Obviously feel free to ignore any of these suggestions – Let me know if you don’t see comments with Track Changes, since I’m not sure commenting shows up well (or at all) on every system.

Optic flow evokes different cortical activation across the scalp depending on the pattern of flow (radial vs. linear) and speed. These effects are seen both in adults (Fesi et al., 2014) and children (Gilmore et al., 2016). This study examined whether child detection of optic flow varies by pattern and speed in similar ways to adults’ (Adamiak et al., 2015), and the extent to which behavioral detection accords with patterns of brain activation.

Child observers (n=20; 5.3-8.5 years, 12 female) viewed two side-by-side, time varying (1.2 Hz coherent/incoherent cycle) annular-shaped (18 deg outer/5 deg inner diameter) optic flow displays at a viewing distance of 60 cm. One display depicted random (0% coherent) motion, while the other depicted radial or linear motion at one of four fixed coherence levels in one of two coherence level profiles: (20/40/60/80%) or (15/30/45/60%). Observers fixated centrally and judged which side contained coherent motion, indicating the choice by pointing to the monitor. The choice was entered by the experimenter via a keypress. Within a single run, speed was either 2 or 8 deg/s. Four runs were collected per participant in a single visit.

We analyzed proportion of correct responses and response times using generalized linear mixed effects modeling in R. As predicted, proportion of correct judgments increased, and the response times of correct judgments declined, with motion coherence. Fast optic flow patterns were perceived more reliably than slow, and radial patterns were perceived more reliably than linear. Taken together, the results suggest that school-age children’s abilities to detect radial and linear optic flow patterns in noise are somewhat less precise than adults’, although their biases toward faster radial patterns are adult-like. Combined with other prior EEG results, these data suggest that optic flow processing networks mature rapidly from infancy, but undergo less rapid, subtler change from mid-childhood to adulthood.