

Infants Deploy Selective Attention to the Mouth of a Talking Face When Learning Speech

Lewkowicz, Hansen (2012)

ABSTRACT

The mechanisms underlying the acquisition of speech-production ability in human infancy are not well understood. We tracked 4–12-mo-old English-learning infants' and adults' eye gaze while they watched and listened to a female reciting a monologue either in their native (English) or nonnative (Spanish) language. We found that infants shifted their attention from the eyes to the mouth between 4 and 8 mo of age regardless of language and then began a shift back to the eyes at 12 mo in response to native but not nonnative speech. We posit that the first shift enables infants to gain access to redundant audiovisual speech cues that enable them to learn their native speech forms and that the second shift reflects growing native-language expertise that frees them to shift attention to the eyes to gain access to social cues. On this account, 12-mo-old infants do not shift attention to the eyes when exposed to nonnative speech because increasing native-language expertise and perceptual narrowing make it more difficult to process nonnative speech and require them to continue to access redundant audiovisual cues. Overall, the current findings demonstrate that the development of speech production capacity relies on changes in selective audiovisual attention and that this depends critically on early experience.

SUMMARY & SIGNIFICANCE FOR GEMIINI

Research on eye gaze shows that a focus on the mouth is critical for the beginning stages of speech. This study explores the reasons that may be true. We know that children on the autism spectrum tend to look away from faces and most studies have shown they look away from the mouth as well. GemiIni's filming approach is intentional on its direct and full screen focus on the mouth. It is our belief that this additional and forced, but passive, focus on the mouth –without the stress of a real person saying “look at me!”--could create the additional visual support that ASD children need when processing information.

QUOTATIONS

“What mechanisms might facilitate the acquisition of speech production capacity during infancy? One possible mechanism might be the deployment of selective attention to an interlocutor's vocal tract during social interactions. Such a mechanism can provide infants with direct access to the tightly coupled and highly redundant patterns of auditory and visual speech information and enable them to profit from the fact that audiovisual speech is perceptually more salient than auditory-only speech.”

“[O]ur findings indicate that the period between 8 and 12 mo of age is critical because typically developing infants rely on redundant audiovisual speech cues to acquire their speech production abilities during this time.

LINK TO STUDY

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3277111/>