The influence of demographic factors, processing speed and short-term memory on Iranian children's pedestrian skills

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Objectives: Young children, children from lower socioeconomic status and boys have the highest risk of pedestrian injury. This study examined the relationship between cognition and specific pedestrian skills of these groups of children in Iran.

Methods: 180 Iranian children aged 7 and 11 years from lower- and higher-socioeconomic status backgrounds participated in the study. A task to identify safe and dangerous road crossing sites and to plan a safe route to cross a road was administered to measure pedestrian skills. Coding and Digit Span subtests of WISC-R were administered to assess processing speed and short-term memory.

Results: Identifying safe/dangerous road crossing-sites and safe route-construction abilities increased with age. Boys scored higher than girls when identifying road crossing sites but did not differ to girls in route-construction. Lower socioeconomic status children scored higher than higher socioeconomic status children on the route-construction task. Girls from lower socioeconomic status backgrounds scored lowest on the identifying safe/dangerous sites task and girls from higher socioeconomic status backgrounds scored lowest on the route construction task. Speed of processing was a significant predictor for identifying crossing sites and socioeconomic status was a significant predictor for route-construction.

Conclusions: Pedestrian skills are complex and influenced by age, gender, socioeconomic status and cognitive development. Results are discussed in relation to child pedestrian safety research in Iran and road safety education for children.

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1. Introduction

Road traffic injuries (RTI) comprise almost 30% of all injury deaths amongst children globally (World Health Organization, 2009). The types of road traffic injuries that affect children are predominantly pedestrian injuries and disproportionately higher injury rates are found for boys and for children from low income households (Backett and Johnston, 1997; WHO, 2008). The majority of research studies on factors associated with children’s road traffic injuries have been carried out in high income countries. There is a scarcity of research on child road users in low to middle income countries where the majority of the world’s children live.

In Iran, road traffic poses a significant threat to health (Karbakhsh et al., 2008; Rezapur-Shahkolai et al., 2009). The rate of RTI in Iran is very much higher than the worldwide rate reported by WHO (2009), particularly for children (Global Burden of Diseases, 2010; Naghavi et al., 2009). In the city of Tehran, Roudsari et al. (2006) found that RTI comprised 50% of all unintentional fatal injuries for children aged less than 15 years. This is considerably higher than the global rate of 30% reported by the WHO (2008). Boys were reported to have higher rates of deaths and injuries than girls, up to 2.2 times as many (Karbakhsh et al., 2008; Rezapur-Shahkolai et al., 2009; Zargar et al., 2003). The majority of child RTIs were pedestrians (Karbakhsh et al., 2008; Roudsari et al., 2006). When compared to global trends, similar demographic factors affect Iranian children’s RTI statistics but the rates appear to be higher. Research on child pedestrian experiences and capabilities in Iran is scarce and there are several gaps in information needed to aid the development of prevention programmes (Tabibi et al., 2010).

1.1. Environmental context

Children in Iran face a dangerous traffic environment. Road traffic is dense in urban areas and pedestrian crossing facilities are scarce. The few pedestrian crossing facilities that exist are used infrequently and inappropriately. Consequently most Iranian parents who can afford it send their children to school by school bus