

CHILDREN'S INTERPRETATION OF NULL OBJECTS UNDER THE SCOPE OF NEGATION*

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1. Introduction

It is a well-known fact that in some Romance languages young children tend to omit direct objects in their spontaneous and elicited production (Jakubowicz et al. 1997, Schaeffer 1997 Müller et al. 1996). Recent research has pointed out that object omission also appear in the elicited production of English children, and has offered an explanation for it based on a null object analysis (Pérez-Leroux, Pirvulescu and Roberge, 2008). Following this approach, it is legitimate to examine the properties of the null element used by English-speaking children in the place of the overt object. Given the availability of implicit null objects in the target grammar, we investigate children's interpretation of implicit objects to test whether children go through a developmental stage where they allow these null objects to have anaphoric properties. If they do, then it can be hypothesized that this is what corresponds to the English null object stage. We report on a study designed to test this.

2. Background

2.1 Implicit objects

It is generally recognized that most if not all transitive verbs can alternate, and their intransitive use involves an implicit object that is prototypical or generic, and that does not appear to bear a referential index as in (1).

- (1) She ate \emptyset early last night. (= 'a meal', \neq 'fish')

Constructions with implicit objects such as those in (1) and (2) play a crucial role in both adult and child grammars.

- (2) a. Would you like to draw \emptyset ?
b. He is always kicking \emptyset .

Indeed, in some circumstances the implicit object can acquire a pragmatically determined reference. In the dialogue in (3), it can be understood

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(although not necessarily so) that the activity of reading will be applied to the newspaper.

- (3) Speaker A: What are you going to do while you wait?
Speaker B: I'll buy a newspaper and I'll read \emptyset .

Of course, this is not always possible; in the dialogue in (4), reference to the newspaper is forced and an implicit object construction fails to provide the intended interpretation.

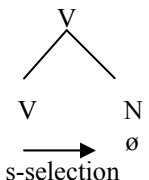
- (4) Speaker A: What did you do with the newspaper?
Speaker B: * I read \emptyset .

We thus conclude that there are no truly anaphoric null objects in English (4) but that implicit null objects (2), which are non-referential in nature, can acquire a pragmatically established link to specific entity in context (3).

2.2 Transitivity: Semantics and syntax

We assume that verbal transitivity can largely be derived from the proposal that all VPs contain an object position that can be overtly expressed or not: Cummins & Roberge (2005), Pesetsky & Torrego (2004), Hale & Keyser (2002). When an object is not overtly realized, it remains as a null object in the VP and verbs differ in the degree of realization that is required of their object.¹

If transitivity is a syntactic property, then (5) can be considered as a universal structural template for objects.

- (5)  where N = implicit null cognate object

Most null objects in English are implicit objects, i.e. null cognate bare nouns with a non-referential, prototypical interpretation. In contrast, other languages such as Portuguese, allow their null objects to have anaphoric properties; Farrell (1990). In such cases, the null element is *pro* or a discourse-linked variable.

3. Development of implicit objects

The developmental issue explored here is to determine how a child acquires the semantic restrictions that the adult associates with implicit objects. Specifically,

¹ Note that this applies to both transitive and unergative verbs.

we seek to determine whether children know that implicit objects are not truly anaphoric, despite likely exposure to exchanges such as (3).

Previous studies have identified a clitic-drop stage in child French, a construction which, at least superficially, requires an anaphoric null object and as such would normally appear in adult French with an accusative clitic (Müller et al., 1996, Jakubowicz et al. 1996, 1997, Pirvulescu 2006).

- (6) Adult: *On peut le manger, l'oeuf?*
 'Can we eat it, the egg?'
 Ivar: *Tu peux manger ø, oui.*
 'You can eat, yes.' (Müller et al., 1996)

Grüter (2006) claims that clitic drop is a production, not a comprehension phenomenon. French (and English) speaking children do not assign a pronominal reference to implicit objects of alternating (causative/inchoative) verbs, interpreting sentences such as *Il a monté* ("He climbed") only as intransitives.

However, Pérez-Leroux, Pirvulescu and Roberge (2008) argue that children's object omissions are not the result of clitic drop, but of the overextension of implicit objects to referential uses based on the UG-given VP structure in (5).

Accordingly, the course of development for French is as follows: 1) the N category in children may initially have a broader semantic range and referential properties; 2) the children have to learn the proper characterization of the s-selection for a given verb.

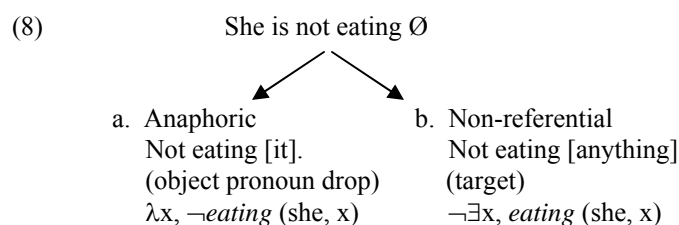
- (7) a. Stage I: V N
 V N_i
 → pronoun acquisition (early)
- b. Stage II V N
 V Pron
 → contextual experience blocks N_i

On one hand, since in adult English there are no truly referential instances of null objects, it could be argued that Stage I should not exist given the minimal variability present in the input. On the other hand, if the template in (5) is universal then even English-learning children should go through Stage I. How can this be verified? What is needed is a method that would allow us to disambiguate the anaphoric and the non-referential readings.

To illustrate, let's consider a statement such as *Mary is eating* made by a small child in reference to a scene showing Mary eating a chocolate bar. It is impossible to determine without a doubt whether the child is talking about the activity of eating (i.e. using a non-referential prototypical null object) or to the chocolate bar (i.e. using a referential interpretation of the null complement).

Similarly, in terms of comprehension, it is difficult to determine how children interpret such a statement.

Consider next the same statement but in its negated form as in (8). Again, in terms of production, this statement could be ambiguous in child grammar (referential or not) when used to depict a picture of a girl playing tennis. But in comprehension, when used to describe a picture of a girl eating a chocolate bar, it becomes ‘true’ if the child has a referential interpretation of the null object and if the scene portrays a girl eating an apple.



Our hypothesis is that children will allow (8) to have both interpretations (8a) and (8b) whereas in the adult grammar N takes narrow scope, i.e. only (8b) would be possible .

4. Methods

To evaluate this hypothesis we designed a truth value judgment task study, with target sentences containing an implicit direct object embedded under negation. If children allowed an anaphoric, referential reading of implicit objects, they would interpret negation as taking scope over the implicit object, at least some of the time, meaning ‘not the object’ as well as ‘not the activity’. The activity was introduced as a game where a puppet named *Froggy* was trying to help the experimenter tell stories; however, Froggy was not very good at it. Children were enlisted as helpers, and they were asked to check if Froggy was saying things right or not.

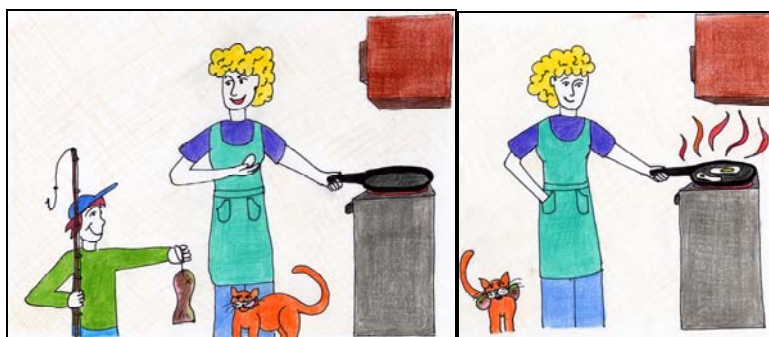
A brief training phase aimed to ascertain that children were able to judge negative sentences. After the training, children heard 12 brief stories (4 control, 8 experimental) followed by a target negative sentence. In each of the stories, the puppet was allowed to describe the last picture, which he did using a negative sentence.

The control items were four simple negative sentences like the one in (9). The purpose of these items was to evaluate the extent to which participants were willing to accept or reject negative sentences.

(9) She is not wearing her pink pajamas.

The experimental stories involved two main participants and made reference to a salient object, which in the example story in (10) is the fish.

- (10) David has brought a fish to his mother, and says “ Mommy can you cook this fish for dinner”.
So, what do you think? *Is the mother going to cook the fish or not?*
Froggy, what’s happening in the next picture?



At the end of the story, one participant (in (10), the mother) does not use the salient object in the cooking activity, but conducts the action on some other, previously unmentioned object. The situation is clear: the mother is cooking something, but not the fish that David brought.

Our experimental prompts, uttered by Froggy, were of two types. The first type consisted of sentences with a verb used intransitively, based on the pattern in (8), as shown (11a). Clearly this prompt should be interpreted as (8b), i.e. an activity reading, so the target response should be a rejection. The second type of prompt shown in (11b) was a comparable sentence in which the verb is used transitively, with an object that is a headless relative construed with respect to the potential antecedent, i.e. clearly a referential reading. In this case, the target response should be an acceptance. In addition, to whether the prompt was right or not, participants were asked a justification for their acceptance or rejection.

- (11) a. Null object version
Froggy: *Oh look, the cat got the fish, so the mother is not cooking.*
Experimenter: *Is that right?*
Participant: *NO (Target)*
Experimenter: *How come?*
Participant: *Well, she is cooking eggs.*
- b. Headless relative version
Froggy: *Oh look, the mother is not cooking what David brought.*
Experimenter: *Is that right?*
Participant: *YES (Target)*
Experimenter: *How come?*
Participant: *She is not cooking the fish, or she is cooking the eggs instead.*

There were eight stories counterbalanced for prompt types for all participants. We hypothesized that to the extent that children allowed implicit objects to have referential properties they would be willing to interpret the prompt in (11a) as equivalent to the one in (11b). They would therefore incorrectly accept (11a) and provide an explanation comparable to the one in (11b).

5. Results and discussion

Our participants were 19 monolingual English-speaking children between the ages of 3;6 and 5;6 (mean age 4;10) recruited in preschools in Toronto. Based on previous studies, we assume that this age group should no longer *produce* null objects in referential contexts, but if the referential reading remains potentially active as a default, then our experiment should reveal its availability in the children. Our control group is made up of 9 monolingual English-speaking adults.

Children were interviewed individually, and their responses were recorded and transcribed. Each response was coded for acceptance or rejection of the prompt and for justification type, i.e. what type of rationale was offered to justify the acceptance or rejection. In general, children were willing to explain themselves, but at times they did not, or they simply repeated the prompt, or produced an irrelevant response. However, the majority of the justifications were both relevant and informative. Our analysis identified three main types of justifications, according to how the justification focused or not on the object of the verb.

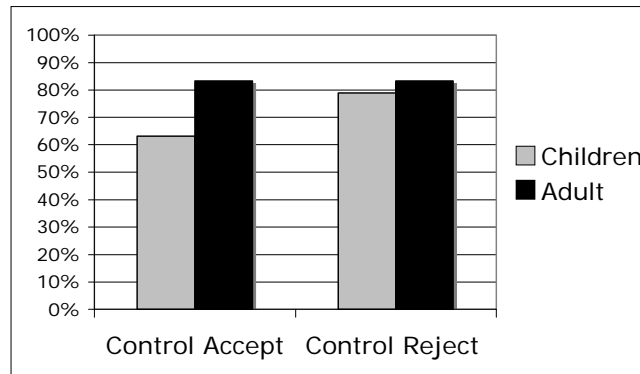
We coded the justifications as: *generic* if they talked about the general activity but made no explicit mention of the object; *specific* if they talked about what happened to the salient object (eg. *the fish*) so that it did not become involved in the target activity; and *contrastive* if they used a contrastive particle to with scope over the other, non-salient object, (eg. *the eggs*). These are illustrated in Table 1.

Table 1: Coding of justification types and relative target acceptability

Code	Example	Acceptability (headless relative)	Acceptability (implicit object)
Generic	... because the mother is cooking. ... because the mother is cooking eggs.	low	high
Specific	... because the cat is eating the fish.	high	low
Contrastive	... because she is cooking eggs instead.	high	low

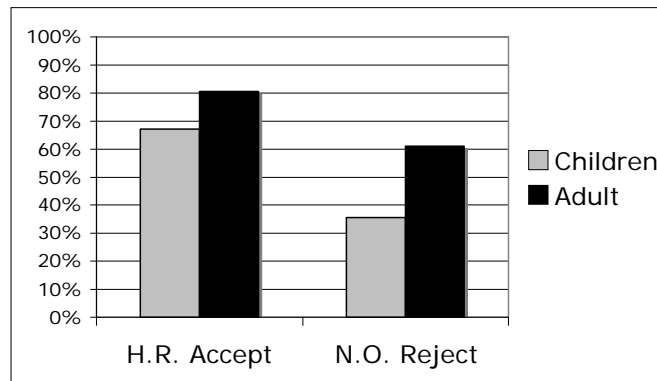
The results on the acceptance/rejection responses (Figure 1) shows a good performance by adults, with 83% target responses, and despite the complexity of the task, children had almost as high a proportion of correct rejections of control items (79%), and lower (but still above chance) proportion of correct acceptances of control items (63%). This strongly suggests that, at least within the conditions of this study, there is no bias towards simply accepting sentences, rather the opposite seems true.

Figure 1. Correct acceptance and rejection of control sentences



For headless relatives in experimental sentences (Figure 2), adult performance reaches levels of correct responses comparable to those of control sentences. At 67% correct acceptances of headless relatives, children match their percentage of correct acceptance of control items, while falling somewhat short of the adult standards.

Figure 2. Correct acceptance and rejection of experimental sentences

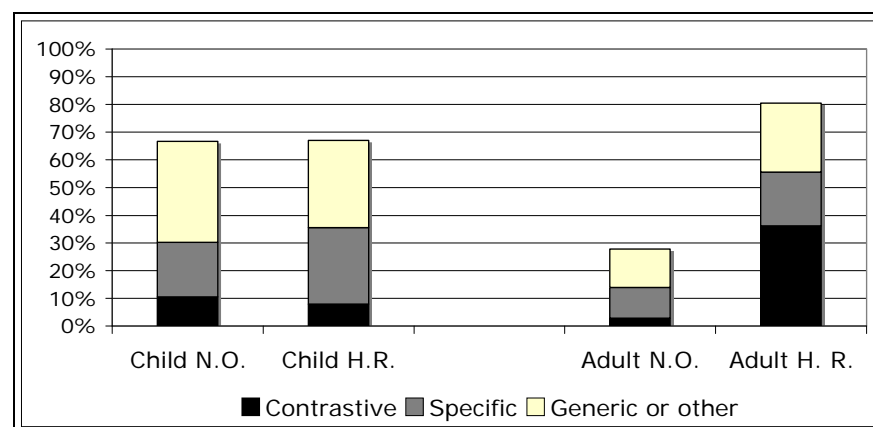


For null objects, a comparison of Figure 1 and Figure 2 reveals that the adults' ability to reject these sentences is lower than for control reject items (61% vs. 83%), showing that implicit object sentences although structurally

simpler than the ones involving headless relatives are more ambiguous. Performance in children is very poor, with children actually rejecting only 36% of the time; acceptances are thus the preferred response. In other words, children are willing to accept the prompt in (11a) as describing the illustration in (10).

We now turn to a qualitative analysis of acceptance responses, which suggest the possibility of a referential interpretation. Figure 3 reproduces the headless relative results for both adults and children but in the case of the null object sentences it provides the acceptances instead of the rejection, as did Figure 2.

Figure 3. Percentage of acceptance responses to experimental sentences classified by justification type



The first observation is that children produce almost twice as many acceptances to null objects as adults and adults interpret null object and headless relative sentences differentially.

Second, it is striking that for children's results there is no difference in the proportions and types of acceptances to headless relative and implicit objects, unlike what is seen in adults. Acceptances of headless relative objects are primarily based on generic and specific justifications, with a proportion of contrastive responses around 11% and 8%.

Third, adults offer virtually no contrastive justifications with their null object acceptances (2%), but offer it frequently for their correct headless relative acceptances (36%). Since the contrastive justification type contrasts the two objects in the illustration, this indicates that adults interpret only the headless relative prompt as truly referential, not the null object prompt; this is as expected.

6. Conclusion

Whereas adults clearly show that they do not interpret null object sentences as headless relative object sentences, children clearly do both in terms of

proportions of acceptances and in the types of explanations or justifications they offer. Since our control sentences did not reveal a preference for acceptances, the lack of distinction between HR and NO sentences cannot be dismissed as a simple acceptance bias.

It seems more likely that these results reflect the willingness on the part of children to treat implicit objects as compatible with a referential interpretation; making the null object similar to the headless relative object in its anaphoric properties.

Within the general discussion in Section 3 on the development of implicit objects in first language acquisition, we asked whether children knew English implicit objects do not have a true anaphoric reading. Their treatment of implicit objects in negation contexts suggests this is not the case. Our hypothesis that (8) – *She is not eating \emptyset* . – can be treated as (8a) – *She is not eating it*. – in child language is verified. Recall that we used negative sentences as prompts in order to isolate the referential or non-referential properties of the missing direct object. Since there are no a priori reasons to assume that negation should directly affect those properties of the object, we can safely extrapolate that the positive sentences such as (1) and (2) also involve a potentially referential null objects. Our results clearly support the observation that a null object stage exists in L1 English.

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