Verbal Tense and Agreement in Child Spanish-speakers with Specific Language Impairment

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1. Introduction

1.1 Overview

What is specific language impairment (SLI)? SLI is an impairment which appears to only affect linguistic cognition, leaving other domains of cognition intact. From five to seven percent of the population suffers from it (Tomblin 1996a, 1996b) and it is associated with dyslexia in school aged children (Catts, Fey, Zhang & Tomblin 2001). There are currently a variety of criteria used to identify children with SLI. Unfortunately, most of them are exclusive and not inclusive. The purpose of the exclusive criteria is to make sure that the child does not have language problems which stem from other causes:

- Nonverbal IQ above 85
- Normal hearing
- No recent episodes of otitis media with effusion
- Normal oral structure
- No frank neurolgical damage
- No social or physical problems which might impede the child's interactions with others (e.g. autism, epilepsy)

The only inclusive criterion is that the child have a score on a standardized language test of 1.25 standard deviations below the mean.

One of the reasons why improving diagnostic accuracy is important is that the US has a sorry history of tracking immigrants and language minority children into special education classes with language impariment diagnoses, when in reality they are simply passing through normal processes of second language acquisition (Baugh 1995, Pray 2003). It is consequently of social importance that tools be developed which are capable of distinguishing normal bilingual delay from language impairment to help both populations succeed.

1.2 Theoretical Background

It is argued that SLI manifests itself differently in different languages. In fact, there appear to be two putative classes of cross-linguistic variation. Gender marking on articles is especially problematic for Spanish-speaking children with SLI (Restrepo & Gutiérrez-Clellan 2001), but not in English because English has no gender marking. This is one kind of difference. But what about constructions that are common to multiple languages? It has been argued that tense marking, which is common to English and Spanish, is very problematic for child English-speakers (e.g. Rice & Wexler 1996), but that it is not problematic for child Spanish-speakers (e.g. Bedore & Leonard 2001, 2005; Bosch & Serra 1997). We will now review reasons why we think that the conclusion that tense marking in Spanish is unproblematic is likely to be unfounded. If we are correct, then tense marking is not an axis of cross-linguistic variation for the manifestation of SLI, but rather a fundamental grammatical dimension of SLI which we should expect to find instantiated cross-linguistically. Below we will attempt to show through a new experiment that, when measured appropriately, tense marking appears to be vulnerable in child Spanish-speakers with SLI in a way similar to child English SLI.

1.3 Root Nonfinite Verbs in Child Spanish

It has been shown in English (Rice & Wexler 1996), French (Jakubowicz & Roulet 2004), Dutch (Wexler, Schaeffer & Bol 2004) and other languages that tense marking is problematic for children with SLI.

1) *He walk across the street.

2) He walks across the street.

But these languages also show the optional use of nonfinite verbs in child language…what about Spanish? Studies of child Spanish (Grinstead 1994, Bel 2001) and related languages such as Catalan (Torrens 1992) & Italian (Guasti 1994) show few problems for typically-developing children with finiteness marking.

One of the underlying assumptions in these studies, however, is that root nonfinite forms will be morphological infinitives. As a consequence, researchers mostly looked for morphological infinitives or agreement errors between overt subjects and verbs - there were few of either. In contrast, an array of nonfinite forms have been found in child English (e.g. Vainikka 1993), thus we might expect there to be multiple nonfinite forms in child Spanish, too. A second problematic dimension to these studies is their exclusive reliance on spontaneous data. Because overt subjects only appear with verbs about 20% of

the time in adult Spanish (Silva-Corvalán 1977), spontaneous production offers few opportunities to find agreement errors. A third problem is the confusion of present indicative verbs, particularly when they occur without an overt subject, with potentially nonfinite bare stem forms. It is largely impossible to distinguish imperatives, 3rd singular indicative and nonfinite bare stems from one another, when one is limited to a transcript.

Bare Stem

3) Habla.
speak (root + "a" theme vowel)
"Speak."

Imperative

4) Habla.
speak 2nd sg. fam. imperative
"Speak."

3rd Singular Present Indicative

5) Habla.
speaks 3rd singular present (progressive or habitual)
"He/she speaks." – "He/she is speaking"

A fourth problem is the widespread use by children of holophrastic, or "frozen form" utterances. These are words or phrases which do not appear to be productive, when studied over time, and do not contrast with other forms of their paradigm. For example, "Quiero eso." or "I want that." may occur in a transcript, but there are no other forms of the verb "querer" anywhere in the first transcript in which "Quiero eso." is found nor are they found for several months of the following recording sessions. Because these are not productive, the conservative assumption to adopt is that these forms do not tell us anything about productive morphosyntax.

A fifth problem stems from adults' discourse representations, computed on the basis of reading transcripts of children's utterances. In the same way that our adult phonological grammars are likely to "fill in the gaps" in phonological experiments which mask certain segmental features, the adult grammars of those analyzing transcripts are also likely to "fill in the gaps" as to what children mean when they use bare stem verbs with null subjects. That is, how do adults reading a transcript know what the children think is a salient antecedent, and consequently whether there is correct subject-verb agreement? Most studies argue that researchers are able to infer from context what children's intended subject referents are, but this is a very difficult task. At times, for example, children appear to be referring to themselves with bare stems, as in the following examples (from Grinstead 1998).

6) Eduardo - 2;5.29
No puede.
Not can (root + “e” theme vowel)
“Cannot.”
[Eduardo responds to the investigator's question of whether he can put two pieces of a puzzle together.]

7) Graciela - 2;3.4
No quiere.
Not want (root + “e” theme vowel)
“Does not want.”
[Graciela responds to mother asking her if she wants a band-aid.]

The likelihood that these utterances are bare stems with a first person singular referent is strengthened by the occasional occurrence of bare stems with first person singular pronouns, in the sense that bare stems with first person subject reference appears to be a grammatical option.

8) Carlos - 2;1.08
Va yo.
go stem I-nom
"I goes.”

9) Carlos - 3;3.28
Yo va a buscar.
I-nom go stem to look for-inf
"I goes to look for."

10) Graciela - 2;6.5
Hace esto yo.
do (root + “e” theme vowel) this I-nom
"I does this."

11) Graciela - 3;3.26
Este, yo quiere.
this, I-nom want (root + “e” theme vowel)
"This, I wants."

Finally, there is some research on child Spanish-speakers using elicited production techniques, which can overcome some of the limitations posed by

spontaneous production data. Pérez-Pereira (1989) and Kernan & Blount (1966) carried out "Wug" test type studies in child Spanish with both real verbs and nonce verbs. Pérez-Pereira showed child Spanish speakers to be less than perfect (78% correct) up to 5-6 years old, as illustrated in Table 1.

	3 year-olds	4 year-olds	5 year-olds	6 year-olds
Preterite 3rd Sg.	48%	74%	73%	76%

Table 1 – Percentage Correct with Real Verbs in Pérez-Pereira (1989)

When the experimenters and not the child decide what the subject and verb are going to be (atenuating the frozen form option), Spanish-speaking children look much more like English-speaking children with respect to root infinitive production (cf. Berko-Gleason 1958, Derwing & Baker 1979; Rice, Wexler & Hershberger 1998).
In summary, in most studies of child Spanish, researchers have found themselves looking at transcripts with many bare stem verbs (including frequently repeated, non-productive forms) with mostly null subjects, trying to figure out whether there is correct agreement or not. This state of affairs is less than optimal and constitutes a weak empirical basis for the generalization that child Spanish speakers mark finiteness correctly. When elicited production data has been considered, child Spanish speakers' ability to mark finiteness looks similar to that of child English speakers.

1.4. Spanish SLI

One of the few studies of tense and agreement marking in Spanish SLI in a Spanish-speaking context is Bosch & Serra (1997). Using spontaneous production data, they studied multiple aspects of the language of 12 SLI children in Spain and concluded that there were very few problems with finiteness marking. However the average age of the children in their sample was 7;6, which is quite old, even for children with SLI, to be having problems marking tense and agreement. Another pair of studies, Bedore & Leonard (2001, 2005), studied 15 SLI children in the US with elicited and spontaneous production, respectively. They concluded that there were no serious problems marking tense and agreement. The children in Bedore & Leonard (2001) showed relatively high accuracy on elicited production tasks, as illustrated in the following table, compiled from their results.

	SLI	Language Controls	Age Controls
Percentage Correct	1085/1296 (84%)	1010/1186 (85%)	1455/1511 (96%)

Table 2 - Elicited Production Errors from Bedore & Leonard (2001, Table 5, pre-publication version)

Bedore & Leonard (2005) showed even higher accuracy in spontaneous production (above 91% for the SLI group), as we might expect.
The results in Bedore & Leonard (2001) show that the children make errors, which leads us to the questions of what kinds of errors they made and whether any of them might constitute non-finite forms. Of course without interpretation/comprehension results, we cannot know definitively, nonetheless there are plausible candidates. In Bedore & Leonard's (2001) elicited production study, there were three very common erroneous responses:

- The infinitive - Yo hablar.
- The Bare Stem - Yo habla.
- An Overgeneralized Agreement Form - Yo habló.

These were the three most common errors that children made. On the basis of these errors, we propose that the grammars of Spanish-speaking children include these nonfinite forms as acceptable, in spite of lacking tense and agreement. Our proposal leads us to the following 2 research questions.

1.5 Research Questions

- Can a receptive task overcome the obstacles posed by spontaneous production data for determining the pervasiveness of root nonfinite forms in child Spanish?

- If root nonfinite forms are pervasive, can they distinguish children with SLI from age and MLUw-matched control groups, and is finiteness consequently useful as a clinical marker of SLI in Spanish?

2. Methods
2.1 Participants

Twenty-seven monlingual Spanish-speaking children in Mexico City participated in our study. Nine were diagnosed with SLI. They had an average mean length of utterance, measured in words (MLUw) of 3.0. Their average age was 67 months (5 years, 7 months). Our age control group consisted of nine

typically-developing children of the same age as the SLI group (mean age = 67 months - 5 years, 7 months). Our language control group consisted of nine typically-developing children of the same language level with an MLUw of 3.0.
The SLI children met all of the inclusive and exclusive criteria for SLI. They all had scores of 1.25 standard deviations below the mean on the *Batería de evaluación de la lengua española* or BELE (Rangel et al 1988), which was normed in Mexico City. Nonverbal IQ was measured using the WIPSSI/WISC, Spanish translation. We included a phonological screen to exclude phonological disorder and we used the Restrepo (1998) family interview, which has been validated as an instrument for identifying Spanish-speaking children with SLI.The control group children also took the phonological screen and the standardized language test to eliminate outliers.
In order to understand the importance of our sample being from Mexico City and not from a Spanish-speaking community in the US, as in Bedore & Leonard's work, we hasten to point out that in previous studies we have found very different results with children in Mexico than have Bedore & Leonard. Such a difference is illustrated by the following two tables, which show the results of two methodologically very similar studies of noun-adjective agreement in Spanish-speaking 5 year-olds in the US and Mexico. While even the five year-old language control children studied in the US, shown in Table 3, show difficulty with agreement, both control groups of children studied in Mexico, shown in Table 4, performed at very high levels of accuracy. On this basis we conclude that the two populations have potentially very different levels of linguistic competence.

	Masc. Sing.	Fem. Sing.	Masc. Pl.	Fem. Pl.	**Total**
SLI	49/60 (82%)	43/60 (72%)	22/30 (73%)	16/45 (36%)	**130/195 (67%)**
Lang	51/60 (85%)	46/60 (77%)	27/30 (90%)	24/45 (53%)	**148/195 (76%)**
Age	57/60 (95%)	55/60 (92%)	30/30 (100%)	35/45 (78%)	**177/195 (91%)**

Table 3 - Noun-Adjective Agreement in Bedore & Leonard (2001) - 5 Year-old SLI Children in San Diego

	Masc. Sing.	Fem. Sing.	Masc. Pl.	Fem. Pl.	**Total**
SLI	35/36 (97%)	33/36 (92%)	33/38 (87%)	30/39 (77%)	**131/149 (88%)**
Lang	38/38 (100%)	37/37 (100%)	37/39 (95%)	32/35 (91%)	**144/149 (97%)**
Age	38/38 (100%)	38/40 (95%)	40/40 (100%)	38/40 (95%)	**150/154 (97%)**

Table 4 - Noun-Adjective Agreement Grinstead, Cantú & Flores (2007) - 5 Year-old SLI Children in Mexico City

2.2 Procedures

The investigator introduces two puppets to the children and explains that they are babies and consequently they do not know how to talk well yet. The child is asked to help the investigators help the puppets to learn to speak better by telling them which of the two produces the better sentence. The investigator then shows the child pictures in which the puppets are carrying out an activity. Upon seeing the pictures, each puppet utters a sentence with either an adult-like verb or with one of the nonfinite forms of the Spanish Tense Composite (hablar, habla, habló). There were 17 items in the present and 17 in the past, plus 10 fillers with errors of syntactic order to be sure that the child understood the experimental format:

12) **Filler Items**
Nosotros bailar en sala la.
We dance in living room the.
vs.
Nosotros bailamos en la sala.
We dance in the living room.

Only children who could detect errors in at least 7 of 10 fillers were included.

3.0 Results

As we can see in the following table and figure, the children with SLI scored significantly lower than did the two control groups. A one-way ANOVA showed a main effect for group, $F(2, 24) = 18.224$, $p < 0.0001$. Post-hoc tests of Least Significant Differences showed the scores of the SLI group to be significantly worse than those of the language control group ($p. < 0.0001$) and significantly worse than those of the age control group ($p < 0.0001$).

	Past	Present	Average	SD
SLI	51.39%	54.90%	53.15%	13.35%
MLU	72.92%	77.78%	75.35%	14.33%
AGE	84.01%	87.54%	85.78%	5.54%

Table 5 – Grammaticality Choice Task Results for Verb Finiteness

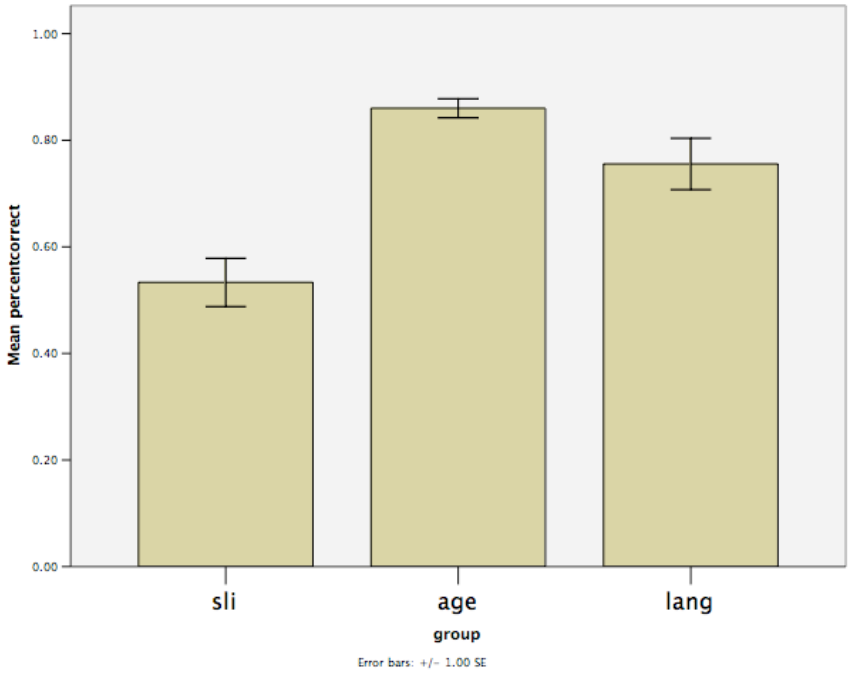

Figure 2 – Comparison of SLI and Control Group Scores

There was also a main effect of verb form type, with group as the between subjects variable, for infinitives ($F [2, 24] = 11.680$, $p < 0.0001$), overgeneralizations ($F [2, 24] = 12.785$, $p < 0.0001$) and bare stems ($F [2, 24] = 18.642$, $p < 0.0001$).

	Bare Stems	Overgeneralizations	Infinitives
SLI	4.33/10 (43%)	7.11/11 (65%)	5.56/12 (46%)
MLU	7.44/10 (74%)	8.22/11 (75%)	9.22/12 (77%)
Age	8.11/10 (81%)	10.44/11 (95%)	9.78/12 (81%)

Table 6 – Comparison of Verb Types Among SLI and Controls

4. Discussion

For children in the SLI group, there was no difference between the grammaticality of the adult forms and the forms of the Spanish Tense Composite. This difference in SLI children's grammatical representations is sufficient to distinguish them from unaffected children of the same age and from unaffected children of the same linguistic level. Our study constitutes a Spanish-language cross-validation of the argument of Rice & Wexler (1996) that at least one important dimension of the SLI disorder is a representational deficit rooted in grammatical tense. Methodologically, we take our results to serve as confirmation that techniques other than spontaneous production are called for when the grammatical properties of phonetically null constitutents, such as the subject in Spanish, are a critical dimension of the research question. Finally, our results suggest that receptive measures of finiteness marking could be useful as a clinical marker of SLI.

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