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Subject Case in Children with SLI and Unaffected Controls:
Evidence for the Agr/Tns Omission Model

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1. PURPOSE

Specific Language Impairment (SLI) is a linguistic deficit in young children who do not have a corresponding "cognitive" deficit. There is a substantial body of evidence that argues that children with SLI have grammars that are complex, highly integrated computational systems, of essentially the same sort that unaffected children and adults have. On this view, the deficit in SLI is that particular features of this highly integrated system are lacking, or develop late (Wexler (1996), Rice, Wexler, and Cleave (1995), Rice and Wexler (1996b)).

The purpose of this paper is to present evidence for this view from an array of phenomena involving the notion of morphological case, a reflex of structural relations in the grammatical system. We will show that some complex interactions between case and verbal inflection are at work in the computational systems of English-speaking children with SLI. Thus, this investigation will provide further evidence that children with SLI have grammars that are governed by principles that also govern non-deviant linguistic systems.

It is important to be clear about what the empirical domain of concern is. Much recent work in morphosyntax has converged on the conclusion that there are two distinct grammatical systems with different properties, each of which often goes by the name "case." (See Schütze (1997) for review and discussion.) One of these, "abstract Case" or "structural licensing," determines the positions where noun phrases can appear in a sentence and forces A-movement, for instance in passives; we will not be concerned with this system here. The other system, "morphological case" (hereafter simply "case"), is responsible for featural distinctions among noun phrases that may be reflected in overt morphological inflections (e.g., the distinctions among Nominative (NOM), Accusative (ACC) and Genitive (GEN) forms of pronouns in English, and nouns in other languages). We assume that the two systems are largely independent, such that a child may have an adult-like structural licensing system but an apparently non-adultlike morphological case system. Nonetheless, we assume that morphological case markings arise from structural

relations in the syntax (e.g., subjecthood, objecthood, etc.). These syntactic relations determine the distribution of case features on noun phrases, and the morphological component of the grammar translates these feature specifications into inflections.

We will show that children with SLI (like unaffected children at a younger age) produce particular case-marked forms in contexts that do not exist in adult language. Thus, there is no way that the forms of case that the children produce could be a strict reflection of the input. As a result, the language of children with language impairment, as reflected in their production, can only be seen as a highly structured system with particular precise deficits in the inflectional system, reflected in an articulated array of facts about the distribution of case. Such a phenomenon is difficult for certain alternative theories to deal with. For example, a theory that suggests that children with SLI simply omit morphemes because the children have phonetic or "processing" or "learning" deficits cannot deal with the facts, because it would not predict the interaction of pronoun forms and verbal forms that we shall observe.

Although the specific topic of this investigation is case, we will be concerned throughout with the underlying theory of SLI. Moreover, our analysis of the language of children with SLI will provide evidence in favor of particular properties of the (unaffected) computational system of language.

2. LANGUAGE AS A BIOLOGICAL SYSTEM: LANGUAGE IMPAIRMENT

Much has been learned about the nature of human language and its development. There is a good deal of evidence that the language system of human beings involves a tightly interconnected, highly specified system of computational principles, usually called Universal Grammar (UG). Many of the principles of UG are known, at least to a first approximation. From studies of normal language and its development, there is good reason to believe that many of these principles are known to young children. The fact that grammar develops uniformly and quickly in most children in a speech community suggests that the underlying principles of this grammar are known to very young children, even though they are not derivable from the language input (the familiar "poverty of the stimulus" argument).

If a system is biologically specified in a species, there is no reason to expect that every member of the species will show identical developmental patterns quite the contrary, in fact. It is well known that genetic abnormalities might lead to differing patterns of development in a certain proportion of the members of a species. These abnormalities are typically constrained to a particular aspect of a system, so that the system might be mostly in place, but with particular aspects occurring deviantly. If a system is genetically specified, we would expect to find a pattern of differing development of particular aspects of the system within an overall pattern of normal development. Finding such a pattern would constitute further evidence for the biological specification of the system.

In recent years just such a system has been argued for, in the study of SLI. SLI is a developmental syndrome in which linguistic properties are apparently deviant or late developing, at the same time that other properties of the child (cognitive, intellectual) are within normal range. In a series of papers, it has been argued on the basis of extensive and rigorous longitudinal developmental studies that SLI involves the late (or non-) development of highly particular grammatical properties along with the normal

development of most other grammatical properties (Rice and Wexler (1996a; 1996b), Rice, Wexler, and Cleave (1995), Wexler (1996)).[1] If this view is correct, then SLI fits into the mold of many other biologically determined abnormalities, at once confirming language as a biological object and illustrating a further dimension to it.

The purpose of this paper is to extend these observations to the case system, which provides strong support for the general nature of the claim.

3. SLI AND THE OPTIONAL INFINITIVE STAGE IN UNAFFECTED CHILDREN

In the areas of clause structure, the inflectional system, and related grammatical properties, evidence to date shows that children with SLI are like unaffected children in that they know most properties of UG.[2]

The children with SLI are severely delayed on a particular subset of linguistic properties, those on which normal children (at a younger age) show non-adult behavior.[3] In order to see this, we must first briefly discuss what is known about clause structure and inflection in young unaffected children. The basic properties of this early grammar can be captured by Wexler's (1994, 1996) Optional Infinitive (OI) stage. Starting from observations in languages other than English, Wexler showed that in the OI stage:

(1) a. Children produce non-finite forms of main verbs
b. At the same age, children produce finite forms of main verbs
c. The children nevertheless know the grammatical (and most semantic) properties of finite and non-finite morphemes

The essential methodology that establishes the conclusions in (1) is the correlation between word order (including verb position) and inflectional morphology on the verb. We will not review the evidence for the conclusions drawn in (1) because they are mostly uncontroversial, having been affirmed and extended in the work of a large number of psychologists and linguists for many languages and constructions.[4] Wexler (1994) extended the OI stage to English, despite the fact that English, unlike other Germanic (and Romance) languages, does not have an audible non-finite morpheme that attaches to a verb stem. Rather, the morpheme is inaudible, a "zero inflection;" the non-finite form of the stem go is go. (For German these are geh vs. gehen, with -en the audible non-finite

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[1] We recognize that children with SLI are known to have limitations in lexical acquisition as is true of the sample we have studied. In fact, one of the criteria for selection was low performance on a measure of receptive vocabulary (cf. Table 2).

[2] These results concern the developing inflectional system. It may be that there are other grammatical constructions that are delayed in SLI. For example, Van der Lely (1996) presents evidence that passive is delayed in SLI children, and Rice and Wexler (in preparation) show that negative questions, late to develop in normal children (Guasti, Thornton and Wexler 1995), are also late to develop in children with SLI. It may turn out that a more general version of the hypothesis holds; namely, for any construction that is maturationally delayed in normal children (as with passive, cf. Borer and Wexler (1987, 1992), Babyonyshev et al. (1994)), children with SLI may be even more delayed on that structure, but children with SLI will not produce deviations that are unattested at some stage in normal children. Whether this is true in general remains to be seen.

[3] Clahsen (199X) argues that German children with SLI make a large number of agreement mistakes, as opposed to unaffected children, but this claim is controversial. It has not been confirmed in the German data of Rice, Knoll, and Grimm (1997) or in the Dutch data analyzed by Wexler, Schaeffer and Bol (in preparation).

[4] All discussion of "agreement" in this paper refers to subject agreement, "Agr-S" in recent syntactic work.

morpheme.) Wexler argued that the omission of 3sg -s (e.g., *Mary run), the existence of clauses with auxiliary and copula be omitted (*Mary going, *John pretty), the omission of past tense (*Mary push the car to mean Mary pushed the car) and the omission of dummy do (*What I win?) were all instances of optional infinitives (non-finite forms) in the OI stage in English. His model of the OI stage assumed that Tns was omitted from these clauses

The omission of Tns can be thought of in two ways: as the omission of an entire functional head from a tree, or as the omission of just a feature specification (in this instance, [Present] or [Past], without omitting the functional head in which this feature normally resides. While these two views are not notational variants, the differences between them are not relevant to issues in this paper, so we leave the matter open here.

At the same time, Wexler argued that agreement was known to the OI child, in the sense that there are very few agreement errors of the type in which an agreement morpheme on the verb disagrees with its subject. Poeppel and Wexler (1993) showed that this prediction held in OI German. This is harder to show conclusively for English due to the paucity of pure agreement morphology, but Harris and Wexler (1996) showed that there are almost no examples in OI English of the type *I goes, in which a first person subject occurs with a third person verb. This finding has been replicated with other children by Rice, Wexler, and Cleave (1995) and Rice and Wexler (1996b).

As Wexler (1994) argued, children know the correct grammatical features of basic clause structure and inflectional morphemes, including properties that dictate whether a particular language shows verb movement, etc. (cf. Pierce (1989), Weissenborn (1990)). These and related results led Wexler (1996; 1998) to propose the following hypothesis:

(2) Very Early Parameter Setting: Normal children set their basic clause structure/inflectional parameters correctly at least from the time they begin to produce two-word utterances.

In other words, children are outstanding learners of clausal and inflectional properties; they do it well and they do it before they have a chance to be corrected for making mistakes (i.e., before they produce the constructions).

In an intensive study of 5-year-old children with SLI comparing them with age-matched and language-matched controls, Rice, Wexler, and Cleave (1995) and Rice and Wexler (1996b) showed that the previous characterization of the OI stage held of children with SLI also, but that children with SLI remained in the OI stage far longer than normal children do. Thus, children with SLI are said to be in the Extended Optional Infinitive (EOI) stage. In fact, even when compared with younger language-matched controls, the affected children lag behind. Other studies of children with SLI, including much older children with SLI, confirm these properties, for example the omission of finiteness marking and the correct use of verbal agreement (Van der Lely, 1997).

In our opinion, the results obtained to date show clearly that English children with SLI have knowledge of basic principles of grammar. They know the properties of (subject-predicate) agreement, in particular that an agreement marker on a predicate implies that the subject of the predicate matches the agreement features. They know that plural NPs must be marked in certain ways. They know that when forms of be are used with a main verb in the progressive, the main verb has an -ing suffix. They know the basic word order of grammatical relations. What children with SLI do not know is that main verbs must be finite. They lag severely behind normal children, and at quite an old

age are distinctly different from adults in their behavior on this piece of grammatical knowledge. Still, children with SLI know many properties of the morphosyntax of English, especially verbal inflection. Since the phonological form and syntactic feature specifications of grammatical morphemes are clearly not universal, the only way for a child to come to that knowledge is by learning the morphemes through experience. Therefore, one cannot claim that children with SLI have a "learning" deficit; if they know the features of inflectional morphemes, they have learned them appropriately.

Although there is good agreement in the empirical literature on the descriptive facts of many constructions in the OI stage, there is more disparate opinion about how to characterize the deficit and its cause at a deeper level. There are a number of theories. (For a review and comparison of a number of these theories, in particular Rizzi's (1994) truncation theory and Wexler's Optional Tense Model, see Schönenberger, Pierce, Wexler, and Wijnen (1995)). Here we will not enter into the debate on the deeper description of the OI stage, and hence by hypothesis of the EOI stage. We will simply assume that certain components of Inflection (INFL) may be optionally missing from the representation of a sentence in the OI stage. This follows one model proposed by Wexler (1991, 1992, 1994), which hypothesized that Tns was optionally omitted. When Tns is not omitted, an adult-like (finite) sentence emerges. When Tns is omitted, an OI sentence emerges. We will adopt a modification of this model that allows for Subject Agreement (Agr)[5] omission as well as Tns omission, as proposed by Schütze and Wexler (1996) and developed in Schütze (1997).

4. THE INTERACTION OF THE INFL AND CASE SYSTEMS IN UG

The reason we have proposed that two components of INFL may be omitted and have not limited ourselves to Wexler's assumption that Tns is omitted in the OI stage is that Wexler's assumption does not seem sufficient to explain the known properties of the development of case. Rather, a somewhat more complex model seems to be needed. We will briefly review the findings that led to this conclusion.

In English, case (other than GEN) is visible only on pronouns. In general, subjects have nominative case (3a), objects have accusative (or objective) case (3b), and possessors (and other NP specifiers) have genitive case (3c).

(3) a. He/she/I/we/they saw Bert
b. Ernie saw him/her/me/us/them
c. his/her/my/our/their book

Case is a reflection of structural grammatical relations; it cannot be explained via thematic relations or other similar notions. Thus, the study of case in children is the study of particular grammatical (syntactic and morphological) properties.

It has long been observed that there are many "errors" of case in young English-speaking children's productions, by which we mean uses that are not possible for adults (Aldridge (1989), Budwig (1989; 1995), Gruber (1967), Huxley (1970), Powers (1995), Rispoli

[5] We will ignore such issues as the existence of languages that do not show an Optional Infinitive Stage (the rich agreement null-subject languages, cf. Guasti (1994), Hoekstra & Hyams (1995), Rizzi (1994), Sano and Hyams (1994), Wexler (1994; 1996)). There are a variety of explanations for why certain languages do not show OIs, explanations that are in the spirit of (1) and that extend our knowledge of the cause of OIs. The existence of OIs interacts with the nature of the input language; nevertheless, it can be shown that this assumption is compatible with children being in the same internal developmental stage across languages (Wexler 199X).

(1994), Tanz (1974), Vainikka (1994), inter alia). In particular, subjects of matrix clauses, which are NOM for adults, are often ACC or GEN for children, for example:

(4) * my/me/him going

We will refer to the "erroneous" subject forms as non-nominative (nonNOM).[6] Several researchers have suggested that these errors could be the result of default case. Following Wexler's Tense-Omission model, Bromberg and Wexler (1995) assumed that Tns was implicated in assigning NOM case, so that when Tns was not available in OIs, NOM case could not be assigned. They assumed that English has a default morphological case (cf. Marantz (1991)), that is, a set of forms that are used by the morphology to spell out nominals that receive no case feature specification within the syntax (see below for further discussion). ACC is clearly the default case in English,[7] as argued in detail by Schütze (1997); some of the evidence for this comes from its appearance in the environments in (5).

(5) a. Me/*I, I like beans. (subject-related dislocation/appositive)
The best athlete, her/*she, should win.

b. Me/*I too. Not us/*we. Me/*I neither. Me/*I next! (ellipsis)

c. Who did it? Me/*I. (bare pronoun reply to subject question)

d. She grew up in Jacksonville, me/*I in Tallahassee. (INFL gapping)
We can't eat caviar and him/*he (eat) beans.

e. Us and them/*We and they are gonna rumble tonight. (conjoined subject)

f. The real me/*I is finally emerging. (modified subject pronoun)
Lucky me/*I gets to clean the toilets. Us linguists are a crazy bunch.

g. It was us. There's me/*I. The murderer is her/*she. (post-copular DP)
If you were me/*I

Thus, when Tns is omitted from a representation, a subject pronoun would show up in the ACC form.

There are two clear predictions from the assumption that Tns assigns NOM. First, finite (tensed) sentences should have only NOM subjects. This seems to be true see Loeb and Leonard (1991) and Schütze and Wexler (1996) for evidence, including data from children with SLI in Loeb and Leonard's study.

Second, since OI sentences are missing Tns and thus cannot assign NOM case, only nonNOM subjects should be able to show up in OI sentences. This is clearly false. As Schütze and Wexler showed, many OI sentences have NOM subjects. Thus, some previous assumption must be altered. It has often been argued on adult linguistic grounds that it is not Tns, but rather Agr, that assigns NOM case (see Schütze 1997 for evidence from numerous languages). Therefore, Schütze and Wexler proposed tying case possibilities to omissibility of Agr: when Agr features are present, the subject is NOM;

[6] We are using "nonNOM" as a purely descriptive cover term for "forms of pronouns other than the NOM form."

[7] Vainikka (1994) suggested that GEN could also be viewed as a kind of default case, based on cross-linguistic data; see Schütze (1997) for discussion.

when Agr is missing, the subject is in the default case (ACC).[8] Agr could not be the only component of INFL that is omissible in child language, however, because if that were true, nothing would account for the existence of NOM subjects with OIs. If missing Agr were the only way that an OI could arise, then all OIs should take nonNOM subjects. Thus, Schütze and Wexler proposed that either Agr or Tns (or both) could be missing from a child's structural representation of a sentence, a two-factor model.

In order to draw out the full set of predictions of this model, we need to establish some properties of the morphological component of the grammar. For concreteness, we will frame the discussion in terms of Distributed Morphology (Halle & Marantz 1993), though other theories may be compatible as well. We adopt a "late insertion" view of morphology, in which vocabulary items are inserted into a syntactic tree after the surface structure has been generated. Further, it will be crucial for us that the choice of vocabulary item to insert in a given structure is governed by two principles. First, each morpheme is specified for a set of features all of which must be present in the syntactic representation in order for that morpheme to be inserted. However, the converse is not true: not all of the features in the syntactic representation need appear in a vocabulary item that is inserted. Second, when more than one vocabulary item is consistent with the syntactic structure (i.e., contains a subset of the features specified there), the most specified item that matches must be inserted. As a consequence of these two tenets, Distributed Morphology naturally includes default vocabulary items for various kinds of syntactic nodes (e.g., pronouns and INFL). These defaults can be underspecified with respect to relevant features such as case, tense, or agreement. The child can draw upon the items of the adult language to automatically "fit" into environments where Tns and/or Agr are missing. As a result of the above properties, Distributed Morphology embodies the traditional Elsewhere Principle, whose operation we crucially attribute to the children under study here, as part of UG.

Let us step through how this approach to morphology applies to the particular morphemes we are concerned with. For example, consider 3sg present tense -s in English, as in (6a):

(6) a. she likes beer
b. * she like beer

The affix -s is specified in the lexicon as requiring that the value of the feature Tns be [Present] and that the value of the Agr (subject agreement) feature be [3sg]. In other words, -s is specified for both Tns and Agr; this is because s does not appear on 3sg non-present verbs, nor on present non-3sg verbs. If either Tns or Agr features (or both) are missing from the representation of a clause, -s cannot be inserted. Since no other overt affixes of English match the feature specifications of the sentence (as we shall see directly), an OI will appear, as in (6b).

Schütze and Wexler (1996) provide the following features for the relevant verbal suffixes in English, following Halle and Marantz (1993):

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[8] It has sometimes been suggested that choice of subject case form in child English might be tied to verb class or some related semantic notion. In unpublished work, Schütze finds no such pattern for the four CHILDES transcripts he studied: virtually every verb that occurs with a nonNOM subject is used by the same child with a NOM subject. The present study does not have a large enough data sample per child to make such an analysis meaningful, but impressionistically there do not seem to be any such correlations here either.

(7) a. -s [3sg] [Tns=Present]
b. -ed [Tns=Past]
c. -Ø [ ]

The morpheme in (7c) is the phonetically empty morpheme, the one that appears on the verb in I like beer. This morpheme is not specified for Tns or Agr features, so it is inserted as a default verbal inflection whenever none of the other verbal inflections is consistent with the syntactic representation. For example, in a clause in which INFL is marked as [Agr=1sg] and [Tns=Present], neither -s nor -ed will be insertable, so -Ø will be inserted. (See Halle and Marantz (1993) for arguments that this empty morpheme is needed independently to account for adult English.)

A second set of morpheme specifications is relevant to getting the properties of case right, namely the specifications for pronouns in English.[9] Schütze and Wexler assume these to be as follows:

(8) a. he [3sg] [masc] [NOM]
b. she [3sg] [fem] [NOM]
c. I [1sg] [NOM]
d. him [3sg] [masc]
e. her [3sg] [fem]
f. me [1sg]

Other pronouns, including the plural pronouns, work analogously.[10] The crucial point is that the ACC pronouns are not specified for ACC, but rather are inserted whenever no NOM feature is present. That is, it is a property of the morphology of English (but not of many other languages) that a pronoun that is syntactically unspecified for case features will be realized using the same form as a pronoun that is syntactically specified for ACC case. In a framework such as Distributed Morphology in which lexical entries can be underspecified, the fact that these forms coincide can be encoded using a single lexical entry for a pronoun like him, if the forms that realize other case features (e.g., NOM, GEN[11]) are specified for those case features (as in the above examples).

Schütze and Wexler assume that as a general principle of UG, NOM is required on the subject whenever Agr is specified in the phrase marker. When Agr is not specified, NOM will not be specified on the subject, nor will any other case feature, and thus the morphology will not allow the NOM pronoun to be inserted. Rather, the default case pronoun will be the only consistent member of the competing set of pronouns, so it will be inserted. This analysis critically embodies the claim that there is nothing syntactically wrong with an NP that lacks a case feature specification per se (see Schütze 1997 for extensive discussion);[12] rather, the presence of a case feature is forced in the adult grammar by the obligatory presence of Agr.

In assessing the predictions of this view, Schütze and Wexler first establish that the children know the relevant set of morphemes and the correct (adult) specifications

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[9] Here and throughout, we ignore *it* since it does not show case contrasts.

[10] It is conceivable that there is a default value for number, so that the singular pronouns are unspecified for number and only the plural pronouns are specified. Since such considerations do not play a role in this paper, we ignore that possibility.

[11] We ignore genitive pronouns in this analysis; see Schütze (1997) for references and discussion.

[12] In particular, such an NP does not violate the Case Filter, because in our view this is a constraint requiring structural licensing, not morphological case.

that define the environments in which the morphemes may be inserted. For children who have reached this stage, clear predictions are made. These are:

(9) a. With verbal forms that specify agreement, subject pronouns will always be NOM.

b. With verbal forms that do not specify agreement, the subject pronoun can be either NOM or nonNOM.

OIs appear with both NOM and nonNOM subjects, because an OI may have Agr or not. The possible syntactic feature combinations for INFL and their associated realizations are laid out in (10); these follow from the definitions of the features on the verbal inflectional morphemes in (7), together with the principles of Distributed Morphology.[13]

(10) a. [+Agr=3sg, +Tns=Present] > -s

b. [+Agr, +Tns=Past]
[-Agr, +Tns=Past] > -ed

c. [+Agr=3sg, -Tns]
[-Agr, +Tns=Present] > OI
[-Agr, -Tns][14]

Note that (10) is simply a descriptive summary of our predictions, not to be confused with the actual lexical entries posited in (7). (10) depicts the output of the child's syntax coupled with the morphology of English. Given these distributions, the range of possible clause types predicted under our hypothesis that Tns and Agr can be independently omitted are as shown in Table 1. This table shows how verbs will be spelled out, given particular feature combinations in INFL, and the case of the subject that is predicted by the claim that Agr rather than Tns determines the presence of NOM case. Each feature matrix in (1) corresponds to a cell in Table 1. These are the only possibilities predicted to occur. The letters in (10) and Table 1 are used to group cells that contain the same verb forms, which will be relevant below. Past tense and modals are grouped together in this analysis, as "b" cells, because neither marks any agreement distinctions in English. Furthermore, we take the presence of a modal to imply the presence of Tns, since in English, modals cannot appear in untensed clauses, and they show a positional distribution consistent with their being in an INFL head. Table 1 also includes our predictions for the distribution of auxiliaries and copulars with respect to subject case; for reasons of space, we do not present the corresponding lexical entries. (See Schütze 1997 for further arguments and discussion.) We assess the predictions of this model below.

5. RESEARCH PARTICIPANTS

The children investigated here participated in a longitudinal study currently being conducted by Rice and Wexler. We report findings from Rounds 1 and 2 of that data collection. A detailed description of the children together with a set of inclusionary and

[13] We are using the notations "+Agr" and "-Agr" as shorthand for ëagreement features are present in INFLí and ëagreement features are absent from INFL,í respectively, and similarly for Tns. This notation does not refer to a binary feature than can be specified as + or –.

[14] A clause that is [-Agr, -Tns] is one that is specified neither for any Tns feature nor for any Agr features. Absence of these features does not necessarily imply absence of the corresponding functional heads, as noted earlier.

exclusionary criteria and the subjects' scores on a series of criterial tests (including standard tests) is given in detail in Rice, Wexler, and Cleave (1995) and Rice and Wexler (1996b). (See Table 2 for subject descriptors.) Here we just briefly reiterate the main points. Children in the SLI group were on the average 4;9 at Round 1 and 5;5 at Round 2. These children had both receptive and expressive difficulties in language, but were within normal range on intelligence and auditory capacity. They passed a preliminary speech probe showing intelligible pronunciation of the target morphemes. The "language-matched" 3N group were control children selected for levels of MLU equivalent to the SLI group at Round 1. Their average age was 3;0 at Round 1 and 3;7 at Round 2. That is, they were about 2 years younger than the SLI group. There were 20 children in the 3N group, 21 in the SLI group at Round 1, and 23 in the SLI group at Round 2.[15] There was a third group studied, the "age-matched" 5N group, which we do not report on here, since they achieved essentially perfect scores on the relevant measures at both times of measurement.

6. METHOD

We analyzed the forms of subject case and verbal inflection from the children using two types of data. The spontaneous data, collected at each round, was simply a recording of the child during natural production. See Rice, Wexler and Cleave (1995) for a description of the details of this data collection and how the analysis was carried out. At each round, we also conducted an experimental "probe" test, in which we elicited sentences with 3sg pronoun subjects. A probe task was used because case in English shows up only on pronouns, so we had to make sure that we had enough subject pronouns to analyze; therefore, we constructed contexts that made these likely. Also, in spontaneous speech it is often difficult to determine precisely what the child intends to say; in particular, it was relevant for us to know the intended temporal reference of an utterance, in order to determine whether a past tense morpheme had been omitted by the child.

7. RESULTS AND DISCUSSION

7.1. Case

First, let us look at the use of case, abstracting away for the moment from the relation of case and verbal inflection. For the spontaneous production data, Table 3 shows percentages of nonNOM 3sg subject pronouns for both groups, for both rounds of measurement. In the calculation of the percentages, the denominator is the total of nonNOM (i.e., him, his,[16] her) and NOM (he, she). Examples of actual utterances with nonNOM subjects are listed in (11).

(11) a. Him stand on chairs.
b. Her watching TV.

The data were analyzed in a 2-way mixed model ANOVA, using SAS software, treating Group as a between-subjects factor and Round as a within-subjects factor, and the intercept as a random variable. There was a significant main effect for group, $F(1, 44) = 4.4$, $p < .05$. Round did not show a significant effect. The interaction of Group by

[15] Three of the children with SLI dropped out of the study after Round 1, and five new children joined for Round 2, so there are 18 children with SLI whose data appears in both rounds. The 3N group did not change.

[16] We observed a single instance of genitive *his* in subject position.

Round was significant, $F(1, 38) = 5.53$, $p < .05$. As predicted, the SLI group was more likely to use nonNOM subjects, a difference that lessened over time.

These findings can be compared to other transcript data from children of ages comparable to the children in our Round 1 data. The mean percentage of nonNOM case for Loeb and Leonard's (1991) sample of control children is 23%, with a standard deviation of 29.6, values very similar to those reported here. For their SLI group, the mean is 50%, with a standard deviation of 48.9, also a similar value. Altogether, the findings from the two studies are congruent with regard to case marking (cf. Also Moore, (1995)). In contrast, Clahsen, Bartke, and Göllner (1997) evaluated utterances from a sample of older children with SLI (from Van der Lely's database), and found that "English SLI children do not produce any nonNOM subjects, even in sentences with bare (uninflected) stems" (p. 167). It is clear how this discrepancy arose: the children with SLI analyzed by Clahsen et al. (1997) were much older, 10;0 to 13;01. In our data, in subsequent rounds of data collection, children with SLI have virtually ceased making these errors at 7 years.

The probe data are reported in Table 4, by group, by round.[17] As with the spontaneous data, the probe data were analyzed in a 2-way ANOVA, group by round, using SAS software. As before, there was a significant group effect, $F(1, 41) = 12.19$, $p < .001$. Round was a nonsignificant factor and the interaction was nonsignificant. The spontaneous and probe data agree on the conclusion that although there are some nonNOM subjects in the 3N children's responses, there are significantly more in the children with SLI, and this holds for both rounds of data.

In order to know how to interpret the contrast of nonNOM rates between the 3N and SLI groups, it is important to look at how children with SLI are using pronouns in contexts other than subject position, to check whether they might have a general problem with case. Therefore, we also tabulated the case forms used in ACC positions (complements of verbs and prepositions and other environments where ACC is used by adults). Since there are fewer of these, we pooled across 1sg, 3sg, 1pl and 3pl pronouns. As Table 5 shows, the 3N children produced no errors at all with objects, and the children with SLI produced only one error in each round, for error rates of 0.5% and 0.4%. The contrast with Tables 3 and 4 is striking. It is clear that neither group of children is confused about the distribution of case-marked pronouns in general; rather, we need an account that relates specifically to subject position.

In summary, our observations confirm that both unaffected children and children with SLI produce nonNOM subjects, but that children with SLI are likely to produce them at a much later age than normal children do, consistent with Menyuk (1964) and Loeb and Leonard (1991). We have argued that children with SLI are in the Extended Optional Infinitive stage, which is characterized by the Agr/Tns Omission Model (ATOM), and that NOM assignment requires Agr. Thus, we predicted that children with SLI would show a larger rate of nonNOM subjects than would unaffected children matched for MLU.

7.2. Contingencies Between Case and Inflectional Category

The Agr/Tns Omission Model (ATOM) of Schütze and Wexler (1996), as revised in Schütze (1997), makes more fine-grained predictions about nonNOM subjects, as we

[17] No genitive pronouns (*his*) were observed in subject position.

have already mentioned. It predicts that when Agr exists in the representation of a sentence, a NOM subject must be produced, and when Agr is missing from the representation of a sentence, an ACC subject (the default form of the pronoun) must be produced. As laid out in Table 1, when we observe a verb form with the -s suffix (e.g., walks), we know that Agr features must have been present in the syntactic representation, or else the conditions for insertion of -s would not have been met. When we observe a verb form with no -s suffix (e.g., walk, walked), the properties of English conspire to prevent us from being able to determine whether Agr was present in the syntactic representation or not. For example, in *Mary walk, the -s suffix might be absent because Agr was not syntactically specified, or because another member of the feature set for -s was absent from the syntactic representation, viz. the feature [Tns=Present]. Thus, as can be seen in Table 1, when a verb form shows agreement, the subject is predicted to be NOM. However, when no distinct agreement marking is visible, the underlying representation may or may not have had Agr features, and so either NOM or nonNOM may be produced.

In order to investigate these predictions, we classified utterances into Agreeing, Ambiguous (with respect to agreement), and Uninflected. "Agreeing" forms include main verbs with -s (e.g., likes), and agreeing auxiliaries and copulas (e.g., is/are). "Ambiguous" forms include past tense verbs (e.g., liked), and modals (e.g., can). Uninflected forms include main verbs missing -s (e.g., *Mary like), omitted auxiliaries and copulas (e.g., *Mary going, *Mary pretty, and the rare instances of uninflected auxiliaries [e.g., *Mary be]). This category also included main verbs that were intended as past tense but semantically were not marked as such.[18]

In principle, the ATOM predicts that nonNOM forms will not occur with the "Agreeing" verbs, abstracting away from performance variation in children's utterances. It further predicts that nonNOM subjects can occur with "Ambiguous" and "Uninflected" forms. On the assumption that omission of Tns is orthogonal to omission of Agr, it is expected that the rate of nonNOM subjects in these two categories will not be equal. To assess the expected proportions, we need to compare the [b] cells with the [c] cells in Table 1. Note that ambiguous verb forms appear in the two [b] cells, one NOM and one nonNOM, and that these two cells include all and only utterances with [Tns=Past] or [Tns=modal]. Contrast this with the uninflected forms in the three [c] cells. The set of utterances from the two cells for [-Tns] are predicted to show the same nonNOM rate as the set of utterances from Ambiguous verbs. However, in addition to the [-Tns] utterances, the Uninflected utterances include the cell for [Tns=Present], [-Agr]; all of these are predicted to take nonNOM subjects. Thus, pooling this cell with the previous two will increase the predicted nonNOM rate across the three [c] cells, making it greater than the nonNOM rate for ambiguous utterances across the two [b] cells.

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[18] We excluded donít from the analysis, as in she/he donít or her/him donít. The reason is that there appears to be an acceptable dialect in Kansas that allows donít with third person singular subjects, although it appears to be missing agreement in standard English. Many of the children's parents use forms like he donít. For children who had a grammar which allowed this, donít would be ambiguous with respect to whether or not agreement was present on the underlying form, similarly to a first person form like I like ice cream. That is, on the ATOM, either NOM or nonNOM subjects could be observed with donít. Therefore, a total of 16 utterances from the SLI group and 19 from the control group were excluded, which included both NOM and nonNOM pronouns. Most of the children who produced donít with subject pronouns did not produce doesnít with subject pronouns.

To summarize our predictions, we expect different nonNOM subject rates across the three categories of inflection. Agreeing verbs should show the fewest nonNOM subjects, in principle none at all. Ambiguous verbs should show some nonNOM subjects, more than the agreeing verbs, and uninflected verbs should show the highest proportion of nonNOM subjects. As we shall see, this is generally the pattern that we observed

7.2.1. Third Singular Subjects

In Table 6 we present the rates of nonNOM subject use in spontaneous utterances as a function of inflections for both groups in both rounds. To examine the overall relationship of inflection categories over rounds, we computed a 2-way ANOVA using SAS software, treating Inflectional Categories and Round as within-subject variables, for each group. For the 3N group, there was a significant main effect for Inflectional Category $F(2, 89) = 6.13$, $p < .01$. Neither Round nor the interaction of the factors were significantly different. As shown in Table 6, uninflected utterances were most likely to have a nonNOM 3sg subject pronoun, as predicted, a pattern that held across rounds. For the SLI group, there were significant main effects for each factor: Round, $F(1, 90) = 10.85$, $p = .001$; Inflectional Category $F(2, 83) = 5.12$, $p < .01$. This shows that there were differences among levels of Inflectional Category, and differences between rounds, and the differences among Inflectional Categories were the same across rounds. As with the 3Ns, the rates of nonNOM are highest in Uninflected utterances, lowest in Agreeing, and in between for the Ambiguous utterances.

Table 7 reports the percentage of nonNOM 3sg subject pronouns in Probes, by Inflectional Category, Group, and Round. In the probe data, utterances fell into two categories (because past tense was not elicited): Agreeing and Uninflected. Analyses followed the same design and method as for the spontaneous data. For the 3N group, there was a significant main effect for Inflectional Category, $F(1, 34) = 18.8$, $p < .001$ and for Round, $F(1, 33) = 12.9$, $p = .001$. Further, there was a significant interaction of the two factors, $F(1, 34) = 7.26$, $p < .01$. This shows that the children were more likely to use nonNOM subject pronouns in Uninflected utterances, and the probability was higher at the second round. Inspection of individual subject data showed that some of the children at the second time of measurement used many more "her" subjects and these were especially frequent in the uninflected utterances. For the SLI group, there was a significant main effect for Inflectional Category, $F(1, 40) = 35$, $p < .001$. Neither Round nor the interaction of the two factors were significant effects. This shows that the greater likelihood of nonNOM in Uninflected utterances persisted over rounds.

Considering the congruence of outcomes, across the two measures, the conclusion is that the likelihood of nonNOM subjects is strongly inflected by Inflectional Category, and this relation holds for both groups of children. At the same time, there is considerable variation across children, as shown by the size of the observed standard deviations. Such variation acts to reduce the power of detecting such differences, suggesting that the obtained significant differences are relatively robust. The variation across children also suggests that their language production is subject to performance factors that may obscure the underlying grammar. This is what may be at work in the finding that children do sometimes use nonNOM pronouns in utterances with Agr.

7.2.2. Third Plural Subjects

Let us briefly discuss the spontaneous data for 3rd person plural subject pronouns. (Plural pronouns are not included in the probe data.) Table 8 shows the NOM (they) and

nonNOM (them) forms as a function of the inflection of the verb. Because of the relatively small number of plural subject pronouns, we did not separate agreeing and ambiguous verbs, instead classing them both as inflected.

As Table 8 shows, the control children produced no nonNOM plural pronoun subjects. There were very few uninflected verbs with pronoun subjects, so the lack of nonNOM subjects may simply result from too small a base rate. At each round, the children in the SLI group used very few nonNOM pronouns in inflected sentences, and considerably more nonNOM pronouns in uninflected sentences. These results on plural pronouns agree with our conclusions concerning singular pronouns, lending further support to the ATOM.

7.3. Adjusting for Case Contrasts

Given the view of morphology we have adopted, a child's lexical inventory (i.e., the set of words and morphemes they have learned), is predicted to have a substantial impact on the sorts of utterances they may produce, above and beyond of the state of their syntax. A relevant instance of this arises for children who have not yet learned the full set of English pronouns, and in particular, are missing one of a pair of contrasting case forms (him vs. he or her vs. she). If morphemes are specified only for the features needed to distinguish them from other morphemes in the lexicon, then a child who has only one 3sg masculine pronoun will have it unspecified for case, regardless of whether the form is he or him. As a result, such children are predicted to use that one form in all syntactic environments. This possibility could work for or against the hypothesis we are testing. If the child, say, has only the nonNOM form of a pronoun (e.g., her but not she for the third person singular feminine pronoun), then the nonNOM form could appear with agreeing verbs. On the other hand, if the child has only the NOM form of a pronoun (e.g., she but not her), then that child is incapable of producing counterexamples to our predictions. Thus, children with only one form of 3sg masculine or feminine pronouns should not be counted in assessing a dependency between subject case and verbal inflection, since they are in principle unable to make the relevant contrast.

In light of this potential confound, the strongest test of the ATOM comes from children who are producing both case forms of the pronoun in subject position. If we test only these children, and the predictions hold (i.e., the NOM forms occur with either agreeing or non-agreeing verbs, but the nonNOM forms occur only with non-finite verbs), then we have excluded possible confounds based on children who do not have case-contrasting pronoun pairs. We therefore did an additional analysis in which we tabulated the data only for children who we had reason to believe were using both case forms of a pronoun as subjects. In this analysis, we considered the NOM and nonNOM forms of the masculine (he/him) and feminine (she/her) pronouns separately. For example, a child's data for the feminine was included for a particular round only if the child produced at least one NOM (she) and one nonNOM (her) token of the feminine pronoun in subject position in that round. The production of a form could come in either the spontaneous or the probe data. If a child produced feminine subjects in only one form (NOM or nonNOM) in both the spontaneous and the probe data in a given round, this child was excluded from the analysis. A child's data might be included for a round for the feminine pronoun, but not for the masculine pronoun, and vice-versa. This counting procedure was designed to be conservative, in the sense that it would tend to overestimate children's case error rate and hence underestimate their grammatical abilities.

Specifically, if a child was producing a mixture of subject case marking in one gender and all NOM subjects in the other, the latter data were excluded, even though under our model both sets of data reflect the same underlying grammar, and hence the overall rate of grammatical (adult-like) utterances is higher than our counting method reflects.

The number of children whose data were included in the analysis in Tables 9 and 10 for each round were as follows: 3N, Round 1: 9, Round 2: 6; SLI, Round 1: 13, Round 2: 8. Table 9 shows the distribution of case forms in the spontaneous data by type of inflection.

There are a number of points to be made regarding this analysis. First, despite the fact that every child in the analysis produced both NOM and nonNOM forms for the relevant pronoun, 3N children produced many fewer nonNOM subjects than did children with SLI; this effect is strongest at Round 1, where the 3N children produced 27/137 = 19.7% nonNOM subjects and the children with SLI produced 130/ 203 = 64.0% nonNOM subjects. Comparing with Table 6, we can see that total frequency tallies across children yield information very similar to that from the means of the individual child percentages, even when adjusting for alternating forms.

Second, and most pertinent to the ATOM, there were a greater proportion of nonNOM subjects for the uninflected clauses than for the agreeing clauses. For the 3N group, this difference reaches statistical significant ($p < .05$) at Round 1 but not Round 2, by the nonparametric Test for Significance of Difference Between Two Proportions (Bruning & Kintz, 1977). The difference for the SLI group is significant ($p < .05$) across rounds, by the same test. At each of the three levels of inflection, at Round 1, there are significant group differences. As we have seen before, this difference dissipates at Round 2.

Table 10 shows the same analysis for the probe data. As in the spontaneous data, there are more nonNOM pronouns for Uninflected than for Agreeing clauses in each of the four comparisons. The cell entries become small, so the exact percentages are subject to some sampling error. Nevertheless, the numbers are in the predicted direction. As for the 55.6% nonNOM in Agreeing clauses for the SLI group at Round 2, all five of the nonNOM pronouns with agreement came from one child, who produced five instances of her with present tense auxiliaries (her is . . .) and produced no other feminine subject pronouns in the probe experiment. The child made it into the analysis by producing one instance of she in the spontaneous sample (along with four instances of her). The pairwise tests of proportions in the probe data show three significant differences: for both rounds, a group difference in nonNOM for Uninflected utterances and at Round 1, within the SLI group, a greater proportion of nonNOM in Uninflected compared to Agreeing utterances.

8. THE OVERALL CHARACTER OF THE OI STAGE

By hypothesis, the existence of nonNOM subject pronouns is restricted to the OI stage, so we should ask how the development out of the OI stage relates to the development out of the nonNOM subject stage. In Table 11 we list the relevant figures from the spontaneous data. First, we list the percentage of OIs for each round and group. These numbers are calculated from the "Composite Tense" percentage, which is taken from Rice and Wexler (1995) and Rice, Wexler and Hershberger (in press). Composite Tense is the percentage

of finite utterances (as opposed to OIs) in all contexts where finiteness can be determined, including 3sg -s for main verbs, auxiliaries, copulas, dummy do in interrogatives, and past tense. Thus, the remaining utterances make up the OI rate: omission of 3sg -s, omission of auxiliaries and copulas, omission of do-support, and use of bare verb stems where past tense was intended. That value for the 3N group is 43% at Round 1; 25% at Round 2. For the SLI group it is 66% at Round 1; 41% at Round 2. For the comparisons here, we adjusted Composite Tense by removing the past tense (i.e., Ambiguous) contexts. The adjusted values appear in Table 11. It is clear that the adjustment, although more precise for our purposes here, effects minimal numerical change. Second, we list the percentage of nonNOM subjects in the same sort of clauses, that is, all Agreeing and Uninflected verbs with 3sg pronominal subjects. Third, we list the percentage of nonNOM subjects in uninflected clauses with 3sg pronominal subjects (Table 6). Fourth, from the same table, we list the percentage of nonNOM subjects in Agreeing clauses.

The overall rate of OIs is larger than the overall rate of nonNOM subjects. One can see a large discrepancy, for example, for Round 1 3N children, who produce 39.4% OIs, but only 15% of their 3sg subjects are nonNOM. The children with SLI of course have higher rates of OIs and nonNOM subjects overall than the 3N children, but again the rates of OIs are higher than the rates of nonNOM subjects. If there is indeed a dependency between inflection and case, as postulated under the ATOM, the proportion of OIs establishes an upper bound on the rate of nonNOM subjects.

9. CONCLUSION

In this paper we have provided evidence that distribution of subject case in English unaffected children and children with SLI is predicted by the ATOM, so that subject case errors are a reflection of the OI stage. Together with the properties of English inflectional morphology, the ATOM correctly predicts that nonNOM subjects are most frequent in uninflected clauses, least frequent with agreeing verbs, and in between with clauses that might or might not have agreement features.

We are not aware of any competing models that can explain the interacting empirical properties that we have discussed, especially models that do not incorporate as part of their explanation the existence of particular grammatical principles and their development. Attempts to explain the development (and delay) of verbal inflection and case via such notions as difficulty of learning non-salient morphemes (e.g., Leonard 1989) do not appear to have sufficient precision and structure to capture the data. To simply take one example, how would any of these kinds of "difficulty of learning" accounts explain why nonNOM subjects pattern mostly with nonagreeing and not with agreeing verbs? A learning account also cannot take recourse to frequencies in the input. Schütze (1997) shows that the frequency of NOM pronouns in English corpora is much higher than that of nonNOM pronouns, yet the children overuse nonNOM forms and hardly ever overuse NOM forms. That is, they produce the less frequent words instead of their more frequent counterparts, in environments where they never hear them. Frequencies also fail to explain the consistent three-tiered pattern of contingency between nonNOM subjects and inflection.

Wexler (1992, 1994, 1996) argued that the emergence from the OI stage was a maturational process under the guidance of a genetic program. Evidence on the

development of case from this paper as well as evidence from Rice, Wexler and Hershberger (in press) regarding the lack of effect of environmental variables on the development of finiteness provide further support for this conclusion, as well as for the application of the conclusion to impaired children. The delay in impaired children is perhaps related to the actions of the underlying genetic program.

Our results on the development of case and its interaction with inflection on the verb provide further evidence for children's correct grammatical knowledge. When children use an agreeing verbal inflectional morpheme, they know that it reflects the presence of Agr features, and that these demand NOM case on the subject. This is true not only for unaffected children but also for children with SLI. Separate explanations are not needed for why case develops in particular ways and inflection develops in particular ways. Both developments can be seen as the result of the same underlying phenomenon: the optionality of the INFL components Agr and Tns in immature grammars.

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Table 1
Predicted Typology of Utterance Types

Agreement Features	Tense Features
[Present]	
[Past] or [Modal]	
[-Tns]	
[3sg]	
he cries[a]	
he is happy	
he cried[b]	
he can cry	
he cry[c]	
he happy	
[-Agr]	
him cry[c]	
him happy	
him cried[b]	
him can cry	
him cry[c]	
him happy	

Table 2

Descriptive Language and Nonverbal Intelligence Scores for the SLI and 3N Groups

PPVT[a]	
MLU[b]	
TOLD-P2[c]	
Columbia[d]	
SLI	
	Mean
73.2	
3.55	
76	
94.4	
	SD
9.5	
.67	
6.15	
7.09	
3N	
	Mean
101	
3.66	
106.7	
110	
	SD
9	
0.58	
8.7	
9	

[a]Peabody Picture Vocabulary Test-Revised, standard score reported
[b]Mean length of utterance (calculated on complete and intelligible utterances, using SALT1)
[c]Test of Language Development-Primary (2nd Ed). For the younger children this assessment is reported for Round 3, when they first met age norms for this test.
[d]Columbia Mental Maturity Scale, age deviation score reported.

Table 3
Percentage of NonNOM 3sg Subject Pronouns in Spontaneous Samples, Both Groups, Both Rounds

Time of Measurement			
		M	SD	Na
Round 1	3N Group	15	26	20
Round 2	3N Group	17	28	20
Round 1	SLI Group	43	38	20
Round 2	SLI Group	23	29	22

[a]The reported N is the number of children contributing to the analyses (i.e., all children who produced pronoun subjects).

Table 4

Percentages of nonNOM 3sg Subject Pronouns in Probe Data,

for Both Groups for Both Rounds

Time of Measurement			
Round 1			
Round 2			
	3N Group		
		M	
04			
14			
		SD	
12			
28			
		N	
18 (20)[a]			
19 (20)			
	SLI Group		
		M	
44			
41			
		SD	
42			
39			
		N	
20 (21)			
22 (23)			

[a]Numbers in parentheses represent total number of children tested.

Table 5

Frequency of Case-Marking on Pronouns in Accusative Positions, Group by Round

Time of Measurement			
		ACC	Non-ACC	TOTAL
Round 1	3N Group	166	0	166
Round 2		222	0	222
Round 1	SLI Group	204	1	205
Round 2		244	1	245

Table 6

Percentages of nonNOM 3sg Subject Pronouns in Spontaneous Utterances, Broken Out by Inflection, Group, and Round

Time of Measurement								
	Round 1				Round 2			
3N Group	M	SD	N		M	SD	N	
Inflection								
Agreeing	08	25	20*		13	28	20	

	Ambiguous
08	
25	
17	
18	
32	
19	
	Uninflected
28	
38	
20	
30	
39	
17	

SLI Group

	Agreeing
26	
29	
16	
13	
31	
21	
	Ambiguous
35	
44	
17	
20	
28	
18	
	Uninflected
52	
40	
20	
28	
36	

*The reported N is the number of children contributing to the analyses (i.e., all children who produced utterances of the type counted within a cell).

Table 7

Percentage of NonNOM 3sg Subject Pronouns in Probes,

Broken Out by Inflection, Group, and Round

Time of Measurement

Round 1

Round 2

3N Group
M
SD
N
M
SD
N

Inflection

Agreeing
1
3
16
7
17
18

	Uninflected
12	
32	
10	
60	
55	
5	

SLI Group

	Agreeing
16	
22	
10	
11	
21	
11	

	Uninflected
57	
44	
16	
79	
36	
14	

Table 8

Frequency of Case of Third Person Plural Subject Pronouns by Verbal Inflection:

Spontaneous Data by Group and Round

Time of Measurement

Round 1

Round 2

NOM
nonNOM
%nonNOM
NOM
nonNOM
%nonNOM

3N Group

Inflection

Inflected
65
0
0
129
0
0

Uninflected
11
0
0
6
0
0

SLI Group

Inflected
48
5
9.4
92
8
8

Uninflected
34
11
24.4
33
30
47.6

Table 9

Frequency of Case of 3sg Subject Pronouns for Children Who Have a Case Contrast, Spontaneous Data, by Group and Round

Time of Measurement		
Round 1		
Round 2		
	NOM	
	nonNOM	
	%nonNOM	
	NOM	
	nonNOM	
	%nonNOM	
3N Group		
Inflection		

Agreeing
51
4
7.3
39
11
22

Ambiguous
19
5
20.8
23
7
23.3

Uninflected
40
18
31.0
13
9
40.9

SLI Group

Agreeing
30
13
30.2
25
4
13.8

Ambiguous
15
16
51.6
27
11

28.9

Uninflected
28
101
78.3
19
19
50

Table 10

Frequency of Case of 3sg Subject Pronouns for Children Who Have a Case Contrast, Probe Data, by Group and Round

Time of Measurement		
Round 1		
Round 2		
NOM		
nonNOM		
%nonNOM		
NOM		
nonNOM		
%nonNOM		
3N Group		
Inflection		

Agreeing
23
1
4.2
9
2
18.2

Uninflected
12
1
7.7
7
4
36.4

SLI Group

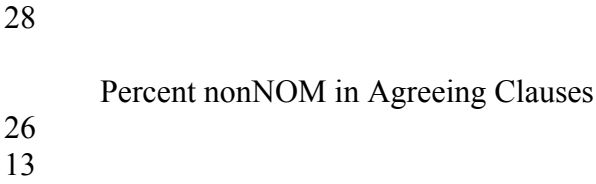
Agreeing
13
2
13.3
4
5
55.6

Uninflected
10
19
65.5
8
19
70.4

Table 11

Summary of Mean Percentages of Case and Inflection Use by Round and Group

Time of Measurement	
Round 1	
Round 2	
3N Group	
Adjusted Percent Optional Infinitives	
39.4	
23.2	
Adjusted Overall Percent nonNOM	
15	
16	
Percent nonNOM in Uninflected Clauses	
28	
30	
Percent nonNOM in Agreeing Clauses	
8	
13	
SLI Group	
Adjusted Percent Optional Infinitives	
63	
48.6	
Adjusted Overall Percent nonNOM	
44	
25	
Percent NonNOM in Uninflected Clauses	
52	


28
Percent nonNOM in Agreeing Clauses
26
13