

Using Elicited Repetition to Test Copula Knowledge in Bilingual and Monolingual Two-Year Olds

Frances Blanchette
Ignacio Montoya

The Graduate Center of the City University of New York

1. Introduction

Why do children produce utterances with null copulas? We hypothesize that in order to facilitate production, children exploit the fact that the copula carries little semantic information and drop it. We call this hypothesis The Production Hypothesis. The Production Hypothesis is an alternative to The Syntactic Hypothesis, which asserts that copula omissions are due to a parameter missetting. Previous studies that argue in support of The Syntactic Hypothesis have relied solely on problematic corpus data (Becker 2000, 2004; Fuertes & Liceras 2010). We thus implemented an elicited repetition task in order to test two-year olds' copula knowledge in a controlled environment. In this paper, we show how the results of our elicited repetition task support The Production Hypothesis and not The Syntactic Hypothesis.

This paper is structured as follows. We begin in section 2 by discussing previous research. In section 3 we describe our rationale for using elicited repetition to test child copula knowledge and provide the details of our task design and participant groups. In section 4 we report our results, and in section 5 we conclude.

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Contact: fblanchette@gc.cuny.edu, ignacio.l.montoya@gmail.com

2. Background

The Production Hypothesis predicts that a child's language proficiency will correlate with her rates of copula inclusion. Under The Production Hypothesis, there should be no effect of predicate type (stage- or individual-level (Carlson 1980; see below)) or language group (bilingual or monolingual) on copula omission. The alternative Syntactic Hypothesis states that due to a parameter missetting, some children pass through a null copula phase.

The Syntactic Hypothesis in Becker (2000, 2004) states that due to a parameter missetting, children omit more copulas with stage- than with individual-level predicates. Stage-level predicates tend to denote temporary properties, and may be instantiated by locative prepositional phrases and some adjectives. Individual-level predicates tend to denote more permanent properties, and may be instantiated by nominal phrases and some adjectives. The following examples serve to illustrate:

- (1) The girl is sad. (stage-level)
- (2) The girl is tall. (individual-level)

Becker (2000, 2004) found that two-year olds omitted significantly more copulas in stage-level constructions like (1) than in individual-level constructions like (2).

Note that (1) and (2) employ the same copula form ('is'). While English uses forms of 'be' for both stage- and individual-level copula constructions, Spanish has two copular forms. In Spanish, forms of *estar* 'be' typically mark stage-level predicates,

while forms of *ser* 'be' typically mark individual-level predicates. The following examples illustrate:

- (3) La niña **está** triste. (stage-level)
'The girl is sad.'
- (4) La niña **es** alta. (individual-level)
'The girl is tall.'

The Syntactic Hypothesis further asserts that, because Spanish has two copular forms, one for each predicate type, Spanish/English bilinguals set the parameter correctly at an earlier stage and omit fewer copulas (Fuertes & Liceras 2010).

Van Kampen (2011) argues that the Syntactic Hypothesis is problematic for a number of reasons, and shows that the corpus data upon which it is based contain confounding variables. For example, Van Kampen notes that the child's input may include small clause complements of perception verbs such as the following (Van Kampen's (2a), p. 3):

- (5) Did you see *the mouse on the TV*?

The child reacts with utterances such as the following (Van Kampen's (3a), p. 3):

- (6) mouse on TV

Though Becker's (2000, 2004) counting method would have included (6) as a stage-level construction with a null copula, the input in (5) shows that this is not necessarily the case.

Van Kampen further points out that Becker's high rates of copula inclusion with nominal predicates could be due to the fact that a large proportion of the child's utterances are presentational 'that's X' constructions, in which 'that's' is an unanalyzed or fixed form 'thats'. As such, the fact that Becker counted these as individual-level predicates with an overt copula is another potential confound.¹

The corpus research by Fuertes and Licerias (2010) on Spanish/English bilingual copula acquisition takes Becker's work as its starting point. The Spanish/English bilinguals in Fuertes and Licerias (2010) have lower rates of copula omission than Becker's (2000, 2004) monolinguals. Fuertes and Licerias conclude that this is due to the fact that the two forms of the copula in Spanish serve as cues that allow children acquiring Spanish to correctly set the relevant parameter at an earlier stage than those acquiring English. Bilinguals acquiring both Spanish and English thus incorporate this correct parameter setting into their English settings, resulting in lower rates of English copula omission. However, in addition to the fact that the Fuertes and Licerias (2010) study is based solely on corpus data, which are subject to confounds such as those discussed above, the authors draw their conclusions based solely on the data of two children. We see, therefore, that more and better data are needed to describe and explain children's copula omission patterns.

To circumvent the problems corpus data present for analyzing children's copula knowledge, we designed an elicited repetition task. The data we gleaned in this controlled environment allowed for direct comparisons of children's copula inclusion across

¹ Van Kampen (2001) in fact provides a more fine-grained longitudinal analysis of Becker's (2000) data, showing that Becker's strategy of summing copula contexts across files that represent distinct periods in the child's development may obscure the child's true pattern of development in regard to the copula. A full summary of Van Kampen's arguments is beyond the scope of this paper.

predicate types (stage- and individual-level) and language groups (bilingual and monolingual). In the next subsection, we describe our task.

3. Methodology: Elicited Repetition

We designed an elicited repetition task to test two-year olds' copula knowledge. Elicited repetition is sensitive to both structural and performance effects (Bernstein Ratner 2000; Lust et al. 1996; Valian & Aubry 2005; a.o). Furthermore, unlike the corpus data described in the previous section, elicited repetition allows for systematic comparisons across predicate types and language groups.

Our participants were ten English monolingual and ten Spanish/English bilingual two-year olds, ranging in age from 2;0 to 2;9. We tested our monolinguals once, in English only, and our bilinguals twice, first in English and second in Spanish. Each bilingual child's two sessions were held within two weeks of each other. We printed each item on an index card, and the experimenter read the item and asked the child to repeat it. Once the child repeated the item, or a portion of the item, the experimenter gave the child the card, and the child fed the card to Elmo. The materials used for the procedure are shown in Figure 1.



Figure 1: Materials

Sessions were mostly conducted at the child's home.² The experimenter began by playing with the child for approximately twenty minutes. Once the child seemed comfortable, the experimenter introduced the child to Elmo and explained that she needed help feeding him. The experimenter told the child that she would say something, then the child would say the same thing, and then the child would feed Elmo. Each child received up to five practice items before beginning the test items.

The items consisted of twenty four-word sentences, ten with stage-level predicates and ten with individual-level predicates. All of the individual-level predicates were adjectival. Six of the stage-level predicates were adjectival, and four were locative.³ Each set of ten predicate types included five animate and five inanimate subjects. Table 1 shows some examples of our English test items.

² Two children were tested in the lab at CUNY's Language Acquisition Research Center at Hunter College. One of these was a monolingual child who did not repeat any of the sentences. This child is not included in the ten monolingual children whose data we report here.

³ We used only locatives that are a single word (e.g. 'there') to keep the number of words per item constant (at four words per item). There are no individual-level locative predicates, which is why we used only adjectival predicates for our individual-level items.

Stage-Level	Individual-Level
The kitty is there.	My mommy is tall.
Some kids are inside.	These grapes are yummy.
Our blanket was outside.	The floor was hard.
The cookies were hot.	Those girls were pretty.

Table 1: English test item examples

Becker’s (2000, 2004) Syntactic Hypothesis, as adopted by Fuertes and Liceras (2010), predicts that monolingual children will omit significantly more copulas with stage-level predicates as compared with individual-level predicates, and that monolinguals will omit significantly more copulas than bilinguals. The Production Hypothesis, on the other hand, predicts equal rates of copula omission across predicate types and language groups, and a correlation between language proficiency and copula omission. In the next section we report the results of our elicited repetition task.

4. Results

In this section we present the results from our English and Spanish elicited repetition tasks, beginning with English.

4.1 English Data (Monolingual and Bilingual)

Contrary to The Syntactic Hypothesis, a two by two ANOVA for predicate type (stage- vs. individual) by language group (bilingual vs. monolingual) showed no main effects and no interaction. Our results are summarized in Table 2.

	Individual-Level	Stage-Level	Overall
Monolingual	.63 (.42)	.65 (.35)	.64
Bilingual	.79 (.26)	.74 (.32)	.77
Mean	.71	.70	.71

Table 2: Mean (s.d.) Copula inclusion in English

The bilinguals in our study included more copulas in English than the monolinguals, as table 2 shows, but this difference was not significant. We found no significant difference in copula inclusion across predicate types with either language group, and no significant difference across language groups for rates of copula inclusion. Both groups included the copula most of the time, regardless of predicate type. All Fs were less than one.

There were, however, copula omissions in our English data. In support of The Production Hypothesis, language proficiency and copula inclusion were highly correlated. The children's mean imitation MLU, which we calculated by counting the words each child repeated per test item excluding the copula, was 2.55 (range .95 – 3.0). This measure was highly correlated with the children's .71 mean copula inclusion ($r = .72, p < .01$).

4.2 Spanish data (Bilingual only)

In this subsection we report the results of our Spanish elicited repetition task, which we administered to our bilinguals within two weeks of their English session. As with our English data, a 2-tailed paired samples t-test on our Spanish data found no significant difference for copula inclusion across predicate type ($t = .99, n.s.$). Table 3 shows the means for copula inclusion across predicate types and overall.

Individual-Level	Stage-Level	Overall
.67 (.38)	.60 (.44)	.63

Table 3: Mean (s.d) copula inclusion in Spanish

Despite the fact that there was no significant difference in copula inclusion across predicate type, table 3 shows that our Spanish participants also omitted copulas some of the time. As in English, we found that language proficiency and copula inclusion were highly correlated in our Spanish data, again in support of The Production Hypothesis. The children’s mean imitation MLU in Spanish, not including the copula, was 2.29 (range 1.15 – 3.0). This measure also correlated with the .63 overall rate of copula inclusion ($r = .73, p < .05$).

5. Discussion and Conclusion

The results of our elicited repetition task showed that two-year old English monolinguals and Spanish/English bilinguals include the copula to the same degree with stage- and individual-level predicates. In a controlled environment, there is no effect of predicate type or language group on copula inclusion. As such, our data do not support The Syntactic Hypothesis: Two-year olds’ copula omissions are not likely to be due to a parameter missetting.

Our data do support The Production Hypothesis. We hypothesized that because children’s production systems are developing they exploit the fact that some elements have relatively low semantic value, and this results in omissions. In stage-level predicates, the copula is only a tense carrier. In nominals, the copula is semantically

vacuous (Carlson 1980). We found that children's language proficiency correlated highly with their rates of copula inclusion. We thus conclude that children omit the copula not by grammatical reflex, but rather due to limitations on their production systems. Because our data were collected in the controlled environment of elicited repetition, as opposed to from recordings of spontaneous speech, they provide a more accurate picture of two-year olds' copula omission patterns.

Further research on this topic should include employing this protocol with monolingual Spanish speakers, as well as testing children acquiring languages with different systems for realizing the copula (e.g. Modern Hebrew). We would expect monolingual Spanish speakers to perform the same as their English monolingual and Spanish/English bilingual counterparts.

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