

Parents' and Children's Production of English Negation

Background – Previous research has proposed the following stages for children's production of negation (Klima & Bellugi 1966; Wode 1977): 1. one-word negatives with *no*, 2. anaphoric *no* along with other words in responses to a previous utterance (e.g. *no*, *outside*) 3. pre-sentential non-anaphoric *no* or *not* (e.g. “no I see truck” to mean “I can't/don't see the truck”) 4. *no/not* between the subject and the verb (e.g. “Kathrine *no* like celery”), adding *can't* and *don't* to the set of negators as unanalyzed wholes (e.g. “I can't open it”) because *can* and *do* are not produced separately in this stage, 5. adult-like negation. However, stages 3 and 4 have been criticized for not being properly supported by the available data (de Villiers & de Villiers 1979; Park 1979; Drozd 1995). In addition, Cameron-Faulkner et al. (2007) analyzed productions of a child in their corpus and argued for a “*no-not-n't* cline”: children first produce *no*, followed by *not*, and finally the clitic form *n't*. This study uses the largest available child language corpus to bring more data to bear on these hypotheses.

Method – We used the CHILDES corpora (MacWhinney 2000), available via *chldes-db* (Sanchez et al. 2019). English-North America and English-UK collections were tokenized. After exclusions due to unintelligibility or missing information ($N = 2,098,522$), the collection contained 14,099,153 tokens from the speech of 570 children. Tokens were classified into positive and negative morphemes, with the following negative morpheme categories: *no*, *not*, auxiliary clitic *n't*, negative pronouns and quantifiers (*none*, *nothing*, *nobody*, *no-one*, *nowhere*), negative adverb of frequency *never*, and derivational negatives with *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*).

Results – Between 12-18 months, almost all negative forms produced by children were instances of *no*, with some contracted auxiliary negatives like *don't* and *can't* (Figure 1). The proportions of *not* and its contracted form *n't* increased rapidly and simultaneously between 18-30 months until around 36-42 months they reached close to parent levels. Children started producing *not* and *n't* around the same time, if not *n't* slightly earlier. They started producing the positive auxiliaries such as *do* and *can* around the same time as negative ones (Figure 2). Compatible with Drozd's (1995) similar corpus findings, only a very small percentage of children's negative utterances could be analyzed as pre-sentential non-anaphoric negation.

Conclusions – Results supported early productions of *no* (stage 1) before *not* and *n't*, but no evidence that *not* is produced before *n't*. We did not find support for robust non-anaphoric pre-sentential negation (stage 3) or contracted forms like *don't* and *can't* as unanalyzed wholes (stage 4). The results suggest a great degree of variability in children's productive development (de Villiers & de Villiers 1979). Our findings are compatible with simultaneous development of frequent negative forms with a production bottleneck that favors shorter utterances like *no* to appear earlier.

Word Count: 497

References – Cameron-Faulkner, Thea, Elena Lieven, and Anna Theakston (2007) What Part of “No” Do Children Not Understand? A Usage-Based Account of Multiword Negation. *Journal of Child Language (JCL)* – de Villiers, Peter A, and Jill de Villiers (1979) Form and Function in the Development of Sentence Negation. *Papers and Reports on Child Language Development* – Drozd, Kenneth (1995) Child English pre-sentential negation as metalinguistic exclamatory sentence negation. *JCL* – Klima, Edward, and Ursula Bellugi (1966) Syntactic Regularities in the Speech of Children. *Psycholinguistics Papers* – MacWhinney, Brian (2000) The CHILDES Project: The Database – Park, Tschang-Zin (1979) Some Facts on Negation: Wode's Four-Stage Developmental Theory of Negation Revisited. *JCL* – Sanchez, Alessandro, Stephan Meylan, Mika Braginsky, Kyle MacDonald, Daniel Yurovsky, and Michael C Frank (2019) Chldes-Db: A Flexible and Reproducible Interface to CHILDES. *Behavior Research Methods* – Wode, Henning (1977) Four Early Stages in the Development of L1 Negation. *JCL*

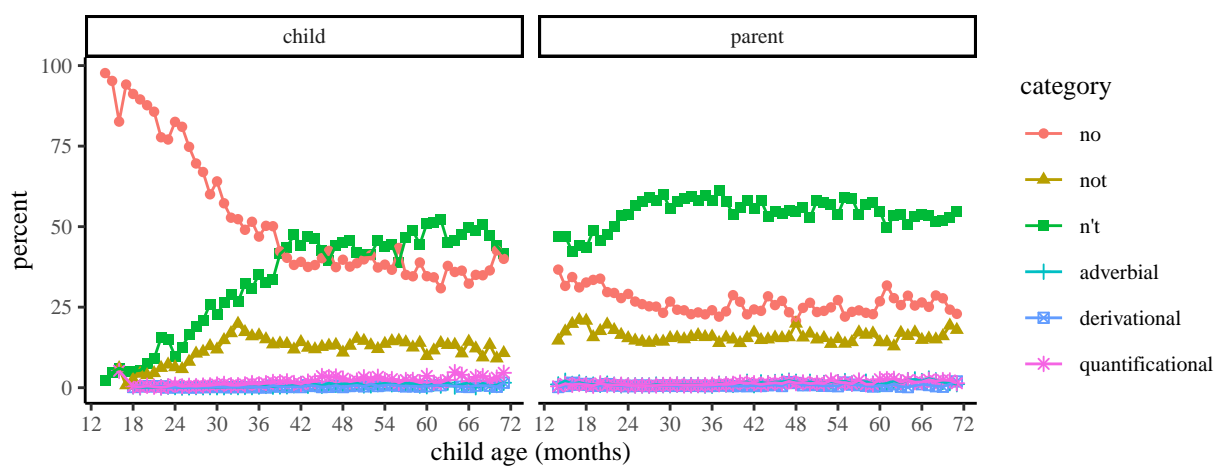


Figure 1: Proportion of different categories of negation in parents' and children's speech between 12 to 72 months of age (1 to 6 years).

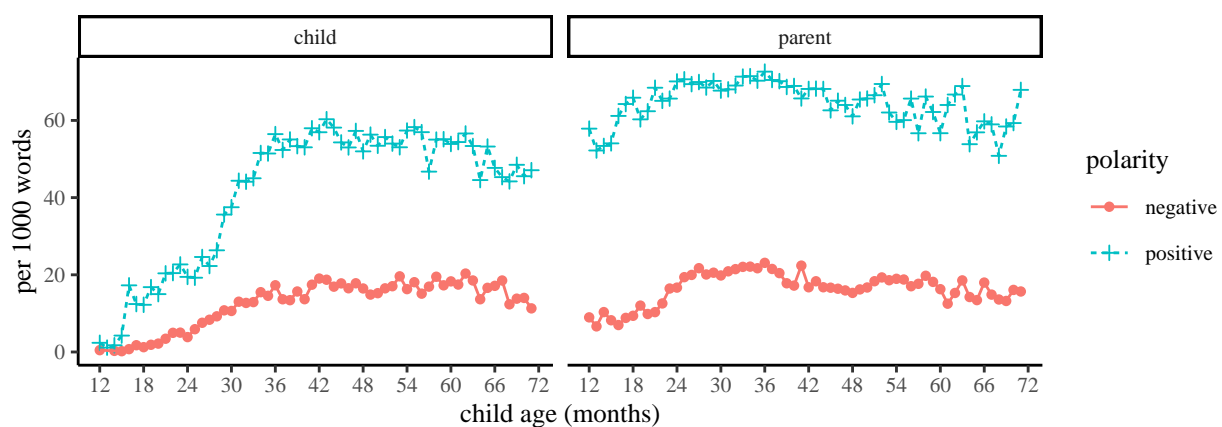


Figure 2: Relative frequency (per thousand words) of positive auxiliary (e.g. *do*, *can*, *is*, ...) as well as their contracted negatives (*don't*, *can't*, *isn't*, ...) in the speech of parents and children between 12 to 72 months of age (1 to 6 years).