Introduction

Infant-directed speech (IDS) is a specialized speech register used by adults and children when speaking to infants. Typically, IDS has higher mean fundamental frequency, broader F0 range, repetition of phrases and prosodic patterns, hyper-syllabification, and simpler syntax than adult-directed speech (ADS) (Ferguson, 1954; Fearon, 1942; Emmorey & Seron, 1986; Kuhl & Atchison, 1997). The acoustic properties of IDS are a function of conversational context, our intent, and affect (Emmorey, 1991). Different prosodic patterns have been identified as having specific functions, such as approving, comforting, postponing, and attention-getting. If an infant is upset, adults tend to speak in comforting utterances, whereas when adults seek to praise or encourage behavior, infant-directed speech (IDS) patterns can be distinguished by dynamic and summary acoustic features such as mean fundamental frequency, or frequency range within utterances, and pitch range. Recognition of speech genres within infant-directed speech is critical for categorization of conversations and for understanding the role of vocal and prosodic cues in communication.

Experiment 1: Assessing Acoustic Asynchronous Audio-Visual Speech

Methods:
- Participants: 40 videos taken from 10 female talkers, each producing 2 comforting and 2 approving utterances.
- Stimuli: 40 videos taken from 10 female talkers, each producing 2 comforting and 2 approving utterances.
- Asynchronous pairs were created by pairing similar-length approving audio tracks with comforting video tracks for each talker, and vice versa.
- Procedure: Habituated to 6 videos of either approvals or comforts.

Figure 1: Six-Month-Old Infants' MLT

Background and Aims

Previous research investigating IDS categorization by younger infants has produced conflicting results as a function of visual stimuli. When presented a crossmodal image while listening to IDS, a month-olds categorized approving and comforting IDS, whereas 6-month-olds categorized asynchronous audio-visual pairs as synchronous (Atchison, Spence, & Touchstone, 2008). Infants also categorize IDS when they view the natural audio-visual synchronous visual information (Atchison & Spence, 2009).

These findings suggest younger infants can categorize IDS with just the auditory information or the audio and visual information together as presented in natural video format. Yet, when presented with a static or asynchronous video, infants categorized IDS as synchronous. A category bias that infants may use for categorization is that an infant is more likely to begin to explore an audio-visual pair if it appears that it is very similar to a visual stimulus. This is the reason why infants who are category proficient at categorizing IDS may use the visual information to begin to explore an audiovisual pair.

Discussion

When viewing either type of asynchronous stimuli, 6-month-olds failed to categorize approving and comforting IDS. Infants in both experiments did not categorize new examples from the novel category than new examples from the habituation category. No change in looks at visual stimuli when the acoustic speech information conflicts with the audio speech in either temporal properties or communicative intent.

Conclusions

This research investigated infants’ categorization of IDS when the auditory and visual temporal properties of the IDS speech did not match the audio speech. Experiment 1 examined the impact of asynchrony between the visual and audio speech on infants’ categorization of IDS. The results are consistent with previous research that has shown that infants’ categorization of IDS is affected by the type of visual stimuli infants see while hearing speech. Six-month-olds did not separate context-specific and synchronous speech when the audio and visual speech were asynchronous, in contrast with the findings of previous research.

Experiment 2: Assessing Acoustic Asynchronous Audio-Visual Speech

Methods:
- Participants: 6-month-olds.
- Stimuli: Same as Experiment 1, but asynchronous pairs were matched within intent category as well as talker. For example, the audio of stimulus “Good job!” was matched with the video of stimulus “Great job!” but these stimuli were only mismatched on intent.

Results: No support for categorization was found.

Figure 3: Six-Month-Old Infants' MLT

Background and Aims

IDS categorization may be prerequisite for this communicative function of IDS. This research illuminates the impact of facial speech on IDS categorization and consistency with findings that 6-month-olds’ categorization of IDS is disrupted by asynchrony between facial and audio speech.

References


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