

Child Pedestrians' perceived risk of the crossing place

Hagai Tapiro, Yisrael Parmet & Tal Oron-Gilad

Presented at the TRB Pedestrian & Cyclist spotlight conference
 2016 Washington DC, USA

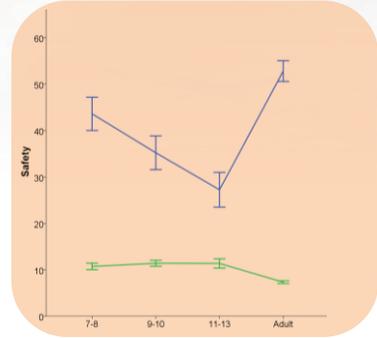


Fig. 1. Safety rate in all scenes and the average decision time for each age group.

Introduction. Crossing the road is a complex task that involves perception, cognitive skills and motor abilities. In order to decide whether to cross the road or not, one is first required to judge whether the crossing place is 'safe' or 'dangerous'; this decision is based upon experience, current situation and the anticipated conditions. The way pedestrians perceive a place as suitable for crossing may affect their awareness toward potential hazards and will affect the overall readiness and situation awareness. The aim of this work was to study the road-side factors that influence the way children evaluate the road as safe or dangerous for crossing.

Method. 24 elementary school children (ages 7-8, 9-10, 11-13) and 12 adult university students viewed 41 stills of real-world road-side scenes on a wide screen, and were asked to rate each scene for safety of crossing as fast as possible using a slide bar (0-100). Each scenario was classified by the general area it was located in (residential, commercial, industrial, indefinite), crossing location, proximity to road features (e.g., junction, road circle), type of road, number of lanes, and number of distractors (conspicuous elements in the environment). No driving vehicles were present in the scenes.

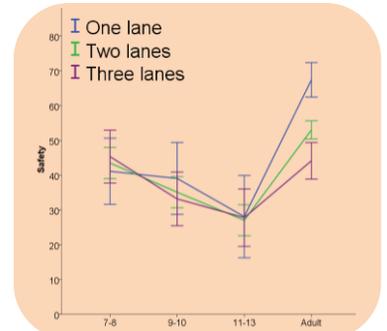


Fig. 2. Safety rate by each age group in relate to the number of lanes.

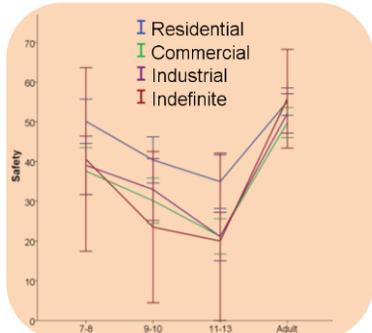


Fig. 3. Safety rate by each age group in relate to the area of the crossing.

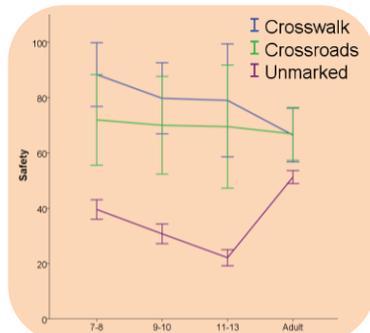


Fig. 4. Safety rate by each age group in relate to the to the crossing location.

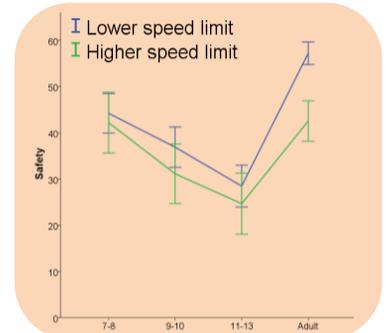


Fig. 5. Safety rate by each age group in relate to the driving speed in the road.

Results & Discussion. Children evaluate the safety of a place for crossing using more "obvious" factors in the environment that are "prone" pedestrians, like dedicated crossing locations. It seems that children look for certain reinsurance for crossing and ignore or are blind to other significant properties of the environment. In contrary, adults seem to base their decision more on higher order reasoning (e.g. time of exposure to danger derived from the number of lanes), which implies upon more sophisticated decision making process that improves with age/experience. The results also show that children are less secure in general when coming to cross the road and that it takes them longer to reach a decision. When the decision is made it is more diverse. Adults' fast decision can imply that they rely more on past experience and acquired knowledge, while children's varied answers may suggest that they are still making "new" decisions and that each of them perceives the scene in a different manner, even within the same age group.