The Acquisition of NPI *any* in English: A Case Study[*]

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1. Introduction

The purpose of this short paper is to present some preliminary results from a study of the monolingual acquisition of the negative polarity item (NPI) *any* in English. These results are part of an ongoing research project that seeks to chart out the development of NPIs in English child language development. The working hypothesis is that children take a conservative approach to the acquisition of NPIs, following Snyder's (2000) Grammatical Conservatism. According to Grammatical Conservatism, children are grammatically conservative, refraining from producing certain constructions until they have clear evidence of the grammatical options for that construction in their language. One observable result of this conservative strategy is the scarcity of "co-mission" errors (as opposed to omission errors) in child language.

This paper is organized as follows. First, I present some background by introducing three claims from the semantics literature on NPI licensing. I then outline some of the predictions that such theoretical analyses, in conjunction with Grammatical Conservatism, make for child language acquisition, and describe the methodology used to test these predictions. Finally, I present some preliminary results from three children, and conclude the discussion.

2. NPI *any* in English

Any in English has a free choice counterpart and a polarity-sensitive counterpart, the latter of which concerns us in this study. As an NPI, *any* requires an appropriate licenser, such as sentential negation:

(1) a.   I do<u>n't</u> have **any** work to do.
   b.   *I have **any** work to do.

The semantics literature on NPI licensing is vast (see among others, Ladusaw, 1979; Linebarger, 1987; Horn, 1989; Kadmon and Landman, 1993; Krifka, 1995). Many current accounts are predicated on some version of the Fauconnier/Ladusaw proposal, according to which NPIs are licensed in the scope of a downward-entailing operator, such as negation. NPIs are also licensed in interrogatives, as shown in (2), though interrogatives are not downward-entailing in any obvious way.

(2) a.   Have you read <u>anything</u>?
   b.   Do you see <u>anybody</u>?

Guerzoni and Sharvit argue that no attempt thus far to provide a uniform treatment of NPIs in declaratives and interrogatives has found much success. They suggest a disjunctive licensing condition: weak NPIs in declaratives require a downward-entailing licenser (Ladusaw, 1979), while weak NPIs in interrogatives require a strongly exhaustive environment, exemplified in (3).

(3) *The strong/weak distinction:*   (Guerzoni & Sharvit, 2007:369)

> a. John knows *who left*.
> <u>Weakly exhaustive reading:</u> For every x, if x left, John knows that x left.
> <u>Strongly exhaustive reading:</u> For every x, if x left, John knows that x left, and if x didn't leave, John knows that x didn't leave.
>
> b. John knows whether Mary left.
> <u>Strongly exhaustive reading:</u> If Mary left, John knows that she left. If Mary didn't leave, John knows that she didn't.

Following Groenendijk and Stokhof (1984), the authors suggest that to "know a question in the strong sense is to believe that the conjunction of its true answers is the conjunction of its actually true answers (Guerzoni & Sharvit, 2007:370). If a question has a strongly exhaustive reading available, it can license NPI *any*. For example, certain embedded wh-questions such as (3a) and embedded polar questions such as (3b) allow strongly exhaustive readings, and can therefore license NPI *any*:

(4)a.   %John knows who has any books on NPIs.[1]
   b.   ✓John knows whether Mary has any books on NPIs.

Consider further now NPIs that occur in declaratives. It has been proposed that there are three classes of NPIs, classified as weak (e.g., *any*, *ever*), strong (e.g., *in years*), and superstrong (e.g., *one bit*). According to Zwarts (1998), these NPIs are licensed accordingly by three classes of licensers, which differ by "negative strength", i.e. by the number of De Morgan's laws they validate. What is crucial to the present study is the fact that the licensers stand in a subset-superset relation. Anti-additive (AA) operators such as *nothing* and *never* are also downward-entailing (DE), and anti-morphic operators such as sentential negation are also AA and DE. This is demonstrated in (5), which shows that superstrong NPIs are licensed in a subset of the environments in which strong NPIs are licensed, and strong NPIs are licensed in a subset of the environments in which weak NPIs are licensed. Relevant for the present study of *any* is the fact that NPI *any* is weak, and minimally requires a downward-entailing licenser, a condition that is satisfied by all three classes of NPI licensers.

(5)   Strengths of negation (Zwarts, 1998)

Downward-entailing (licensers of weak NPIs)
Anti-additive (licensers of strong NPIs)
Anti-morphic (licensers of superstrong NPIs)
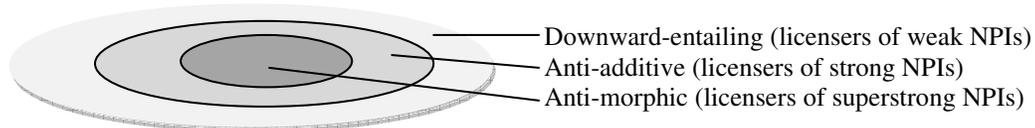
Armed with the above background information, let us now consider how the child might acquire the licensing condition on NPI *any*. Given Guerzoni and Sharvit's disjunctive licensing condition and Zwarts' characterization of NPI licensers as standing in a subset-superset relation, we can predict some interesting consequences for child language acquisition, presented in the following section.

3. Predictions for acquisition

If children are in fact conservative with respect to the acquisition of the NPI licensing condition, and do not produce NPIs until they have adult-like knowledge of the appropriate licensing conditions for their language, we predict few errors, particularly co-mission errors, such as the use of *any* in an affirmative environment:

(6)   CHI: I want *any* milk. (intended meaning: 'I want some milk')

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[1] Only those speakers who can access the strongly exhaustive reading of (3a) find (4a) acceptable.

By the time we see NPI *any* in the corpora, children should already know the correct licensing condition, and should thus produce the NPI correctly. To test this, we look at the rates of licensed vs. unlicensed *any* in the transcripts of the spontaneous speech of American English-speaking children.

Next, consider the disjunctive analysis of weak NPI licensing in English. Crucially, Guerzoni and Sharvit's analysis is meant to apply cross-linguistically; that is, the disjunctive licensing condition on NPIs is a part of Universal Grammar, and is built into the child's grammar. What the child acquiring English needs to learn then is that the lexical item *any* is a weak NPI. Once she acquires this, she should be expected to be capable of producing NPI *any* in both declaratives and interrogatives (since the disjunctive licensing condition is built into the child's grammar). We thus predict concurrent emergence of the NPI *any* in declaratives and interrogatives.

Finally, the third research question pertains to children's use of NPI *any* in declaratives. The conservative hypothesis is that the child takes an initial 'subset-only' route, using *any* with the narrowest subset of licensers compatible with the evidence that she has so far encountered in the input; with increasing positive evidence, the child can increase her inventory of potential NPI licensers (as consistent with the input).[2] Sentential negation is the most frequently occurring licenser in the input, and also happens to align with the narrowest subset of NPI licensers in English (i.e. anti-morphic operators). Given this, we expect to see children's initial use of *any* occurring with anti-morphic sentential negation. By examining the licensers of NPI *any* over time, we should see the conservative child increasing her inventory of potential NPI licensers to include AA and strictly DE operators.

4. Methodology

To test the above predictions, we have looked to the spontaneous speech production of children acquiring American English whose corpora are available on the CHILDES database (MacWhinney, 2000). I discuss here the data from three children, whose corpora are given in Table 1.

Table 1. Corpora under study

Corpus	Child	Age range	No. of transcripts	No. of utterances
Brown	Adam	2;03,04 – 5;02,12	55	45,371
Sachs	Naomi	1;02,29 – 4;09,03	93	15,542
Suppes	Nina	1;11,16 – 3;03,21	56	31,423

Using the *kwal* and *combo* programs available in CLAN, the corpus analysis program associated with the CHILDES database, we can find all child utterances containing *any*, and check for utterances containing negation and other potential NPI licensers, discounting imitations, repetitions, routine utterances, unclear utterances (indicated in the transcripts by the presence of "xxx" or "yyy"), and single-word utterances (in which any potential licensers may be obscured).

Charting out the development of the NPI *any* over the entirety of the transcripts for each child, we can take note of the proportion of licensed and unlicensed *any*, the operators that license *any*, and the development of any other potential NPI licensers that the child may use.

5. Results & Discussion

In this section, I present the first results from the American English corpora. An initial survey of the data from the three children shows that the NPI *any* is not a high-frequency construction. The numbers are given in Table 2.

Table 2. Frequency of NPI *any*

Child	No. of NPI *any*	No. of utterances
Adam (Brown)	52	45,371
Naomi (Sachs)	24	15,542
Nina (Suppes)	54	31,423

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[2] See van der Wal (1996) for this hypothesis as applied to the acquisition of NPIs in Dutch.

Our first research question was whether children take a conservative approach to the acquisition of NPIs. The rates of licensed vs. unlicensed NPI *any* are given in Table 3. An occurrence of NPI *any* was counted as licensed if a licenser (such as sentential negation) could be found within the same clause, and unlicensed if there was no licenser visible anywhere within the clause.[3]

Table 3. Licensed vs. unlicensed NPI *any*

Child	No. of NPI *any*	Licensed NPI *any*	Unlicensed NPI *any*	Error rate (%)
Adam	52	49	3	5.77
Naomi	24	23	1	4.17
Nina	54	51	3	5.56

These results indicate that for the most part, the three children make few NPI licensing errors.

Our second research question was whether children should acquire the use of NPI *any* in declaratives and interrogatives concurrently, as would be consistent with a disjunctive analysis of a single lexical item. The Binomial Test (cf. Snyder, 2007: Chapter 5) can help us to judge whether the observed chronological gap between the first-observed declarative *any* and the first-observed interrogative *any* is simply due to a lower frequency of use of the construction emerging later. Non-significance of the Binomial Test based on relative frequency indicates that the observed chronological gap is fully consistent with concurrent emergence, given the lower probability of sampling the less frequent construction (Snyder, 2007). The Binomial Test is based on First of Repeated Uses (cf. Stromswold, 1996; Snyder & Stromswold, 1997); a prerequisite of running the test is a high enough frequency of NPI *any* in both constructions. Setting the minimal cut-off point at 10 occurrences of NPI *any* in both declaratives and interrogatives, we find that only Adam produced a sufficient number of NPI *any* to justify the use of the Binomial Test:[4]

Table 4. Binomial Test (Adam)

Child	Gap between Decl-*any* & Q-*any*	# earlier *any* during gap	# earlier *any* after gap	# later *any* after gap	*p*-value
Adam (Brown)	3;02,09 – 3;04,18	4	26	16	.15 (NS)

This result suggests concurrent emergence of NPI *any* in declaratives and interrogatives.

Our third research question was whether children take an initial 'subset-only' route with respect to NPI licensing in declaratives. That is, we want to know whether children start off with the narrowest subset of licensers compatible with the evidence (likely sentential negation). The results are given in Table 5.

Table 5. NPI licensers in declaratives

Child	Declarative NPI *any*	Neg-licensed *any*	Non-AM licensers	Non-AM licenser(s)
Adam (Brown)	32	31	1	*in case* in transcript 43 (4;01,15)
Naomi (Sachs)	22	22	0	--
Nina (Suppes)	47	46	1	*without* in transcript 56 (3;03,21)

None of the children appear to pose a counterexample to the Subset Principle or to Grammatical Conservatism; the majority of occurrences of NPI *any* involve licensing by sentential negation, and for Nina, there is evidence of later widening to include a non-anti-morphic licenser (anti-additive *without*). Under a conservative approach, expansion to the superset of licensers proceeds on the basis of positive evidence. As such, where exactly the child starts off in the subset-superset schema, and how quickly she proceeds from subset to superset, depends on the input.

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[3] None of the three children produced any neg-raising sentences; all NPI licensers were found within the same clause as the NPI.

[4] Only Adam's grammatical utterances containing *any* were used in the calculation in Table 4.

6. Conclusion

This short paper presented the preliminary results of a corpus study that sets out to examine the hypothesis that children use a conservative learning strategy with respect to the acquisition of the disjunctive licensing condition on NPIs. We looked at the results of three children acquiring American English, and for the most part, it appears that these children take a conservative approach. They: (i) do not produce NPI *any* until they have knowledge of the appropriate licensing condition for their language; (ii) produce few licensing errors once they start to use *any* productively; (iii) start with the narrowest subset hypothesis compatible with the evidence they receive in the input.

While work is in progress to investigate the acquisition of NPIs with data from additional children (those acquiring American English, as well as those acquiring British English), two related research questions are also being explored. First, there should be some analysis of the potentially confusing ambiguity between NPI *any* and free choice *any*. How and when do children distinguish these two uses of *any*? Second, the question of how and when children begin to use non-AM and non-AA licensers, by assumption, depends a great deal on the input that they receive. In this regard, it would be worthwhile to examine the transcripts of the input from the caregivers. These two questions are currently being investigated.

In conclusion, this case study of three children suggests that a conservative approach is on the right track, and work is currently in progress to further investigate the acquisition of NPIs.

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