

# Research Report Summary



Jodie M. Plumert, PhD, & Joseph K. Kearney, PhD 6/31/2017

## An Investigation of Peer Influences on Risky Child and Adolescent Pedestrian Road Crossing



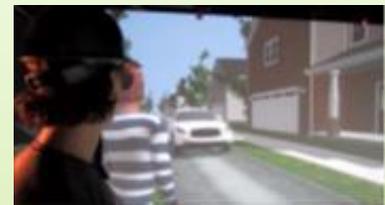
Pedestrian injuries and deaths caused by motor vehicle collisions are a major public health concern worldwide.

To date, most of the research on pedestrian safety has focused on how individuals interact with traffic. Although it is well known that the presence of peers in a car dramatically increases the risky behavior of teen drivers, little is known about how child and adolescent pedestrians cross

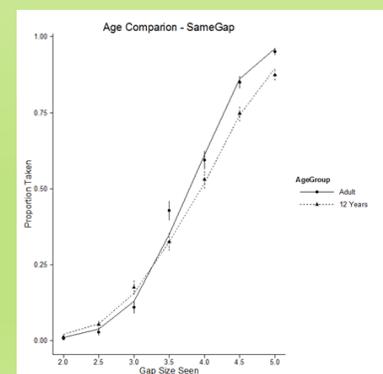
roads with peers, and whether joint road crossing with peers puts youth pedestrians at heightened risk for collisions with motor vehicles.

This project conducted two experiments investigating social influence on road-

### Road Crossing with a Computer-Generated Agent



Computer-generated agents were programmed to make risky or safe crossing decisions.



Gap choice response curves for adult and child road crossing

crossing behavior. The first experiment examined how adults and children jointly cross traffic-filled roadways with a real partner in a pedestrian simulator. The second experiment looked at how the riskiness of a real partner or a computer-generated agent influenced the road crossing of adult pedestrians.

Both experiments were conducted in our large-screen pedestrian simulator. Participants stood at the edge of a one-lane virtual road. A steady stream of traffic approached from the left, passed through the volume, and then continued down the road to the right. The position and orientation of the participants' heads were tracked in real time and used to render perspective-correct images. One novel technical development was the use of

*“This project highlights the importance of teaching children safe strategies for road crossing and emphasizes the importance of training children to be cautious when crossing roads in a group.”*

stereo imaging technology to display separate non-stereo image streams to two different participants.

The results of the two experiments consistently showed that participants were inclined to cross the same gap as their partner, even when not explicitly instructed to do so, and that in doing so, they tightly synchronized their movements with their partner. This was true for children and adults, for friendly and unacquainted partners, and for partners that were real or computer-generated agents.

The experiments also showed that adult participants often adjusted their gap choices and

the timing of their crossing to accommodate their partner – picking bigger gaps that allowed more time for crossing. Children were less likely to adjust their choices, leading to riskier road crossing.

Lastly, the experiments showed that the riskiness of the partner's gap choices influenced the riskiness of the gaps selected by the participant.

This project highlights the importance of teaching children safe strategies for road crossing and emphasizes the importance of training children to be cautious when crossing roads in a group.



## References

O'Neal, E.E., Jiang, Y., Franzen, L., Rahimian, P., Yon, J. P., Kearney, J.K., & Plumert J.M. (2017). Changes in perception-action tuning over long time scales: How children and adults perceive and act on dynamic affordances when crossing roads. *Journal of Experimental Psychology: Human Perception and Performance*. <http://doi.org/10.1037/xhp00000378>.

Nikolas, M., Elmore, A., Franzen, L., O'Neal, E., Kearney, J.K., & Plumert, J.M. (2016). Risky bicycling behavior among youth with and without attention-deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry*, 57, 141-148.