

Acquisition of Sentential Negation in English and Japanese

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Abstract

This paper examines three hypotheses which attempt to explain sentential initial negation in English child language. Based on data in CHILDES (MacWhinney 2000) and other data, we find that the External Negation Hypothesis (ExNeg) may be correct. We propose that ExNeg may occur due to the immaturity of the C-T feature inheritance of tense, and the head property of negation which is transferred from tense. We also investigate sentential negation in Japanese. Our data there do not support ExNeg; however, C-T feature inheritance may also be true, since children start using the past tense first, whereas sentential negation emerges later.

1. Issues

The aim of this paper is to “describe” the original state of the faculty of language. In generative literature, the genetic endowment is explained as Universal Grammar (UG), however, it is not clear how simple/complicated it is. To observe UG as a syntactic phenomenon, we investigate acquisition of sentential negation in English and Japanese. Negation cannot be taught, according to Pea (1980), and children utter negative expressions spontaneously. At first they express their negative attitude as a word (*no* in English, *nai* (non-existence), *iya* (rejection), *dame* (prohibition), etc. in Japanese), and then go on to master sentential negation later. Some may master adult-like negation early, while others may produce non-adult-like sentences, as in (1) (MOT=Mother):

(1) Adam (2;3.04)

MOT: did you see the truck?

Adam: no I see truck.

MOT: no (.) you didn't see it.

Adam's utterance in (1) has been an issue in child language. *No* in (1) is non-anaphoric, i.e., *no* denies the following proposition [I see the truck]. Three explanations are given in the literature. The first hypothesis assumes that it is an instance of External Negation (ExNeg). According to this analysis, Adam produces a regular subject, with the negation in the external position. The second hypothesis claims that it is the result of a VP internal subject, the *no* in (1) being the regular negation in NegP (InNeg). The third hypothesis claims that the sentence initial negation *no* is an instance of metalinguistic exclamatory sentence negation (MetaNeg), whereby children deny previous utterances.

This paper examines the three hypotheses, and gives a theoretical account. Among the three, ExNeg may capture the English phenomenon. In the following sections, we will discuss each hypothesis.

2. Three accounts

Children produce a single word around twelve months old, and gradually produce two/three-word utterances. Negation can be observed as a single word, *no*, in English, and most children master the sentential negation like adults. However, as we have seen, children may produce the negation in the sentence initial position, as in (1):

(1) Adam (2;3.04)

MOT: did you see the truck?

Adam: no I see truck.

MOT: no (.) you didn't see it.

Three accounts are given of this data in the literature.

The first account assumes that children understand the regular subject position, but they may not understand the position of sentential negation.

(2) **External negation (ExNeg):**

[CP no [TP I see truck]]

Klima & Bellugi (1966), Bellugi (1967 in Bloom 1970/1990), Wode

(1977), Van Valin (1991), among others, assume that the sentence initial negation may be externalized in early child language, to be internalized only later.

The second account explains that it is an instance of internal negation. They assume that Adam produces negation in the regular position, and the subject in VP internal position, as in (2).

- (3) **Internal negation (InNeg)**
 [IP [NegP no [VP I see truck]]]

Within the Principles and Parameters (P&P) framework Déprez & Pierce (1993) claim that children master adult like negation, but the subject stays in situ (VP internal subject).

The third account assumes that children use the sentence initial negation to deny previous utterances. Drozd (1995) claims that the sentence initial negation is an instance of metalinguistic exclamatory sentence negation, based on Horn (1989). Horn distinguishes two types of negation: descriptive negation which expresses truth-functional denial; and metalinguistic negation which “is used to deny or object to any aspect of a previous utterance” (Horn 1989:414). According to Drozd (1995), (1) can be paraphrased as “Don’t say U (utterance) (to me)” or “Don’t use U that way”.

- (4) **Metalinguistic negation (MetaNeg)**
 [Don’t say [I see truck]]

Drozd (1995) explains that the use of pre-sentential negation is not a sign of immaturity of negation; rather children must still learn appropriate lexical forms for expressing exclamatory negation.

As we have seen, these three accounts assume some kind of immaturity: sentence internal negation in (2); subject raising in (3); and lexical learning of exclamatory negation in (4). In the following section, we demonstrate counterexamples against (3) and (4) based on CHILDES (MacWhinney 2000).

2.1. Against Internal Negation

Sentence initial negation is not common, but has been an issue in the literature of child language. We analyze CHILDES (MacWhinney 2000), and investigate the acquisition of Adam (Brown 1973) and Nina (Suppes 1974) who produce sentence initial negation. As shown in Table 1, Adam and Nina exhibit clear uses of non-anaphoric sentence initial negation, as we have seen in (1). Since sentential negation is related to TP, we also analyzed the emergence of tense-related morphemes.

Table 1: English data (CHILDES: MacWhinney 2000, Brown 1973, Suppes 1974) Emergence of TP related morphemes¹

	Adam (2;3.04~)	Nina (1;11.16~)
Past forms	got (2;3.04) / dropped/spilled/felled [fallen]/happened (2;10.30)	ate (1;11.29)/ seed (saw: 2;1.22)
Sentential negations	no I see truck (2;3.04) no the sun shining (2;4.03) I don't want to sit seat (2;6.03)	no Mommy doing (2;0.17) no lamb have it (2; 0.24) no dog stay in the room (2;1.15) I can't open the door (2;1.29)
Subject +be	here it is/I'm dripping/ you are/ you naughty are (2;6.03)	those are feet (1;11.16) this is Nonna /duck is red (1;11.24)
Agreement	anything goes (2;6.03)	he hops (1;11.16)

As shown in Table 1, Adam produced sentence initial negation as well as irregular past forms when the first research was conducted. Nina, on the other hand, produced irregular past form and agreement, but correct subjects+*be* prior to the sentence initial negation. Nina seems to understand the TP subject since her subject +*be* forms are correct, hence this can be a counterargument against InNeg (VP internal subject).

InNeg hypothesis faces another problem. As a consequence of the VP internal subject, Déprez & Pierce (1993) assume that the WH-element can be in the IP position: as in (5), Nina produced Subject-Aux inversion at 25 months old (*ibid.*, pp. 58-59), so they assume that WH in IP is possible, as in (5b).

- (5) a. What did I make? (Nina, 25 months)
b. [IP AUX [VP S...]]

However, as we have seen in Table 1, Nina understood the TP subject before she was 24 months old (at 1;11.16), hence (5a) can be an instance of WH in CP.

Moreover, InNeg is proposed under P&P in which negative lowering is impossible. However, under the revised theory, lowering may be possible if we can explain that the head property of negation is part of the C-T feature inheritance, which is discussed in Chomsky (2004, 2007, 2008, 2013, among others). We will discuss one possibility in section 3.

2.2. Against Metalinguistic Negation

Drozd (1995) claims that the sentence initial negation in (1) is an instance of metalinguistic exclamatory sentence negation which denies previous utterances. This proposal is questionable since it is incompatible with the semantic aspect of acquisition: children refer to both entities in the world and the utterances of caretakers. When they use negation, it expresses either the nonexistence or denial of the utterance. Put differently, MetaNeg only explains denial of the utterances, but it does not see the aspect of the truth functional negation. We explain examples in Nelson (1973) and Bloom (1970 (1990)) which can be counterexamples against MetaNeg.

Around one year old, children produce a word to learn references to the world. Nelson's (1973) is a longitudinal study of the acquisition of their first 50 words by 18 children (1-2 years of age), and she finds that children produce a word to match the entity and the name, and to request an action. These 50 words are categorized into two groups: referential and expressive. For example, *Door* can be pro-

duced as either referential (nominal) or expressive (action word):

Referential: when he touched the door but not in demand (nominal).

Expressive: when he wanted to go outside (action word).

Among those 50 words by the 18 children, 65% are referential (specific 14%+ General 51%); and 13% are expressive. Put differently, 65% of their utterances are in reference to the world whereas 13% are listener oriented. Children will say a word that is not in response to a previous utterance. The second example is from Bloom's (1970 (1990)) data.

According to Bloom (1970 (1990)), children start using negation as nonexistence, with rejection/denial appearing later. From her data, we find that children express negative attitudes without reference to previous utterances. For example, Kathryn (in Bloom 1970 (1990)) produces *no* as a single-word utterance in her early stage, 11 instances of nonexistence (4 response to questions), 24 instances of rejection (15 in response to questions or comments), 3 instances of denial (2 in response to comments) and 17 indeterminate instances of *no* (6 in response to comments). Put differently, seven out of 11, nine out of 24, one out of 3 are spontaneous, hence they are not metalinguistic negation.

As we have seen the studies indicate that children express negations without responding to previous utterances, therefore, they do not support Drozd (1995).

Now we look at Nina's data in Table 1. She uses sentence initial negation without denying a previous utterance. *Nina 2 & 3* in (6) are produced without denying the previous utterances.

(6) Nina (2;0.24)

MOT: you want mommy to have the chair on her hand?

Nina1: no.

MOT: let's put it on the floor.

MOT: can you put it on the floor?

Nina2: no have it (.) mommy.

MOT: you don't want me to have it?

Nina3: no lamb have it.

MOT: you don't want the lamb to have it either?

Nina1 denies the previous utterance with *no*. In *Nina 2 & 3*, she does not deny previous utterances, hence they cannot be metalinguistic negation. They can be instances of prohibitives or truth functional negations, which can be paraphrased as “Don’t have it!” (prohibitive) or “Mommy/Lamb can’t have it” (descriptive).

In sum, Drozd’s (1995) assumption does not explain the fact that children are aware of an entity in the world, and they know how to describe nonexistence without responding to previous utterances.

2.3. External Negation

Finally, we discuss ExNeg. Klima & Bellugi (1966), Wode (1977), Felix (1984: 135), among others, argue that children produce the sentence initial negation since it is part of the maturation process. They assume that children go through three stages of acquisition: children use negation in the external position (Stage I); they use *no/not* in the internal position (Stage II), and finally they master sentential negation (Stage III). The development may vary, however, for example, Adam and Nina (Table 1) skip Stage II in their acquisition.

- (7) Stage I: no the sun shining (TP subject)
Stage II: I no reach it
Stage III: I don’t go sleep

Bloom (1970 (1990)) argues that her data do not support the three Stages: her subjects do not produce sentence negation with the sub-

ject, and their negations are all anaphoric. However, Bloom's data cannot be counterarguments against ExNeg, since Adam and Nina clearly produce non-anaphoric negations with a subject. Children in Bloom's research may skip Stage(s) I and/or II. Among the three hypotheses, ExNeg is the most plausible one: ExNeg is compatible with Nina's data; and it can explain both descriptive and metalinguistic negation. If ExNeg is on the right track, it could explain other languages. In fact, similar data are reported in other languages.

German: non-anaphoric *nein* by Inga (Wode 1977)

Inga tries to shoot an arrow but she doesn't manage to pull the bow properly. Father demonstrates the procedure, but Inga still doesn't manage. Eventually, she gives up, and says:

- (8) *nein, schaffe ich (I can't manage it). (at 2;0.7)
 [Adult =nein, ich schaffe es nicht]

In (8), *nein* is used instead of the sentence internal negation *nicht*.

Polish: Sentence internal particle *nie* by Basia.

Basia uses *nie* at the sentence initial position in interrogative (which is non-anaphoric), as in (9b) (Smoczyńska 1978, in 1985).

- (9) a. *Nie Basia śpi 'not Basia sleeps'
 b. *Nie tu brudno? 'not here dirty?= It's not dirty here?'
 c. *Nie śpi Basia 'Not sleeps Basia'
 d. Basia nie śpi 'Basia not sleeps = Basia isn't sleeping'

Turkish: two children use negations at the sentence final position.

One child uses a lexical negative marker, *ğdeil* where adults use *kalk-ma* (get:up-NEG) (child A: till 2;3).

- (10) *Anne otur, kalk ğdeil.
 mother sit get up NEG
 'Mother sit, don't get up'

Another child uses the sound + gestural negation (Child B: till 2;6).

- (11) *Yap -ıcağ -ım 1h.
do FUT 1SG NEG
(adult= yap-mı-yacağ -ım ‘do-NEG-FUT-1SG)
‘I won’t do (it)’ (Aksu-Koç & Slobin 1985)

Japanese: some children place *nai* after the sentence final form rather than the irrealis form.

- (12) a. *tabe-ru nai
eat-nonPast NEG
‘I won’t eat’ (a child 2;1. Clancy 1985: 401)
b. *nor-u nai.
ride-nonPast NEG
‘(it) does not ride.’ (Manabu, 2;6. Sano 1998)
c. *tsuk-u nai
attach-nonPast NEG
‘(it) does not attach.’ (Masanori, 2;4. Sano 1998)

If the ExNeg hypothesis is on the right track, these data can be explained as ExNeg. However, we will argue that our data on Japanese cannot support ExNeg analysis.

3. A theoretical explanation

As discussed, among the three hypotheses, ExNeg is the most plausible one. In fact, Adam’s data can be explained under three hypotheses, but Nina’s data can be explained only by ExNeg. Moreover, the languages above can be explained by ExNeg as well. We assume that ExNeg is correct, as we look for an appropriate theory under the current Minimalist Program.

Sentence negation is controversial in the literature: whether the negation is a head or Spec (Pollock 1989, Haegeman 1995, Ouhalla 1990, Ernst 1992, etc.). Compare adult sentential negations in English:

- (13) a. Ken could **not** have heard the news.
 b. Ken could have **not** heard the news.

The two examples of *not* in (13) are syntactically distinct: *not* in (13a) obtains a head property whereas that in (13b) does not. As shown in (15), (15a) licenses VP ellipsis whereas (15b) does not. It is well known that VP ellipsis is available when an elided VP is right of some head (Bresnan 1976, Potsdam 1997, etc.), as in (14) (Potsdam 1997:534).

- (14) a. Some of the guests tried the appetizers but most did not \emptyset .
 b. Joe will taste the food if Mikey does \emptyset .

As pointed out by Ernst (1992:118) negation licenses VP deletion in (15a), but not in (15b).

- (15) Ken said that he could have heard the news, but George
 a. said that he could *not* (have) _____.
 b. *said that he could have *not* _____.
 c. said that he could have *not* heard the news.

What we can see here is that *not* obtains a head property when it is adjacent to tense, as in (15a).

The adjacency also matters in terms of the interpretation. For example, according to Palmer (1990), *not* negates *can* when they are adjacent each other, as in (16):

- (16) a. John can't still be reading *neg>can*
 b. Can't we drop the subject, if you don't mind? *neg>can*

On the other hand, the event can be negated with an empathic *nót*:

- (17) We can always *nót* go. *can>neg*

Moreover, *never* in C can license NPI when it is adjacent to tense, whereas *not* in an adverbial phrase cannot. Jackendoff (1972:364-365,

emphasis added) points out that two types of negative adverbials are available in English, as in (18) and (19). *Never* in Spec of C with *did* in C licenses *any* in (18a), whereas *not long ago* in (19a) cannot.

- (18) a. Never did anyone give John anything
b. *Never anyone gave John anything.

- (19) a. *Not long ago was there a rainstorm
b. Not long ago there was a rainstorm.

In sum, *not* in T and *never* in C clearly obtains the property of sentential negation when it is adjacent to tense.

In terms of child language, we assume that children have to master two properties to acquire sentential negation: one is TP, and the other is adjacency. TP related learnings are subject, agreement, past forms, and adjacency entails inheriting the head property which can be part of the C-T inheritance. The C-T feature inheritance is discussed in Chomsky (2004, 2007, 2008, 2013, among others). According to Chomsky, tense, agreement, focus and force are C features. For example, semantic tense cannot be part of ϕ features. It is obtained when T is selected by C (Chomsky 2004:115, fn. 53); Agreement & Focus belong to C and to T, based on Miyagawa (2005) (Chomsky 2008). *vP* has a full-argument structure, whereas CP is the minimal construction that includes Tense and event structure and (at the matrix, at least) force (Chomsky 2004: 124). T has these properties only as a reflex of C-T (id., fn. 73).

As we have shown in Table 1, Adam and Nina first produce irregular past forms, with regular past forms coming much later. Agreement, subject *+be*, irregular past forms are also mastered gradually. To master sentential negation, children have to understand that the tense feature has to be inherited from C to T, while negation receives the head property from the tense. Some children master sentential negation early, i.e., the full set of TP features, whereas Adam and Nina were slower; that is the reason they produced ExNeg.

4. Acquisition of sentential negation in Japanese

Based on our discussion of English, we will investigate the acquisition of negation in Japanese. We analyzed the data in CHILDES (MacWhinney 2000, Miyata 1995, 2000, etc. Miyata 2001), as in Table 2. In an early stage, Japanese children express their negative attitude with a single word, *nai* (nonsexist); *iya* (rejection); *dame* (prohibition); and *chigau* (different). Among them, *nai* can be used as truth functional negation while the other three of them may deny previous utterances. Japanese children in Table 2 start using *nai* (nonsexist) first, which is also observed in McNeil & McNeil (1967).

Later, they produced sentential negation, as in *V-nai*. Table 2 shows the emergence of four negative expressions, tense, and sentential negation by three children.

Table 2: emergence of 4 negative words, sentential negation by three children in Japanese (MacWhinney 2000, Miyata 1995, 2000, etc., Fujimoto 2008)

Children's name	Aki (1;5.07~)	Ryo (1;4.03~)	Tai (1;5,20~)
Negative words	<i>nai</i> (1;11.29) <i>iya</i> (2;0.12) <i>dame</i> (2;2.11) <i>chigau</i> (2;3.00)	<i>nai</i> (1;7.21) <i>iya</i> (1;9.15) <i>chigau</i> (2;1.18) <i>dame</i> (2;1.08)	<i>na i</i> (1;5.20) <i>iya</i> (1;5.20) <i>chigau</i> (1;8.13) <i>dame</i> (1;9.25)
-ta (perfect/past)	<i>at-ta</i> (2;0.19)	<i>at-ta</i> (1;10.26)	<i>at-ta</i> (1;5.20) <i>owat-ta</i> (1;5.20)
V-nai (neg)	<i>ofi(ochi)-nai-</i> (2;3.18)	<i>aka-nai-ne</i> (2;0.04)	<i>deki-nai</i> (1;5.27)
V-ru/u + nai (neg)	<i>kik-u-nai</i> (2;5.20) <i>korere-ru-nai</i> (2;7.26)	<i>mom-u-nai</i> (nomanai) (2;1.18)	
Sentence Final Particles	<i>-ne</i> (1;11.29) <i>-yo</i> (2;0.05) <i>-no</i> (2;2.00)	<i>-ne</i> (1;10.05) <i>-yo</i> (2;0.28) <i>-no</i> (2;1.25)	<i>-yo</i> (1;05.20) <i>-no</i> (1;05.27) <i>-ne</i> (1;08.28)

Now we will investigate two assumptions: whether ExNeg applies

to Japanese data; and if the C-T feature inheritance is appropriate.

Sano (1998) points out that Japanese children may place sentential negation after the sentence final form (as in *V-ru/u-nai*), which is also observed in Aki and Ryo. In the ExNeg hypothesis, this is explained as Stage I. However, Aki and Ryo produce the correct form of *V-nai* earlier: Stage III preceded Stage I in Aki and Ryo. This means that they did not follow the acquisition process which is expected in ExNeg. Unless we analyze Sano's data, it is hard to explain whether his data supports ExNeg, however, at this point, we assume that ExNeg may not be available in Japanese. Children may skip Stages I & II since they use four negative words to distinguish truth functional and speaker attitude negations (rejection, denial, and prohibition), as in Table 2. Children may receive enough input to produce adult like sentential negation in Japanese.

The next argument is the C-T feature inheritance. Although Japanese children do not demonstrate ExNeg, they may go through the acquisition stage of C to T.

As Table 2 shows, children use sentence final particles (SFPs, *yo* (emphatic), *-ne* (seeking confirmation), and *-no* (softer emphatic, interrogative)), according to Fujimoto (2008). Those discourse expressions which belong to force are also explained as part of the C-T feature inheritance in Chomsky (2004:124). Put differently, Japanese children also start producing C expressions before T. In terms of the order of acquisition, SFPs come first, the past tense *-ta* appears, and finally, the *V-nai* form emerges. The acquisition order of *-ta* \rightarrow *V-nai* is also supported by Atake & Ito (2013): in their data, children master (with over 90% accuracy: see Rice 1995) negation between 2:03-2:05 years old. They master tense (at 1:09-1:11) prior to negation. As discussed, the tense feature is inherited from C, and we assume that the C-T feature inheritance is a necessary condition for mastering the auxiliary use of *nai*. However, we are inconclusive about the acquisition process at this point.

5. Conclusion

In this paper we examined the three hypotheses which attempt to explain the sentential initial negation in English child language. Based

on data in CHILDES (MacWhinney 2000) and other acquisition data we find that ExNeg may be explained as a phenomenon in English.

ExNeg may occur when children have not mastered the C-T feature inheritance, since negation has to obtain the sentence property from tense in English. Put differently, we assume that C-T is also the acquisition order. We also investigated sentential negation in Japanese. Our data did not support ExNeg in Japanese, however, the C-T feature inheritance may also be the acquisition order in Japanese. Children start using sentence final particles prior to past tense, whereas the sentential negation *V-nai* form emerges later.

The C-T feature inheritance may be part of UG, and the acquisition order is from C to T. The findings in this paper can be enhanced when we find more data and supporting evidence.

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Notes

¹ We exclude *not* in child data, since it can be taken ambiguously as either a constituent negation or a sentential negation, according to Drozd (1995).

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