

1 The production of negation in parents' and children's speech

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Abstract

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13 *Keywords:* keywords

14 Word count: X

DRAFT

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Introduction

Children start producing all types of English negation by age 18 months and by 36 months, they produce them at the rate parents do. types of negation in English: no, verbal (not, nt), lexical (nothing, nobody, nowhere, none, un-in-de-dis-).

Study 1 Questions * What is the overall trajectory of negative forms in child production? * Does the development of negation follow a no > not > nt cline? (Cameron-faulkner et al) * How many children are found to produce no/not/nt at each age? * Do positive variants of the negative constructions exist too? * Are early "can't" and "don't" examples unanalyzed wholes? (Klima & Bellugi 1966; Bloom 1970) Do children produce "can't" and "don't" before using "do" and "can"? * Proportion of no vs. not vs. nt broken down by mean length of utterance * instead of age, put mean length of utterance on the x axis?

Study 2 Questions * What are early constructions? * the response may differ based on annotation level * Do children's early negative utterances differ so much from those used by adults? (Thornton & Tesan 2013) * How common are ungrammatical non-adult like combinations? * How many pre-sentential negation? (NEG + Subject + Predicate) * How many sentence internal? (Subj + NEG + Predicate) * Is negation external at the beginning? (appear before subjects) Does a NEG + S schema mark the beginning of negation? (McNeill & McNeill) * How many are optional infinitive: it not fit in here, it don't fit in here? * control MLU: which forms are common among 1/2/3/... word utterances? * exclude single "no" (as well as anaphoric no) utterances from "no + more words" * What is anaphoric negation negating? * How productive are early forms of negation? * average neg + #WORD per child as measure of productivity

39 Previous Studies

40 Formal and functional development of negation

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Current Study

Acquisition of negation should concern itself with two notions: 1. negative morpheme 2. compositional complexity. By negative morpheme, we mean the kinds of morphemes that at each stage of acquisition are mapped to negative meanings. English has adverbial and adnominal morphemes that encode the concept of negation. We can look at how each form-meaning mapping emerges in children's development. Second by compositional complexity, we mean the types of elements that each morphemes successfully negates at each stage of development. Under such analysis negation may have been successfully acquired to operate on locative elements but not identity relations. Compositional complexity of negation at each stage also helps us understand how quickly children generalize the function of negation beyond specific arguments it takes in the child's input.

Study 1: Large-scale metrics

Methods

For samples of parents' and children's speech, we used the online database *chldes-db* and its associated R programming package *chldesr* (Sanchez et al., 2018). *Chldes-db* is an online interface to the child language components of TalkBank, namely CHILDES (MacWhinney, 2000) and PhonBank. Two collections of corpora were selected: English-North America and English-UK.

Procedure. All word tokens were tagged for the following information: 1. The speaker role (parent vs. child), 2. the age of the child when the word was produced, 3. the type of the utterance the word appeared in (declarative, question, imperative, other)¹, 4.

¹This study grouped utterance types into four main categories: "declarative", "question", "imperative", and "other". Utterance type categorization followed the convention used in the TalkBank manual. The utterance types are similar to sentence types (declarative, interrogative, imperative) with one exception:

whether the word was positive or negative, and 5. the type of negative word produced. For this study we considered the following classes of negative words in English: the words *no* and *not*, all possible negative clitic auxiliary forms with *n't* (i.e. *ain't*, *isn't*, *amn't*, *aren't*, *wasn't*, *weren't*, *don't*, *doesn't*, *didn't*, *won't*, *shan't*, *hasn't*, *havn't*, *hadn't*, *shouldn't*, *can't*, *couldn't*, *may'nt*, *might'nt*, *would'nt*, and *mustn't*) as well as their positive forms without *n't* as controls, negative quantifiers (*nothing*, *nobody*, *no-one*, *nowhere*, *none*) and their positive existential and universal variants (*something*, *everything*, *somebody*, *everybody*, *someone*, *everyone*, *somewhere*, *everywhere*, *some*, *all*), adverb of frequency *never* and its existential and universal variants (*sometimes*, *always*), and finally derivational negative forms with morphemes *un-* (e.g. *unhappy*), *in-* (e.g. *invisible*), *dis-* (e.g. *disappear*), *de-* (e.g. *defrost*), *non-* (e.g. *nonsense*), and *-less* (e.g. *careless*).

Exclusion Criteria. First, unintelligible tokens were excluded (N = 379,549). Second, tokens that had missing information on children's age were excluded (N = 1,060,766). Third, tokens outside the age range of 1 to 6 years were excluded (N = 658,207). The collection contained the speech of 570 children and their parents after the exclusions.

Results

Following Cameron-Faulkner, Lieven, and Theakston (2007), we first look at the proportions of different categories of negation in parents' and children's speech between the ages of 1-6 years. As the right panel on Figure 1 shows, parents generally produce more the category "question" consists of interrogatives as well as rising declaratives (i.e. declaratives with rising question intonation). In the transcripts, declaratives are marked with a period, questions with a question mark, and imperatives with an exclamation mark. It is important to note that the manual also provides terminators for special-type utterances. Among the special type utterances, this study included the following in the category "questions": trailing off of a question, question with exclamation, interruption of a question, and self-interrupted question. The category imperatives also included "emphatic imperatives". The rest of the special type utterances such as "interruptions" and "trailing off" were included in the category "other".

instances of auxiliary contracted negation *n't* than *no*, and produce more instances of *no* than *not*. However between the ages of 12-18 months, almost all children's negative forms are instances of *no*, with a few contracted auxiliary negatives like *don't* and *can't*. Between 18 to 36 months, children's instances of *not* and its contracted form *n't* increase rapidly until they reach the parents' level of production. Although, the rate of *no* production always stays above the parents' level, probably because parents' ask more questions from children than children from adults. Similar to Cameron-Faulkner et al. (2007) we find that children start productions of *no* earlier than other forms. However, unlike their conclusions, we find that children start producing the verb phrase negation *not* and its contracted form *nt* around the same time.

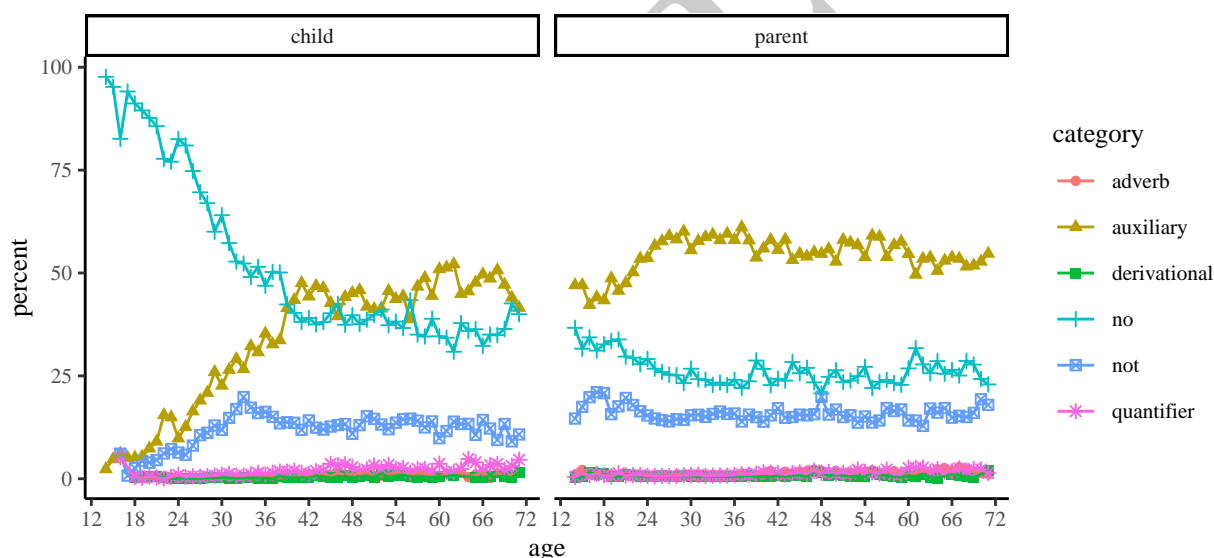


Figure 1. Proportion of different categories of negation in parents' and children's speech between 1 to 6 years of age.

How does this interact with mean length of utterance? Are early *no*'s mainly single word utterances?

It is also often claimed in the literature (citation needed) that early forms of auxiliary negation like *can't* and *don't* are learned as unanalyzed chunks because the positive auxiliaries *can* and *do* are not produced at the same age. Figure (3) shows the relative

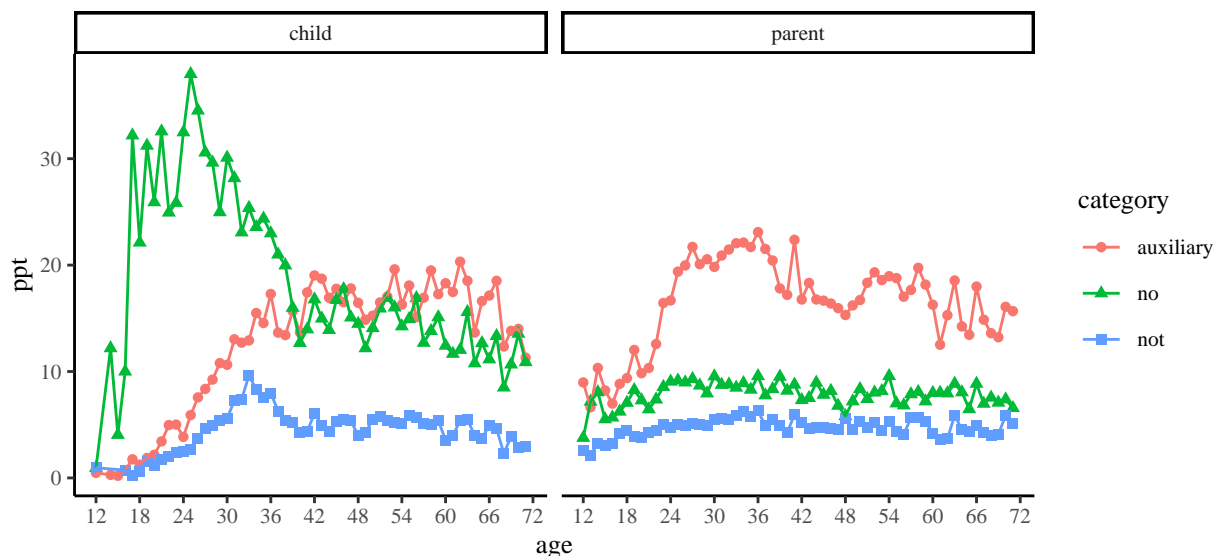


Figure 2. Relative frequency of the response particle *no*, verb phrase negation *not*, and its contracted auxiliary forms like *don't*

frequency of positive and negative auxiliary forms in the speech of children and their parents. Our results show that overall, children start producing the positive and negative auxiliary forms around the same time and they always produce the positive forms at a higher rate than negative ones. For both positive and negative forms they increase their productions until they reach their parents' levels between 36-42 months of age.

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Conclusions

Essentially the answers to these questions:

- What is the overall trajectory of negative forms in child production?
 - Does the development of negation follow a $no > not > nt$ cline? (Cameron-faulkner et al)
 - How many children are found to produce $no/not/nt$ at each age?

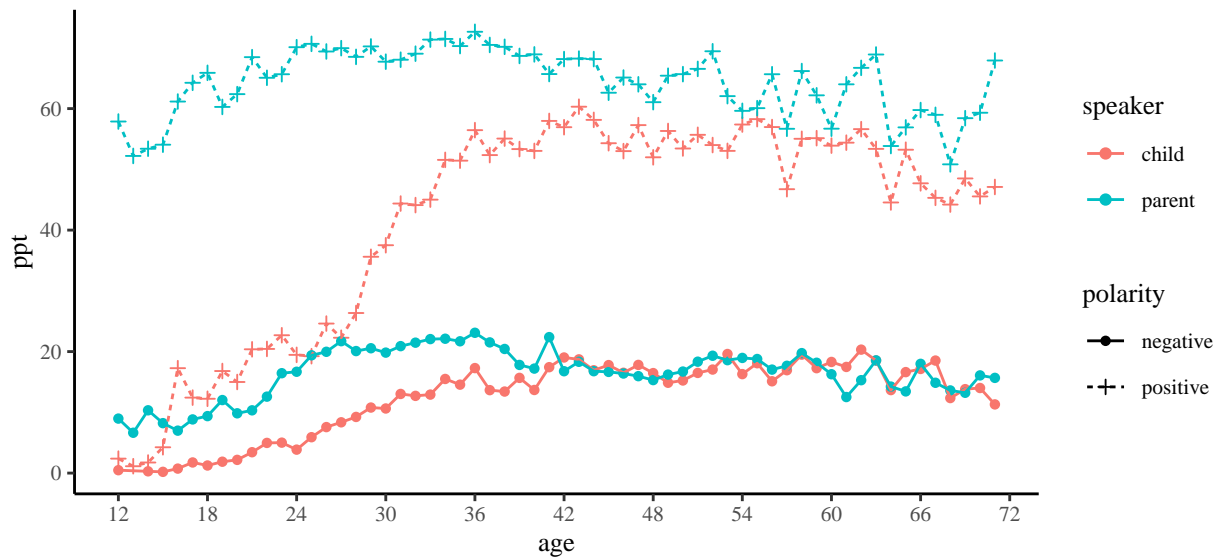


Figure 3. Relative frequency of positive auxiliary forms such as *do*, *are*, and *can* as well as their contracted negative form with *nt* in the speech of parents and children.

- Do positive variants of the negative constructions exist too?
 - Are early “can’t” and “don’t” examples unanalyzed wholes? (Klima & Bellugi 1966; Bloom 1970) Do children produce “can’t” and “don’t” before using “do” and “can”?
- Proportion of no vs. not vs. nt broken down by mean length of utterance
 - instead of age, put mean length of utterance on the x axis?

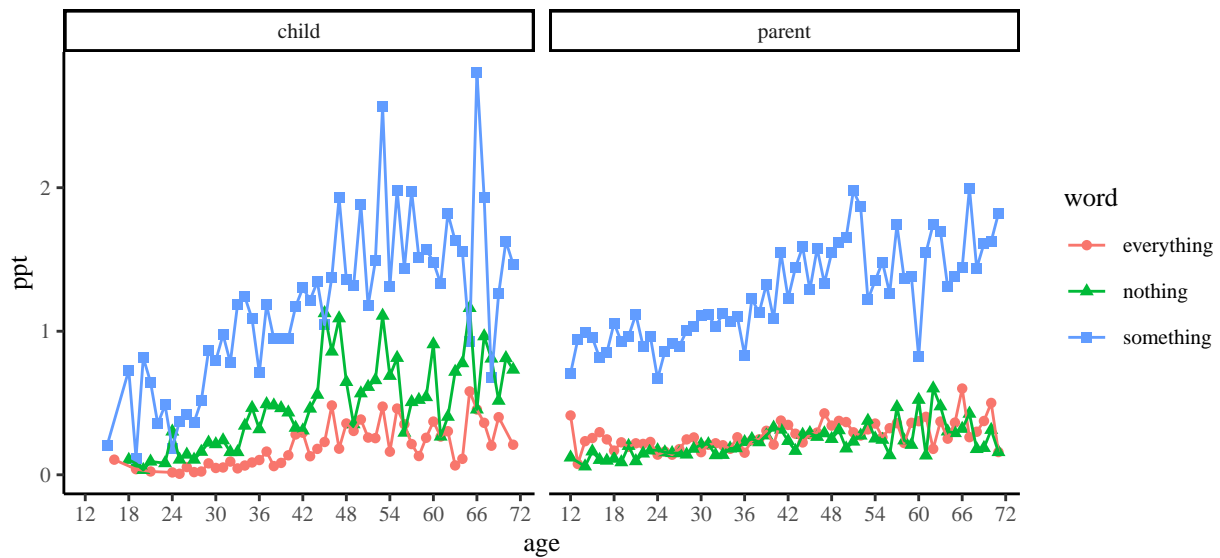


Figure 4. Relative frequency of positive and negative quantifiers.

Study 2: Early Productions

Participants

Material

Procedure

Data analysis

Results

Discussion

References

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