Subjects in English-speaking Children with Specific Language Impairment

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1.   Introduction

Traditionally, Specific Language Impairment, or SLI, is considered a disorder that affects language, but no other cognitive function, hence the term: **Specific** Language Impairment. Many researchers nowadays agree that the disorder is even more specific: it mainly affects grammar, while other components of language, such as the lexicon or the pragmatic system remain mostly unimpaired.

One of the reasons to study Specific Language Impairment (SLI) in children is to gain insight in language organization and language development (Leonard, 1998, among others). An important hypothesis regarding these two related issues has been proposed by Fodor (1983) and Chomsky (1986), namely the Modularity Hypothesis, as informally described in (1):

(1)   ***Modularity Hypothesis***(Fodor, 1983; Chomsky, 1986)
        The view of cognition in general, and language, in particular, as arising from
        a complex interaction of various cognitive domains and further, that these
        domains are autonomous in the sense that they are governed by distinct
        principles.

This description suggests that we can distinguish two types of modularity, as in (2):

(2) A. modularity of cognition (with language being one of the modules);
B. modularity of language.

Results of SLI studies showing that impairment can be isolated to language only provide support for a Modularity Hypothesis corresponding to A. As for the one in B, the question arises as to what modules language itself comprises. We take a Chomskyan view of language as a starting point, and assume the modules of language to be as in (3):

(3) *Modules of Language*

I. Lexicon
II. Computational System: Grammar: - morphosyntax
- semantics
- phonology
Processor/Parser
III. Pragmatic System

In this paper we provide support for the hypothesis that the deficits of children with (grammatical) SLI are restricted to the Computational System. We do this by showing that, unlike normally developing children, (MLU/ language-age matched) children with SLI do not display errors caused by the lack of certain pragmatic principles. However, they do make similar morpho-syntactic errors. These findings contribute to the hypothesis that the Computational System and the Pragmatic System are distinct modules.

We compared the spontaneous language production of English speaking children with SLI with data from younger English speaking normally developing children. The topic of investigation is "subjects". The term "subject" is syntactic. Therefore, when we discuss subjects, we first and foremost study its syntactic properties. However, the constituents that subsume the subject role of the sentence, have other properties as well, such as semantic, phonological, and pragmatic

properties. For reasons mentioned before, we are interested in the syntactic and the pragmatic properties of subjects. As purely syntactic properties of subjects we chose (i) subject-verb agreement, and (ii) Nominative Case assignment. As a pragmatic property we chose subject drop, a phenomenon we argue to be motivated by pragmatic considerations in adult English.

In the next section (2) we provide a brief presentation of the relevant phenomena (subject-verb agreement, subject Case, and subject drop) in adult English. Section 3 formulates our hypotheses and predictions for the language of English speaking children with SLI with respect to these phenomena, as compared with normally developing English acquiring children. After describing our methods in section 4, we show in section 5 how our results confirm our hypotheses. Finally, we briefly discuss our data in section 6, and draw the conclusion that because English speaking children with SLI have problems with subject-verb agreement, and with subject Case, but not with subject drop, their impairment is restricted to the Computational System (section 7).

2. Background

2.1 Subject-verb agreement in adult English

As is well-known, English subjects only trigger overt person/number agreement on the verb in 3rd person singular for main verbs and the auxiliary verbs *DO* and *HAVE*, and in all persons for the verb *TO BE*, as illustrated in (4):

(4)   a)   Susan cycle**s** to the supermarket every day.
        b)   Doe**s** Bill like falafel?
        c)   Stephanie ha**s** eaten the entire cake.
        d)   I **am** / you **are** / she **is** / we **are** / you **are** / they **are** happy.

2.2 *Findings regarding verbal agreement in normally developing child English*

Roger Brown (1973) was one of the first scholars to document that normally developing English-speaking children often produce uninflected verbs in the 3rd person singular and omit copular and auxiliary forms of the verb *to be*. Initially, this phenomenon in child language was labeled "agreement omission in finite constructions". The findings were confirmed by many other researchers, such as Radford (1986), Hyams (1992), Wexler (1992; 1994), but re-interpreted as "non-finite constructions". Thus, the error did not consist of agreement omission, but rather of the use of non-finite verbs in obligatory contexts for verbal agreement or finiteness.

In their quantitative study of the development of several syntactic phenomena in English-speaking children with SLI and normally developing children Rice and Wexler (1996) show that normally developing English-speaking 3 year olds produce non-finite verbs in obligatory contexts for verbal agreement 39% of the time. Interestingly, commission errors such as the ones in (5), are hardly ever observed.

(5)   **@ = unattested in standard English child language**
   a)   @I walk**s** to school (every day)
   b)   @They eat**s** ice-cream (every day)
   c)   @You **am** funny
   d)   @He **are** happy

The non-finiteness errors have completely disappeared by age 4;0.

2.3 *Nominative Case in adult English*

In adult English, subjects receive NOMinative Case and this is marked overtly only on pronouns. Thus, most subject pronouns are distinct in their form from object and possessive pronouns, as illustrated in (6) for the first person singular pronoun:

(6)   a)   I/*me/*my saw Jane yesterday.
       b)   Bill invited me/*I/*my to the party.
       c)   Has anyone seen my/*I/*me keys?

2.4   *Findings regarding Nominative Case in normal standard child English*

Several researchers of child English have observed that normally developing

English speaking children sometimes use a non-Nominative subject pronoun (Rispoli,

1994; Vainikka, 1994; Schuetze, 1997). Wexler et al.'s (1998) quantitative study of 20

children shows that 3-year olds use Accusative or Genitive subject pronouns 15%, and

3;7 year old children 17% of the time. By the age of 4;0 we do not find any Case

errors anymore.

The findings regarding verbal agreement or finiteness and non-NOM subject

pronouns are summarized in (7) and (8):

(7)   Table 1: *Proportions of morpho-syntactic errors in normal standard*
               English child language

age	non-finiteness errors	non-NOM subject pronouns
3;0	39%	15%
3;7		17%

(8)   Non-finiteness errors and non-NOM subject pronouns have completely
       disappeared by age 4;0 in normal standard English child language.

2.5   *Subject drop in adult English*

Unlike in languages such as Italian and Spanish, whose grammars license

empty subjects, in adult English subjects may be dropped only in certain pragmatic

contexts. For example, answers to WH-questions may omit the subject if the referent

of that subject is mentioned in the preceding WH-question, as illustrated in (12):

(9)   a)   A: Where is Anne?
                B: __ Left already.
        b)   A: What did Rebecca do last night?
                B: __ Watched TV.

Another pragmatic context in which subjects may be left out is the so-called "diary

drop" context, as first pointed out by Haegeman (1990). She describes a cluster of

properties observed in diary drop (from Rizzi (1994)), which is exemplified in (10) -

(13):

(10)   Subjects can be freely dropped even if the standard register of the language
        does not allow this, e.g. in English and French. In English, the dropped subject
        is usually first person:

        *A very sensible day yesterday. ____ saw noone. ____ took the bus to
        Southwark Bridge. ____ walked along Thames Street. . . .*
                        (Virginia Woolf, ***Diary***. Vol.5, 1936-1941, pp.203-204)

(11)   The subject cannot be dropped after a preposed element:

        a)   *____ was so stupid!*
        b)   ** How stupid ____ was!*

(12)   Main subjects can be dropped, embedded subjects cannot:

        a)   *____ can't find the letter that I need.*
        b)   ** I can't find the letter that ____ need.*

(13)   Subjects can be dropped, objects cannot:

        a. *____ saw her at the party.*
        b.** She saw ____ at the party.*

Thus, English subject drop exists, but it is driven by pragmatic, rather than syntactic

factors. Empty subjects are not licensed by anything in the syntax, such as verbal

agreement. However, they can be identified by a referent in the discourse in restricted

pragmatic contexts.

2.6   *Findings regarding subject drop in normally developing standard child*

English

Young normally developing, standard-English speaking children up to age 3;0

drop subjects at substantial rates (Brown, 1973; Hyams, 1983; 1986). Hyams (1992;

1996) analyzed the phenomenon quantitatively, and found percentages of non-

adultlike subject omission in English child language as presented in Tables 2 and 3 in

(14):

(14)   *Findings young normally developing, standard English speaking children*

Table 2: *Proportions of (non-adultlike) null subjects for Adam* (from Hyams,
          1992)

age	2;7	2;8	2;9	2;10	2;11	3;0
	70%	75%	70%	40%	25%	10%

Table 3: *Proportions of (non-adultlike) null subjects in sentences with lexical*
          verbs (from Sano & Hyams, 1993; Hyams, 1996, based on Hyams and
          Wexler, 1993, and Pierce, 1992)

child	age	proportion
Eve	1;6-2;1	26%
Adam	2;5-3;0	41%
Nina	2;0	44%
	2;2	11%

Table 2 shows the proportion of subject drop in Adam per month from age 2;7 - 3;0,

which decreases from 70% (2;7) to 10% (3;0). In Table 3 we see proportions of

subject drop for Adam from age 2;5-3;0, but now collapsed, and for Eve and Nina.

On the face of it, these data suggest that young children, up till at least the age

of 3;6, lack the pragmatic rule that governs subject drop in English. However, more

fine-grained research on null subjects in the child versions of non-pro-drop languages

suggests that there is a syntactic correlation between the finiteness of the verb, and the overtness of the subject (Weverink, 1989; Sano & Hyams, 1993; Hyams, 1996; Wexler, 1993, among others). This is the same research that has re-interpreted "agreement omission" in English (see section 2.2) as "non-finiteness". Without going into too much detail, the general explanation is that non-finite verbs do not license overt subjects, and therefore the subject is null, or at least underspecified. Thus, in these cases there is a syntactic reason for the subject to be null. If we are concerned with the pragmatic properties of (null) subjects in child English, subjects that are null because of syntactic reasons should be excluded. Therefore, the focus should be on sentences with clearly finite verbs. Sano & Hyams (1993) carried out a detailed quantitative study and investigated the overtness of subjects in different types of finite constructions, namely "inflected *be*", "modals", "3rd person singular —*'s*, and "past tense –*ed*".They show that constructions with inflected *be* and modals hardly ever contain null subjects. However, if the verb has a 3rd person singular -*s*, or a regular past tense -*ed* inflection, there is a substantial proportion of null subjects. Consider Table 4 in (15):

(15)

Table 4: *Proportions of null subjects with finite verbs ending in* s *and* — ed

name of child	age	-s	-ed	total — s/-ed
Eve	1;6-2;3	10% (5/50)	23% (9/40)	16% (14/90)
Adam	2;3-3;0	26% (16/62)	57% (13/23)	34% (29/85)
Nina	2;2-2;4		19% (3/16)	

Eve produces null subjects in 10% of her 3rd person singular present tense constructions and in 23% of her regular past tense constructions, which cannot be explained by a syntactic correlation with the form of the verb. Adam's proportions are even higher: 26% in the present tense and 57% in the past. For Nina only regular past

tense counts were done, and she dropped subjects in these contexts 19% of the time. Concluding, despite the fact that part of the proportion of null subjects in child English can be explained by syntactic factors, we are still left with a significant number of non-adultlike, non-syntactically explainable null subjects.

Thus, we can safely say that the data at least suggest that young children lack the pragmatic rule that governs subject drop in English. By the age of 4;0, or even somewhat earlier, normally developing English speaking children no longer produce non-adultlike null subjects, indicating that they have acquired the pragmatic subject rule.

3.   Hypotheses and predictions

As we hinted at in the introduction of our paper, we adopt the hypothesis from previous research on SLI (see, for example, Leonard, 1998) that SLI implies impairments in certain areas of the Computational System only, and therefore not in pragmatics. This is formulated in (16):

(16)   *Hypothesis 1*
        SLI implies deficiencies in the Computational System, but not in
        pragmatics.

More specifically, we hypothesize that children with SLI older than 3 have the pragmatic rule that regulates subject drop in English, just like their normally developing age mates. This is formulated in (17):

(17)   *Hypothesis 2*
        Children with SLI older than 3 have the pragmatic rule that regulates subject
        drop in English (just like their normally developing age mates).

If older English speaking children with SLI have this pragmatic rule, it is predicted that they will not drop subjects in contexts in which this is pragmatically inappropriate for adults. This prediction is stated in (18):

(18)   *Prediction 1*
       English children with SLI older than 3 do not drop subjects in pragmatically inappropriate contexts.

Furthermore, adopting the assumption that verbal agreement is a purely syntactic property of subjects, independent of pragmatics, we predict that children with SLI may produce errors in this area, similar to younger normally developing English speaking children. This second prediction is formulated in (19):

(19)   *Prediction 2*
       English speaking children with SLI produce non-finite constructions in obligatory contexts for verbal agreement.

As laid out earlier, a second purely syntactic phenomenon concerns Nominative Case on the subject, a phenomenon that yields errors in normal early child English as well. Similar to younger normally developing English speaking children, we predict that English speaking children with SLI with the same MLU/Language Age produce non-Nominative subjects, as stated in (19):

(20)   *Prediction 3*
       English speaking children with SLI produce non-Nominative subjects

Now that we have laid out our hypotheses and predictions, we turn to the actual investigation of the SLI data.

4. Methods

4.1 Subjects

We investigated the spontaneous speech of 17 English speaking children with SLI between the ages of 3;11 and 8;7 and a Mean Length of Utterance range of 2.1-9.4. These data were collected and kindly made available to us by Susan Curtiss and Paula Tallal (Tallal, Curtiss and Kaplan, 1988). The children were followed for 4 consecutive years, referred to as year 1, year 2, year 3, and year 4, respectively. The children in year 1 were roughly 4 years old, the year 2 children 5, the year 3 children 6, and the year 4 children 7 years old. Details regarding the subjects' gender, age and Mean Length of Utterance are provided in (21).

(21)   Table 5: *Details children with SLI*

		year 1		year 2		year 3		year 4	
ID	gender	age	MLU	Age	MLU	age	MLU	age	MLU
1	f	4;9	5.3	6;0	4.8	6;9	6.5	7;9	9.4
2	f	-	-	5;7	3.5	6;7	5.9	7;7	6.6
3	m	4;2	4.9	5;3	5.7	6;2	5.9	7;2	6.7
4	f	4;0	5.0	5;0	5.0	6;0	4.7	7;0	4.8
5	m	4;8	2.6	5;7	3.2	6;9	2.7	7;8	2.9
6	m	4;5	4.1	5;4	5.6	6;5	6.2	-	-
7	f	4;0	4.9	6;4	6.0	7;2	5.0	7;11	4.5
8	m	4;7	4.2	5;8	4.5	6;7	5.0	7;7	5.6
9	f	4;2	3.4	5;3	4.4	6;3	5.2	7;3	7.2
10	m	-	-	5;9	2.6	6;9	5.7	8;7	3.9
11	m	4;9	4.0	5;8	3.9	6;10	5	7;6	4.1
12	m	-	-	5;0	3.8	6;1	5.7	7;0	5.5
13	f	4;5	4.9	5;10	4.9	6;11	5.6	7;9	8.1
14	m	4;2	3.7	5;4	4.1	6;4	3.9	7;5	4.8
								7;6	7.1
15	m	4;2	2.4	5;1	5.3	-	-	7;1	4.4
16	m	3;11	2.1	5;4	3.1	7;0	5.2	-	-
17	m	4;4	3.9	5;4	4.4	6;3	6.1	7;3	6.8

The types of utterances we included in our analyses are summarized in (22) — (24).

(22)   ***Utterances used for analysis of subject-verb agreement***
        All utterances containing:
        a) 3rd person singular main verbs;

b)   3rd person singular auxiliary verbs ***DO*** and ***HAVE***;

b)   3rd person singular auxiliary verbs ***DO*** and ***HAVE***;

c)   copular and auxiliary forms of ***BE*** for all persons.

(23)   ***Utterances used for analysis of Subject Case***
All utterances containing a combination of a verb and a subject pronoun displaying overt (NOM/ACC/GEN) Case

(24)   ***Utterances used for analysis of subject drop***
All clauses containing a verbal element, except for:
(i)   imperative constructions;
(ii)   relative clauses;
(iii)   non-finite embedded clauses;
(iv)   elliptical clauses, repetitions and completions of adult utterances;
(v)   second conjunct in sentential coordinations.

5.   Results

The results show that, just like the younger normal children, the children with

SLI produce considerable numbers of non-finite constructions, that is, bare stems, in

obligatory contexts for verbal agreement. This is shown by Table 6 in (25):

(25)

Table 6: ***Proportions of non-finite (bare stem) constructions in obligatory contexts for verbal agreement in English speaking children with SLI compared to normally developing English speaking children*** (adapted from Rice and Wexler, 1996)

	SLI - year 1	**SLI - year 2**	**SLI - year 3**	**SLI - year 4**	**N-LA**	**N-AGE**
non-finite (bare stem)	33% (80/241)	23% (63/275)	15% (80/549)	4% (23/531)	**39%**	0%

Legend
SLI — year 1:   age 3;11-4;9, mean age 4;4
SLI — year 2:   age 5;0-6;4, mean age 5;6
SLI — year 3:   age 6;0-7;2, mean age 6;7
SLI — year 4:   age 7;0-8;7, mean age 7;6
N-LA: 20 normally developing children with comparable language age (mean age 3;0)
N-AGE: normally developing children of the same chronological age (> 4;0)

As we see in the second column of Table 6, the youngest children with SLI produce

33% non-finite constructions in obligatory contexts for verbal agreement, a

percentage comparable to the proportion of non-finite constructions by normally developing children of around 3 years old, namely 39%, as is shown in the penultimate column. The year 2 and 3 children still show substantial amounts of non-finitess errors, namely 23% and 15%, respectively, whereas the year 4 children behave adultlike in this respect. Thus, the children with SLI under investigation do show gradual development towards the target grammar with respect to verbal agreement, or finiteness. The last column in Table 6 shows that normally developing age mates have acquired obligatory subject-verb agreement. Interestingly, the children with SLI hardly produce commission errors as in (5), just like the normally developing children.

Table 7 in (26) shows that subject pronouns do not always have Nominative Case in the language of English speaking children with SLI:

(26)

Table 7: *Proportions of non-Nominative Case on subject pronouns in English speaking children with SLI compared to normally developing English speaking children* (adapted from Wexler et al., 1998)

	SLI - year 1	SLI - year 2	SLI - year 3	SLI - year 4	N-LA	N-AGE
non-NOM	**18%** (20/109)	3% (4/149)	3% (11/370)	1% (3/343)	3;0: **15%** 3;7: **17%**	0%

Legend
N-LA: 20 children with comparable language age, at two points in development, namely age 3;0 and 3;7.
Rest of legend same as in Table 6.

As the second and the penultimate column of Table 7 show, the year 1 children with SLI produce about the same number of Case errors as normally developing English speaking children between age 3;0 and 3;7 do, namely 18% and 15-17%, respectively. The older children with SLI are adultlike in this respect.

Nonetheless, English speaking children with SLI do not have problems with subject drop. In other words, they produce overt subjects in virtually all contexts in which this is obligatory for adults. This is shown by Table 8 in (27):

(27)

Table 8: *Proportions of overt and null subjects in English speaking children with SLI compared to normally developing English speaking children*

	SLI - year 1	SLI - year 2	SLI - year 3	SLI - year 4	N-LA	N-AGE
overt subjects	86% (398/464)	90.5% (634/701)	94% (1184/1265)	96% (1294/1347)	**~60%**	
adultlike null subjects	5% (24/464)	5% (36/701)	3% (40/1265)	3% (33/1347)		100%
non-adultlike null subjects	**9%** (42/464)	**5%** (31/701)	**3%** (41/1265)	**2%** (20/1347)	**~40%**	**0%**

Legend
N-LA: normally developing child (Adam) with comparable language age up to age 3;0 (data from Sano & Hyams, 1993)
Rest of legend same as in Table 6.

The percentages in Table 8 indicate that even the youngest children with SLI produce only 9% non-adultlike null subjects. The percentages for the year 2, 3 and 4 children are even lower: 5%, 3%, and 2%, respectively. This is in sharp contrast with the behavior of normally developing children with comparable MLUs, as is shown in the penultimate column: up until age 3;0 Adam produces on average 40% non-adultlike null subjects. Furthermore, as the last column shows, normally developing age mates no longer produce non-adultlike null subjects, and are thus similar to the children with SLI in this respect.

Nevertheless, as we explained before, the investigation of null subjects in English child language requires a more fine-grained analysis, a la Sano & Hyams. In

order to isolate cases of pure pragmatic subject drop, (potentially) non-finite
constructions should be excluded from the analyses. We therefore categorized all
constructions with a verb into finite and non-finite constructions, followed by a
subcategorization of finite verbs into " 3rd person singular + past tense — ed" , " irregular
past tense" , " inflected be + modals" , and " bare stems" . This enabled us to compare
our SLI data with Sano & Hyams' data on normally developing English speaking
children.

In Table 9 in (28) we present the results of this more detailed analysis:

(28)

Table 9: *Proportions of overt and adultlike/non-adultlike null subjects in different
types of finite and in non-finite constructions in English speaking children with SLI*

	SLI — year 1				SLI — year 2			
	S + ED	IRREG. PAST	BE + MODAL	BARE STEM	S + ED	IRREG. PAST	BE + MODAL	BARE STEM
overt subjects	94% (62/66)	93% (51/55)	99% (125/127)	74% (162/218)	93% (87/94)	98% (61/62)	98% (182/186)	85% (304/359)
adultlike null subjects	5% (3/66)	0% (0/55)	0% (0/127)	10% (21/218)	2% (2/94)	0% (0/62)	2% (3/186)	9% (31/359)
non-adultlike null subjects	2% (1/66)	7% (4/55)	2% (2/127)	16% (35/218)	6% (5/94)	2% (1/62)	1% (1/186)	6% (24/359)

	SLI — year 3				SLI — year 4			
	S + ED	IRREG. PAST	BE + MODAL	BARE STEM	S + ED	IRREG. PAST	BE + MODAL	BARE STEM
overt subjects	92% (209/226)	96% (191/200)	100% (348/350)	89% (436/489)	95% (216/227)	97% (169/175)	100% (424/425)	93% (485/520)
adultlike null subjects	3% (7/226)	2% (4/200)	0% (0/350)	6% (29/489)	2% (4/227)	2% (3/175)	0% (1/425)	5% (25/520)
non-adultlike null subjects	5% (10/226)	3% (5/200)	1% (2/350)	5% (24/489)	3% (7/227)	2% (3/175)	0% (0/425)	2% (10/520)

Legend
S + ED: 3rd person singular ~~-s~~ and past tense *-ed*
IRREG. PAST: irregular past tense
BE + MODAL: inflected forms of *be* and modals
BARE STEM: non-finite/bare stem constructions

Examining Table 9, the picture comes out even stronger: the highest proportion of non-adultlike null subjects in finite constructions is 7%, in the youngest group. In year 2, 3, and 4, these percentages vary between 0% and 6%. As becomes evident from the last two rows, the results also show that the majority of the null subjects occur in the bare stem constructions. As noted before, these null subjects are syntactically explainable, and thus not an indication of the child's ability regarding pragmatic subject drop.

A comparison to Sano & Hyams' data shows that normally developing English speaking children with a comparable language age produce substantially higher proportions of null subjects in finite constructions, at least with verbs containing a 3rd person singular –*s* or past tense –*ed* inflection. This can be seen in Table 10 in (29):

(29)

Table 10: ***Proportions of adultlike and non-adultlike null subjects in* -s *and* -ed *constructions in English speaking children with SLI compared to normally developing English speaking children***

	SLI — year 1	SLI — year 2	SLI — year 3	SLI — year 4	N — LA	N — AGE
adultlike null subjects	5% (3/66)	2% (2/94)	3% (7/226)	2% (4/227)		
non — adultlike null subjects	2% (1/66)	6% (5/94)	5% (10/226)	3% (7/227)	Eve: 16% (14/90) Adam: 34% (29/85) Nina: 19% (3/16)	0%

The non-adultlike null subjects of the children with SLI vary between 2% and 6%, whereas normally developing children with a comparable MLU produce between 16% and 34% non-adultlike null subjects.

6.   Discussion

The results just presented show that the predictions formulated in (21), (22),

and (23) are borne out, as is summarized in (30):

(30)   *Summary of results*
  a)   Unlike normally developing younger English speaking children with comparable MLUs, but similar to normally developing age mates, 4, 5, 6, and 7 year old English speaking children with SLI are adultlike with respect to the use of overt vs. null subjects in finite constructions.
  b)   Similar to normally developing younger English speaking children with comparable MLUs, but unlike normally developing age mates, 4, 5, and 6 year old English speaking children with SLI produce substantial amounts of non-finiteness errors.
          Interestingly, these co-occur with null subjects much more often than finite verbs do.
  c)   Similar to normally developing younger English speaking children with comparable MLUs, but unlike normally developing age mates, 4 year old English speaking children with SLI incorrectly produce non-Nominative subject pronouns.

These results render the suggestions in (31):

(31)   a)   English-speaking children with SLI of 4 years and older do NOT lack the pragmatic rule that governs subject drop in English, contrary to younger normally developing children, but similar to normally developing children of the same age;
  b)   syntactically, the children with SLI make errors comparable to normally developing children of around 3 years old, indicating that they are in the same grammar developmental stage;
  c)   in children with SLI, pragmatic principles develop normally as a function of age, rather than as a function of grammar developmental stage.

Thus, predictions 1, 2, and 3 are borne out, providing support for our two hypotheses, repeated in (32) and (33).

(32)   *Hypothesis 2*
  Children with SLI older than 3 have the pragmatic rule that regulates subject drop in English.

(33) *Hypothesis 1*
Children with SLI have deficiencies in the Computational System, but not in pragmatics.

7.   Conclusion

In this study we have shown how a modular model of language such as the one described in (3) can guide research in the field of SLI. Distinguishing Pragmatics from the Computational System allows us to tease apart subject properties that are purely grammatical - such as verbal agreement and Nominative Case - on the one hand and a property driven by pragmatics - such as the dropping of the subject in English - on the other hand, and therefore to investigate them separately. The differences in results regarding the two types of subject properties in children with SLI are explained by the hypothesis that children with SLI are grammatically impaired, but not pragmatically. Thus, the findings of this study of English children with SLI provide support for a model of language as in (3).

Concluding, we have shown how theories of the organization of language and syntactic theory are useful guides in the research of Specific Language Impairment, and vice versa, how results of SLI studies can refine and support such theories.

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