Language differentiation by 20-month-old bilingual infants

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Introduction

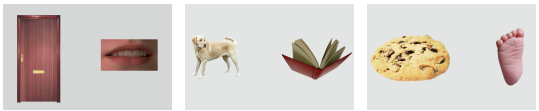
- Bilingual infants have perceptually-based sensitivities that support the discrimination of sentences from their native languages (Bosch & Sebastián-Gallés, 2001; Byers-Heinlein et al., 2010).
- It is unknown when and how infants go from discrimination to differentiation as they learn words in their native languages.
- Do bilingual infants treat translation equivalents (e.g. English *dog* and French *chien*) as equivalent?
- Bilinguals' processing of mixed-language speech provides an implicit test of language differentiation.
- Bilingual adults process mixed-language speech slower than single-language speech, which has been explained by the cost of switching between two separate language systems (Grosjean & Soares, 1986; Macnamara & Kushnir, 1971).
- If bilingual infants differentiate their languages, then they might show a processing cost for mixed-language speech.

Participants

- **Participants**: Eighteen 20-month-old English-French bilingual infants. Fourteen were simultaneous bilinguals, and 4 were early sequential bilinguals with exposure to L2 beginning at 4, 9, & 14 (2 infants) months.
  - Age: *M* = 20m14d, *range* = 19m3d - 21m16d
  - French exposure: *M* = 39%, *range* = 26% - 57%
  - English exposure: *M* = 59%, *range* = 37% - 74%
- Exposure to **parental language mixing** measured via the Language Mixing Scale (Byers-Heinlein, 2012)

Procedure

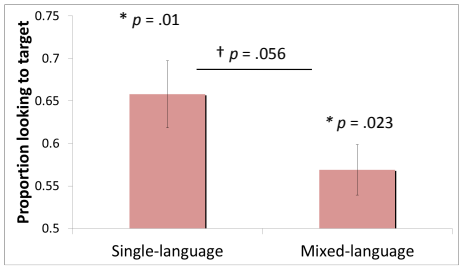
- Preferential looking paradigm on Tobii T60XL eye tracker.
- Infants randomly assigned to English or French carrier phrase condition.
- 18 trials: 6 mixed-language trials, 6 same-language trials, 6 filler trials (also same-language).



Condition	Same-Language Trials	Mixed-Language Trials
English	Look, find the **dog**!	Look find the ***chien***!
	Look, find the **book**!	Look, find the ***livre***!
French	Regarde, trouve le **chien**!	Regarde, trouve le ***dog***!
	Regarde, trouve le **livre**!	Regarde, trouve le ***book***!

Results

- Proportion looking time to target object was calculated during a window of 400-2000 ms after target word onset.
- Performance on each trial type was compared to each other and to chance (.5) using *t*-tests.



- No effects of parental language mixing.

Discussion

- Mixed-language sentences impaired infants' comprehension of familiar words.
  - Time course analyses are needed to more precisely identify the locus of the effect.
- Clear evidence that bilingual infants differentiate cross-language synonyms. *Dog /chien* are not interchangeable.
- Consistent with findings that bilinguals show pragmatic differentiation in conversations with different interlocutors (Genesee et al., 1996).
- Yet, infants showed successful comprehension in both same-language and mixed-language sentences.
  - Bilingual infants' language system is flexible enough to handle language mixing.
  - First experimental study to go beyond language discrimination, and show that bilingual infants differentiate between the words in each language.
- Ongoing studies are testing older and younger infants.

References

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