presence of [r]. In addition, the present tense and infinitive forms of these verbs are produced with different tonal word accents. The present tense forms are produced with 'accent I' whereas the infinitive forms are produced with 'accent II' (acoustically, these are distinguished by the degree to which the fundamental frequency drops from the strong syllable to the weak syllable, how early the fundamental

frequency falls in the strong syllable, and whether there is a slight rise in fundamental frequency following the drop.) When scoring the children's use of noun plural inflections, we noted any instances in which a child used the plural inflection of the wrong declension (e.g., producing the plural inflection *–ar* with a noun requiring *–or*). These were few in number (a total of 17) and were scored as correct for our purposes.

To assess interjudge reliability in coding the children's spontaneous speech samples, the samples from four children in each language group were randomly selected. These samples were then scored by an independent judge. We then compared the independent judge's codings with those made by the original scorer. For Swedish, the agreement between the independent judge and original scorer ranged from 88% (for past tense inflections) to 96% (for present tense inflections). For English, agreement ranged from 84% (for past tense inflections) to 95% agreement (for both present tense inflections and noun plural inflections).

For inclusion in the statistical analyses we required a minimum of five obligatory contexts for each grammatical morpheme type. As expected, all 28 children across the language groups showed adult-like levels of infinitive use (for SSLI, M = 98.38% in obligatory contexts, range 91.30 to 100%; for ESLI, M = 100%), and therefore this grammatical morpheme type was not included in the statistical analysis. The mean number of obligatory contexts (with ranges) for each of the remaining grammatical morpheme types in each language can be seen in Table 1. Clearly, our decision to examine only those Swedish present tense inflections that ended in a consonant and differed from the stem form did not hamper analysis, as obligatory contexts for this grammatical morpheme type were numerous in the Swedish data. From Table 1 it can also be seen that for three of the four grammatical morpheme types, all 14 children in each language group showed a sufficient number of obligatory contexts. However, for regular past tense inflections, two SSLI children and one ESLI child did not meet the criterion for inclusion in the statistical analysis.

2.2. Results

For each of the morphemes under investigation, comparisons were made between the SSLI and ESLI children, testing the predictions of the EUCC. Significant ($p < .05$) t tests were followed by the computation of effect sizes, using d. All of the effect sizes reported below can be considered large (d = 0.80 or greater), according to Cohen (1988). An illustration of the findings appears in Figure 1.

2.2.1. Noun Plural Inflections—Noun plural inflections should not fall within the purview of the EUCC. For this reason, it served as a control morpheme and no differences were expected between the two groups of children. Indeed, the two groups used noun plural inflections to a similar and high degree, t (26) = 0.07, p = .948. Mean percentages of use in obligatory contexts (and SDs) for the SSLI and ESLI children were 93.93 (9.93) and 94.14 (7.05), respectively. For both the SSLI and ESLI children, all errors in noun plural contexts were productions of the singular.

2.2.2. Present Tense Inflections—According to the EUCC, present tense inflections should be used to a significantly higher degree by the SSLI children than by the ESLI

children. In Swedish, checking at Tns only would not block the expression of present tense forms, whereas in English, the available form (present third person singular *-s*) requires checking at AgrS as well as Tns. The results were consistent with the prediction, t (26) = 4.63, $p < .001$, $d = 1.95$. The SSLI children as a group showed considerable use of present tense inflections ($M = 90.71$, $SD = 12.85$), although one SSLI child used this inflection in only 50% of obligatory contexts. The ESLI children showed considerably lower degrees of use of the English equivalent ($M = 53.64$, $SD = 27.04$). For the SSLI children, 52 of the 59 errors observed were productions of infinitive forms in place of present tense forms. The remaining 7 errors were productions of the stem. All of the errors in the English data were productions of bare stems.

2.2.3. Copula Forms—For the same reasons noted above for present tense inflections, the SSLI children should show greater use of copula forms than the ESLI children. This difference was, in fact, significant, t (26) = 2.63, $p = .014$, $d = 1.02$. The SSLI children's percentages of use ($M = 73.07$, $SD = 16.21$) were considerably higher than those of their English counterparts ($M = 54.71$, $SD = 20.46$).

The present tense copula form errors in the Swedish data were limited to omissions of the copula form. Unlike Swedish, English has three present tense copula forms, *is*, *are*, and *am*. Inspection of the English data revealed that 130 of the 141 errors were omissions of the copula form. The remaining 11 errors were productions of *is* in contexts requiring *are*.

2.2.3. Past Tense Inflections—Past tense inflections do not involve agreement in either English or Swedish. Thus, in both languages, checking at Tns only can result in the expression of a past tense form. However, the two languages differ in that, in Swedish, checking at AgrS only will result in the production of a non-finite form only when the Spec position of CP is unfilled. If this position is lexically filled, the non-finite form resulting from checking at AgrS only will cause the derivation to crash, and an utterance of this type should not be produced. Therefore, on the basis of proportionately more ways for past tense forms to occur in Swedish than in English, we expect higher percentages of use of past tense forms for the former. Indeed, a significant difference in the predicted direction was seen, t (23) = 3.11, $p = .005$, $d = 1.31$. The SSLI children ($M = 86.17$, $SD = 18.30$) used past tense inflections with higher percentages than the ESLI children ($M = 53.31$, $SD = 32.06$). In the Swedish data, 17 of the 20 errors observed were productions of infinitives; of the remaining 3 errors, 2 were productions of the stem, and 1 was the production of a present tense form. For the English data, all errors were bare stems.

Although the ESLI children were less likely than the SSLI children to use past tense inflections in obligatory contexts, both groups showed evidence of over-regularizations of past, as in *throwed* for *threw* and *springde* "runned" for *sprang* "ran." Eight ESLI children produced a total of 38 forms of this type. A total of 20 over-regularizations were produced by nine SSLI children.

2.3. Interpretation

The findings reported in this study were largely consistent with predictions based on the EUCC. As expected, the two groups did not differ in their use of noun plural inflections.

These are not subject to the EUCC. Importantly, the SSLI children showed greater use of all three finite verb forms than did the ESLI children. We had anticipated that even the SSLI children would produce non-finite forms on occasion, given that when the EUCC applies, checking could occur at AgrS only, and thus Tns would not be projected. Such non-finite productions were, in fact, seen to some degree.

3. STUDY II: VERB-SECOND AND FINITE VERB MORPHOLOGY IN SWEDISH SLI

In Study II, we test the assumption that the greater accessibility of finite verb morphology afforded by the EUCC in Swedish, coupled with the correct setting of the verb-second parameter will lead to accurate verb-second use. Specifically, Swedish-speaking children with SLI should show a high percentage of non-subject-initial utterances with tense-marked verbs in second position. We selected non-subject-initial utterances because subject-initial utterances do not provide a means of determining whether the subject appears in the Spec position of CP or in the Spec position of TnsP. To facilitate interpretation of the findings, we compare SSLI children to a group of younger Swedish-speaking children whose language development is proceeding in typical fashion.

3.1. Method

3.1.1. Participants—The 14 SSLI children of Study I were also participants in this study. Fourteen additional Swedish-speaking children served as the comparison group. These children were typically developing children attending day care centers in the same communities as the SSLI children. They had served as participants in the study reported by Hansson et al. (2000). Each of these children showed age-appropriate scores and normal functioning on the language and non-language measures. These children ranged in age from 25 to 43 months, with a mean age of 35.42 months (*SD* = 4.15), and were approximately two years younger than the SSLI children. Eight of these children were girls and six were boys. The MLUs in words of these children ranged from 2.22 to 4.83, with a mean MLU of 3.62 (*SD* = 0.64). The MLU of each child in this group was within 0.38 words of the MLU of a child in the SSLI group. Hereafter, these typically developing children are referred to as the STD-MLU children.

3.1.2. Procedure—The spontaneous speech samples obtained from the SSLI children of Study I served as the source of data for this study. Spontaneous speech samples were also obtained from the STD-MLU children, following the same procedures. As noted earlier, the mean sample size for the SSLI children was 488 spontaneous utterances, with the smallest sample consisting of 332 utterances. For the STD-MLU children, the mean sample size was 481 utterances, with the smallest sample containing 272 spontaneous utterances.

3.1.3. Analysis—From the children's spontaneous utterances, we identified two utterance types. The first type was declarative, had a constituent other than the subject in sentence-initial position, and included both a subject and a verb. Utterances with missing auxiliary verbs were excluded, because the lexical verb in these contexts must be nonfinite and does not occupy second position. Utterances with missing copula forms were also excluded. As in

Study I, we removed from analysis those cases where the present tense form of the verb was indistinguishable from the infinitive or bare stem form. For the remaining utterances, we determined whether the verb was marked for tense and whether it appeared appropriately in second position, as in (9), or inappropriately after the subject, as in (10).

(9) Sen äter Jeanette glass

Then eats Jeanette ice cream

'Then Jeanette eats ice cream'

(10) *Sen Jeanette äter glass

*Then Jeanette eats ice cream

'Then Jeanette eats ice cream'

The second utterance type was a *wh*-question in which the *wh*-word was a constituent other than the subject. In such questions, the *wh*-word appears in the Specifier position of CP, the finite verb appears in C, and the subject follows the finite verb. Our criteria in selecting or excluding these non-subject *wh*-questions for analysis were identical to the criteria used for the non-subject-initial declarative sentences described above. Again, we determined whether the verb was marked for tense and appeared in second position, as in (11), or inappropriately after the subject, as in (12).

(11) När kommer Jeanette?

When comes Jeanette?

'When does Jeanette come?'

(12) *När Jeanette kommer?

*When Jeanette comes?

'When does Jeanette come?'

As both non-subject-initial declarative sentences and non-subject *wh*-questions require finite verbs to appear in second position, the data for these utterance types were combined.

Because Study II involved an assessment of appropriate and inappropriate word order, the interjudge reliability for classifying the children's utterances in this respect was evaluated. Four children's samples were randomly selected and an independent judge examined each utterance for type of word order and whether the word order was appropriate. Agreement between the independent judge and the original scorer for the classification of word order was 95%.

3.2. Results

All children produced utterances that could be included in the analysis. The mean number of non-subject-initial utterances (declaratives and *wh*-questions) meeting our selection criteria for the SSLI group was 49.79 (range 18 to 165); for the STD-MLU children, the mean was 70.07 (range 7 to 131). We then examined the two groups' use of finite verbs and verb-second use in these utterances. The distribution of finite verbs and verb-second use is shown

in Table 2. In this table, the non-subject constituent occupying first position (e.g., the direct object, adverbial, or non-subject *wh*-word) is designated "X". As can be seen from the table, in the great majority of cases, the STD-MLU children used a well-formed utterance with a finite verb in second position followed by the subject (964/981 or 98%). The great majority of non-subject-initial utterances by the SSLI children (640/697 or 92%) also showed a finite verb appropriately placed in second position.

To ensure that the children's high levels of accuracy were not attributable to use of a few familiar (and thus potentially routinized) *wh*-questions, we examined the children's accuracy on the non-subject-initial declarative sentences separately. These utterances yielded results that were very similar to the results for the overall data. The STD-MLU children used finite verbs in second position in 98% (777/794) of their non-subject-initial declaratives. For the SSLI children the corresponding figure was 91% (486/536).

As can be seen in Table 2, the SSLI children also produced a small number of non-subject-initial utterances with a non-finite verb. These totaled 13/697 or almost 2% of the children's non-subject-initial utterances. These utterances were not expected to occur.

Both groups of children produced another utterance type that was unexpected, a sentence with a finite verb that inappropriately followed rather than preceded the subject. Given the assumption of a correct setting of the verb-second parameter, the lexical material (the non-subject) presumably occupying the Spec position of CP should have led the finite verb to move to C. Although both groups of children produced utterances of this type, they comprised a higher percentage of the non-subject-initial utterances produced by the SSLI children (44/697 or 6%) than by the STD-MLU children (17/981 or 2%), t (26) = 3.42, p = .002, d = 1.77. All 14 SSLI children produced at least one non-subject-initial utterance with a finite verb following the subject. Ten of the 14 STD-MLU also produced utterances of this type. It can be seen, then, that when children of either group produced a sentence with a constituent other than the subject in initial position, the verb was usually finite and located in second position. However, the SSLI children produced a larger percentage of utterances that might be interpreted as having appropriate checking at Tns but no movement of the verb to C.

4. GENERAL DISCUSSION

The results of Study I indicated that the ESLI children were significantly less consistent than their Swedish counterparts in using present tense inflections, past tense inflections, and copula forms, but the two groups did not differ in their use of noun plural inflections. The results of Study II indicated that when producing non-subject-initial utterances, the SSLI children showed high percentages (M = 92%) of accurate verb-second use with finite verbs. Nevertheless, they were less proficient than the STD-MLU children in placing the finite verb before the subject. Before discussing these findings in terms of the EUCC, we consider other factors that may have been responsible for the results.

One possibility to consider is that the SSLI children managed to exhibit high percentages of use of the finite verb forms because they were relying on a default form (see Paradis and Crago (2001)). According to this interpretation, these children were not displaying evidence

of checking at Tns (only), but of producing some well-rehearsed form that only resembled a verb expressing tense. This possibility does not seem likely, for several reasons. First, as reported in Study I, the SSLI children were generally accurate with past as well as present tense inflected verbs, and were already at adult-like levels in using infinitives when these were obligated. Therefore, the children would have to have acquired up to three different default forms for each verb, and have had a good grasp of the appropriate context for each. In addition, when errors were committed in contexts obligating present or past tense forms, these errors were usually productions of infinitive forms. Such errors are consistent with the view that Swedish is an "optional infinitive" language (Wexler, 1994). Finally, many of the children produced forms representing over-regularizations of past. Such forms reflect a creative, productive system and cannot be attributed to memorization.

Are there research design limitations that might have distorted the findings of Study I, rendering them uncharacteristic of the cross-linguistic similarities and differences that actually hold? One possibility is that the Swedish-speaking children selected for participation were not as severely impaired in language as the English-speaking children. However, we are unable to find any hints that this may be the case. The expressive grammar test scores of these children, like those of the English-speaking children, correspond to the lowest 2% of the normative sample (more than 2 SD below the mean for their age). It should also be noted that in the Hansson et al. (2000) investigation, these Swedish-speaking children used both present tense copula forms and regular past tense inflections in significantly fewer obligatory contexts than younger typically developing children matched for MLU. Yet, in the present study, these grammatical morpheme types were used to a significantly greater extent by the SSLI children than by the ESLI children. Furthermore, for each of the morpheme types, the percentages of use observed for the ESLI children were, if anything, slightly higher than the values reported in previous studies of English-speaking children with SLI of the same age. For example, Leonard (1995) reported percentages of 34 and 32 for present and past tense inflections, respectively. Rice and Wexler (1996) reported percentages of 37 and 30 for these same inflections. In the present study, the percentages for the children with SLI were 53.64 and 53.31, respectively.

Another possible source of distortion in the data lies in the number of obligatory contexts obtained for each grammatical morpheme type. It seems plausible that the group differences were seen for precisely those morpheme types that had the fewest obligatory contexts. If this were true, it might be argued that the smaller number of obligatory contexts produced data that were unrepresentative. However, this does not appear to be the case. Group differences favoring the SSLI children were seen for the grammatical morpheme types showing the most obligatory contexts in both the Swedish and English data (present copula forms) as well as for those showing the fewest (past tense inflections).

A major assumption of this investigation was that the single checking operation permitted by the EUCC will lead to greater use of present tense inflections and copula forms by the SSLI children than by the ESLI children. In Swedish, these finite forms can arise in two ways. First, the interpretive/conceptual property could over-ride the EUCC. Second, checking could occur at Tns only; because these Swedish finite forms do not express agreement, they will not be suppressed if AgrS is not projected. Only if checking occurs at Agr rather than

Tns will non-finite forms result. In contrast, in English, there is only one way in which present tense inflections and copula forms can be expressed, namely, when the interpretive/conceptual property wins out over the EUCC. Otherwise, either checking at AgrS only or at Tns only will be sufficient to block the expression of the morpheme. These expectations were borne out in the data; the SSLI children were more consistent in using these morpheme types than were the ESLI children. Noun plural inflections, which are not subject to the EUCC, did not reveal a difference between the two groups.

The basis for predicting group differences (favoring the SSLI children) in the use of past tense inflections was somewhat different. In both languages, checking at Tns only can allow for the appearance of a past tense verb form, as neither the past tense in English nor the past tense in Swedish involves agreement. Therefore, checking at Tns only will not have an adverse effect on the expression of the required morpheme. However, as a verb-second language, Swedish allows fewer ways for a non-finite form to find expression. In English, checking at AgrS only will result in a non-finite verb form. In Swedish, checking at AgrS only will result in a non-finite verb form only if no lexical material is in the Spec position of CP. If lexical material is in this position, the appearance of a non-finite verb will violate the verb-second parameter and the derivation will crash. That is, no such utterance will be generated. On the other hand, if checking occurs at Tns only, a past tense form will emerge regardless of whether lexical material appears in the Spec position of CP or not. If this position is unfilled, the verb-second parameter is not relevant. If the position is lexically filled, the past tense form will meet the (finite verb) requirements of the parameter and will move to C. It should be noted that these theory-internal outcomes can serve as a basis for predicting a Swedish advantage for the use of present tense inflections and copula forms as well as past tense forms. However, they seem especially important for the prediction for past tense. As noted earlier, there are other reasons to predict a Swedish advantage for the use of these other finite forms. Our expectation of greater use of past tense forms by the SSLI children than by the ESLI children was confirmed by the data. A significant difference favoring the SSLI children was seen.

In Study II, the dominant sentence type used by the SSLI children proved to be consistent with predictions of the EUCC account. The non-subject-initial utterances produced by these children usually contained a finite verb that appropriately occupied second position. The appearance of the finite verb could have been occasioned by checking at Tns only, as no other checking is required to enable expression of the finite verb forms of Swedish. The second position of the verb was prompted by the correct setting of the verb-second parameter and the presence of lexical material in the Spec position of CP (as only non-subject-initial utterances were examined in Study II). Thus, the finite verb moved to C.

Although the EUCC account seems to predict the dominant pattern seen in Study II, there are details that it does not seem to accommodate. First, in 13 (almost 2%) of the SSLI children’s utterances, a non-finite verb form was produced despite the appearance of a constituent other than the subject in sentence-initial position. In five of these, the verb occupied second position; for the remaining eight, the verb followed the subject. We cannot account for these utterances, given the assumptions we have made. A remaining detail may have even more importance: Why did the SSLI children differ from the STD-MLU children

in the percentage of non-subject-initial utterances containing a finite verb that followed rather than preceded the subject? These constituted only a minority (approximately 6%) of the non-subject-initial utterances produced by the SSLI children. However, both the total number of such utterances in the SSLI data (44) and the number of different SSLI children contributing such utterances to the data (all 14 children) suggest that they should be explained in some manner.

Some scholars have proposed that AgrS and Tns are projected in young children's grammars but C is not projected until somewhat later (e.g., Meisel and Müller (1992)). An approach of this type for SLI might account for the presence of XSV utterances with finite verbs because the verb would presumably remain in Tns and the subject would remain in the Spec position of TnsP. However, this approach has no way of explaining why the great majority of non-subject-initial utterances showed a finite verb appropriately placed in second position.

We can only speculate about why the SSLI children occasionally produced finite verbs without using them in second position. It seems plausible that the instances of XSV sentences with finite verbs were cases in which the subject DP occupied the Spec position of CP (prompting the finite verb to move to C) but the child altered the utterance for pragmatic reasons and produced a sentence-initial adverbial through adjunction to the left of the CP. This seems especially reasonable given that an inspection of the SSLI children's samples revealed that 75% of their utterances were subject-initial (SVX) sentences. Many of these could have been cases in which the subject DP occupied the Spec position of CP. Such cases of adjunction to the left of CP might reflect occasional formulation difficulties on the part of the SSLI children. They do not seem to constitute a fundamental problem in the grammar, given that in the great majority of instances, non-subject-initial utterances showed appropriate XVS order with a finite verb.

The degree to which this 'adjunct' proposal or alternative proposals are pursued should depend on the degree to which these exceptions are taken to be an accurate reflection of the SLI profile in Swedish. Future research should be devoted to this issue. Until this issue is resolved, the emphasis should probably be placed on the fact that the predictions of the EUCC approach were largely confirmed. Even in the case of verb-second use, the great majority of utterances produced by the SSLI children were in line with this account.

5. CONCLUSION

Since data from Swedish-speaking children with SLI were first published, we have been puzzled by the discrepancy between the observed data and our assumptions about what these data should have looked like. At the outset, we had expected that these children would produce a high proportion of infinitives in finite verb contexts, and relatively little evidence for the involvement of CP. Instead, we observed generally high degrees of use of appropriate finite verb forms, and generally accurate placement of the finite verb in second position. Based on the two studies reported in this paper, we believe that the EUCC offers considerable insight into this grammatical profile. Because Swedish verbs express tense but not agreement, the use of present and past tense verb inflections and copula forms will not be blocked if checking occurs only at Tns. The use of these morphemes will be substantial

and at significantly higher levels than the closest counterparts in English. Because checking at Tns only is sufficient for finite verb use, the correct parameter setting assumed in the EUCC approach should lead to a high degree of appropriate verb-second use. We do not presume that the EUCC constitutes a full account of the use of verb morphology and verb-second by Swedish-speaking children with SLI. Indeed, we have reported certain details that might not be handled by the EUCC account without additional assumptions. Along with possible refinement of its details, this account should be tested against data from a wider range of languages. In the meantime, it is hoped that the present application of the EUCC approach has shed light on some of the principles that govern children's grammars.

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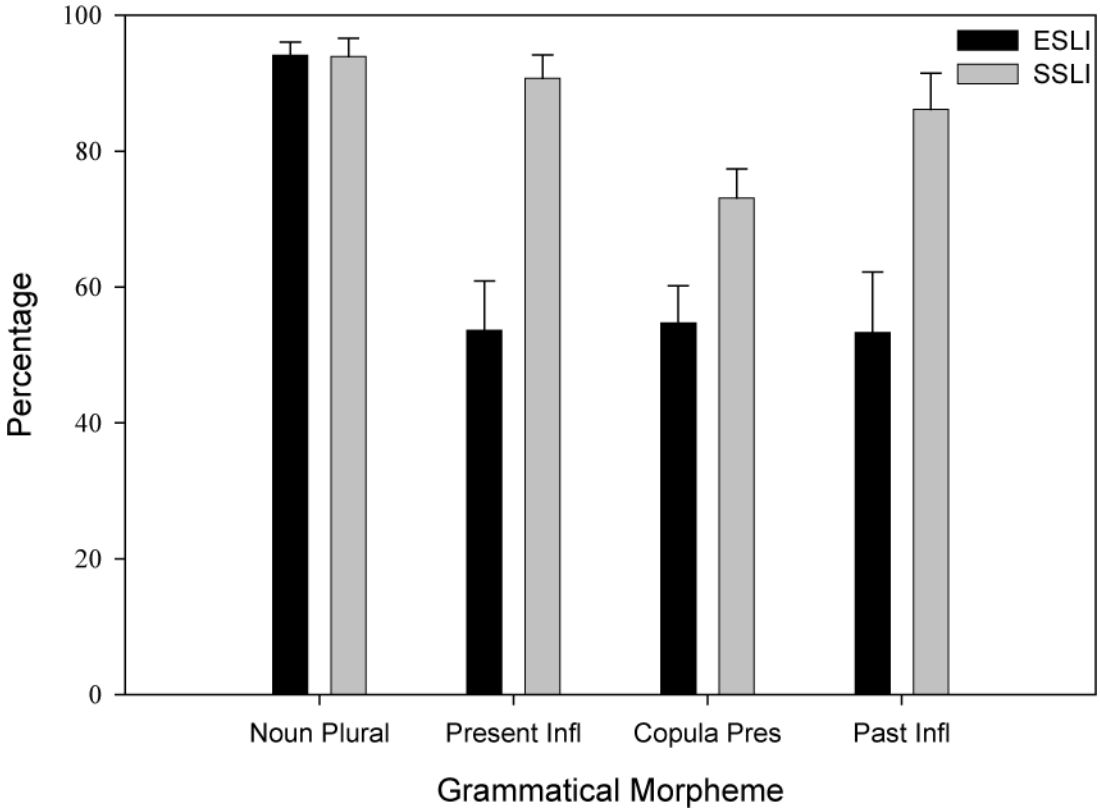

FIGURE 1.

Mean percentages of use (with standard errors) in obligatory contexts for the English- (E) and Swedish-(S) speaking children with SLI.

TABLE 1

The number of obligatory contexts for each grammatical morpheme type. Also shown is the number (N) of children in each language whose sample contained a sufficient number of obligatory contexts (5) for inclusion in the statistical analysis.

Grammatical Morpheme Type	Swedish	English
Present tense inflections		
M	50.43	24.07
Range	14–130	11–109
N	14	14
Past tense inflections		
M	17.41	13.54
Range	5–40	5–49
N	12	13
Present copula forms		
M	63.36	98.21
Range	29–120	32–166
N	14	14
Noun plural inflections		
M	28.16	55.43
Range	7–81	19–146
N	14	14

TABLE 2

Distribution of finite and non-finite verb forms in utterances beginning with a constituent other than the subject.

Group	Type of Verb	Correct Order (XVS)	Incorrect Order (XSV)
SSLI			
	Finite	640	44
	Non-Finite	5	8
STD-MLU			
	Finite	964	17
	Non-Finite	0	0

X = non-subject constituent, V = verb, S = subject.