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On Children's NEEDs*

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1. Introduction

Within the Principles-and-Parameters approach to UG (including the recent Minimalist Program), a theory of cross-linguistic variation is simultaneously a theory of the child's "hypothesis space" during language acquisition. The task for a child is to identify the correct grammar for the community's language from among the possibilities permitted by UG. In principle, then, we can gain insight into the nature of permitted variation by investigating how the child's grammar changes during the course of acquisition.

Recent studies of child language convincingly demonstrated that child language acquisition is indeed a valuable source of evidence concerning possible cross-linguistic variation, especially in the domain of syntax. For example, Snyder (2001) revealed that English-learning children acquire endocentric root compounds and transitive verb-particle constructions at around the same time, and proposed a syntactic parameter that correlates these two distinct properties. Sugisaki & Snyder (2005/2006) provided evidence from child English for Kayne's (1981) parametric proposal that the availability of preposition stranding is linked to the availability of the prepositional complementizer construction. In addition, Sugisaki (2008) showed that the course of acquisition is consistent with the analysis (such as Hasegawa 2007) that creates an implicational relationship between the languages that permits the

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swiping construction (Merchant 2002) and the languages that allows preposition stranding.

In this study, I develop this line of research, and attempt to add another piece of evidence that child language acquisition constitutes an important testing ground for evaluating hypotheses about language variation. In contrast to the earlier studies, the present study focuses on an (apparent) cross-linguistic variation in the lexicon. More specifically, this study evaluates the recent proposal by Harves & Kayne (2008) and Harves (2008a,b) that, among Indo-European languages, the languages that have a close counterpart of the transitive verb *need* are limited to a proper subset of those languages that have a close counterpart of the transitive verb *have*. Our results from child English argue for the analysis by Harves & Kayne (2008) and Harves (2008a,b) in which the transitive *need* is derived through an incorporation to a silent counterpart of the transitive *have*.

2. *Have*, *Need*, and *Want*: Accounting for their Cross-linguistic Variation

It has been widely known that transitive verbs like *need* and *want* appear to take a simple DP argument which receives an intensional interpretation. The sentences involving these transitive verbs exhibit two hallmark characteristics of intensional contexts first discussed by Frege (1982): (i) Substitution of co-referring terms need not preserve truth, and (ii) non-denoting objects need not induce falsity. For example, substituting "Spiderman" in (1a) for "Peter Parker" in (1b) need not preserve truth, even though these two terms are extensionally equivalent. The sentence in (2) remains true even though "a unicorn" has no reference in the actual world. In contrast, regular transitive verbs do not exhibit these properties: Substitution of "Spiderman" for "Peter Parker" in (3) preserves truth, and the sentence in (4) is simply false.

(1) a. MJ needs/wants Spiderman.
    b. MJ needs/wants Peter Parker.
(2) Ken needs/wants a unicorn.
(3) a. MJ met Spiderman.
    b. MJ met Peter Parker.
(4) Ken owns a unicorn.

Intensional transitive verbs *need* and *want* share other properties as well (see Larson, den Dikken, and Ludlow 1997 and Schwarz 2007, among others). For

example, both of these verbs exhibit ambiguities with time adverbial adjuncts, as illustrated in (5) (Schwarz 2007).

(5) Matt needed/wanted some change before the conference.
   a. Paraphrase 1:
      There was a time before the conference at which Matt needed/wanted some change.
   b. Paraphrase 2:
      What Matt needed/wanted is to have some change before the conference.

Yet, a recent, detailed cross-linguistic survey of Indo-European languages by Harves & Kayne (2008) and Harves (2008a,b) revealed that, despite such similarities, these two transitive verbs significantly differ in their cross-linguistic distribution. They observe that the availability of a transitive verb corresponding to *need* is severely limited in that it is present only in *H(ave)-languages*, the languages that have a close counterpart of English *have*, which is an overt verb expressing ordinary possession such that the possessor has nominative Case and the possessee is a direct object (with accusative Case and no preposition). In other words, transitive *need* is not available in *B(e)-languages*, the languages that lack a close counterpart of *have* and express ordinary possession using some counterpart of *be*. For example, Czech is an H-language and has a transitive verb corresponding to *need*, while Russian is a B-language and lack a transitive *need*: As illustrated in (7b-d), Russian expression that corresponds to English *need* either requires a Dative-Nominative pattern or requires a preposition in front of its object.

(6) Czech (Harves & Kayne 2008:5-7, Harves 2008b:8):
   a. *Possession*
      Mají nové auto.
      have-3PL new car-ACC
      'They have a new car.
   b. *'Need'*
      Tvoje děti tě potřebují.
      your children-NOM you-ACC need-3PL
      'Your children need you.'
   c. *'Want'*
      Petr chce nové auto.
      Petr-NOM want-3SG new car-ACC
      'Petr wants a new car.'

(7) Russian (Harves & Kayne 2008:3-4, Harves 2008a:215):

a. *Possession*

U	Ivana	budet	novaja	mašina.
at	Ivan-GEN	be-FUT.3SG	new	car-NOM.SG

'Ivan will have a new car.'

b. *'Need'*

Mne	nužna	èta	kniga.	
me-DAT	necessary-FEM	that	book-NOM.FEM	

'I need that book.'

c. *'Need'*

Rebenok	nuždaetsja	v	vašej	pomošči.
child-NOM	need-3SG	in	your	help-PREP

'The child needs your help.'

d. *'Need'*

* Rebenok	nuždaet	vašu	pomošč.
child-NOM	need-3SG	your	help-ACC

e. *'Want'*

Ivan	xočet	novuju	mašinu.
Ivan-NOM	want-3SG	new	ca-ACC

'Ivan wants a new car.'

Harves (2008a,b) observes that, in sharp contrast to the transitive *need*, a transitive verb corresponding to English *want* can be present both in H-languages and in B-languages. For example, both Czech and Russian have a counterpart of English *want*, even though the former is an H-language and the latter is a B-language, as illustrated in (6c) and (7e), respectively.

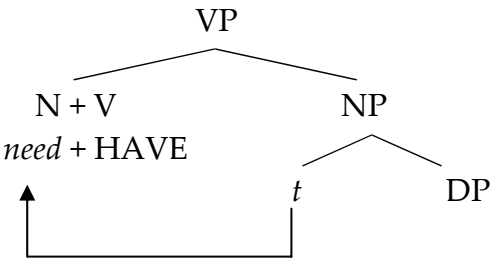
Part of the comparative survey by Harves & Kayne (2008) and Harves (2008a,b) is summarized in Table 1.

	Possession?	Transitive *need*?	Transitive *want*?
English	have	YES	YES
German	have	YES	YES
Spanish	have	YES	YES
Czech	have	YES	YES
Icelandic	have	YES	NO
Swedish	have	YES	NO
French	have	NO	YES
Italian	have	NO	YES
Bulgarian	have	NO	YES
Russian	be	NO	YES
Hindi	be	NO	YES
Irish	be	NO	NO
Welsh	be	NO	NO

Table 1: Cross-linguistic Survey of Indo-European Languages

In order to account for the cross-linguistic generalization in Indo-European languages that a transitive verb corresponding to *need* is available only in H-languages, Harves & Kayne (2008) adopt a Hale & Keyser (1993) style incorporation-approach to verbal *need*, and propose a derivation in which nominal *need* raises and incorporates into unpronounced verbal HAVE. They argue that the incorporation of nominal *need* into silent HAVE results in the appearance of a transitive *need* inheriting the accusative Case licensing properties of HAVE.

(8)



By assuming that the presence of a silent verb in a language requires an overt counterpart, the lack of transitive *need* in B-languages follows straightforwardly from the derivation shown in (8): Since silent HAVE constitutes a necessary component in the derivation in (8), transitive *need* is available only in those languages that can expresses possession using transitive *have*. Put another way, B-languages lack transitive *need* precisely because they lack transitive *have* and by extension its silent counterpart.

As we can see in Table 1, there are H-languages that lack transitive *need*, which indicates that the presence of transitive verbal *have* is a necessary but not sufficient condition for licensing verbal *need* in a given language. For example, French has transitive *have* (and *want*) but still lacks transitive *need*, as illustrated in (9).

(9) French (Harves & Kayne 2008:13, Harves 2008b:6-7):

a. *Possession*

J'ai une voiture.
I-have-1SG a car
'I have a car.'

b. *'Need'*

J'ai besoin d'une voiture.
I-have-1SG need of-a car
'I need a car.'

c. *'Want'*

Je veux une voiture.
I want-1-SG a car
'I want a car.'

Harves (2008b) speculates that the restricting factor would be the availability of an incorporation operation: The H-languages that disallow transitive *need* would be those that lack incorporation altogether. Then, in order for a language to have verbal *need*, the language must permit both a silent counterpart of transitive *have* and an incorporation operation.

To summarize, Harves & Kayne (2008) and Harves (2008a,b) observe that, even though transitive *want* can be present both in H-languages and in B-languages, transitive *need* is available only in a subset of H-languages. To account for this cross-linguistic distribution of verbal *need* in Indo-European languages, they proposed an analysis in which transitive *need* involves incorporation into the silent counterpart of transitive *have*.[1]

1. In order to account for the intensionality effects observed with *need* and *want*, Harves (2008b) proposed that these transitives select for a hidden *v*P complement, building on the Small Clause analysis by Schwarz (2007). Crucially, under the analysis by Harves, languages differ as to which verb is embedded within this clausal complement: In H-languages, this structure involves silent HAVE or GET, while in B-languages, the structure involves silent BE. See Harves (2008b) for details.

3. Prediction for the Acquisition of English

Even though Harves & Kayne (2008) and Harves (2008a,b) are quite careful in limiting their generalization to Indo-European languages, one may criticize their comparative survey by saying that the sample size is relatively small, by the standards of language typology. In addition, the diagnostics employed are quite superficial, and it would be necessary to become more precise about what counts as the counterpart of "transitive *need*" and of "transitive *have*".

In light of these potential problems, evidence from acquisition can be especially valuable: We can overcome these difficulties by deriving and testing the acquisitional prediction of their proposal. According Harves & Kayne (2008) and Harves (2008a,b), among Indo-European languages, natural-language grammars permitting transitive *need* are a proper subset of those permitting transitive *have*. In terms of acquisition, this generalization suggests that the knowledge of verbal *have* constitutes a proper subset of the knowledge required for deriving verbal *need*. Then, in the acquisition of a language like English that has both transitive *have* and *need*, when the presence of *have* is acquired earlier than other prerequisites for transitive *need* (such as the availability of an incorporation operation), children will acquire transitive *have* earlier than transitive *need*. On the other hand, when the presence of *have* is the last-acquired prerequisite for transitive *need*, children will acquire transitive *have* and *need* at around the same time. Hence, the proposal by Harves & Kayne (2008) and Harves (2008a,b) makes the following ordering prediction for the acquisition of English.

(10) *Prediction for the Acquisition of English*:
In English, any given child will acquire transitive *have* prior to, or at around the same time as, but never significantly later than transitive *need*.

The comparative survey by Harves (2008a,b) suggests that, in contrast to verbal *need*, there should be no derivational link between transitive *have* and transitive *want*. Then, we can expect that children learning English will not exhibit any strict ordering effect between *have* and *want*. In the next section, we investigate the acquisition of transitive *have*, *need*, and *want* in English, with the goal of evaluating the prediction in (10).

4. Transcript Analysis

In order to determine the validity of the prediction in (10), I analyzed ten longitudinal corpora for English from the CHILDES database (MacWhinney 2000), which provided a total sample of more than 246,000 lines of child speech. The corpora analyzed in this study are summarized in Table 2. For each child, I located the first clear uses of (i) transitive *have*, (ii) transitive *need*, and (iii) transitive *want*. To count as a clear use, these verbs were required to be followed by an overt DP object. The CLAN program Combo, together with a file of all the relevant forms of these predicates, was used to identify potentially relevant child utterances, which were then searched by hand and checked against the original transcripts to exclude imitations, repetitions, and formulaic routines.

Child	*Collected by*	*Age Span*	*# Child Utterances*
Adam	Brown (1973)	2;03 – 4;10	45,555
Anne	Theakston et al. (2001)	1;10 – 2;09	19,902
Aran	Theakston et al. (2001)	1;11 – 2;10	17,193
Becky	Theakston et al. (2001)	2;00 – 2;11	23,339
Eve	Brown (1973)	1;06 – 2;03	11,563
Naomi	Sachs (1973)	1;02 – 4;09	15,960
Nina	Suppes (1973)	1;11 – 3;03	31,505
Peter	Bloom (1970)	1;09 – 3;01	26,891
Sarah	Brown (1973)	2;03 – 5;01	37,012
Shem	Clark (1978)	2;02 – 3;02	17,507

Table 2: Corpora Analyzed

Results are summarized in Table 3. All ten children produced transitive *have*, *need* and *want* by the end of their corpora. Following Stromswold (1996) and Snyder (2007), the age of acquisition was taken as the first clear use, followed soon after by repeated use. Mean age of acquisition for transitive *have* was 2;01 (years:months), with a range of 1;06 to 2;05. Mean age of acquisition for transitive *need* was 2;03, with a range of 1;09 to 2;08. Mean age of acquisition for transitive *want* was 2;00, with a range of 1;06 to 2;06.

Child	Transitive *have*	Transitive *need*	Transitive *want*
Adam	2;04.03	2;06.17	2;06.03
Anne	1;11.08	2;02.12	1;10.17
Aran	2;02.25	2;08.12	1;11.12
Becky	2;02.30	2;03.27	2;02.15
Eve	1;06	1;09	1;06
Naomi	1;10.18	1;10.18	1;09.26
Nina	2;00.24	2;02.12	2;01.06
Peter	2;00	2;01	2;00
Sarah	2;05.30	2;08.02	2;03.07
Shem	2;03.16	2;03.02	2;02.16
Mean	2;01	2;03	2;00

Table 3: Ages of Acquisition

To evaluate the statistical significance of observed age differences between acquisition of transitive *have* on one hand and acquisition of transitive *need* and *want* on the other, I counted the number of clear uses of the earlier construction before the first clear use of the later construction. Next I calculated the relative frequency of the two constructions in the child's own speech, starting with the transcript after the first use of the later construction, and continuing through the end of the corpus. A Binomial Test was then used to obtain the probability of sampling the observed number of tokens of the earlier construction simply by chance, before the first clear use of the later construction. The null hypothesis for the test is that the second construction was grammatically available at least as early as the first construction, and had the same relative frequency observed in later transcripts (Stromswold 1996, Snyder 2007).

The results of the statistical analysis are summarized in Table 4. Four children acquired verbal *have* significantly earlier than verbal *need*, and the remaining six children acquired these two predicates at approximately the same age (no significant difference, $p > .10$). Crucially, no child in this study acquired transitive *need* significantly earlier than transitive *have*, as predicted in (10). In sharp contrast, in the case of transitive *have* and *want*, two children acquired transitive *have* significantly earlier than transitive *want*, six children acquired transitive *have* significantly later than transitive *want*, and the remaining two children acquired these two predicates at approximately the same age. Hence, the results of my transcript analysis indicate that even though the order of acquisition between transitive *have* and transitive *want* can vary from child to child, the order of acquisition between transitive *have* and

transitive *need* is quite strict: Children never acquire transitive *need* significantly earlier than transitive *have*.

	Transitive *have* vs. Transitive *need*		Transitive *have* vs. Transitive *want*	
Child	*Early acquired*	p =	*Early acquired*	p =
Adam	have	$p < .05$	have	$p < .05$
Anne	have	$p < .01$	want	$p < .001$
Aran	have	$p < .001$	want	$p < .001$
Becky	at around the same time	$p > .05$	want	$p < .001$
Eve	at around the same time	$p > .10$	have	$p < .05$
Naomi	at around the same time	-----	want	$p < .001$
Nina	have	$p < .001$	at around the same time	$p > .05$
Peter	at around the same time	$p > .10$	at around the same time	-----
Sarah	at around the same time	$p > .10$	want	$p < .01$
Shem	at around the same time	$p > .10$	want	$p < .001$

Table 4: Results of the Statistical Analysis

A possible alternative explanation for the observed order of acquisition in English would be to say that the order merely reflects the frequency of these predicates in the child-directed speech. In order to determine whether such input-based account can be maintained, I analyzed the same ten corpora and counted the number of sentences involving transitive *have*, *want*, and *need* in the mother's utterances, up to the point when the child begins using all of these transitive verbs. The results are summarized in Table 5. In the adult speech, transitive *have* tended to be most frequent and transitive *need* tended to be least frequent. Since there were children who acquired verbal *have* significantly later than verbal *want*, and also children who acquired verbal *have* and *need* at around the same time, the frequency in the adult input cannot be regarded as the crucial factor that explains the order of acquisition of these predicates.

Child	Files analyzed	Transitive *have*	Transitive *need*	Transitive *want*
Adam	01-08	54	12	17
Anne	01a-14a	244	33	129
Aran	01a-27a	539	85	162
Becky	01a-12a	132	17	93
Eve	01-08	196	13	59
Naomi	01-15	35	1	39
Nina	01-14	159	2	21
Peter	01-07	12	0	15
Sarah	001-024	58	3	47
Shem	01-04	7	1	7

Table 5: Frequency of *have, need,* and *want* in the child-directed speech

5. Conclusion

The results of my transcript analysis greatly strengthen the generalization by Harves & Kayne (2008) and Harves (2008a,b) that, at least among Indo-European languages, natural-language grammars permitting transitive *need* are a proper subset of those permitting transitive *have*. The findings lend acquisitional support to their analysis that transitive *need* is derived through incorporation to a silent counterpart of transitive *have*, and consequently, to a decompositional approach to predicates (Hale & Keyser 1993). A broader implication of this study is that the time course of language acquisition provides an important testing ground to evaluate proposals regarding syntactic variation, which in turn suggests that child language is potentially a valuable source of evidence concerning the nature of variation permitted by human language (Snyder 2001, 2007, Sugisaki 2003).

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