

BUCLD 38 Proceedings
To be published in 2014 by Cascadilla Press
Rights forms signed by all authors

Clitic Omission in Spanish-Speaking Children: Evaluating the Roles of Competence and Performance

Victoria E. Mateu

1. Introduction

There is wide agreement that object clitics in Romance languages show a protracted development in L1 acquisition (Müller and Hulk, 1996; Pérez-Leroux et al., 2008; Wexler et al., 2004, *inter alia*), and present difficulties for various other learner populations, including children with SLI (Bedore and Leonard, 2001), as well as L2 learners (Grüter and Crago, 2012). Nevertheless, and despite the extensive literature investigating this phenomenon, the accounts proposed to date continue to be debated. Explanations generally fall into two classes, those that attribute the difficulty with object clitics to the competence domain and those that attribute it to the performance domain.

The goal of the present study is to contribute new evidence relevant to this question by investigating the production and comprehension of object clitics in Spanish-speaking children aged 2-4. Our results do not provide any evidence in favor of competence accounts, and they strongly indicate that clitic omission in Spanish is affected by memory and language processing limitations.

1.1. Direct object clitics in adult Spanish

In most Romance languages, when a direct object (DO) denotes a specific referent salient in the discourse, it is expressed with an object clitic marked for gender and number (1a). However, given a generic interpretation of the DP, a DO clitic/object is not allowed (1b).

- (1) a. Tiene el tigre la pata rota?
'Does the tiger have a broken leg?'

Sí, sí que ***(la)** tiene.
yes yes that ***(CL-FEM-SG)** have
'Yes, it has (it).'

* Victoria E. Mateu, University of California at Los Angeles, victoria@ucla.edu. Many thanks to everyone who offered guidance and assistance on this project, particularly Nina Hyams, Carson Schütze, Megha Sundara, Robyn Orfitelli, Theres Grüter, and the audience of BUCLD 38. I am also greatly indebted to the children, parents and daycare teachers who participated.

- b. Tienen rayas los tigres?
'Do tigers have stripes?'

Sí, sí que (*las) tienen.
yes yes that (*CL-FEM-PL) have
'Yes, they have (them).'

In Spanish, the distribution of clitics is limited to the positions immediately preceding a finite verb, or immediately following a progressive participle, infinitive or imperative.

With respect to their syntactic structure, we will assume a base-generation analysis of clitics. Under this analysis, the canonical object position contains an empty category, *pro* to which the verb assigns a theta-role. Clitics head an independent functional projection that selects a [+specific] DP as their specifier, thus triggering movement of *pro* to this position, where the feature of specificity is eliminated from the head (Sportiche, 1996).

1.2. Direct object clitics in child Spanish

The literature on DO clitic omission in Spanish offers divergent results concerning the rate of omission at the early stages. In the case of elicitation studies, results of 3-year-olds range from 0% omission (Wexler et al., 2004) to 35% (Castilla et al., 2010), with some studies falling in between: 5% in De la Mora et al. (2004), and 12.5% in Bedore and Leonard (2001). These conflicting results are also observed in the case of naturalistic data (Fujino and Sano, 2002; Lyczkowski, 1999 cited in Wexler et al. 2004). Possible confounds for this disparity may be: the experimental method used in elicitation tasks, the presence of DO clitics in the prompt questions, dialectal differences concerning the acceptability of null objects,¹ disparity in the age ranges, and differences in the counting procedure in the case of naturalistic data. One of the primary goals of the present study will be to provide new elicitation results taking these confounds into consideration

1.3. Accounts of DO clitic omission

1.3.1. Representational accounts

Representational accounts claim that the child's early grammar is distinct from the adult grammar in that it contains the means for syntactically representing a sentence with a null referential object. Wexler et al. (2004), for instance, argue that clitic omission can be explained under the assumption of the 'Unique Checking Constraint' (UCC; Wexler, 1998), a maturational constraint

¹ The Spanish variety under investigation in Castilla and Pérez-Leroux (2010) is Colombian Spanish, a dialect which has been documented to allow null referential objects in adult speech (see Campos, 1999, for surveys).

that limits the number of checking operations the child can perform. The UCC account makes specific typological predictions: only languages with participle agreement should exhibit a stage in which object clitics are omitted. Thus, they predict Spanish-speaking children should not drop object clitics at any stage.

Müller and Hulk (2001) propose a hypothesis based on parameter missetting. They suggest that early Romance grammars allow referential null objects in the same way topic-drop languages like Chinese do.

In a different account, Pérez-Leroux et al. (2008, 2012) propose that children's overgeneration of referential null objects results from their failure to restrict the null structure to the appropriate context, i.e. non-referential contexts. These authors further assume that lexical knowledge is a prerequisite for children to acquire the appropriate licensing contexts for null objects, and claim to make two predictions: the child's relative rate of clitic omission will be predicted by his vocabulary development, and the rate of clitic omission will be inversely correlated with levels of sentence complexity, as measured by average sentence length and subordination rates.²

1.3.1. Performance accounts

Other authors have argued that object clitic omission in children should be taken as evidence of their computational limitations or their immature performance system, and not attributed to a divergent grammatical representation or constraint. In line with this idea, Jakubowicz and Rigaut (2000), and Prévost (2006) argue that the placing of (pre-verbal) clitics in a non-canonical argument position creates computational problems in children.

Combining key aspects of psycholinguistic models of language production, such as incremental language processing, Grüter and Crago (2012) presented an account assuming a Tree-Adjoining Grammar model. Under this framework, producing clitic constructions requires more complex operations and more working memory resources than creating transitive constructions with full DPs, leading to children's inconsistent use of object clitics. These authors thus claim that frequency of object clitic omission should be negatively correlated with performance on independent measures of working memory capacity.

2. Study 1. Production

One of the primary goals of our production study is to evaluate whether children acquiring a variety of Spanish where object drop is unattested omit object clitics in production. The results of this study have implications for different accounts of object clitic omission, as outlined in (2):

² In another representational account, Schaeffer (1997) attributes the delayed acquisition of clitics to a missing concept in the child's pragmatic system, the 'Concept of Non-Shared Knowledge', which is involved in the encoding of the feature [specific]. Our study was not designed to test this pragmatic hypothesis. For a discussion of this analysis see Mateu (2014).

- (2) a. Wexler et al.'s (2004) UCC account: Only languages with participle agreement will show clitic omission. Spanish-speaking children should not show clitic omission.
- b. Pérez-Leroux et al.'s (2012): The child's relative rate of clitic omission will be predicted by his lexical development and ability to produce complex sentences.
- c. Grüter and Crago's (2012): Performance on a task that measures verbal working-memory should be a good predictor for the relative frequency of object clitic omission.

2.1. Participants

Thirty-two Spanish-speaking children participated in this study. Data from an additional 15 were excluded from the analysis because of the following factors: less than 50% of exposure to Spanish ($n = 3$), a diagnosed language delay ($n = 2$), failure to provide verbal utterances in more than 50% of the trials in the elicitation task ($n = 5$), and failure to answer correctly to all 6 controls in the comprehension task ($n = 5$, see Section 3.2). The children were recruited from five daycare centers located in Los Angeles, California. Children were grouped into three age categories: 2-, 3-, and 4-year-olds in a cross-sectional design. In addition, ten native Spanish-speaking adults participated in this study. The breakdown of the participants by age is given in Table 1:

Table 1. Participants by age group.

Age group	n	age range	mean age
2-year-olds	10	2;4.27 to 2;11.27	2;10.5
3-year-olds	10	3;0.12 to 3;11.27	3;5.27
4-year-olds	12	4;1.18 to 4;10.18	4;5.27
Adults	10	19;7.18 to 57;5.18	41;6.24

All children included in this study were considered to have normal hearing, vision, and language development and none of them had direct exposure to any of the dialects where null objects have been attested. All families reported Spanish as the main language spoken at home, and children's overall exposure to the language ranged from 50 to 90% ($M = 70.6$, $SD = 8.16$). The adults in the study were teachers at the daycare centers where the children were enrolled. The dialectal and physical requirements were the same as those for children.

2.2. Material and Method

2.2.1. Elicitation task

Children were presented with short stories illustrated by a picture. This was followed by the prompt question "What did x do to y?" used to elicit DO clitics (as in Castilla, 2008). Prior to testing, participants were presented with 3 training

items to familiarize them with the task. The actual test consisted of 8 items balanced for number and gender (2 FEMSG; 2 MASC SG; 2 MASC PL; 2 FEMPL) Responses were recorded in writing by the experimenter, and the task was audiotaped and transcribed by an independent native Spanish-speaker.

2.2.2. Verbal working memory: Non-word repetition task

We developed a verbal working memory test paralleling that of Gathercole and Adams (1993). A set of 15 nonwords were constructed, 5 with one syllable, 5 with two, and 5 with three. Although some of the items contained clustered consonants, they were all heterosyllabic, and were constructed as far as possible to be low in phonological complexity. Items were prerecorded by a native Spanish speaker and were played once. The child was then asked to repeat the word he had heard. Responses were recorded in writing, and audiotaped and transcribed by an independent native Spanish-speaker. Responses were scored as incorrect if the child produced a sound that differed phonemically from the target non-word or if the child omitted a sound completely. The total number of correctly produced tokens was manually calculated for each child.

2.2.3. Story retelling task

We also collected a language sample from each child in order to obtain four additional measures of linguistic development:

- a. Mean Length of Terminable Units in Words (MLTU), where T-unit is a main clause plus all its subordinated clauses.
- b. Number of T-units (NU-TU) is the count of T-units per narrative.
- c. Subordination Index (SUB-I) is the number of T-units plus the number of subordinated clauses divided by the total number of T-units.
- d. Number of different words (NDW) is the number of different words produced during story re-telling.

The results of these measures were used to analyze which linguistics factors can predict clitic omission. As in Castilla (2008) and Pérez-Leroux et al. (2012), the present study employed the wordless picture book “Frog Goes to Dinner” (Mayer, 1974) to elicit the language sample. The experimenter read the story to each child using the script while showing the book. Once the story was finished, the examiner asked the child to retell the story while looking at the pictures. The children’s narratives were recorded and transcribed by an independent native Spanish speaker. Each measure was calculated for each transcription by hand.

2.3. Results

Responses obtained from the elicitation task were classified into one of the following four categories: (a) responses containing an accusative object clitic,

e.g. ‘la abre’ (‘he opens it’), (b) responses containing a full DP, e.g. ‘abre la ventana’ (‘he opens the window’), (c) responses with a transitive verb ungrammatically lacking a direct object, e.g. ‘abre’ (‘he opens’), and (d) verbless utterances. Responses of the latter category were excluded from further analysis. Children with more than 4/8 verbless answers were excluded from the whole study (n = 5). Figure 1 provides the overall scorable responses.

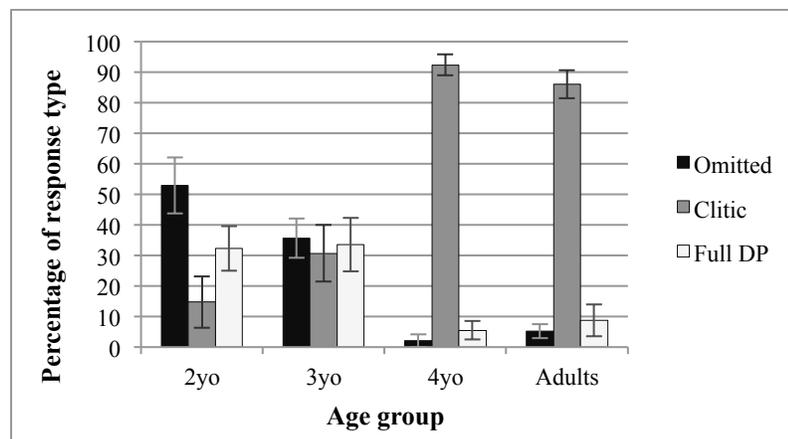


Figure 1. Elicitation Task: rate of clitic omission, clitic production and full DPs.

In the non-word repetition task, children generally did better with shorter words and showed improvement with age. The results are shown in table 2.

Table 2. Non-word repetition task correct responses in percentages.

	1 syllable	2 syllables	3 syllables	Total
2-year-olds	82%	54%	28%	54.7%
3-year-olds	74%	76%	44%	64.7%
4-year-olds	88.3%	91.7%	86.7%	88.9%

The story-retelling task also shows an improvement with age. The results are given in table 3 for each of the linguistic measures discussed earlier.

Table 3. Story-retelling task.

	NU-TU	MLTU	SUB-I	NDW
2-year-olds	11.00	3.05	1.02	31.80
3-year-olds	18.70	4.07	1.03	43.60
4-year-olds	21.58	5.91	1.13	59.08

In order to investigate the relationship between object clitic omission in the elicitation task and the five other independent linguistic measures, we used a

mixed effects logistic regression model with age, verbal working memory score (VWM), NU-TU, MLTU, SUB-I and NDW as independent variables, and random intercepts for subject and item. Only one factor showed a significant effect: verbal working memory, $p < 0.001$. The rest of the variables were far from significant. This result indicates that the score obtained in the non-word repetition task was the only significant predictor for the rate of object clitic omission in the elicitation task. The complete results are given in table 4.

Table 4. Results from the mixed effects logistic regression model with 237 observations, 32 child subjects, 8 trials.

Fixed effects:

	Estimate	SE	z value	$p (> z)$	
(Intercept)	14.080	5.287	2.663	0.008	**
age	-0.058	0.040	-1.464	0.143	
VWM	-0.069	0.018	-3.866	0.000	***
NU-TU	-0.010	0.051	-0.189	0.850	
MLTU	-0.427	0.399	-1.070	0.284	
SUB-I	-8.125	5.111	-1.590	0.112	
NDW	0.050	0.038	1.336	0.181	

Signif. codes: $p < 0.001$ ‘***’, $p < 0.01$ ‘**’, $p < 0.05$ ‘*’, $p < 0.1$ ‘.’

When the significant variable, verbal working-memory, is taken out of the model, ANOVA results show a significant decrease in the fit, $\chi^2 (1) = 14.234$, $p < 0.001$. A more intuitive measure of the quality of this model can be given with a pseudo- R^2 , which would be an approximate percentage of the variance in the data that can be accounted for with those variables. The full model evaluated against an ordinary intercept model shows a Nagelkerke $R^2 = 0.467$. Given that the variable of verbal working memory alone obtained an outstandingly close goodness of fit, Nagelkerke $R^2 = 0.434$, this implies that the variable VWM can account for virtually all the omissions predicted by the model.

2.4. Discussion

The results obtained on the elicited production task show a substantial rate of clitic omission in the 2- (52.92%) and 3-year-old (35.71%) groups. These results are incompatible with Wexler et al.’s (2004) UCC account, which predicts no clitic omission in Spanish, a language with no participle agreement. Our results also failed to support Pérez-Leroux et al.’s (2008, 2012) claims that expressive vocabulary and sentence complexity as measured by MLTU and SUB-I should predict rate of clitic omission. Examining the predictive nature of five independent linguistic measures, and age, we found only one significant variable: non-word repetition span.

These results are, however, compatible with performance accounts. Children may omit object clitics because they cannot successfully hold all the elements that form the clitic construction in memory. Occasionally, children

may be able to repair the sentence by retrieving and adding a full DP object post-verbally (at the expense of violating pragmatic rules). That would explain the higher rates of infelicitous full DPs in the first stages (see Figure 1). This finding thus presents the first empirical evidence for performance accounts linking object clitic omission to working memory limitations.

3. Study 2. Comprehension

The second experiment was designed to investigate the comprehension of null object sentences as well as object clitic constructions. The predictions we tested are included below in (3):

- (3) a. Most representational accounts predict that children should accept referential null objects in a comprehension task.
- b. Processing-based accounts may predict that the longer the sentence, the more elements must be computed, thereby increasing the chance of failure (see Bloom 1990 for subject drop).
- c. Based on the object clitic omission account of Jakubowicz and Rigaut (2000), and Prévost (2006), pre-verbal clitics could be more difficult to process than post-verbal clitics, given that canonical full DP objects also occupy a post-verbal position.

3.1. Participants

The same 32 children and 10 adults who participated in Study 1.

3.2. Material and Method

In this study, children were presented with sentence-picture pairs. We selected three high-frequency verbs that allow a causative-inchoative alternation: *volar* ('fly'/'make something fly'), *dormir* ('sleep'/'put someone to sleep') and *correr* ('run'/'kick someone out').

- (4) a. Diego *vuela*.
Diego flies
'Diego flies.'
- b. Diego *lo* *vuela*.
Diego CL-MASC-SG flies
'Diego flies it.'

At the beginning of each trial, participants were presented with an image and a short story introducing the character and the potential direct object. Each trial was then accompanied by two images: one depicted a transitive scenario and one an intransitive scenario. The task was designed so that the target

sentences would acquire a transitive interpretation if null objects were grammatically sanctioned (as in Grüter 2006). Thus, example (4a) would be compatible with the transitive scene if the child's grammar allows referential null objects.

We included two types of conditions: 2 intransitive trials (simple present or present continuous), and 4 clitic trials that varied in terms of VP length (simple present or present continuous), sentence length (with or without a final adjunct), and clitic position (pre-verbal or post-verbal). The test totaled 18 test items plus 6 control items, which contained a full DP. In addition, 3 training trials were included to verify the child understood the task.

Table 5. Comprehension study clitic conditions.

VP length	Final AdvP	Cl. Position	Example
Simp. Pres.	yes	pre-	<i>Diego lo vuela muy alto</i> 'Diego flies it very high'
Pres. Cont.	yes	pre-	<i>Diego lo está volando muy alto</i> 'Diego is flying it very high'
Pres. Cont.	yes	post-	<i>Diego está volándolo muy alto</i> 'Diego is flying it very high'
Pres. Cont.	no	post-	<i>Diego está volándolo</i> 'Diego is flying it'

3.3. Results

Responses obtained from the intransitive conditions showed that children virtually never chose transitive scenes when the sentence did not have an overt object. At the individual level, no single child scored less than 5/6 in the intransitive trials except for one 4-year-old, who scored 3/6. His rate of omission in the elicitation task was 0/8 and he correctly produced 6/8 clitics. Therefore, neither group nor individual performance allows us to establish a relationship between clitic omission and the availability of referential object *pro* in the child's grammar.

On the other hand, children sometimes assigned an intransitive meaning to sentences with object clitics. In other words, they seemed to ignore the clitic. On average, the 2-year-olds correctly matched the clitic sentences to the transitive scenes 55.83% of the time, 3-year-olds 60%, and 4-year-olds 77.78%.

In order to assess whether any of the variables discussed in Study 1 could predict the rate of correct responses in the clitic conditions, we generated a new mixed effects logistic regression model with age, condition,³ VWM, NU-TU, MLTU, SUB-I and NDW as independent variables, and verb and subject as random intercepts. Among the variables included in Study 1, verbal working memory (VWM) again turned out to be the only significant predictor, $p < 0.01$.

³ Conditions were dummy-coded. Baseline condition was the simple present pre-verbal clitic condition.

The complete results are included in Table 6. When the variable ‘verbal working memory’ is taken out of the model, ANOVA results show a significant decrease in the fit, $\chi^2(1) = 6.32, p = 0.01$.

Table 6. Results from the mixed effects logistic regression model with 384 observations, 32 child subjects, 3 verbs.

Fixed effects:

	Estimate	SE	z value	$p(> z)$	
(Intercept)	-3.779	2.203	-1.715	0.086	.
pre-verbal pres.cont	-0.629	0.342	-1.841	0.066	.
post-verbal pres.cont.	-1.412	0.338	-4.175	0.000	***
post-verbal pres.cont. no adjunct	-0.415	0.346	-1.200	0.230	
age	-0.025	0.025	-1.016	0.309	
VWM	0.028	0.011	2.603	0.009	**
NU-TU	-0.006	0.034	-0.172	0.863	
MLTU	0.361	0.234	1.544	0.123	
SUB-I	3.561	2.341	1.521	0.128	
NDW	-0.021	0.021	-1.007	0.314	

Signif. codes: $p < 0.001$ ‘***’, $p < 0.01$ ‘**’, $p < 0.05$ ‘*’, $p < 0.1$ ‘.’

The results we obtained from this model also showed a significant difference between the baseline condition (i.e. the pre-verbal clitic simple present condition) and the post-verbal clitic present continuous condition, as well as a marginal difference between the former condition and the pre-verbal clitic present continuous condition. In particular, two- and three-year olds were significantly more likely to choose the transitive scene in the pre-verbal clitic simple present condition than in the pre-verbal clitic present continuous condition, $t(38) = 2.48, p = 0.02$. That is, they “ignored” the clitic more often when the verb was periphrastic than when it was simple. All groups were also generally better with shorter sentences where the post-verbal clitic was in sentence final position than when the post-verbal clitic was followed by an adjunct, $t(62) = 2.76, p = 0.01$. Finally, children were also more likely to correctly assign a transitive meaning to sentences with pre-verbal clitics than sentences with post-verbal clitics all else being equal, $t(62) = 2.25, p = 0.03$.

3.4. Discussion

The most prominent prediction of most representational accounts is that children who omit clitics in production should accept referential null objects in a receptive task, given their assumption that the child grammar contains a syntactic representation of null objects. Results from the sentence-picture matching task showed that when presented with intransitive sentences, children assigned them the correct intransitive interpretation to the same extent as adults, with all child groups performing above 93% on average. These results could be interpreted as evidence against most accounts that seek an explanation for clitic

omission at the representational level. If children omit object clitics as a result of a non-adult grammar, we would expect a strong correspondence between a child's rate of clitic omission in production and his non-adult assignment of transitive readings to sentences lacking an overt object. A possible alternative interpretation is that children have a null referential object grammar coupled with a very strong bias for the intransitive interpretation. However, this type of account would not explain the fact that all the children included in the study correctly chose the transitive scene in all six control trials, which contained a full DP. The rest of our findings would also be left unaccounted for: the correspondence between non-word repetition span and production and comprehension of clitic constructions, the increased use of full DPs in the initial stages, or the differences found in the paired clitic conditions of the comprehension task.

We also found that children's overall performance in the clitic conditions was surprisingly low. Group performance for the two younger groups was at chance level. At the individual level, average correct scores for the clitic conditions formed a continuum that ranged from 33% to 100%. This pattern of results cannot be easily interpreted by accounts that posit a representational deficit in the child's grammar. These views propose that the observed inconsistent use of clitics results from the child having an alternative non-adult means of encoding a referential object, i.e. null. Therefore, they do not predict that clitic constructions should cause any difficulties in comprehension. As in our production study, the results obtained from this second study point towards a processing explanation. Our regression analysis showed that non-word repetition span has a significant predictive value in children's ability to correctly interpret object clitic constructions.

Comparative analyses of the results obtained in the four clitic conditions revealed that this is indeed the case. With respect to sentence complexity, 2- and 3-year-olds were significantly more likely to correctly assign a transitive reading when the sentence contained a simple verbal form than when the verb was periphrastic. This result may not come as a surprise considering that several studies investigating language processing have found a strong preference in both children and adults for shorter over longer dependencies (McDaniel et al., 2010).

In a second comparative analysis we observed that sentences containing a post-verbal clitic followed by an adjunct received fewer correct responses than those where the post-verbal clitic was in final position. This result is also predicted if we assume that the longer the sentence, the more elements must be computed, increasing the possibility of failure (Bloom, 1990). Additionally, results from perception studies have shown that edges of sentences are more salient and are routinely remembered more often than elements in medial positions (Sundara et al., 2011). Although it is not known whether this is due to immaturity of the sensory systems or to verbal-working memory limitations, both would be considered to be purely performance-related limitations.

Finally, Jakubowicz and Rigaut (2000) and Prévost (2006) suggested that clitics that appear post-verbally might be easier to interpret than those preceding the verb, given that full DP objects also have a post-verbal position. This

prediction, however, was not borne out in our study. In fact, children performed significantly better in the pre-verbal clitic condition than in the post-verbal clitic. A possible factor that could account for children's better performance with pre-verbal clitics is that cross-linguistically pre-verbal clitics are phonologically less integrated to their base than post-verbal clitics (Peperkamp 1997). Peperkamp attributes this effect to processing issues that predict word beginnings to be more prominent than word ends, both in word production and in word recognition.

It seems thus, that children have an adult mental representation of clitic constructions, but that they have difficulties interpreting them –and not only producing them– due to difficulties at the performance level, i.e. low processing and linguistic memory and lack of phonetic salience.

4. Conclusion

The present study examined the production and comprehension of object clitics in Spanish-speaking children. In our production study we found that object clitic omission occurs at non-negligible rates in 2- and 3-year-olds. When assessing the relationship between rate of clitic omission and a selection of linguistic factors we found that non-word repetition span was the only significant predictor, strongly suggesting that verbal working memory limitations have an effect on the use of clitics. In the comprehension study, we found that children consistently chose the intransitive scenes when they were presented with potential null object structures, regardless of the high rates of clitic omission in the elicitation task. This could be interpreted as counterevidence to proposals that attribute clitic omission to a null object representation. Further analysis revealed that children have trouble interpreting object clitic constructions, and that this difficulty is directly associated with low scores in the non-word repetition task. A comparative analysis of children's performance in the four clitic conditions provided further evidence favoring performance accounts.

The results from these two studies thus suggest that the linguistic principles that govern object clitic constructions in Spanish-speaking children are adult-like from the beginning, but the means for integrating clitics may require more refined and developed mechanisms of memory and language processing.

References

- Bedore, Lisa M. & Laurence B. Leonard. 2001. Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research* 44. 905–924.
- Bloom, Paul. 1990. Subjectless sentences in child language. *Linguistic Inquiry* 21. 491–504.
- Campos, Héctor. 1999. Transitividad e intransitividad. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática descriptiva de la lengua española*, 1519–1574. Madrid: Espasa Calpe.
- Castilla, Anny P. 2008. *Developmental measures of morphosyntactic acquisition in monolingual 3-, 4-, and 5-year-old Spanish-speaking children*. Toronto: University of Toronto dissertation.
- Castilla, Anny P. & Ana T. Pérez-Leroux. 2010. Omissions and substitutions in Spanish object

- clitics: Developmental optionality as a property of the representational system. *Language Acquisition* 17, 2–25.
- De la Mora, Juliana, Johanne Paradis, John Grinstead, Blanca Flores & Myriam Cantú. 2004. The production of object clitics in Mexican Spanish-speaking children, with and without SLI. Poster presented at the *Symposium for Research on Child Language Disorders*. Madison, WI: University of Wisconsin.
- Fujino, Hanako & Tetsuya Sano. 2002. Aspects of the null object phenomenon in child Spanish. In Ana T. Pérez-Leroux & Juana M. Licerias (eds.), *The acquisition of Spanish morphosyntax*, 67-88. Dordrecht: Kluwer.
- Gathercole, Susan E., & Anne-Marie Adams. 1993. Phonological working memory in very young children. *Developmental Psychology* 29(4). 770-778.
- Grüter, Theres. 2006. *Object clitics and null objects in the acquisition of French*. Montreal: McGill University dissertation.
- Grüter, Theres & Martha Crago. 2012. Object clitics and their omission in child L2 French: The contributions of processing limitations and L1 transfer. *Bilingualism: Language and Cognition* 15(3). 531-549.
- Hyams, Nina. 2011. Missing subjects in early child language. In Jill de Villiers & Tom Roeper (eds.), *Handbook of Generative Approaches to Language Acquisition*, 13-52. New York: Springer.
- Jakubowicz, Celia & Catherine Rigaut. 2000. L'acquisition des clitiques nominatifs et des clitiques objets en français. *Canadian Journal of Linguistics* 45, 119-157.
- Mateu, Victoria E. 2014. Object clitic omission in child Spanish: Evaluating representational and processing accounts. Manuscript submitted for publication.
- McDaniel, Dana, Cecile McKee & Merrill F. Garrett. 2010. Children's sentence planning: Syntactic correlates of fluency variations. *Journal of Child Language* 37. 59-94.
- Müller, Natascha & Aafke Hulk. 2001. Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *Bilingualism: Language and Cognition* 4. 1-21.
- Peperkamp, Sharon. 1997. *Prosodic Words*. Den Haag: Holland Academic Graphics.
- Pérez-Leroux, Anna T., Mihaela Pirvulescu & Yves Roberge. 2008. Null objects in child language: Syntax and the lexicon. *Lingua* 118. 370-398.
- Pérez-Leroux, Ana T., Anny P. Castilla & Jerry Brunner. 2012. General and specific effects of lexicon in grammar: Determiner and object pronoun omissions in child Spanish. *Journal of Speech, Language, and Hearing Research* 55. 313-327.
- Prévost, Philippe. 2006. The phenomenon of object omission in child L2 French. *Bilingualism: Language and Cognition* 9. 263-280.
- Schaeffer, Jeannette. 1997. Object scrambling, object (-clitic) placement and nominal specificity in Dutch child language. In Elizabeth Hughes, Mary Hughes & Annabel Greenhill (eds.), *Proceedings of the 21st Annual Boston University Conference on Language Development (BUCLD 21)*, 527-538. Somerville, MA: Cascadilla Press.
- Sportiche, Dominique. 1996. Clitic constructions. In Johan Rooryck & Laurie Zaring (Eds.), *Phrase structure and the lexicon*, 213-276. Dordrecht: Kluwer.
- Sundara, Megha, Katherine Demuth & Patricia Kuhl. 2011. Sentence position effects on children's perception and production of English third singular -s. *Journal of Speech, Language and Hearing Research* 54. 55-71.
- Wexler, Ken. 1998. Very early parameter setting and the Unique Checking Constraint: A new explanation of the optional infinitive stage. *Lingua* 106. 23-79.
- Wexler, Ken, Anna Gavarró & Vicenç Torrens. 2004. Feature checking and clitic omission in child Catalan and Spanish. In Reineke Bok-Bennema, Bart Hollebrandse, Brigitte Kampers-Mahne & Petra Sleeman (eds.), *Romance languages and linguistic theory 2002*, 253-269. Amsterdam: Benjamins.