Sensorimotor influences on infant speech perception in (a)typical development

Sensorimotor influences on infant auditory speech perception have been shown to modulate phoneme discrimination, highlighting the integration of sensorimotor information and auditory speech prior to production. We examined the selectiveness, generalizability and potential cross-domain impact of sensorimotor influences, by testing a novel (native) phoneme contrast (/da/-/za/), a stress contrast (trochaic/iambic), and an intonation contrast (statement/question intonation). In three experiments, Portuguese-learning 6-month-old infants listened to the phoneme (P), stress (S), and intonation (I) speech contrasts without and with oral-motor impairments induced by two teething toys: a gummy teether and a flat teether. Three groups of typically developing infants (no object in the mouth, with gummy teether, and with flat teether) performed P, I and S, with experiment order counterbalanced across participants. Infants discriminated the phoneme contrast only in the absence of a teething toy. Similarly, the stress contrast was discriminated without a teether, while both teethers disrupted discrimination. By contrast, discrimination of the intonation contrast was found both in the absence of the teething toys and in the gummy teether condition, but not in the flat teether condition. Our results were the first to suggest that sensorimotor influences modulate speech perception beyond phoneme discrimination. Their effects on infants' prosody perception were different for stress and intonation, pointing to specificity in the sensorimotor influence. Currently, sensorimotor influences are being tested in infants with Down Syndrome, that display oral-motor dysmorphologies. Our findings offer new insights into the significance of the perception-production link in (a)typical development.