

Language Experience as a Driver of Eyes and Mouth-looking Patterns to Talking Faces in Bilingual Toddlers: A Classical and Temporal Dynamics Approach

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Introduction

- ❖ **Dual language experience** shapes adaptations in early language-learning mechanisms, like **selective attention to talking faces** (i.e., to the eyes and mouth; Bastianello et al., 2022; Morin-Lessard et al., 2019).
- ❖ Yet, most evidence comes from **cumulative looking-time measures** (but see Birulés et al., 2024).
- ❖ It is unclear whether **even limited early exposure to a second language (L2)** in the first year shapes **dynamic adaptations in bilingual toddlers' selective attention to talking faces, in subtle ways** that aggregated classical measures could miss (e.g., accumulated looking times).

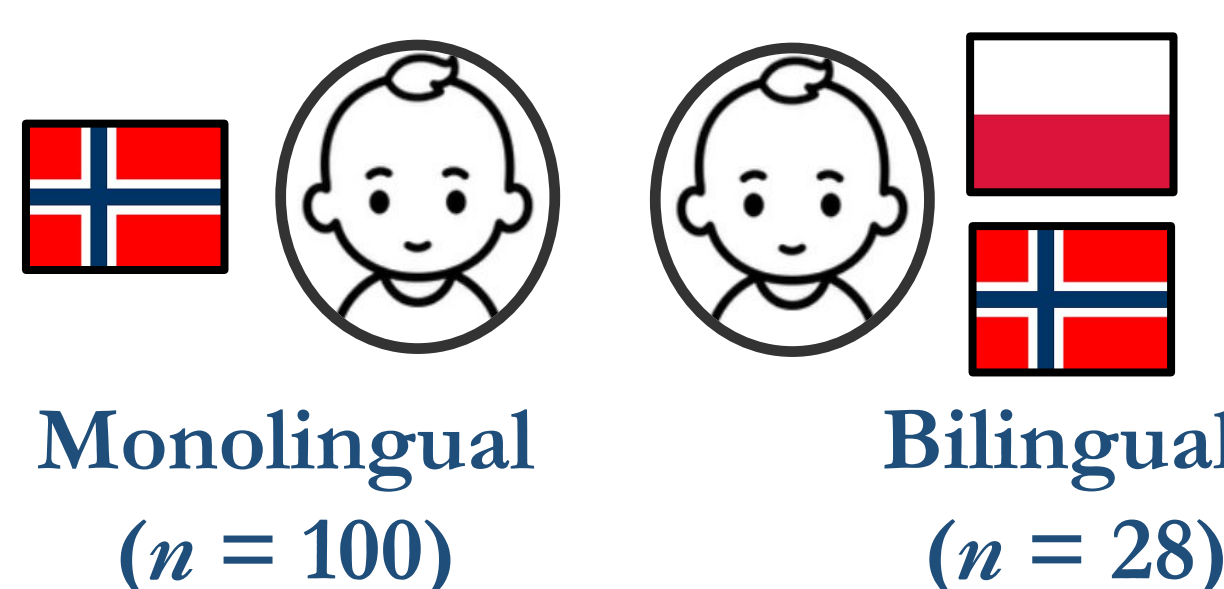
Aims

To examine the time-course of attention in sequential bilingual toddlers (as in Birulés et al., 2024), to test whether early L2 exposure shapes their later dynamic pattern of attention to the eyes and mouth of talking faces.

In particular, we explore whether:

- ❖ Bilingual and monolingual toddlers differ in the **temporal dynamics of eyes and mouth-looking in talking faces**
- ❖ In bilinguals, **greater early L2 exposure predicts increased mouth-looking**
- ❖ In monolinguals, **greater mouth-looking** relates to **larger vocabulary**, while in bilingual, this link would extend to **both L1 and L2**

Participants (N = 128)

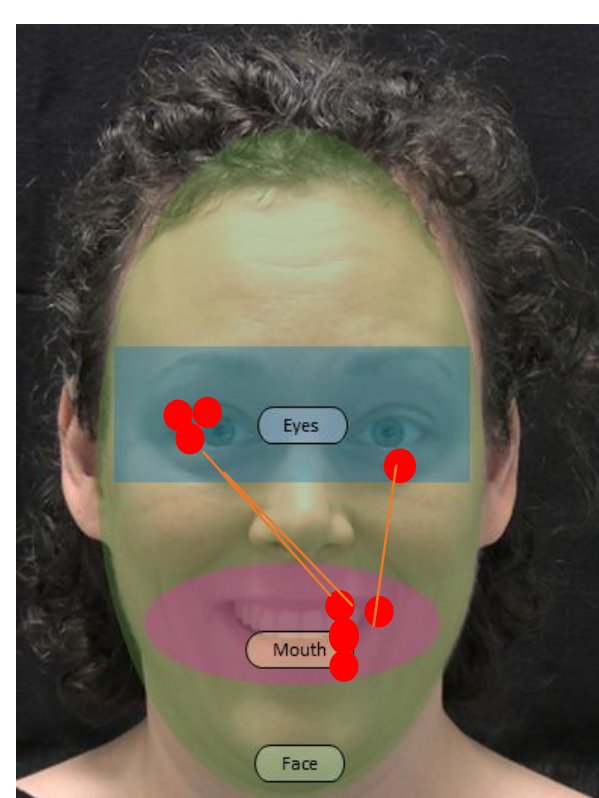


Ages: 18–24 mo; L2 exposure (M): 21.52%
Onset exposure L2 (M): 8.6 mo

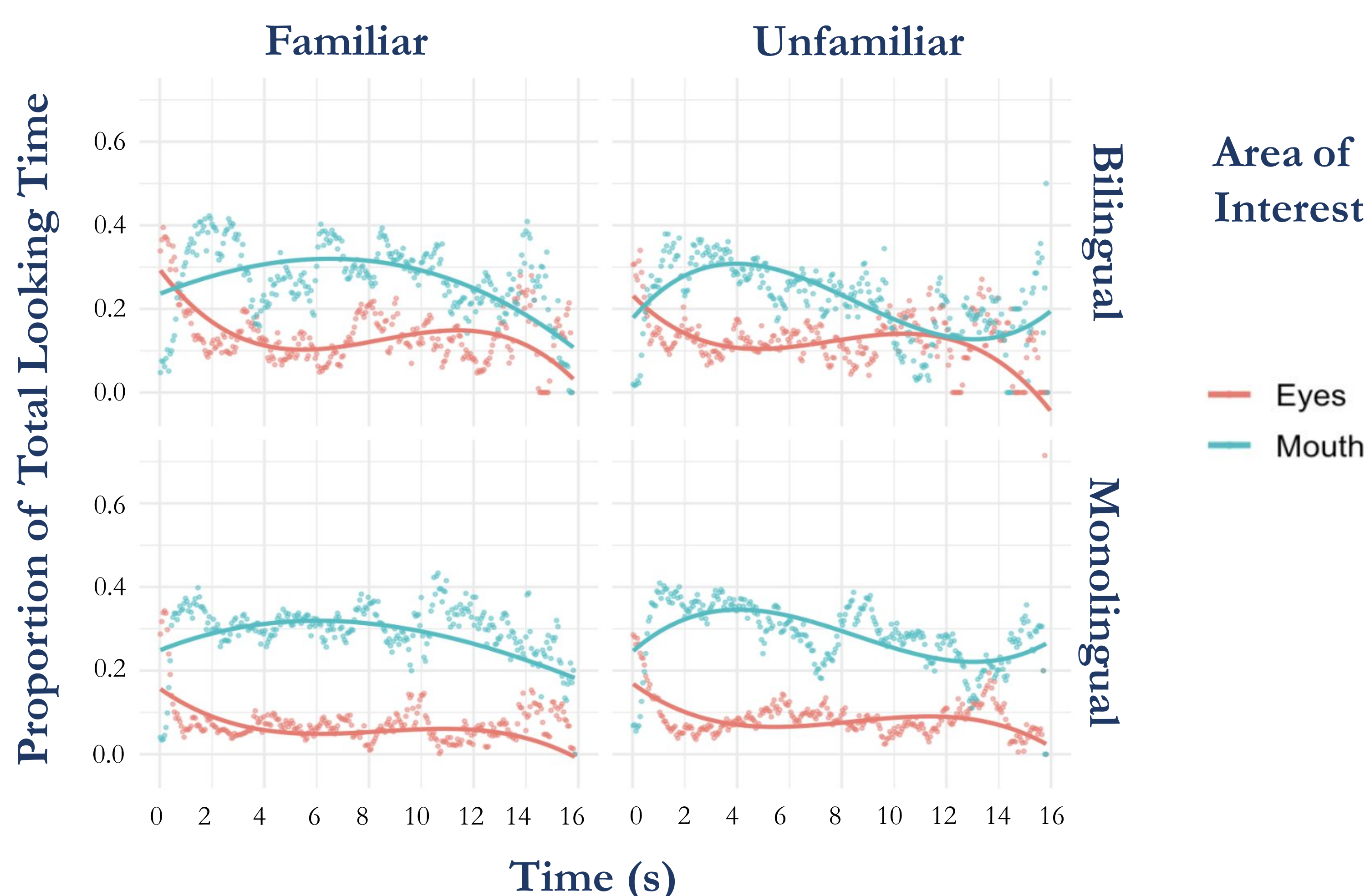
Methods

Procedure

- Free-viewing task
- AV fluent speech
- Balanced bilingual
- 2 blocks: in L1 & L2 (~2 min each)
- ET: SMI iView RED250mobile



Temporal Dynamics Approach (Growth-Curve Analysis)

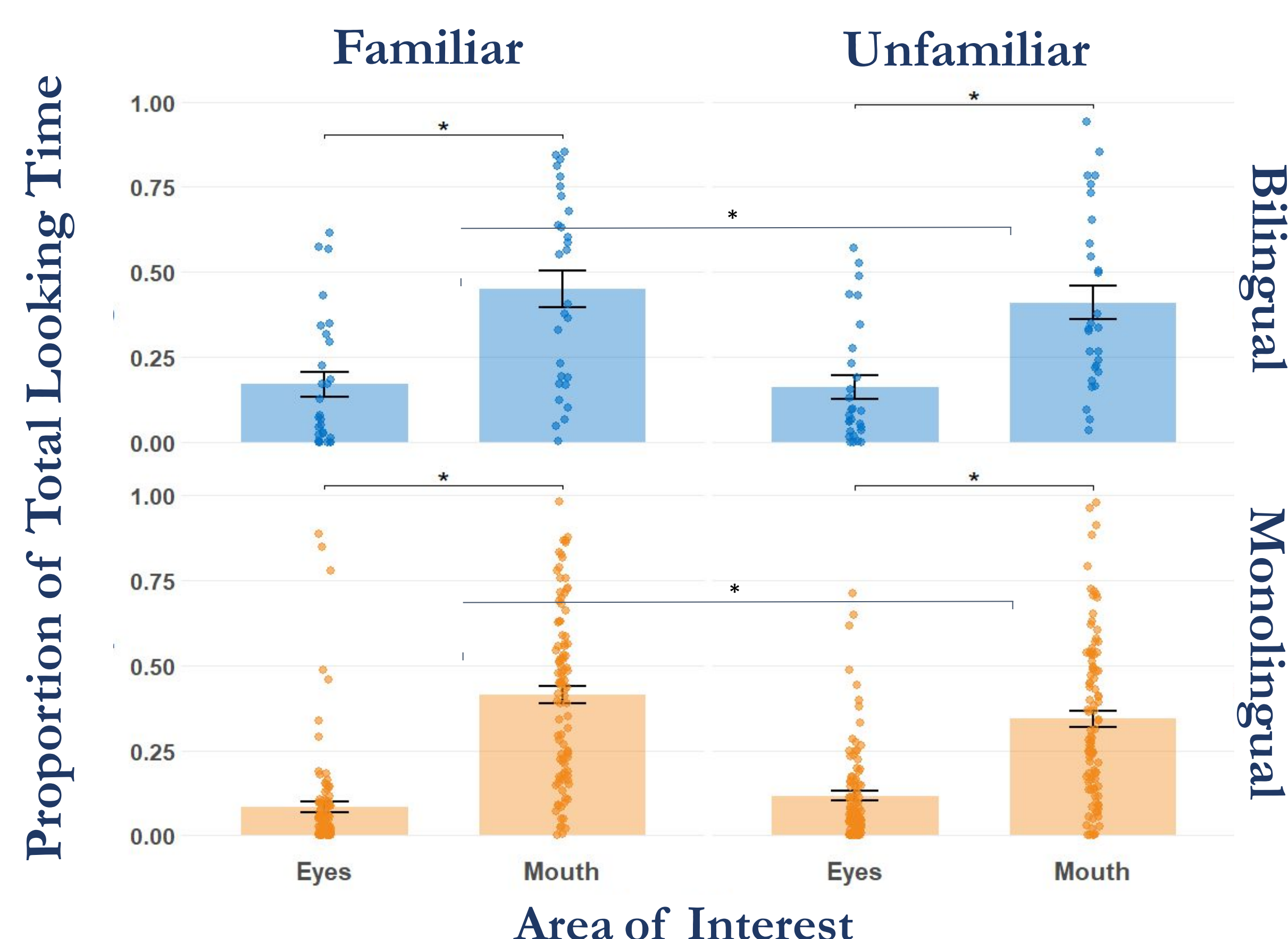


Model with best fit: (ot1+ot2+ot3)*AOI*Language Background * Language Familiarity + (1|ID)+(1|Trial)

ot3: AOI * Language Familiarity, $F(1) = 46.76$, $p < .0001$

ot3: AOI * Language Background, $F(1) = 15.28$, $p < .0001$

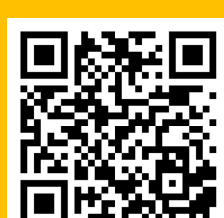
Classical Approach (Linear Mixed Models)



- ❖ Bilingual showed **higher overall looking time** than monolingual ($p = .046$)
- ❖ **Language familiarity** modulated looking patterns to the **mouth only** ($p = .01$); across language groups, toddlers **looked more to the mouth in the FAM than UNFAM** talking face ($p = .01$), with no such effects for eyes-looking ($p = .38$).

Conclusions

- ❖ Both mono- and bilingual toddlers looked more at the **mouth in the language they best understood**, unlike prior work in infancy. This may reflect a shift towards **lexical cue extraction** (see Birulés et al 2026). But this effect emerged only in the **middle** of the trial.
- ❖ Bilinguals showed **greater eyes-looking** than monolinguals from **trial onset**, and this remained throughout, likely reflecting increased attention to socio-communicative cues.
- ❖ In bilinguals, **cumulative L1 and L2 language experience predicted later eyes-looking (positively for L1, negatively for L2)**, but not mouth-looking, suggesting that dual early language input may shape later attention to socio-communicative facial cues.
- ❖ Neither mouth- nor eyes-looking related to concurrent or later vocabulary.
- ❖ **Language familiarity may influence both mouth- and eyes-looking** in mono- and bilinguals during toddlerhood, but only **combining classical and time-resolved approaches** reveals these dynamics.



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