



Infants' Attention to Auditory and Visual Stimuli

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Purpose and Methods

The purpose of this study is to compare infants' attention to dynamic auditory and visual stimuli presented in infant-controlled habituation procedures.

Participants and Design

- 6-month-old infants ($n = 31$, $M = 185$ days, $SD = 15$ days)
- Attention to stimuli compared in 2 infant-controlled categorization experiments (counterbalanced)
 - Auditory stimuli; infant-directed speech utterances spoken by females
 - Visual stimuli; videos of female emotional expressions
- Stimuli presented contingent on attention-getting visual stimulus
- Each stimulus presented for 30 s or until 1-s look away ended trial



Discussion

Infants' attention is better maintained by auditory IDS than dynamic visual face stimuli

- Results consistent with finding that addition of auditory track to visual facilitated infant attention at 6 months (Shaddy & Colombo, 2004)
- Infants may more easily disengage from visual than auditory stimuli

Visual attention measures may not be assessing general-purpose processing mechanism

- Rather, responses depend on stimulus properties in addition to processing speed and strategies.
- The results have implications for interpreting assessments of infant processing and cognitive performance based on attention to visual stimuli only.

More research comparing auditory and visual attention is needed to determine if short and long looking time is related to short and long listening.

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- (Og̃oole, Harms, Snow, Hurst, Pappas & Abdi, 2005)

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Abstract

This study compared infants' attention to dynamic auditory and visual stimuli. Six-month-olds experienced auditory (infant directed speech), and visual stimuli (emotionally expressive faces) during two different habituation paradigms. Attention (looking time) to auditory stimuli was greater than attention to visual stimuli, suggesting that auditory information is more effective at maintaining infants' attention. The findings have implications for interpreting assessments of infant processing based on attention to visual stimuli only. Additional research is needed to explore the relation between auditory and visual attention and if auditory attention provides unique information about cognitive processing.

Introduction

Much research has examined infant attention to visual static stimuli.

Individual differences in looking time are related to concurrent and later measures of cognitive performance (Colombo et al., 1995, 1988; Rose et al., 1986, 2002).

- Short lookers perform better than Long lookers
- Short looking associated with faster processing and better recognition memory (Rose et al., 1999, 2001)

Few studies have used other types of stimuli, such as dynamic visual, auditory, or social stimuli to test if attention is influenced differently as a function of the stimuli.

Motion influences infant and adult face recognition (Otsuka, in press; Roark et al., 2003)

Infants attend longer to dynamic visual and dynamic visual + auditory than static visual alone (Shaddy & Colombo, 2004)

This study compared infants' attention to dynamic auditory and visual social stimuli.

- Is there stability in looking time for auditory and visual stimuli?
 - If so, then visual attention measures are assessing a general attentional process.
 - If not, then attention performance reflects the influence of stimulus properties on processing.

Auditory Experiment: Categorization of Infant-Directed Speech

Infant-Directed Speech (IDS) Stimuli

- Recordings (1s) of Comforting & Approving female IDS

Habituation Paradigm

- On each trial, 1 of 6 IDS stimuli spoken by different voices
 - Habituated to comfort or approval
- Habituation criterion: 3 consecutive trials decreased 50% or below 1st 3 trials of habituation
 - (Habit 2000; Cohen, Atkinson & Chaput, 2000)

Visual Experiment: Categorization of Dynamic Facial Expressions

Facial Expression Stimuli

- Videos (3 s) of Happy & Disgust dynamic female faces
 - DOD/DARPA Human ID project (Og̃oole et al., 2005)

Habituation Paradigm

- On each trial, 1 of 3 faces presented in series
 - Habituated to happy or disgust
- Habituation criterion: 3 consecutive trials decreased 50% or below 1st 3 trials of habituation
 - (Habit 2000; Cohen, et al., 2000)

Results

- Mean looking time (per trial) during habituation:
 - Auditory IDS ($M = 9.28$, $SE = .78$) >
 - Visual DF ($M = 6.69$, $SE = .51$)
 - two-tailed paired-samples $t(30) = 2.85$, $p < .01$

- Individual-subject data:
 - 21 infants attended longer to auditory
 - 7 infants attended longer to visual

- Correlation of auditory & visual looking times
 - $r(29) = .10$, $p = .57$

Comparing Auditory and Visual Attention in 6-month-old infants

