



WHAT YOU HEAR IS WHAT YOU SEE:

Visual information can hinder auditory detectability early in development

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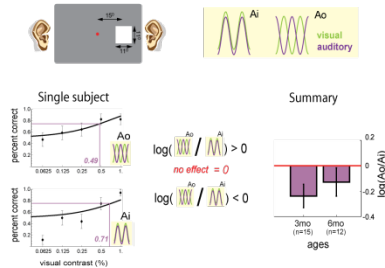
INTRODUCTION

Whereas a great deal of research in adults has examined how simple visual stimuli, providing no lateralized spatial information, can influence the detectability of a sound (e.g. Bolognini et al., 2005; Lovelace, et al., 2003; Odgaard et al., 2004), little is known about similar influences on low level auditory detectability early in development.

In a similar experiment, examining the influence of auditory stimuli, providing no spatial information, on low level visual detectability, Ciaramitaro & Dobkins found that a task-irrelevant sound could influence visual contrast sensitivity, in 3- and 6-month olds.

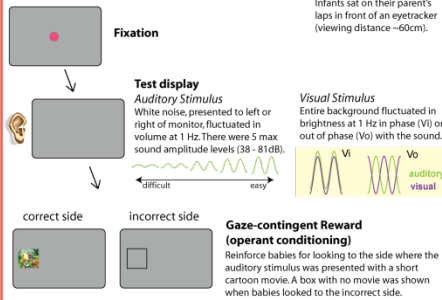
Here we examine whether task-irrelevant (non-spatial) visual information helps or hinders adults and 3- to 8-month old infants' ability to localize near-threshold auditory stimuli.

Previous findings (Ciaramitaro & Dobkins):

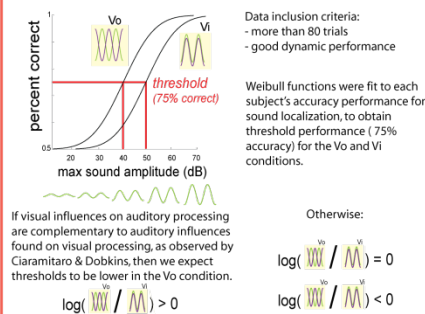


METHODS

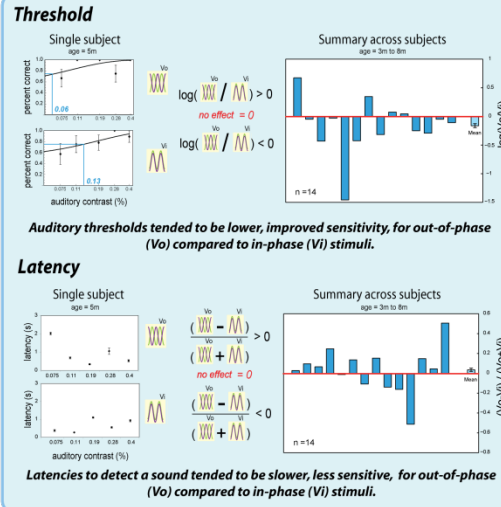
Subjects' gaze behavior was assessed using two-alternative forced choice preferential looking as measured by a Tobii TX 300 eyetracker.



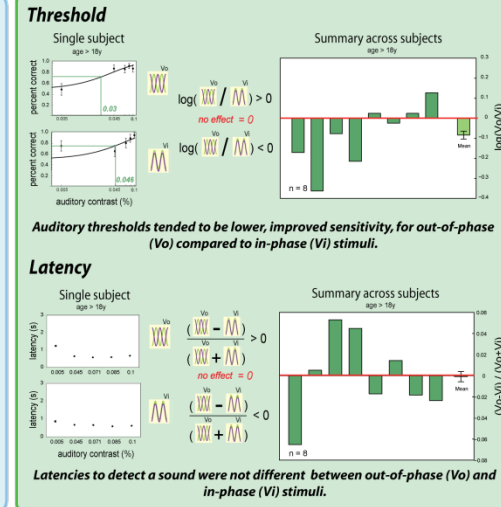
Analysis & Expected results:



RESULTS: INFANTS



RESULTS: ADULTS



DISCUSSION

General effect of non-spatial visual information:
 - Our results thus far suggest a trend of smaller threshold for out-of-phase (Vo) stimuli, than in-phase (Vi) stimuli, consistent with our previous results of auditory influences on visual processing (Ciaramitaro & Dobkins, 2013), implying a complementary interaction between visual and auditory processing in infants.

- The results from adults observers were similar to that from infants, awaiting for more data to confirm whether the interaction between vision and audition remains symmetric with development.

Future Research:
 Using pupillometry to further our understanding of the limitation or enhancement of auditory processing induced by non-spatial visual information.

References:
 Bolognini et al. (2005). "Acoustical vision" of below threshold stimuli: interaction among spatially converging audiovisual inputs. *Exp Brain Res*, 160(3), 273-82.
 Ciaramitaro, V.M., & Dobkins, K.R. (May 2013). The development of cross-modal attention: When can a sound help visual detection. *J Vis*, 13(5), article 087.
 Odgaard, E.C., Arnh, Y., Marks, L.E. (2004). Brighter noise: sensory enhancement of perceived loudness by concurrent visual stimulation. *Cogn Affect Behav Neurosci*, 4(2), 127-32.

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