

## Background

- Adults speak infant-directed (ID) speech to infants with different communicative intents throughout the first year of life (Fernald, 1989)
  - Approving ID speech: "Good girl!", rising-falling pitch, higher F<sub>0</sub>
  - Comforting ID speech: "Don't cry, baby.", falling pitch, lower F<sub>0</sub>
  - 6-month-olds categorize auditory-only approving and comforting ID speech (Spence & Moore, 2003)
- Adults portray ID faces when speaking ID speech (Chong et al., 2003)
  - Adults distinguish ID faces based on communicative intent, by valence of featural characteristics (Shepard et al., 2012)
  - Approving ID faces: widened "smiling" eyes, smiling mouth (positive)
  - Comforting ID faces: saddened eyes, frowning mouth (negative)
- Yet, it is unknown whether 6-month-olds detect differences in approving and comforting ID faces
  - Adults' visual attention to faces differs by valence
    - Eyes of sad faces, mouth of happy (Eisenbarth & Alpers, 2011)
    - Negative emotions better detected in left visual field, positive emotions better detected in right visual field (Jansari et al., 2011)
    - Valence hypothesis: right hemisphere processes negative emotions, left hemisphere processes positive (Silberman & Weingartner, 1986)

## Research Questions

- Do 6-month-olds attend differently to the eyes and mouth of ID faces that portray specific communicative intent?  
Hypothesis: longer fixations to mouth than eyes of approving ID face, equal fixations to mouth and eyes of comforting ID face.
- Does the valence hypothesis of hemispheric lateralization apply to 6-month-old infants?



## Method



- 6-month-olds ( $n = 40$ ,  $M$  age = 181 days, 24 females, all Caucasian)
- Infants viewed stimuli on a Tobii T60 XL Eye-Tracker
  - One pre-test trial of an animated drum (not analyzed)
  - One 15-s silent video of a woman speaking ID speech
  - Each infant saw 1 of 6 women speaking either approving ( $n = 20$ ) or comforting ( $n = 20$ ) ID speech (between-subjects design)

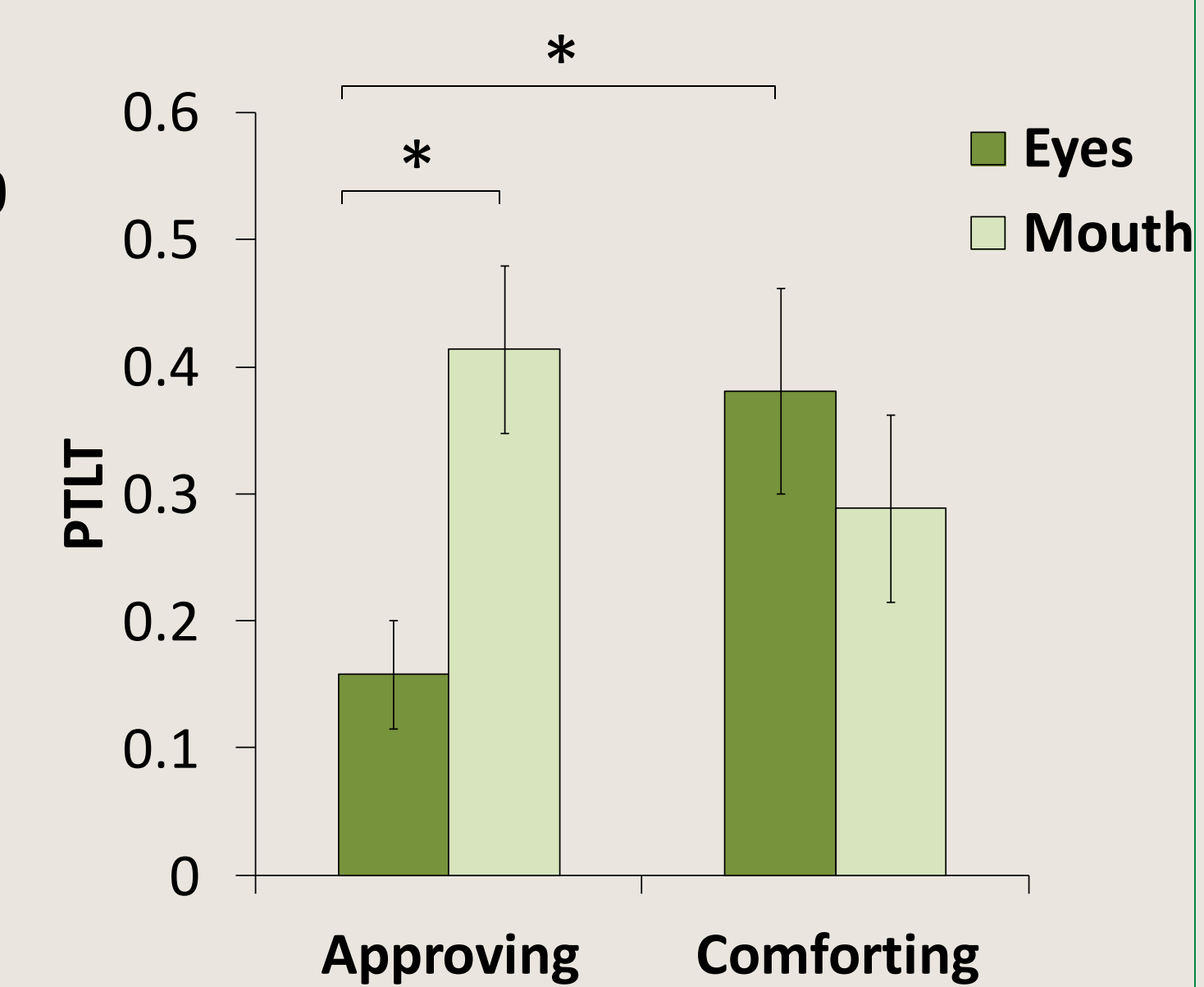
## Analyses

- AOIs defined for Eyes, Mouth, Viewer's Left (VL) and Right (VR) Sides of Face
- Proportion of Total Looking Time (PTLT) to each AOI out of total looking time
- First 2.5 s analyzed to assess initial attention when orienting to a speaking face (Oakes, 2011)

## Results

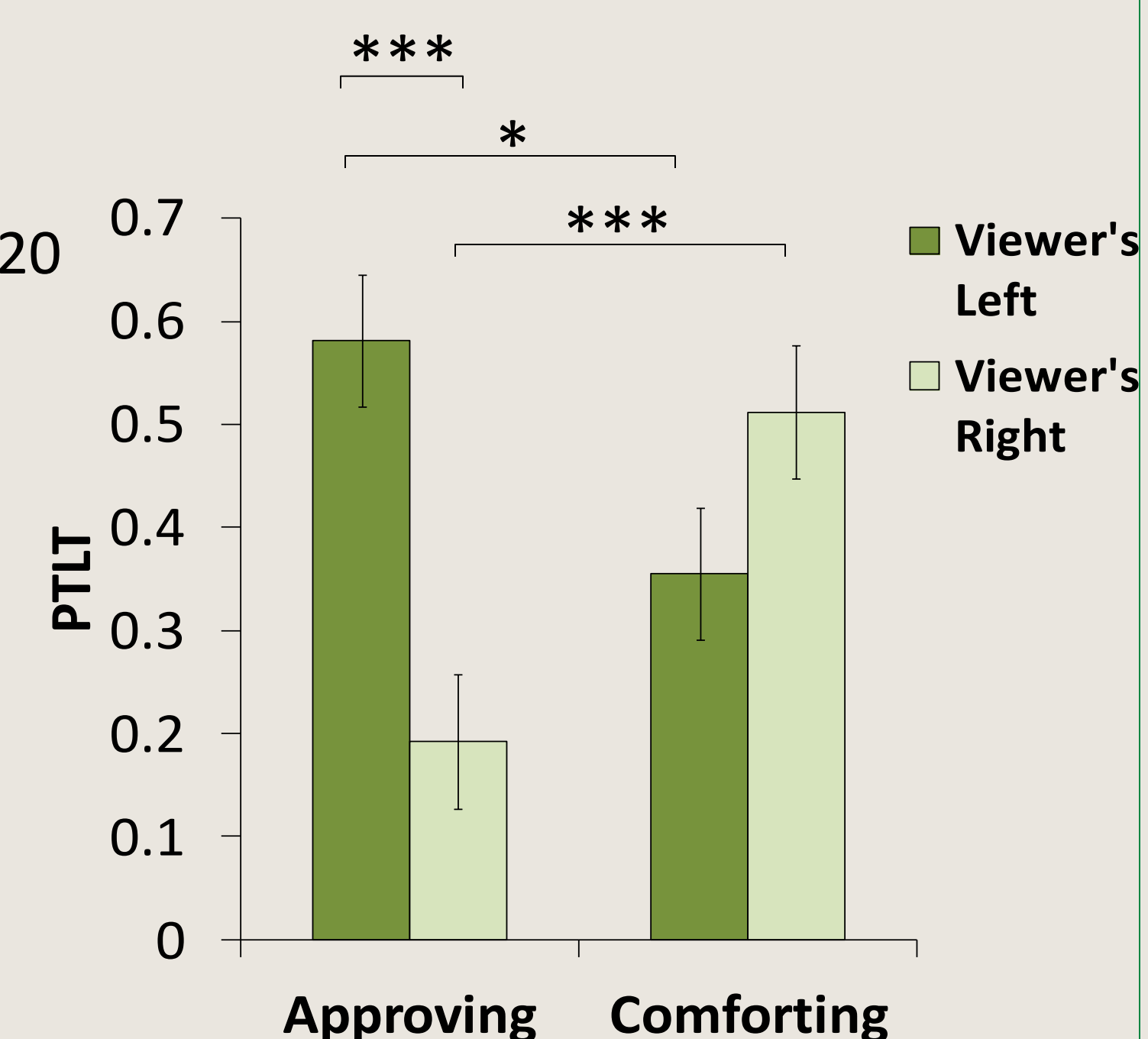
- Repeated-measures ANOVA: **PTLT to Eyes vs. Mouth by Condition**

- AOI x Condition:  $F(1, 38) = 4.12, p = .05, \eta^2 = .10$
- Approving face: Mouth > Eyes ( $p = .02$ )
- Comforting face: Mouth = Eyes ( $ns$ )
- Comforting Eyes > Approving Eyes ( $p = .02$ )
- Comforting Mouth = Approving Mouth ( $ns$ )



- Repeated-measures ANOVA: **PTLT to VL vs. VR Side of Face by Condition**

- AOI x Condition:  $F(1, 38) = 9.46, p = .004, \eta^2 = .20$
- Approving face: VL > VR ( $p < .001$ )
- Comforting face: VL = VR ( $ns$ )
- Approving VL > Comforting VL ( $p < .02$ )
- Comforting VR > Approving VR ( $p < .001$ )



- Four new AOIs defined: **VL Eye, VR Eye, VL Side of Mouth, VR Side of Mouth**

- AOI x Condition:  $F(3, 114) = 5.30, p = .002, \eta^2 = .12$
- Approving face:
  - VL Side of Mouth = VL Eye ( $p = .07$ )
  - VL Side of Mouth > VR Eye ( $p = .007$ ), VR Side of Mouth ( $p = .003$ )
- Comforting face:
  - No difference in attention to specific sides of eyes, mouth

## Discussion

- Infants attend differently to eyes and mouth of silent speaking approving and comforting ID faces
  - Greater attention to comforting eyes than approving eyes
  - Greater attention to approving mouth than approving eyes
  - Consistent with adults' visual attention to sad eyes and happy mouth of faces (Eisenbarth & Alpers, 2011)
  - Approving ID face may recruit infants' attention to the smiling mouth, the sound source of spoken language.
    - Preferential attention to mouth at 6 months related to later expressive language skills (Young et al., 2009)
    - Function of ID speech in fostering language acquisition may differ by communicative intent
- Infants attend differently to viewer's left (VL) and right (VR) sides of approving and comforting ID faces
  - Greater attention to VL than VR of approving face, specifically to VL side of mouth versus VR features
  - Greater attention to VR of comforting than approving face
    - Right side of face (VL) may be more expressive when portraying positive emotions, while left side of face (VR) may be more expressive when portraying negative emotions (see Powell & Schirillo, 2009, for review)
  - Infants' lateralized processing contradicts adults' according to valence hypothesis (Silberman & Weingartner, 1986)
- Future work should assess the developmental trajectory of valence-specific visual attention to both ID and AD faces

## References

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