

## INTRODUCTION

### Approving vs. Comforting Messages

- Habituation procedures found that 6-month-old infants categorize audiovisual approving and comforting infant-directed (ID) speech (Atchison et al., 2009)
- Features of ID speech** (Fernald, 1989; Shepard et al., 2012)

	Example	Facial Features	Melodic Features
Approving ID speech	"Good job!"	wide eyes, raised eyebrows, greater teeth visibility, smiles	rising & falling pitch contours, higher F <sub>0</sub>
Comforting ID speech	"Poor baby!"	sad eyes, furrowed eyebrows, frowning lips	falling pitch contours, lower F <sub>0</sub>

### Silent vs. Audiovisual Stimuli

#### Silent ID & Adult-Directed (AD) Speech

- 6-month-olds: more attention to mouth than eyes (Shepard, 2013)
  - Increased attention to mouth at 6 months due to language development
- 4- to 9-month-olds: **Left Visual Field Bias** (Wheeler, 2010; Liu et al., 2011)
  - Possible interpretations
    - Right hemispheric advantage in face/emotion processing, as information in the left visual field relays to the right hemisphere
    - Asymmetry in facial expressions

#### Audiovisual ID & AD Speech

- 6-month-olds: equal attention to eyes & mouth (Lewkowicz & Hansen-Tift, 2012)
- 5- to 8-month-olds: more attention to VL eye than VR eye (Smith et al., 2013)

### Research Questions

- To which facial features of approving and comforting ID faces do infants attend?
- How does ID speech affect scanning of ID faces?

## METHODS

- Infants sat in mother's lap, approx. 68 cm from Tobii T60 XL Eye-Tracker
- Five-point calibration followed by stimuli presentation
  - One 15-second silent (N = 36<sup>†</sup>) or audiovisual (N = 37) video of a woman speaking ID speech in English
  - Each infant viewed one of five different Caucasian females delivering either an approving (N = 37) or comforting (N = 36) message

### Participants

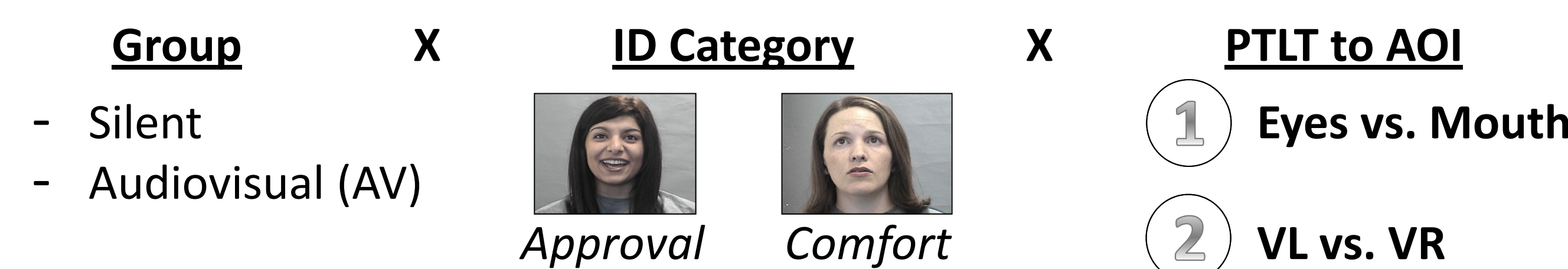
#### 6-month-old Infants

- N = 73; 35 males, 38 females; M age = 180 days, SD = 10 days
- Mother's Race:** All Caucasian
- Mother's Ethnicity:** 51 Non-Hispanic, 14 Hispanic, 8 Other
- Native Language Exposure**
  - English (N = 54)
  - English & other language 50% or less of the time (N = 19)



## ANALYSES

- Four Areas of Interest (AOIs) defined:
  - Eyes, mouth, viewer's left (VL) & viewer's right (VR) side of face
- Analyzed proportion of total looking time (PTLT) to AOIs during **first 2.5 sec** (Oakes, 2011)
- Two mixed design ANOVAs



## RESULTS

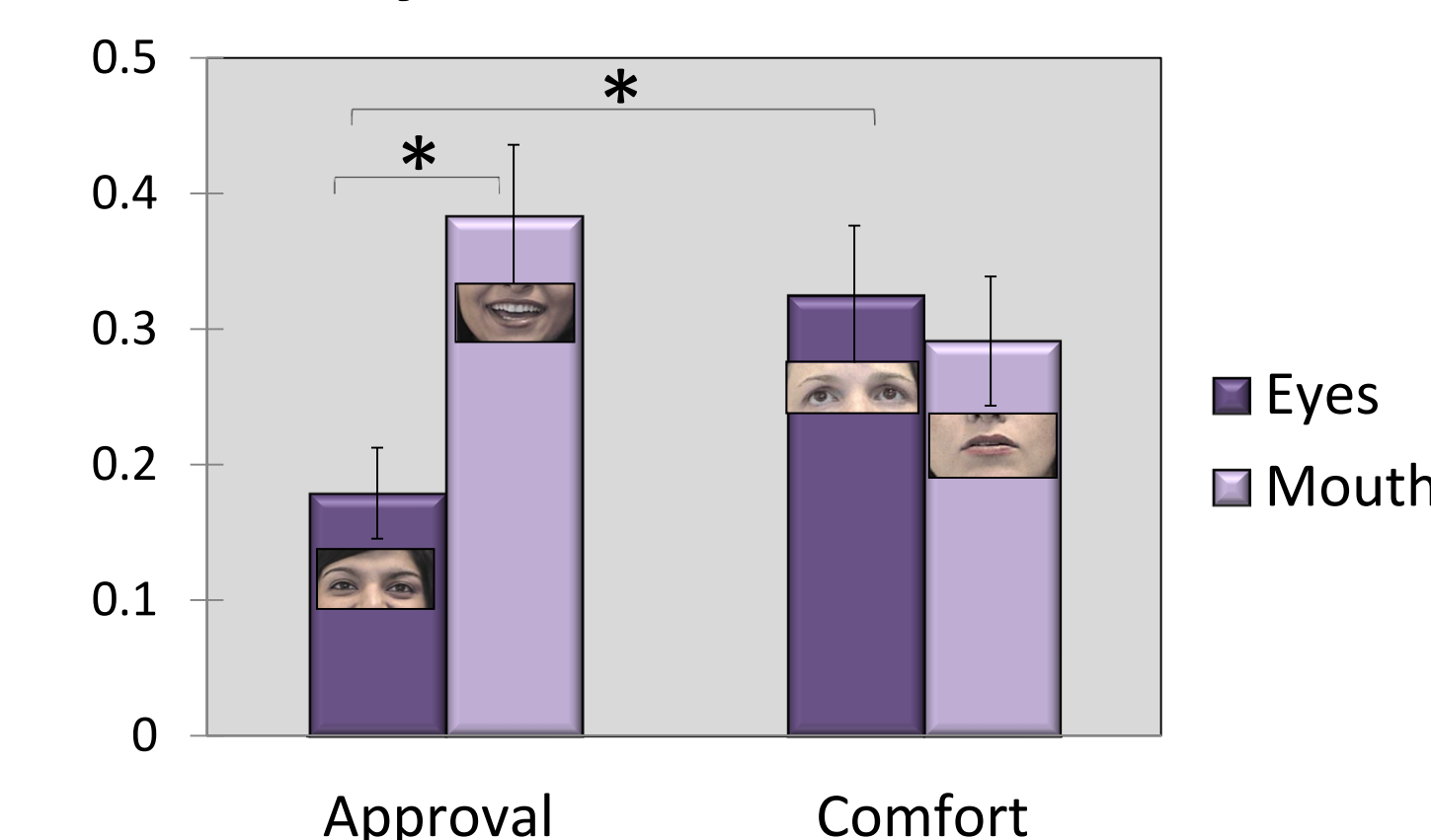
- 1 **Group (silent, AV) x ID Category (approval, comfort) x AOI (eyes vs. mouth)**

No significant main effect or interactions of group

#### ID Category x AOI

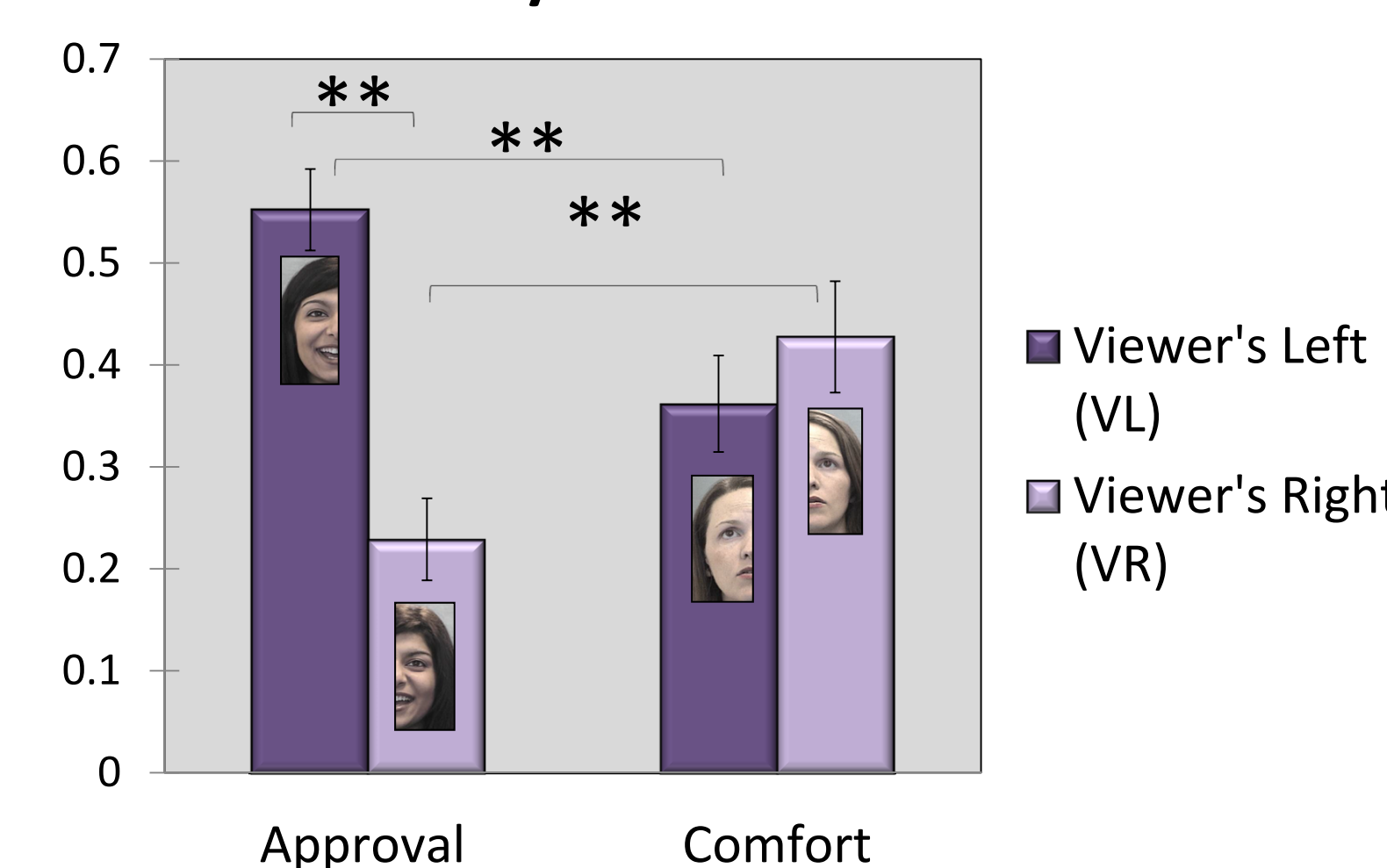
- F(1,69) = 3.77
- p = .056;  $\eta_p^2 = .05$ 
  - APP: **Mouth** > Eyes (p = .014)
  - COM: Mouth = Eyes (ns, p = .719)
  - EYES: **Com** > App (p = .022)
  - MOUTH: Com = App (ns, p = .205)

#### Eyes/Mouth: Mean PTLT

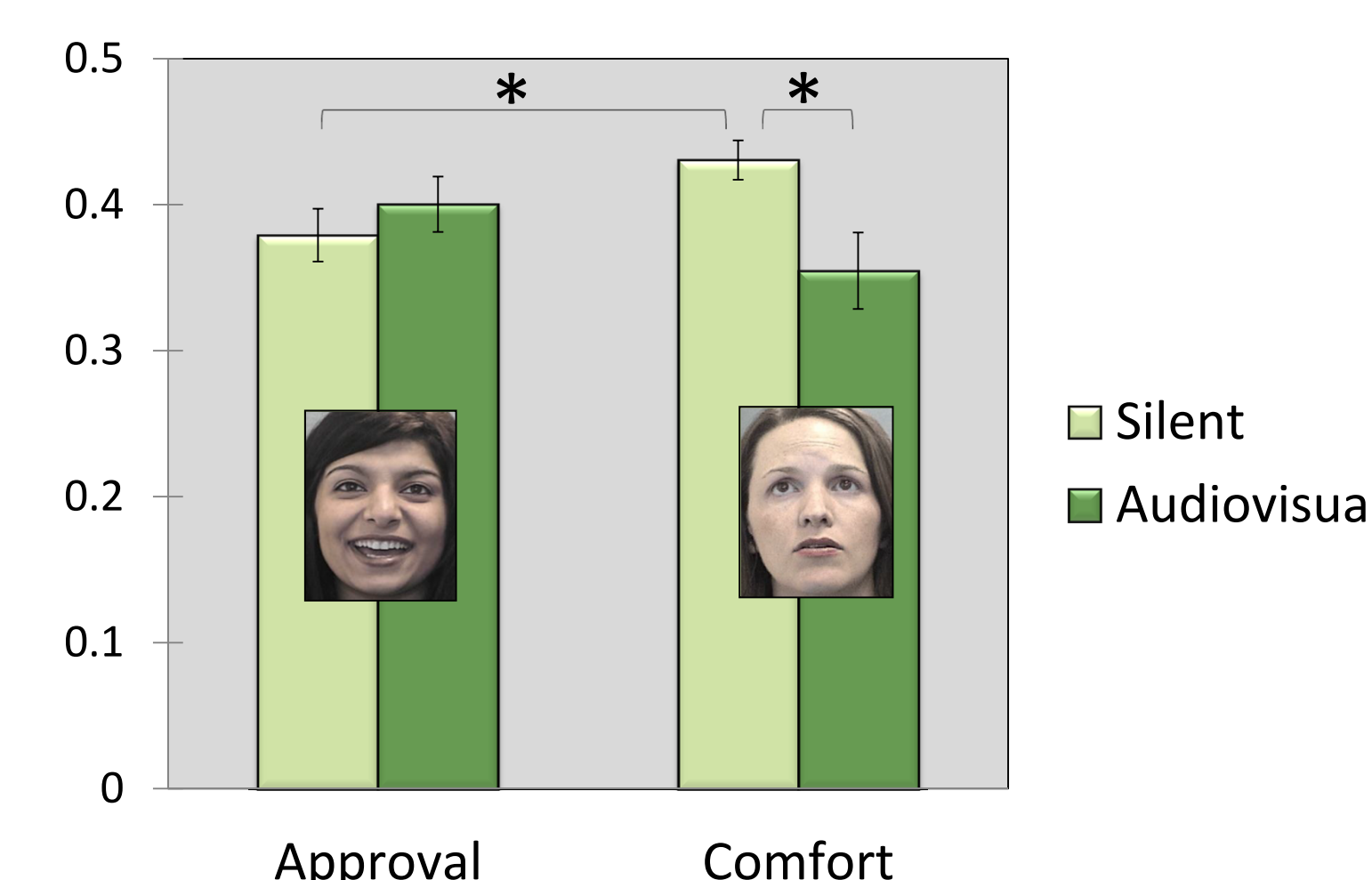


- 2 **Group (silent, AV) x ID Category (approval, comfort) x AOI (VL vs. VR)**

#### VL/VR: Mean PTLT



#### VL + VR: Silent vs. AV Mean PTLT



Error Bars: +/- 1 SE

#### AOI (VL, VR)

- F(1,69) = 4.83
- p = .031;  $\eta_p^2 = .07$ 
  - VL (.46) > VR (.33)

#### ID Category x AOI

- F(1,69) = 9.76
- p = .003;  $\eta_p^2 = .12$ 
  - APP: **VL** > VR (p < .001)
  - COM: VL = VR (ns, p = .506)
  - VL: **App** > Com (p = .003)
  - VR: **Com** > App (p = .005)

#### Group x ID Category

- F(1,69) = 6.21
- p = .015;  $\eta_p^2 = .08$ 
  - APP: Silent = AV (ns, p = .430)
  - COM: **Silent** > AV (p = .012)
  - SILENT: **Com** > App (p = .027)
  - AV: Com = App (ns, p = .160)

## DISCUSSION

### Auditory input had little impact on attention to specific facial features

- Speech component did not affect attention to **Eyes vs. Mouth** or **VL vs. VR**
    - Consistent with findings of more attention to mouth during silent and audiovisual positive ID speech (Shepard, 2013)
- 6-MONTH-OLDS' SCANNING OF ID FACES APPEARS TO BE DRIVEN BY NON-AUDITORY FACTORS (I.E., MOVEMENT, OTHER VISUAL INFORMATION) OF APPROVING & COMFORTING ID SPEECH

### Different scanning patterns suggest infants detect distinctive features of approving and comforting ID faces

- Eyes vs. Mouth**
  - More attention to mouth than eyes for approving, not comforting, messages
    - Greater teeth visibility and smiling in approving than comforting ID speech (Shepard et al., 2012)
  - More attention to comforting eyes than approving eyes
    - Consistent with findings in adults (Eisenbarth & Alpers, 2011)
      - Initial fixation on sad eyes compared to eyes of other expressions
- VL vs. VR Side of Face**
  - More attention to approving VL than both approving VR and comforting VL
    - Supports right-hemisphere hypothesis of emotion processing (Bourne, 2010)
      - Stronger patterns of right hemisphere lateralization found for positive & higher intensity emotions
  - More attention to VR side of face for comforting than approving messages
    - Supports facial expression asymmetry (Richardson et al., 2000)
      - Greater movement in the left side of the face (VR) for negative emotions, right side of the face (VL) for positive emotions
- Equal attention to silent and audiovisual approving faces, but more attention to silent than audiovisual comforting faces

→ THESE RESULTS IDENTIFY FACIAL FEATURES 6-MONTH-OLDS MAY USE TO DIFFERENTIATE AND CATEGORIZE APPROVING & COMFORTING ID SPEECH (Atchison et al., 2009)

## REFERENCES

- Atchison, et al. (2009), Poster at SRCD.
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