VARIABLE INPUT AND OBJECT DROP IN CHILD LANGUAGE[*]

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1.   Introduction

Young children appear to exhibit an optionality stage for direct objects, which they overcome at different ages in different languages (Jakubowicz et al. 1996, Schmitz et al. 2004, Wexler et al. 2002, Pérez-Leroux, Pirvulescu & Roberge, In press). Such crosslinguistic differences in development should be examined in light of the complexity of the input. One important fact not yet fully considered is that adult grammars allow for null objects in a variety of contexts. This leads to an important question: Given a verb without an object, what can the child unambiguously infer? We argue that the interpretability of object omission is different for children and adults. Consider the hypothetical scenario in (1).

(1)   Mary comes to the lunch table with a lunch bag. She places the bag on
        the table and says: I brought a sandwich, but …
                        a.   …I don't want to eat it.
                        b.   …I don't want to eat.

        Paradoxically, the variant with the missing object (1b) offers a more complex learning experience for the child learner. The child could be using the example to make inferences about the meaning of the verb or, alternatively, she could be making inferences about the syntax of null object licensing in the target grammar. In a language like English, (1b) will be interpreted as having some associated semantic properties (i.e., genericity/prototypicality): 'I don't want to eat anything'. In a different language, such as Chinese, the object referent can be recovered through discourse. This suggests the need for a convergence of the lexical and syntactic approaches: the child needs to simultaneously determine lexical frames (argument structure) and formulate the target grammar for null object licensing. The first acquisition process is syntactic bootstrapping (Gillette et al. 1998); the second is parametric learning: learning about the syntactic properties of object licensing that are specific to the target language.
        This type of multiple-analysis problem is a pervasive feature of the child's primary linguistic data. Learnability theories approach the problem in various ways. To avoid parametric fluctuation, Fodor (1998) suggests that learners only set parameters on the basis of unambiguous input. However,

unambiguous triggers models are not very successful because language input seldom contains such input (Fodor & Sakas 2005). Yang (2004) suggests that learning is a result of a stochastic selection of competing grammars. To parse a sentence, children randomly choose an option from the set of UG-given possible analyses. Success or failure to analyze a sentence alters the probability that a grammar will be selected again. A parameter is set early if a grammar frequently succeeds at parsing sentences with it. Thus, the frequency of a given sentence-type predicts the timing of setting of the parameter associated with it.

In this paper we argue that the tension between the two modes of learning involved in acquisition of direct objects (the lexical and the syntactic) contributes to the optionality stage in children. We consider the status of object complements with a restricted set of transitive verbs, which range in the degree of omissibility of the object, and present data from CHILDES from the Sachs and MacWhinney Corpora (English) and the York corpora (French) and an additional French source, the Dubuisson-Pupier corpus, to examine: a) the extent to which children's omissibility preferences match their parents', and b) whether the cases of optional transitivity have sufficient contextual disambiguation or a substantial part of the omission data provides ambiguous input.

2. Lexical vs. syntactic transitivity

2.1 Transitivity as a lexical construct

Verbs traditionally classified as transitive can regularly appear without an overt object in many languages of the world. It is important to understand how children somehow acquire this knowledge. There are two plausible conceptual approaches to optional transitivity. The first is a lexical approach, where optionally transitive verbs, such as *eat*, are described by postulating two lexical entries, as in (2).

(2)   a.   *Eat*$_1$, unergative, 'eat a meal', incorporates an object component.
          b.   *Eat*$_2$, transitive, 'ingest food in some manner', incorporates a
               manner component that forces the presence of an object.

Under the lexical approach, an overt object used with the transitive *eat* is obviously assumed to be syntactically present, but absence of an object with unergative *eat* means that no object is represented in the syntax. There are a few problems with this view. First, the syntactically absent object of unergative *eat* is still assumed to be active in the compositional interpretation of the sentence. The object is incorporated to the lexical entry of the verb, leading to the paradoxical view that the unergative interpretation (2a) involves an object. One is forced to posit a lexical rule so that the entry in (2b) can be turned into (2a).

This essentially means that: 1) a transitive verb can "automatically" be used unergatively or, stated differently, that the transitive verb subsumes its potential unergativity; 2) transitivity for a particular verb must be learned before unergativity. This brings us full circle: transitivity needs to be learned by the child but to learn the alternations the child must assume that the verb is transitive to begin with. The purely lexical approach fails in other respects. The

description of *eat* in (2) offers two options: there is an object or there is none. However, a projected null object is (at least sometimes) needed: example (3) is ambiguous between a natural reading whereby the spy had some food after she memorized the document and the frivolous interpretation that she ate the document once she memorized it. This latter interpretation requires a parasitic gap (Chomsky 1982), which crucially relies on the existence of an available empty object for *eat*. In a lexical approach, three different entries for *eat* are needed – or two entries plus a mechanism to derive the third possibility, as represented in (4). However, this third option is not idiosyncratic and most likely not lexical in nature, but a pervasive possibility that is available cross-linguistically.

(3)   Which document did the spy memorize __ before eating __?

(4)   *Eat*$_3$, transitive with null object, 'ingest specified food'.

An additional issue is that transitivity, as a lexical construct, is not a categorical phenomenon: transitive verbs can appear intransitively.[1] Indeed, most transitive verbs alternate, and even those verbs that resist the alternation can be found in intransitive frames in corpora. For instance, *devour* is normally assumed to contrast with *eat* in that respect; see (4) above.

(5)   *Eat* vs. *devour*
       There are those who annihilate__ with violence — who devour __.
       (BNC:FAT 2709)

However, the attested example in (5) exists and is acceptable. In terms of language acquisition, it would then be necessary to explain how each option is learned by a child, and how the child acquires knowledge of when and where each option is used.

2.2   Transitivity as a syntactic construct

A more accurate approach would provide a single entry for *eat* and derive the three uses of the verb. Thus, transitivity is best viewed as a (universal) grammatical property, not as a lexical property. To implement this, let us assume that V roots must merge with a complement. The basic transitive
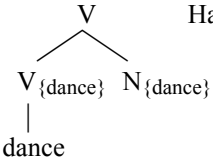
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[1] Conversely, there are intransitive verbs that, under certain circumstances, allow an overt object. Unergative verbs commonly allow a modified cognate object, regular DP, or measure phrase to appear as their complement (Massam 1990).
(i)   a. John sleep a restless sleep.
       b. John slept the whole night.
       c. John lived a good life.
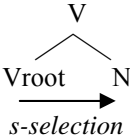   d. John ran a good race.
       e. Then he swam a mile.

structure is given in (6); the crossed elements indicate positions prior to syntactic movements.
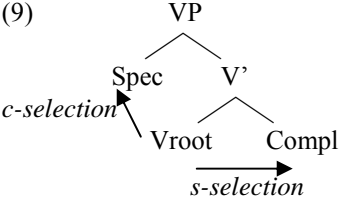
(6)   [$_{TP}$ John T [$_{vP}$ ~~John~~ [$_v$ eat] [$_{VP}$ ~~eat~~ DP]]]

In the case of unergatives and transitives with no overt object, a bare N is merged to V, instead of a DP (or other types of overt complements). Based on work by Hale & Keyser (2002), we assume that the bare N merged at V root enters into a semantic hyponymic relation with the V root.

(7)   V   Hale and Keyser (2002:93)

　　V$_{\{dance\}}$　N$_{\{dance\}}$
　　　|
　　dance

As a bare N, this object is non-referential but its class denotation makes it open to pragmatically-based inference. This eliminates the need for multiple lexical entries for transitive verbs used intransitively. The selectional relation operating between V and N at Merge ensures hyponymic identification; let us call it *s-selection*. This N can be seen as a null cognate object (Dobrovie-Sorin 1998). The V root thus s-selects the N. Since this is the basic option available to all verbs, we take it to be the minimal instantiation of transitivity. It is represented in (8). Both unergative and transitive V s-select their complement. However, a transitive VP is structurally different from an unergative VP: the Spec position establishes grammatical linking between the direct object (for functional identification) and the verbal root head (c-selection), as in (9). C-selection is independent from the semantic transfer at V root, and triggers structural asymmetry of the Spec-head feature agreement type.

(8)   V

　Vroot   N
　　→
　s-selection

(9)   VP

　　　Spec   V'
c-selection
　　　　Vroot   Compl
　　　　　→
　　　s-selection

For acquisition purposes, we assume s-selection as the minimal instantiation of transitivity, i.e. the initial setting in UG or the point of departure for L1 acquisition. According to this view, what the child must learn is not whether a given verb can appear with or without an object (i.e. is transitive,

optionally transitive, or unergative) but rather the particular semantic relation that holds between that verb and the object position. In other words, what kind of object is compatible with that verb, and how much information does the object contribute?

2.3 Null objects in French

To illustrate, we describe the functioning of null objects in the adult grammar of French. Previous analyses propose a major distinction between null objects with a context-free non-specific interpretation (which we define as non-individuated or generic) and those that have a specific referent (individuated or definite).

(10) Non-individuated
C'est un jeu qui défoule __ .

(11) Individuated
"Tu as lu les pages? " Il avait lu __.

Cummins & Roberge (2005) show that some cases are not easily classified into a simple referential vs. non-referential (or definite vs. indefinite) distinction. Such null objects are partly identifiable from the speech context, but are not fully definite or specific. Consider (12), where the reference may correspond to a subset of the elements mentioned in the speech context:

(12) bon alors il y a l'infirmière qui arrive avec tous ses médicaments parce que mon chirurge avait laissé euh un ordre c'est à dire que j'avais droit à tout ce que je voulais - c'était tellement c'est - oui pour calmer la douleur c'est tellement douloureux comme opération que il a dit euh aucune limite - bon alors **on m'a donné Ø** mais en fait **ça** te fait absolument rien. (Lambrecht & Lemoine: 307)
'well the nurse came with all the medication because my surgeon had left instructions that is I could have whatever I wanted - it's so it's - yes, for the pain it's such a painful operation that he said uh no limits - okay so **they gave me Ø** but **it** does absolutely nothing for you'

The missing object of *donner* 'to give' in this example is partly identifiable from the speech context, but it is not definite or specific. It can be inferred that the reference of the null object of *donner* is 'some medication'. The reference is not a definite, specific entity, nor is it fully context-independent.

Cummins & Roberge (2005) propose a more fine-grained classification based on the following two hypotheses. First, the availability and interpretation of null objects follow from fairly straightforward interactions between lexical semantics, syntax, and pragmatics. The syntax can provide a null object of a certain type which can then be interpreted by combining the semantic contribution of the verb with information from the linguistic and/or extralinguistic context: this is the standard process of semantic composition. More specifically, they propose that the I-principle of Levinson (2000) is

responsible for the interpretation of the null objects that do not seem to be referential and yet depend on the context, such as the one in (12). The I-Principle forces the recipient to amplify the informational content of the speaker's utterance and to assume the most specific interpretation by avoiding interpretations that multiply referents.

In other words, a V root must merge with a complement, but different modules contribute to the interpretation of the object if this object lacks lexical content. This approach leads to a typology of null objects that can exist in a given language. The typology for French is given in Table 1.

Table 1 : A Typology of Null Objects (Cummins & Roberge 2005)

Reference	referential			non-referential	
Antecedent	reference to antecedent		no reference to antecedent		
Contextual recovery	recovered by clitic	clitic-drop ("delinked")	deictic	contextual clues present	contextual clues absent
Syntax	*pro*		N		
Semantics	ϕ features of clitic	via antecedent	via deixis	lexical semantics of V (i.e. Null Cognate Object)	
Pragmatics		I-principle on linguistic context	I-principle on extralinguistic context	I-principle (less stereotype, more context)	I-principle (more stereotype, less context)

The answer to the seemingly simple question of what types of null objects exist in French is thus rather complex: it depends on the particular module or interaction between modules that are considered. This typology covers the following possibilities. We illustrate the distinctions established with examples from Cummins & Roberge (2005). Referential subindices are used only when the reference is to a linguistic antecedent. Examples that illustrate more than one property are repeated:

- there are referential (12b) and non-referential null objects (12e);
- reference can be to a linguistic antecedent (12b) or not (12c);
- the null object can be either *pro* (12b) or a null bare Noun (N) (12d);
- *pro* is always referential (12a,b) and has the meaning of its antecedent;
- N can be referential (12c) or non referential (12e);
  - the reference of N cannot be to an antecedent;
  - the "meaning" of N obtains via deixis (when referential; 12c) or via the lexical semantics of the verb (when it is non-referential; 12d,e);
- pragmatics regulate the interpretation of the null object (12d,e).

(13) a. NO recovered by clitic
A : Tu veux ce livre$_i$?
B : Oh ! Mais je l$_i$'ai déjà lu *pro*$_i$.

    A: 'Do you want this book?'
    B: 'Oh! I've already read it.'
  b. Clitic-drop (delinked) NO
    A : Tu veux ce livre$_i$?
    B : Oh ! Mais j'ai déjà lu *pro*$_i$.
    A: 'Do you want this book?'
    B: 'Oh! I've already read Ø.'
  c. NO recovered through deixis
    (A hands a paper to B and says): Tiens, lis *N*.
    'Here, read Ø.'
  d. NCO (more contextual)
    Je vais acheter un magazine au kiosque, et je lirai *N* en t'attendant.
    'I'll buy a magazine at the stand, and I'll read Ø while I'm waiting for you.'
  e. NCO (more stereotypical)
    Pendant mon congé sabbatique j'ai surtout l'intention de lire *N*.
    'During my sabbatical I mainly intend to read Ø.'

This typology can be used to examine other languages. We consider only English here. English seems to allow only the null objects associated with the null N type in Table 1. If the presence of a *pro* null object in French is related to the accusative clitic system in this language, then the lack of such null objects in English follows straightforwardly; see Authier (1992). The contrast in (14) and (15) is thus accounted for. Example (14) makes no true reference to the dishes; it is only inferred that the activities of washing and drying apply to the dishes. This can be accounted for by an I-Principle application on the N null object of the two verbs. In (15) however, the context forces actual reference to an antecedent (as though there were pronouns: *she washed them and I dried them*) although there is no empty pronoun category available in English.

(14) We have to get rid of all the ugly dishes before your date arrives.
   Okay, you wash *N* and I'll dry *N*.

(15) What did you do with the dirty dishes?
   *She washed *pro*, and I dried *pro*.

   The two learning problems of lexical transitivity and syntactic transitivity can now be examined side by side. A child who hears a verb with no object needs to incorporate this fact into his or her grammar. For each verb the child will learn from the input the likelihood of it appearing without an object. The child must also decide, for verbs likely to have an object, whether to interpret the absence of the object as reflecting the speaker's intention to deemphasize the role of the object in the event (i.e., no intent to individuate), or to reflect a grammatical fact about the licensing of referential null objects. Crucially, examples (13d) in French and (14) in English must be considered from an input point of view (from the child's perspective). They provide potential evidence for the existence of a null object with reference to a linguistic antecedent. Indeed,

they could be analyzed as being similar to the data from Topic-drop languages; consider the Chinese example in (16). We refer to such pieces of data as parametrically ambiguous in that the potentially individuated nature of the null object is superficially compatible with target grammars that do correspond to the actual target grammar.

(16) Li (2002:297)
          A: John fasheng-le shemeshi?
              happen-Asp what
               'What happened to John?'
          B: Bill dashang-le [e]
              hit-hurt-Asp
               'Bill hurt (John).'

       To the extent that a child hears cases such as (1b) or (14), he or she will be justified in projecting the minimal transitive structure presented in (8).

2.4   Crosslinguistic differences in children's object omissions

Our discussion above suggests that all verbs allow null objects, and that what varies is how much contextual support individual verbs need. We expect object omission in early grammar, in all languages, since all children start with the unrestricted universal template as in (8) – a 'treelet', in the sense of Fodor (1998).
       If object omission is a natural acquisition stage, why have earlier examinations of objects in child language not revealed such a stage for English? Corpus-based reports on object omissions in young children indicate that illicit omissions are minimal (Bloom 1990; Ingham 1993/1994; Hyams and Wexler 1990). These studies report low proportions of illicit omissions, and tend to explain these as the result of performance problems. Interestingly, in his analysis of Naomi's data Ingham also reports some illicit omissions on the part of the adult. Hyams and Wexler (1993) report an omission rate of about 10% in English and do not consider these omissions as a grammatical process but rather as performance phenomena.
       The answer is simple: most object omissions should not be characterized as ungrammatical; they are simply semantically different from their lexically overt counterparts. In other words, coding a missing object as ungrammatical is not so much a categorical evaluation (e.g. verb X should not have a missing object) as it is a stylistic one (e.g. would I accept it in this context or not). If object omissibility is not categorical, the acceptability of object omission should result in substantial inter-speaker variability. French offers an interesting case in comparison: corpus-based results indicate low omissions, while experimentally controlled results show higher rates (Pirvulescu In press, a). Pirvulescu & Roberge (2005), one of the few studies to report interrater reliability, found little agreement when speakers were asked to simply identify whether an objectless sentence was grammatical or not. Once a specific type of context was selected, for example, the clitic context (i.e., definite antecedents for an object-oriented sentence), the rates of illicit omission in French were higher than previously reported (Pirvulescu, In press b).

For these reasons, the syntactic problem of null objects has been specifically considered only with clitic languages, where researchers were interested in tracking the acquisition of clitic systems. Two important results from the study of clitic languages have emerged: 1) there is an optionality stage, and 2) there appear to be cross-linguistic differences in the age at which clitic optionality disappears. For instance, French, Catalan and Italian are late languages, but in other languages, such as Spanish and Romanian, children are believed to lack an optional clitic stage (Wexler, Torrens & Gavarró 2003). Some approaches predict delay based on the computational complexity of clitic constructions (Wexler, Torrens & Gavarró 2003-2004, Jakubowicz & Nash, to appear). Our earlier work (Pérez-Leroux, Pirvulescu & Roberge 2005) shows that once English-speaking children are presented with the same experimental conditions (i.e. *what did X do with Y?),* they also exhibit an early stage of object optionality, despite the fact that English is not a clitic language. We thus leave aside previous analysis of optionality based on clitic properties, and turn instead to the syntactic approach to transitivity and its predictions that children start with a minimal null object. We previously argued in Pérez-Leroux, Pirvulescu & Roberge (2005) that the overall presence of null objects in the input (i.e. their frequency and variety) delays children's acquisition of the proper extension of null objects in the target grammar, because it favors retention of the default option – a minimal null object. This minimal VP structure remains in the adult grammar, with specific semantics. In the child, however, the structure is unconstrained and covers a broader semantic range (Pérez-Leroux, Pirvulescu & Roberge 2006).

The present study examines the potential ambiguity in optional transitivity contexts in English and French. We compare patterns of transitivity in children and adults with a restricted set of optionally transitive verbs, and then test whether the parental use of null objects is contextually sensitive. If parental use favors unambiguous contexts, we can conclude that null objects as a contextually special option can be directly learned from the input. If null objects appear in both ambiguous and unambiguous contexts, we can conclude that the input supports an optionality stage, and that a deductive approach is needed to acquire the special semantics of the null objects.

3. Study

We analyzed child and adult speech in 3 corpora of spontaneous speech from CHILDES: MacWhinney (English), Sachs (English), York (French), and an additional French corpus (the Dubuisson-Pupier corpus), which was made available to us by Marie Labelle. The Sachs corpus consists of 93 files of longitudinal transcripts of the speech of a child, Naomi, taken over 43 months (1;2-4;9). The MacWhinney corpus consists of 88 files taken over a period of 73 months, with child collection being performed for the first born child, Ross (1;4-7;5). Both sets of data are from speakers of American English, and were collected by parent-investigators. For French, the York corpus is the result of an 18-month study where children were recorded during biweekly half-hour sessions (from March 1997 to June 1998). We examined only the 36 files corresponding to the transcripts of the Canadian child, Max (1;9-3;2) whose parents were middle class, university-educated adults living in Montreal. From

the Dubuisson-Pupier corpus, we examined data from one Canadian child, Cynthia (1;11-2;05); the corpus consists of 7 recordings over a 6-months period (from February 1976 to July 1976).

3.1 Methods

Six transitive verbs that varied in their likelihood of omissibility were targeted for analysis: *build, cut, draw, drink, hit* and *eat*, in English, and *construire, couper, dessiner, boire, frapper* and *manger* in French. The CHILDES files were searched using the KWAL command, with windows of 5 preceding and 5 subsequent lines. The preceding window was expanded to 10-20 lines when 5 lines were insufficient to determine the context of the conversation. A wildcard search was conducted for all verbs (i.e. eat*, drink*, boi*, construi*, etc.), and then individual searches were performed for irregular morphology (i.e. ate, drank, built, bu, etc.). The Dubuisson-Pupier files were manually searched.

Standard exclusionary criteria were used: tokens of a verb were discarded: i) if the verb appeared in an incomplete utterance or if the utterance contained unintelligible segments, ii) if the verb was matched with made-up words, and iii) if the utterance was an imitation or repetition. We used as an additional criterion: iv) particles for English. That is, if the verb was matched with a prepositional particle (i.e. I'm cutting it up) we did not include this in the transitivity count since particles may affect the transitivity of the sentence. The remaining parent and child data were separated and coded for syntax. From these, we also excluded operator constructions formed on the object from the main analysis, such as wh-questions or relatives, since these structures have independent justification for a missing object. Imperatives were also excluded on the grounds that they allow deictic null objects in adult grammar that are not otherwise possible. The remaining target utterances were classified by the syntactic status of the objects as null objects or DPs (which included lexical or pronominal DPs).

The null object data were extracted for further analysis. All instances of null objects with these verbs for the adults were classified as individuated (if there was a potential linguistic antecedent in the context) and non-individuated (if this was not the case). This classification did not look further into the semantic status of the antecedent (definite/indefinite/mass/generic), nor into the particular focus of the utterance (emphasis on object referent vs. emphasis on action), but rather into the question of the presence of a potential lexical antecedent. To illustrate, consider the null objects in (17) and (18):

(17) Examples of non-individuated interpretation
      a.   French   b.   English
   *COL: Ça écrit pas très bien.   FAT: you just made that
Ah! c'est bien mieux. Qu'est-ce   one up that's sort of a nice
que tu écris Cynthia?   song though Mark .
*CYN : C'est cassé ça, han?   *MAR: it's not a song either .
*COL: C'est cassé?   *FAT: you know you could
*PAU: C'est pas bon hein?   be a music man too .
*CYN : Est pas bon   *FAT: mommy says that you
*MOT: ***Tu écris ou tu dessines*** have a very good voice .

chérie?
*CYN : E [:je] dessine
*MOT: Tu dessines, qu'est-ce que tu dessines?
*CYN : E [:je] veux dessine
*MOT: Qu'est-ce que c'est le dessin?

*FAT: you could be a singer.
*FAT: *you could be a guy who sings while he builds.*
*MAR: very funny .
*FAT: it's true .

(18) Examples of (potentially) individuated interpretation

a.   French
*CYN: Emmanuel!
*MOT: Emmanuel, et c'est qui l'autre?
*CYN: Emmanuel encore.
*MOT: Oh, c'est qui ça?
*CYN: Des cailloux, xxx.
*MOT: Donne le gâteau, c'est fini peut-être les xxx là, *tu mangeras tout à l'heure.*
*CYN: Photos Cynthia. [?].
*MOT: Il faut pas que ça l'excite trop.
*CYN: C'est Emmanuel peut-être? [?].
*MOT: Et ça, qui c'est ça?
*CYN: Pipi.

b.   English
*FAT: you wan(t) (t)o come up?
*FAT: *he's hitting me in the belly .*
*FAT: trying to climb up .
*FAT: ok .
*FAT: no, no !
*FAT: you can't [!] have the papers .
*FAT: you have to go down again .
…
*** File "boys07a-in.cha": line 1641. Keyword: hitting
*FAT: # ok .
*FAT: now (are) you going to do +...
*CHI: what ?
*FAT: mhm .
*CHI: ok .
*FAT: *I wish you'd stop # hitting*

3.2   Results and discussion

For English, a total of 1575 tokens of the six target verbs (*eat, drink, cut, draw, hit* and *build*) were extracted from the MacWhinney and Sachs corpora. Excluded constructions represented a total of 53 and 203 for the children and adults, respectively. The remaining sentences were classified as to whether or not they exhibited nulls, and the ratios of null objects per verb were computed for the parent and the child.

Table 2: Ratio of null objects per total number of verb tokens used by parents and children in English corpus

VNO/total ratio	Sachs		MacWhinney	
	parent	child	parent	child
BUILD	0.00 (0/1)	0.00 (0/0)	0.38 (6/16)	0.00 (0/5)
CUT	0.63 (5/8)	0.44 (4/9)	0.08 (3/39)	0.03 (1/31)
DRAW	0.50 (16/32)	0.20 (9/46)	0.18 (4/22)	0.24 (5/21)
DRINK	0.16 (4/25)	0.11 (3/27)	0.16 (7/45)	0.03 (1/31)
HIT	0.00 (0/5)	0.50 (1/2)	0.05 (3/57)	0.07 (3/44)
EAT	0.11 (11/103)	0.20 (15/74)	0.15 (67/444)	0.10 (24/232)
Totals	0.21(36/174)	0.20 (32/158)	0.14 (90/623)	0.09 (34/364)

The data are insufficiently robust to make reliable description of all verbs (we have shaded areas containing data for verbs with insufficient numbers of tokens). The more robust data show clearly that there is variation between the lexical items, and across corpora. Interestingly, these data show that the children in general approach the preferences visible in the parental data, with six out of the eight robust comparisons within a 10% difference between parents and children. The French corpora were smaller. We extracted from the Dubuisson-Pupier corpus a total of 130 tokens, and from the York corpus, a total of 70 tokens. Excluded constructions (imperatives and operator constructions) totaled 11 tokens in the Dubuisson-Pupier corpus, and 7 in the York corpora. In both databases, for the verbs that had a substantial number of tokens (*manger* in both corpora, also *boire* in the York data), parents and children showed similar rates of null objects.

Table 3: Ratio of null objects per total number of verb tokens used by parents and children in French corpus

	Dub.-Pupier (CYN)		York (Max)	
	Parent	Child	Parent	Child
BOIRE	0.24 (4/ 17)	0.17 (1/ 6)	(0/0)	0 (0/2)
CONSTRUIRE	(0/0)	(0/0)	(0/0)	(0/0)
COUPER	1.00 (1/ 1)	1.00 (1/ 1)	0.33 (1/3	0 (0/4)
DESSINER	0.50 (2/ 4)	0.75 (3/ 4)	0.60 (3/5)	0.33 (2/ 6)
FRAPPER	(0/0)	(0/0)	1.00 (1/1)	0 (0/1)
MANGER	0.46 (29/ 63)	0.56 (19/34)	0.14 (4/ 28)	0.10 (2/ 20)

We concluded from these observations that: a) the theoretical optional transitivity of the verbs was confirmed: all verbs robustly represented verbs had some degree of omission, b) there is inter-speaker variability for these verbs, and c) children tend to approximate the transitivity patterns of their parents. The results show that both children and adults use null objects in individuated contexts. In the Sachs corpus, adults show a preferential distribution for NO in

non-individuated contexts, but this is not the case in the MacWhinney corpus. What seems to be clear is that the input is robustly ambiguous. The child hears nearly as many null objects in specific contexts (i.e. compatible with an object drop grammar) as in non-specific contexts; this is true for about half of the MacWhinney corpus, and approximately two fifths of the Sachs corpus. The child in MacWhinney also produces null objects equally in individuated and non-individuated contexts. However, Naomi produces proportionally more null objects in individuated contexts than her parents. A CHI test performed on the distribution of null objects per context for parents vs. children approaches significance for Sachs ($\chi^2 = 0.092$), but not for MacWhinney ($\chi^2 = 0.74$).

Table 4: Number of null objects classified per context type

	Sachs		MacWhinney	
	Child	Adult	Child	Adult
Individuated referent in context	19	14	17	48
No linguistic referent available (non-individuated)	13	22	17	42
Totals	**32**	**36**	**34**	**90**

In the French corpora, one of the adults produced null objects equally in both types of contexts (Dubuisson-Pupier corpus), whereas the other favored non-individuated contexts in their production of null objects (York corpus). The York child approximated these preferences (CHI test, $p = 0.65$). In contrast, the Dub.-Pupier child produced most of its null objects in individuated contexts.

Table 5: Number of null objects classified per context type (French)

	Dub.- Pupier		York	
	Child	Adult	Child	Adult
Individuated referent in context	3	6	3	8
No linguistic referent available (non-individuated)	21	30	3	1
Totals	**24**	**36**	**6**	**9**

Two children approximate their parents' distribution (MacWhinney and Dubuisson-Pupier) but two other children have divergent distributions (the York sample is too small to warrant inferences). Of the three adults with sufficient data, one produced null objects as often in individuated contexts as in non-individuated contexts (1/2); another had a slight bias towards non-individuated contexts (2/5), and another had a stronger bias (1/5). Despite this variability, it is clear that a substantial proportion of the input is semantically ambiguous.

4.   Conclusion

While we recognize that inferences from small set of corpus data are by necessity, limited, they provide sufficient evidence to support two claims. First, it seems clear that children are treating the optional transitivity of these verbs in ways that suggest sensitivity to parental usage. Given what is known about

children's lexical conservativity, this is not surprising (Ingham 1993/1994, Tomasello 2000). Second, it is clear that parental use provides substantial ambiguous input: the minimum observed was 1 in 5. That is, the input contains many null objects in contexts that would be compatible with an object drop grammar. This highlights the nature of the acquisition problem represented by examples such as (1): how do children acquire the special nature of null objects in the presence of ambiguous input? It is conceivable that this ambiguous input contributes to the optionality stage discussed in section 2.4; however, it is clear that it cannot explain the differences across languages, since both languages give evidence of ambiguous use of null objects, at comparable rates. Our corpus analysis suggests that primary linguistic data for the child provides only partial support for solving the problem of parametric ambiguity. We speculate that overall quantity of omissions in the input must be factored into the learning situation (Yang 2002). That is, other language-specific factors such as range of null object contexts, presence of clitics, and whether clitics function as agreement markers or stand in complementary distribution, should be explored as contributors to the differences in the duration of the optional stage. Overextensions of null objects in bilingual children have been analyzed by Müller & Hulk (2001) in a similar vein; they suggest that cross-language structural ambiguity extends the optionality stage. However, they treat optionality as the competition between parameters. We adopt instead a view where optionality arises not between two different parameter settings as in Yang (2002), but between a grammar that is learned, and a minimal default structure. This minimal default grammar remains in the adult grammar (Roeper 1999; van Kampen 2004) as an option that allows the interpretability of omission on the basis of the lexical entry alone.

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