Infant pro gap

The Gap-overlap task (adapted from Elsabbagh, Fernandes et al. (2013)) is a gaze contingent paradigm that measures visual attention shifting between a central and a peripheral stimulus. This is thought to be a key sub process underlying behavioral control. The Gap-Overlap task contains three conditions; i) Gap, in which the central stimulus disappears 200ms before the appearance of the peripheral target; ii) Baseline, in which the central stimulus disappears simultaneously with the appearance of the peripheral target; iii) Overlap, in which the central stimulus remains on screen during peripheral target presentation. Key dependent variables: Latency to shift attention to the peripheral stimulus in the Gap vs Baseline conditions (Facilitation) and Gap vs Overlap conditions (Disengagement).

Stimulus

The Gap-Overlap task was based on Elsabbagh and colleagues (2013). Trials started with a clock (2.6° x 2.6°) expanding and contracting (maximum size 3.5° x 3.5°) at the center of the screen to attract the participant's attention. After the participant fixated the central stimulus, it started spinning with a speed of 500°/s to maintain the participant's attention. After 600-700 ms, a peripheral stimulus (a yellow oval, 2.6° x 2.6°) was presented at 19° to the left or right from the central stimulus. This 100 ms jitter in onset of the peripheral stimulus was implemented to decrease anticipatory saccades. The task contained a gap, overlap, and baseline condition. In the gap condition, central stimulus offset was 200.2 ms on average (*sd* = 1.69 ms, range 196.67-216.67 ms) before peripheral stimulus onset. In the overlap condition, the central and peripheral stimulus remained simultaneously and inanimately on screen. In the baseline condition, the

peripheral stimulus onset was at the same time as central stimulus offset. The peripheral stimulus stayed on screen until the participant fixated it or until 1500ms elapsed. Upon fixating the peripheral stimulus, or if 1500ms elapsed, the peripheral stimulus spun and contracted over 1000ms. This feedback was combined with various sounds (e.g., a car horn, a bell). The Gap-Overlap task consisted of 12 trials per condition, randomly presented.

Apparatus

The Tobii TX300 eye-tracker (Tobii Technology, Stockholm, Sweden) with an integrated 23-inch monitor (1920 by 1080 pixels; 60 Hz refresh rate) was used to record infants' eye movements. Median measurement precision for all detected fixations was 0.42° root mean square (RMS) noise (SD = 0.20°) in Session 1 and 0.42° RMS noise (SD = 0.21°) in Session 2. The Tobii TX300 ran at 300 Hz and communicated with MATLAB (version R2015b, MathWorks Inc., Natick, MA, USA) and the Psych Toolbox (version 3.0.12;Brainard, 1997) running on a MacBook Pro (OS X 10.9) via the Tobii SDK.

Procedure

Familiarization and positioning (65 cm in front of the eye-tracker) of the infant was performed as is described in Hessels et al. (2015). The system-controlled calibration procedure consisted of a contracting circle that was consecutively presented at all four corners and the center of the screen. Upon full contraction, the point was calibrated, after which it moved to the next point and expanded again. The circles were coupled with sound. If calibration was judged insufficient, the calibration was repeated. The gap-overlap task started after calibration. The infants' looking behavior was followed real-time via a webcam. If the infant lost

attention, the experimenter attempted to redirect attention toward the task by playing sounds. The task including calibration lasted 10–15 min.

References:

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