

BACKGROUND

- The faces we see on a day-to-day basis provide us with multimodal stimulation (e.g., hearing a speaking person and seeing their facial movements).
- This stimulation is characterized by intersensory redundancy (IR), as the auditory and visual sensory information is presented synchronously, which attracts infant attention (Bahrick & Lickliter, 2000).
- In this study, we explore attention recruitment and face recognition by presenting 12-month-olds with dynamic, audiovisual face stimuli presented with or without IR.
- In Experiment 1, infants were familiarized with videos of 2 faces, side-by-side, where the soundtrack was synchronous with one video (i.e., experimental condition) or neither videos (i.e., control condition).
- In Experiment 2, participants were familiarized with a video with a single face, where the soundtrack was either synchronous or asynchronous with the video.

RESEARCH QUESTIONS

Experiment 1

- Do faces presented with temporal synchrony recruit greater attention than faces presented without temporal synchrony during familiarization?
 - Do infants in the experimental condition demonstrate face recognition?
- Can infants process modality-specific face properties because neither familiar stimulus possesses IR?

Experiment 2

- How do infants allocate their attention to single presentations of multimodal synchronous and asynchronous faces?
- Does the synchrony provided by a multimodally presented face impact face recognition?

METHOD

Participants

Experiment 1

- 72 participants
 - 31 females, 35 males, 1 non-binary
 - 24 White/Caucasian, 7 mixed, 4 Asian, 1 Black/African American
 - 3 Hispanic/Latino
 - 24 Bilingual/multilingual

Experiment 2

- 58 participants
 - 25 females, 33 males
 - 33 White/Caucasian, 8 mixed, 4 Asian, 1 American Indian/Alaska Native
 - 3 Hispanic/Latino
 - 23 Bilingual/multilingual

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References

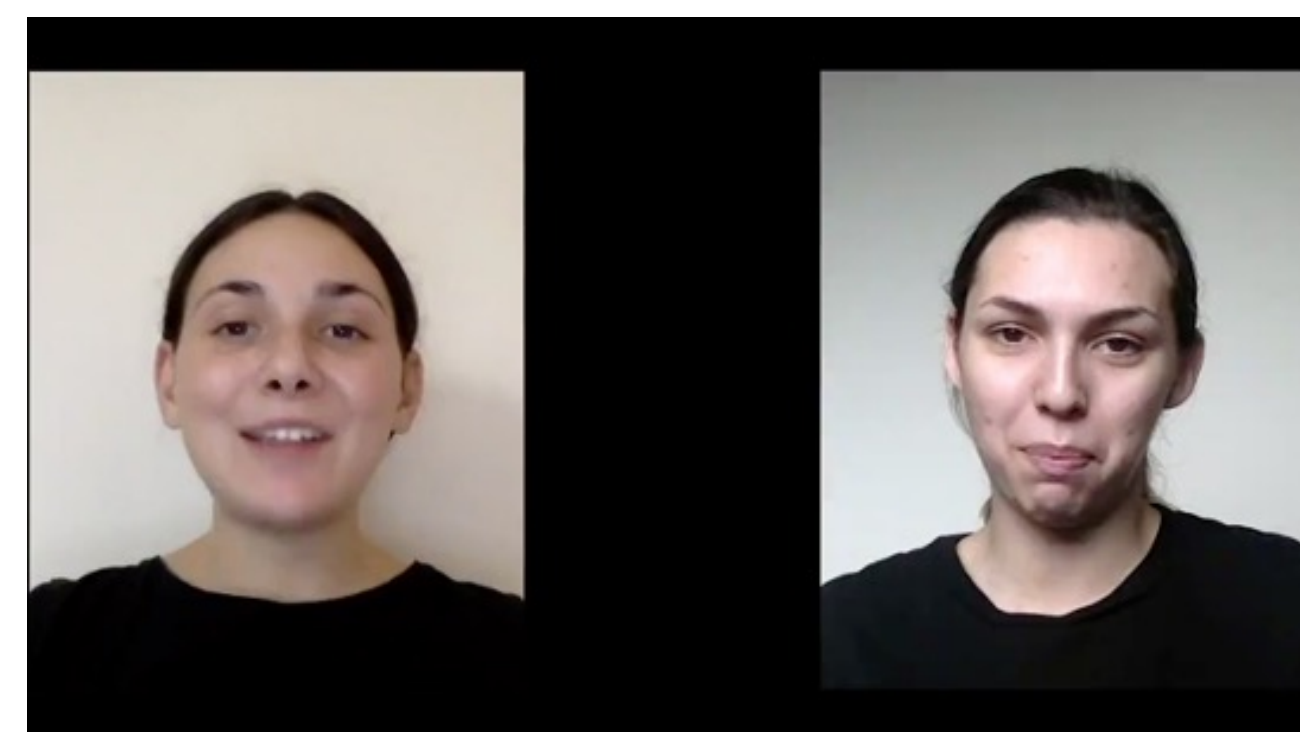
Bahrick, L. E., & Lickliter, R. (2000). Intersensory redundancy guides attentional selectivity and perceptual learning in infancy. *Developmental psychology*, 36(2), 190.

Funding

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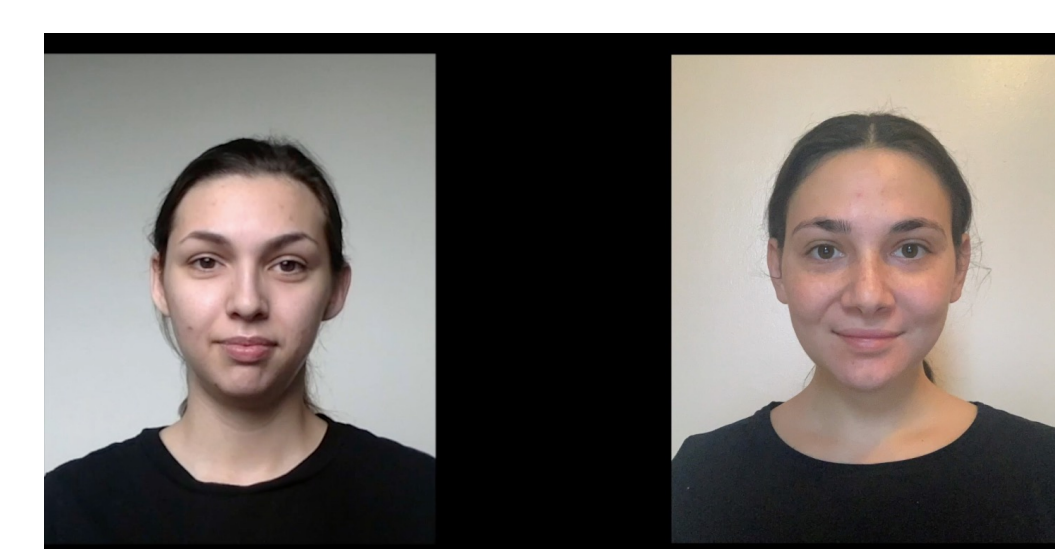
PROCEDURE

Familiarization. Infants viewed two videos simultaneously (Exp 1) or one video (Exp 2). The familiarization lasted for 30 seconds.

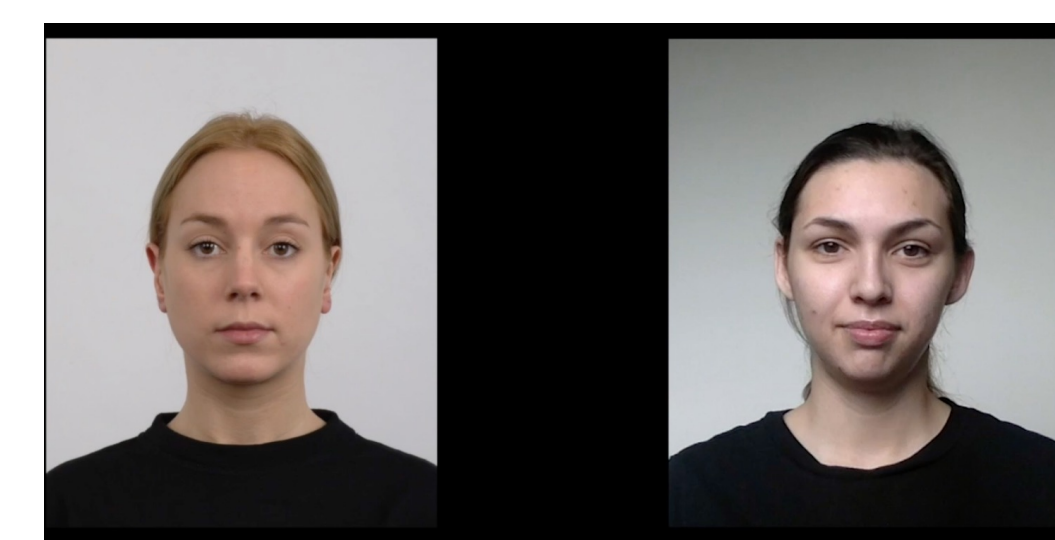


Familiarization
Two dynamic faces

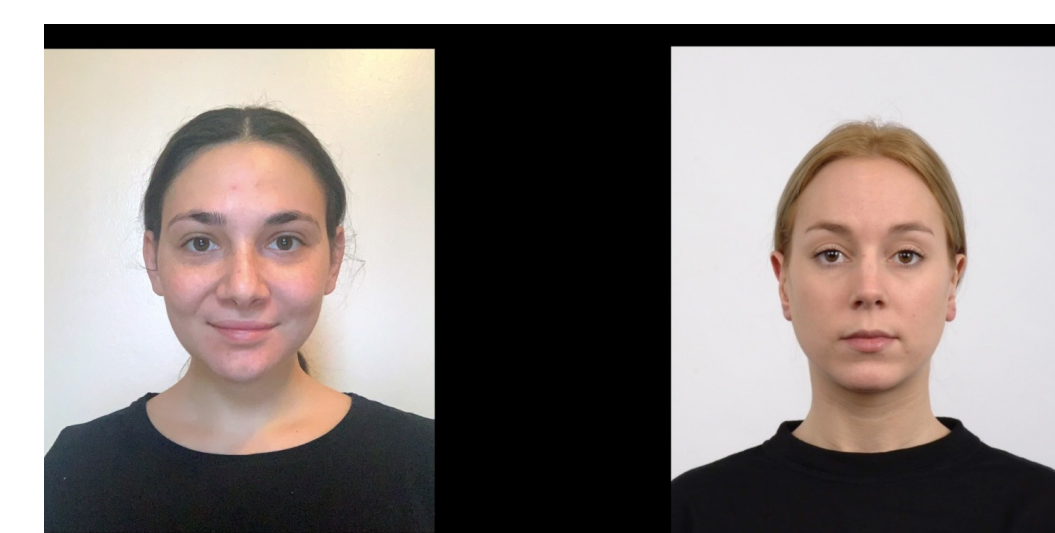
Visual paired-comparisons (VPCs). Pairs of static pictures, lasted 7.5 s each.



VPC 1
Faces viewed during familiarization



VPC 2
One face from familiarization, one novel face



VPC 3
The other face from familiarization, one novel face

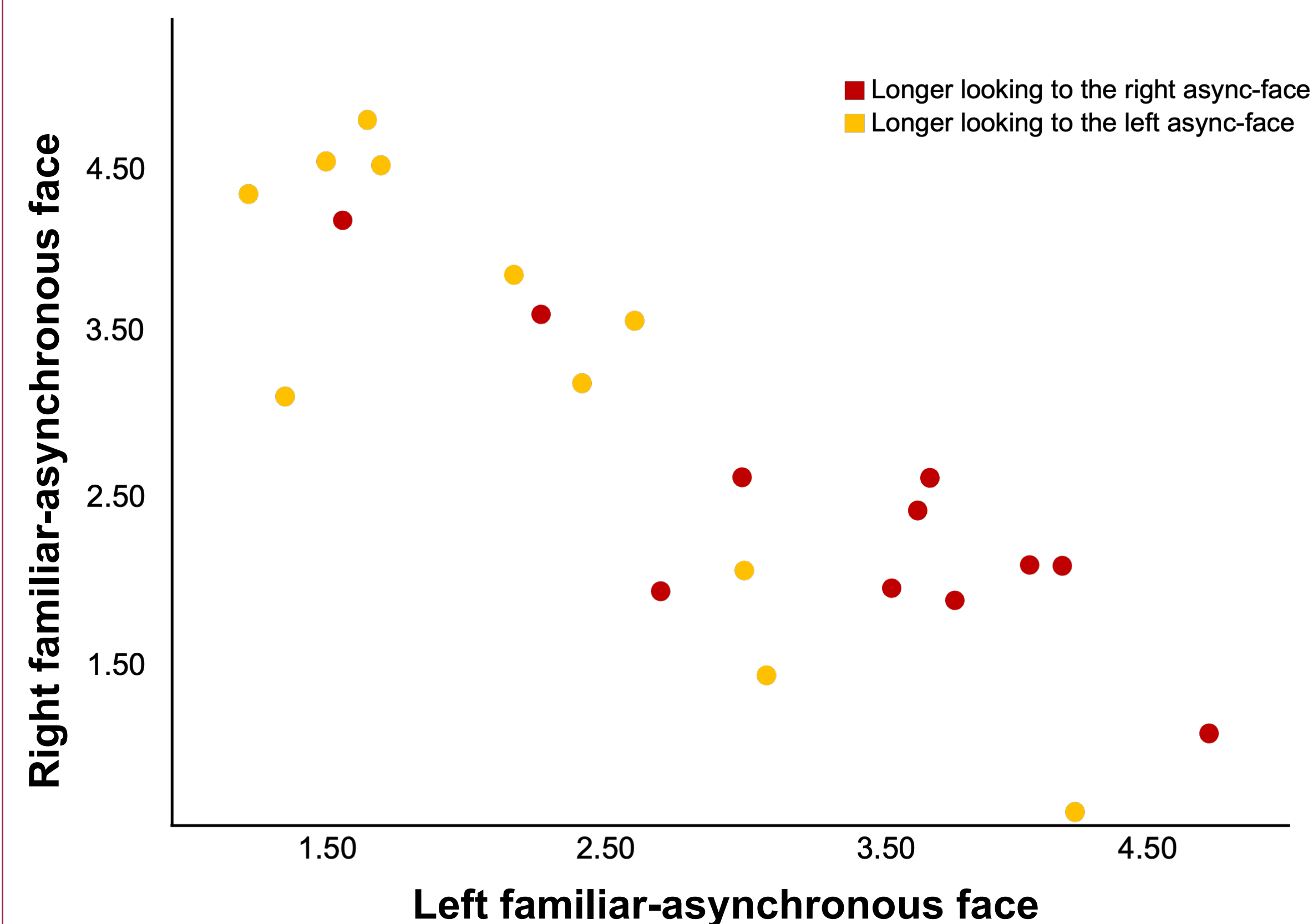
Data Coding and Analysis

We used Datavyu (2014) to code and process the data. We employed one-sample t-tests to test for looking preferences by determining if look durations to VPC stimuli were above the chance value of 50%.

RESULTS

Experiment 1

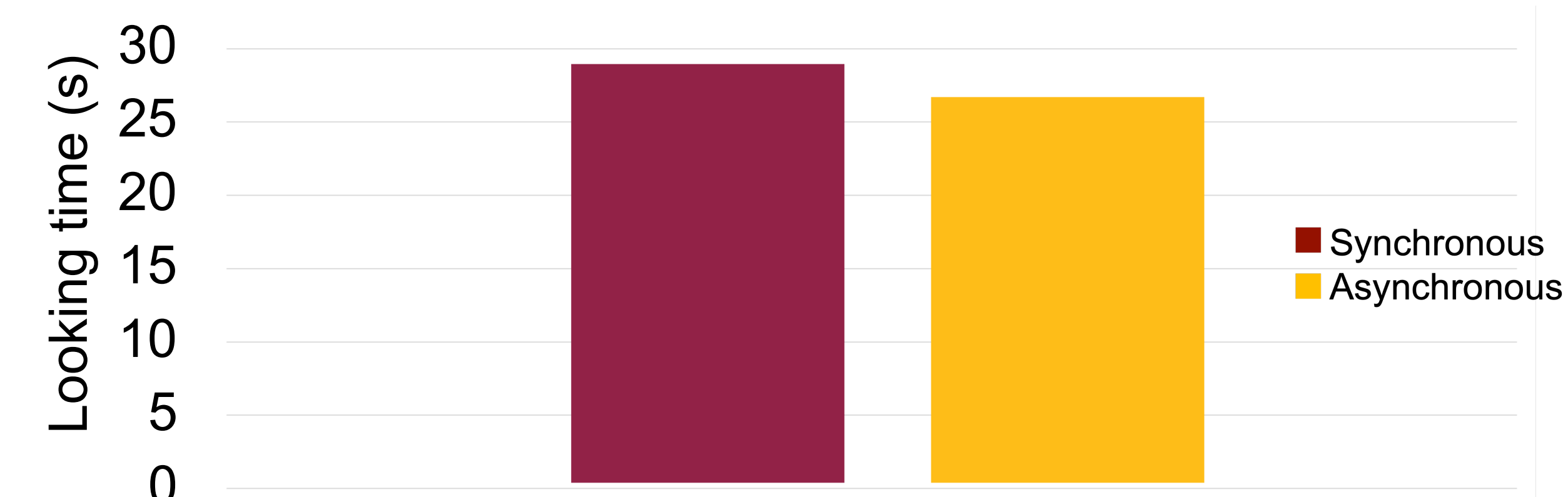
- The results showed that **neither experimental nor control groups demonstrated face preferences** during familiarization or VPC trials.
- Qualitatively, we found **some participants in the control condition that showed a preference** for one face over another during familiarization also showed evidence of preference for the more novel face during the VPC.



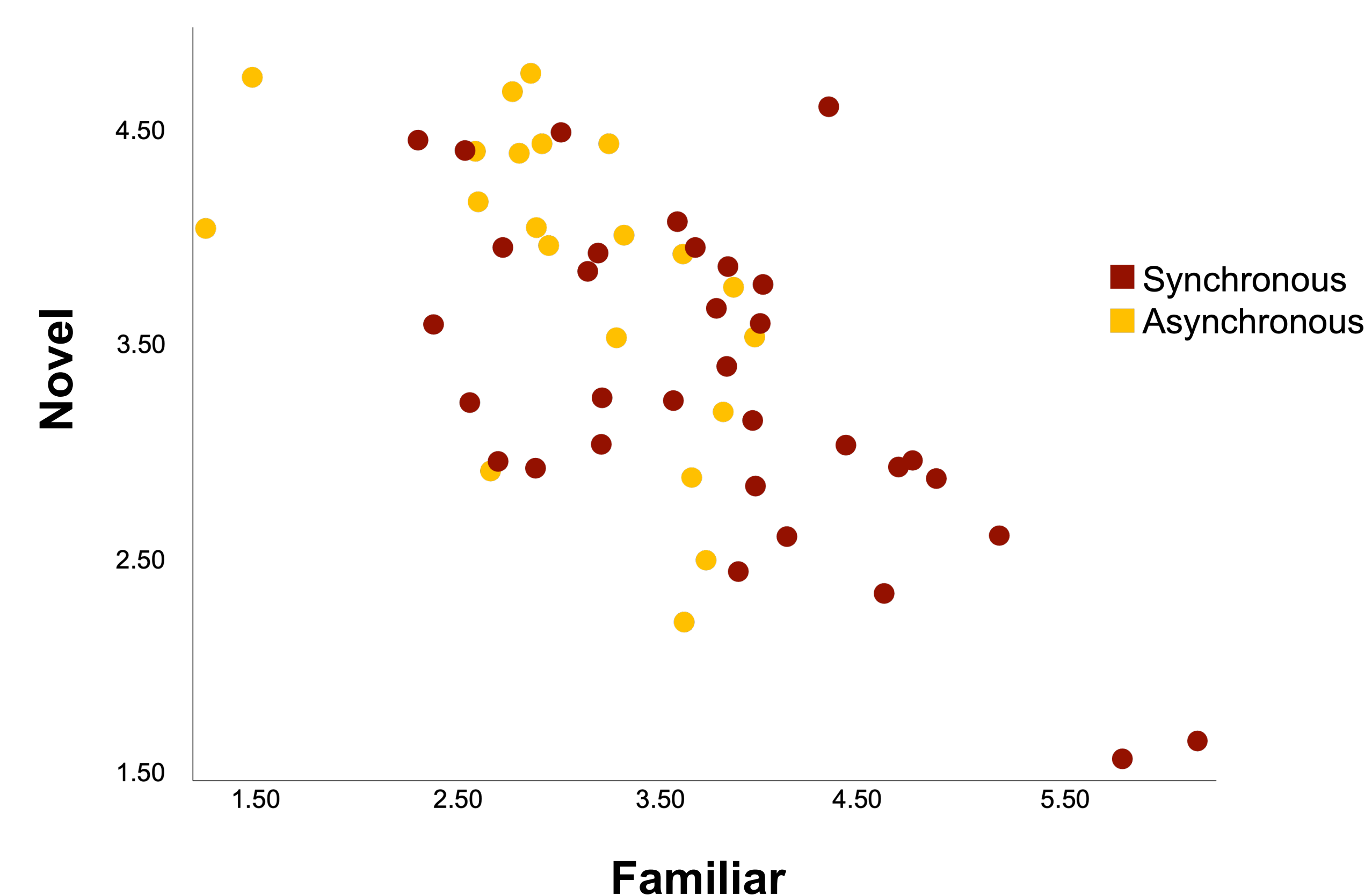
Experiment 2

- Infants in the **synchronous group looked longer during the familiarization** (27.99 s) than the asynchronous group (26.01 s), $t(55) = -2.334$, $p = .023$.
- The synchronous group did not show any familiarity or novelty preferences during the VPC trials. **The asynchronous group displayed a novelty preference**, looking at the novel face 55% of the time, $t(20) = 2.520$, $p = .02$.

Familiarization – Synchronous vs. Asynchronous



VPC – Familiar vs. Novel



DISCUSSION

- Participants in Experiment 1 did not show evidence of face recognition. This may be due to the **complexity of the familiarization phase**, including multiple dynamic stimuli.
- In Experiment 2, participants in the synchronous condition showed greater attention during familiarization than participants in the asynchronous condition. However, infants in the synchronous condition did not show evidence of face recognition. This indicates that a **processing advantage was seen for the amodal information over modality-specific facial information**.
- Infants in the asynchronous condition of Experiment 2 demonstrated face recognition. This may indicate that **naturalistic face processing takes place during periods of time that are not characterized by intersensory redundancy**.
- This line of research can benefit from the use of neural methods, including event-related potentials (ERPs), to examine neural correlates of face processing and infant attention.