Longitudinal changes in parental consonant production in infant-directed speech and infants' early speech production from 6 to 12 months

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Previous research suggests that properties of infant-directed speech (IDS) might be beneficial for infants' language development (Golinkoff et al., 2015). However, consonants have gained less attention than prosodic and vowel-based properties (McMurray et al., 2013). In the current study, we examined voice onset time (VOT) – a distinguishing cue for stop consonant contrasts – in IDS and adult-directed speech (ADS), and its relation to infants' speech production from 6 to 12 months. We collected data from a longitudinal sample of n=48 Norwegian parent-infant dyads. Parents' IDS and ADS were recorded in-lab at three timepoints (infants' age: 6, 9, 12 months), and the VOTs of a total of 7,295 stop consonants (/b-p/, /d-t/, and /g-k/) were measured. In addition, at each timepoint, parents reported, through an online questionnaire, their infants' production of the same consonants, as well as their babbling. Hypotheses were preregistered, and we used full-null model comparisons to minimise type I-errors in the analyses. Results of our mixed models demonstrated that, while controlling for speaking rate, parents' VOT is longer in IDS vs ADS for voiceless stops ($\chi2=77.8$, $p <.001$), but shorter for voiced stops ($\chi2=76.0$, $p <.001$), and IDS, as compared to ADS, features overall less distinct consonant contrasts ($\chi2=17.5$, $p <.001$). Further, VOT in IDS becomes more similar to ADS with infants' age (voiceless $\chi2=36.3$, $p <.001$, Fig. 1; voiced $\chi2=8.09$, $p <.01$), however, we find no relationship between parents' VOT and infants' consonant production or babbling (p's >.05). A potential explanation is that less distinct productions of contrastive consonants in Norwegian parents' IDS suggest that parents' modulations in speech to infants would be motivated by attentional and affective aims rather than didactic purposes.