
The development of the visuo-tactile temporal binding window for infants aged 4- to 8-months-old.

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Abstract

Previous studies have shown that audio-visual temporal binding windows decrease in duration from infancy to adulthood. But this developmental trend may not be seen across all sense pairings (e.g., due to differences in the sensorimotor biomaturational constraints across sensory modalities). Here we investigated whether there are developmental changes in visuo-tactile temporal binding between 4-8 months of age concerning visual and vibrotactile stimuli presented on infants' feet. This age range was chosen as infants typically develop reaching behaviour (another visuo-tactile skill) during this age span. Therefore, a short reaching task was also carried out to explore potential connections between this ability and infants' visuo-tactile temporal binding. Infants were first habituated to vibrotactile and visual stimuli presented simultaneously. Stimuli were presented for 700 milliseconds on alternating feet with an interstimulus interval of 1500 milliseconds. Trials continued until the infant looked away for 2 continuous seconds. Once an infant had reached the habituation criterion (50% less total looking across the most recent 3 trials compared to the first 3 trials), they were presented with four test trials: the familiar synchronous trial and three asynchronous trials (where the light's onset was delayed by 100ms, 250ms, and 400ms respectively). The order of these four test trials was counterbalanced across infants. Infants' total looking times in each test trial were recorded, along with their age (in days), sex, and reaching ability. Preliminary findings from 28 participants indicate that infants are able to segregate visual and tactile stimuli presented with 100ms between them across the age range.

Keywords: Developmental, Self perception, Body representation, Visuotactile

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