

BACKGROUND

Healthy adults recruit sensorimotor knowledge in speech perception

(Skipper, Devlin & Lametti, 2017 for a review)

By 4.5 months, infants can recruit (on-line) sensorimotor information for perceptual goals

when it is administered through manipulation of the articulators (Yeung & Werker, 2013; Bruderer et al., 2015; Choi et al., 2019)

Sensorimotor knowledge is gained in development through experience with speech production

→ **Early production might allow infants to recruit sensorimotor knowledge**

- strengthening perception thanks to the emergence of a new source of information
- carrying (in experimental conditions) effects similar to those observed in on-line experiments

Evidence of such effects has been reported (De Paolis et al., 2010, 2013; Majorano et al., 2013, 2019; Streri et al., 2015; Altvater-Mackensen et al., 2016)

AIM

To explore the developmental link between speech production & perception :

- **In familiar word-form processing** (cf. methodology in Poltrock & Nazzi, 2015)
- **Comparing infants with different levels of sensorimotor development**

METHODS

PARTICIPANTS

11-month-olds (32)

- French-learning monolinguals
- No familial history of Speech Language or Hearing disorders

Median-split into High- vs Low- producers :

11mos = 20 Low-; 12 High-producers

14mos = 18 Low-; 14 High-producers

14-month-olds (32)

PRODUCTION ASSESSMENT (Parental questionnaire)

No. and type of French Consonants → (a) stably produced
(b) sporadically produced
(c) not yet produced

± Variegated & reduplicated babbling

PERCEPTION TASK

Stimuli

Isolated familiar words (familiar to 30% of French-learning 11 & 14-mos; verified for each sbj)

→ **10 words with Easy (Early-Learned) consonants** (plosive + nasals)

→ **10 words with Difficult (Late-Learned) consonants** (fricatives)

- Selected from the French version of MacArthur CDI (Kern, 2003;)

- Controlled for word/syllable frequency; vowel context; syllables (no. and structure)

Procedure

Headturn Preference Procedure with no familiarization phase

6 trials of each type of words

RESULTS

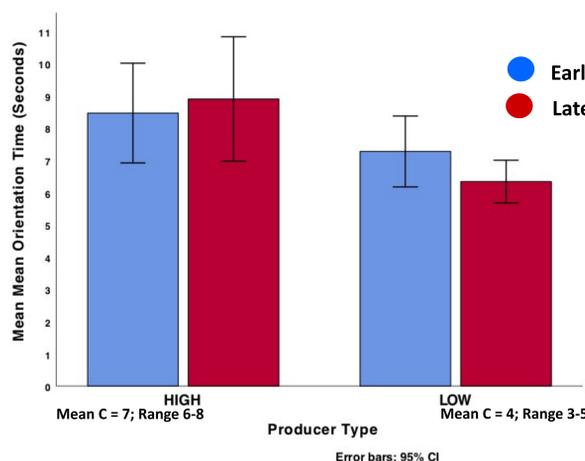
Mixed ANOVA for each group (DV = Orientation Time)

- Type of Consonant in the Word-list (Early-; Late-learned Cs)
- Producer-Type (Low; High)

11-month-olds

Main effect of Producer (F= 6.7; p = .01; $\eta_p^2 = .18$)

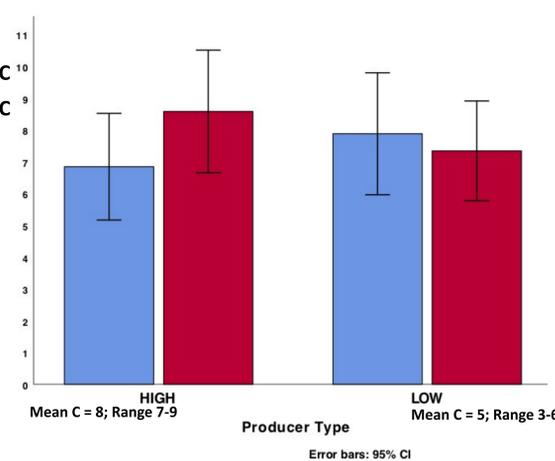
High producers have globally longer Orientation Times



14-month-olds

Word-List * Producer (F= 8; p = .008; $\eta_p^2 = .2$)

High producers orient more towards Late-learned Cs



Pearson's correlation (no. Cs ; OT Differential Score) : r = .4 ; p = .03 (both groups)

CONCLUSIONS

Overall, participants appear to process word-forms differently as a function of their speech production skills

- The effect is generalized in the 11-months group
→ *A broad association between perception and production abilities whose underlying reasons need further clarification*
- The effect is modulated by the Type of Consonant in the 14-months group (Early- vs Late-learned)
→ *Consistent with the fact that these infants were starting to produce the Late-learned sounds*

This study is in line with previous literature reporting production/perception links in development.

It is the first study to investigate the phenomenon with early familiar word-forms.

SHORT BIBLIOGRAPHY

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