Do you see what I see? Comparing optic flow experienced by infants and their mothers

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Development of Gaze Patterns and Heading

Gaze patterns differ by task, but how do task-relevant gaze patterns develop?

Do infants and adults experience different optic flow patterns or flow at different speeds?

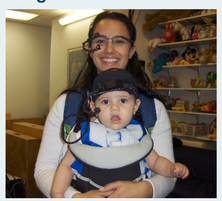
We compared patterns of eye and head motion produced while mothers carried infants down a hallway.

Eye-Tracking and Video Recording

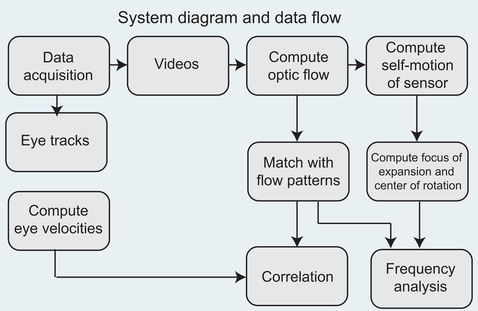
Mother/infant dyads (N=6) walked down a hallway.

Mothers and infants wore head-mounted eye trackers (800 x 600 pixels; 54° x 42°; 30fps)

More information on methods
www.positivescience.com
Franchak et al., *Child Development* 82, 2011



Data Processing



Acknowledgments

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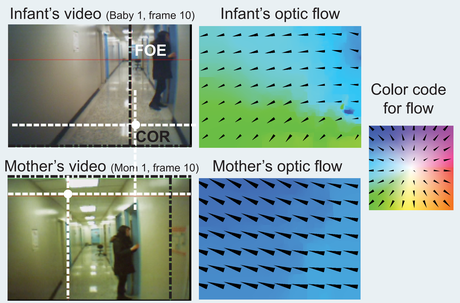
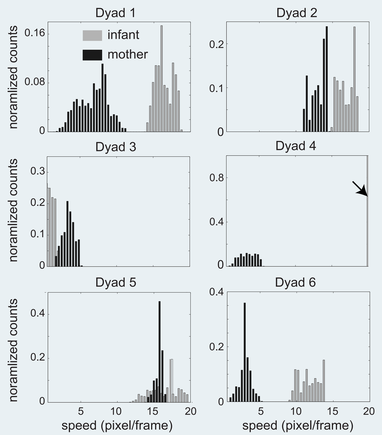
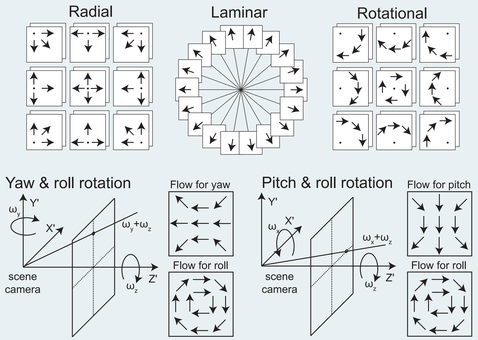
Estimating Optic Flow from Videos



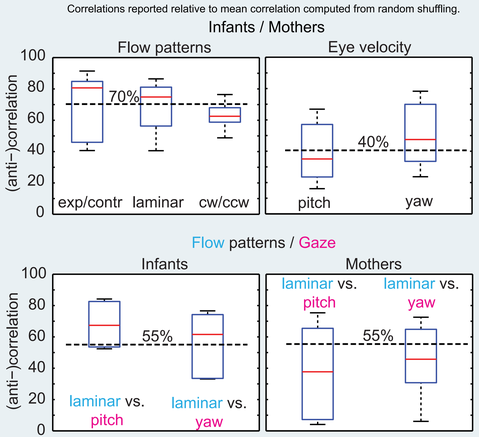
Results: Do infants and mothers experience similar speeds of flow?



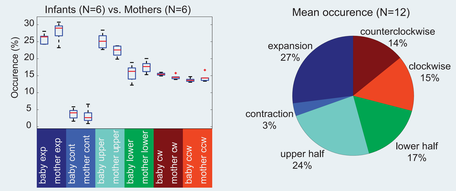
Matching Optic Flow against Pattern Type



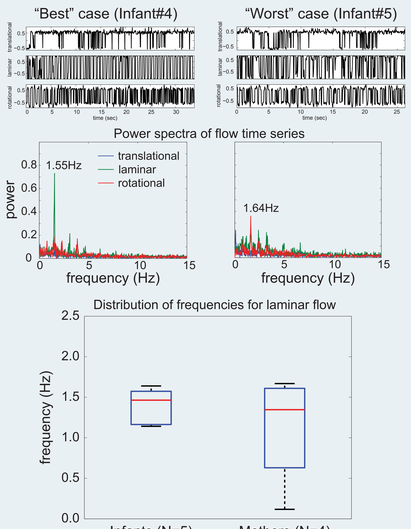
Results: Do flow patterns correlate -- between infants and mothers or between flow and gaze?



Results: Do infants and mothers experience flow types with equal frequency?

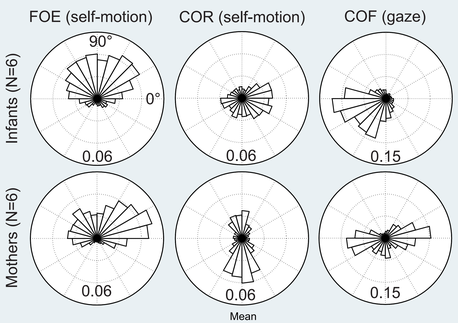


Results: Is there temporal structure to the patterns of optic flow infants and mothers experience?



Results: Where do infants and mothers look?

Focus of Expansion (FOE), Center of Rotation (COR), Center of Fixation (COF)



Results: Summary

Most infants experience faster flow speeds than mothers.

Infants and mothers experience correlated optic flow and in similar relative proportions.

Infant/mother gaze patterns correlate weakly.

Infants' horizontal/vertical gaze correlates with laminar flow. Mothers' gaze less strongly coupled to flow.

In infants, but not mothers, laminar flow showed a consistent temporal structure.

In infants, FOE pointed upward, consistent with downward head position, head rotations were around horizontal axis, and gaze pointed toward lower visual field.

In mothers, FOE pointed in upper visual field along the horizontal axis, head rotations were around vertical axis, and gaze shifted left/right more than up/down.

Conclusions

Infants and mothers experience somewhat different patterns of flow even when moving in the same visual environments.