



# The effect of a road safety educational program for kindergarten children on their parents' behavior and knowledge



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## ABSTRACT

Road safety education for children is one of the most important means for raising awareness of road safety and for educating children to behave safely as pedestrians, bicycle riders, and vehicle passengers. The current research presents a novel attempt to examine the effect of a unique road safety educational program for kindergarten children on a secondary target group—the parents. The program, named the “Zahav Bagan” program (ZBP), is presented at kindergartens once a week during the entire academic year. It is conducted by senior citizen volunteers and is part of the formal education of the children.

The main purpose of the current study was to compare the behavior, awareness, and knowledge about child road safety, of two groups of parents—those whose children participated in the ZBP group, and those whose children did not; this latter group was the control group. A telephone-based survey was conducted using a sample of 76 ZBP parents and 59 control group parents. Results of the survey showed no effect of ZBP on parents' knowledge of child road safety law and recommendations, but more importantly, the results did show a significant effect in terms of parents' observance of safe behavior and in their awareness of road safety in everyday life. These results confirm the importance of educational programs on road safety, especially as triggers and reminders to children and to their parents, to act as cautious road users.

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## 1. Introduction

Children's involvement in car crashes is a main contributor to deaths of children between 5 and 14 years of age (e.g., [Andy-Findling et al., 2003](#); [Will, 2005](#); [National Center for Health Statistics \(NCHS\), 2013](#)). In Israel, according to the Israel Central Bureau of Statistics (CBS), between the years 2003–2010, on average, over 3500 children aged 0–14 were injured each year, as passengers or as pedestrians ([CBS, 2014](#)).

According to safety recommendations and the law in Israel, children of kindergarten age (5–6 years) are supposed to sit in the back seat of the vehicle, on a five-point harness safety seat or on a booster seat, while buckled with a shoulder belt. Although the law allows children from the age of three to sit on a booster seat, the recommendations are to sit children on a five-point harness safety seat until they reach a weight of 18 kg, and on booster seat until they reach a height of 1.45 m.

Studies that examined the risk factors for the involvement of children in car crashes found that the extent of parental involvement in the child's behavior on the road was a crucial factor, because children are most often under their parents' supervision and responsibility ([Ozanne-Smith, 1992](#)). Parents have the ability, through a number of agencies, to prevent or reduce the severity of injury to their children in case of car crashes. These include, among others, the use of child safety seats or seat belts, according to the child's age and size ([Dinh-Zarr et al., 2001](#); [National Highway Traffic Safety Administration \(NHTSA\), 2002](#); [Will, 2005](#); [Netherlands Institute for Road Safety Research \(SWOV\), 2012](#)); maintaining a strict routine of safe crossing at crosswalks; and guiding their children to always wear a helmet and safety gear while riding bicycles ([Andy-Findling and Levi, 2009](#)). Nevertheless, only 58% of Israeli children aged 5–9 were found to be regularly using booster seats and seat belts in their parents' car ([Cohen and Ben-Bassat, 2015](#)) and 27% of children aged 5–11 were regularly using helmets while riding a bicycle ([Gitelman et al., 2013](#)). According to a survey about parents' attitudes about child safety, it appears that parents tend to dismiss their responsibility for their children's injuries in crashes ([Andy-Findling and Levi, 2009](#)).

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Another risk factor for child involvement in car crashes is the fact that children have specific characteristics that affect their ability to behave cautiously as pedestrians or as bike riders. These characteristics, which raise the probability of getting injured on the road, are related to their physical structure (being short and vulnerable), and to their cognitive abilities (e.g., attention span, information processing, risk assessment, and distance assessment abilities) (Shinar, 2007). Studies show that children under the age of 9 have difficulty identifying danger while crossing the road, and base their decision to cross in the presence of cars in their visual field only (Ampofo-Boateng and Thomson, 1991; Oron-Gilad et al., 2011).

Many studies show that children between the ages of 5 and 7 lack the developmental skills to manage safely on the road (e.g., Schwebel et al., 2012; Oron-Gilad et al., 2011). For example, a recent study by Oron-Gilad et al. (2011), examined hazard perception differences in road crossing performance among child and adult pedestrians. Results of this study showed that children under 9 years of age demonstrated a low level of awareness to potential hazards (Oron-Gilad et al., 2011). Nevertheless, parents are not strict enough in teaching their children relevant safety rules and then reinforcing those lessons; too often parents allow their children to make decisions that put them at risk on the road, because the ability to make these decisions does not match their capabilities (Bergman and Rivara, 1991; Rivara et al., 1989). It seems that parents are not aware of their children's lack of skills and, therefore, do not educate and guide them as would otherwise be expected (Rivara et al., 1989). This assertion was tested in several studies in Israel and in the US, where researchers examined the reasons given by parents for not using a child safety seat for their children. According to these studies, one of the most common reasons for not using a child safety seat is the child's reluctance to being seated in a child safety seat or in a booster seat (Ebel et al., 2003; Cohen and Ben-Bassat, 2015; Bingham et al., 2006). Morrongiello and Barton (2009) argues that parents must be given the tools to educate their children for more cautious behavior on the road throughout the day. Her opinion is that giving tools to parents, combined with other support and educational activities, may raise parents' awareness and reduce children's injuries on the roads (Morrongiello and Barton, 2009).

One of the ways proven most effective in raising the awareness of road safety and in educating children about road safety is the use of educational programs given by the educational institutions. Intervention programs given to children in kindergartens and schools have been shown in many studies to have a positive effect on children's behavior, as pedestrians, bike riders, and as car passengers, and thus reduce the likelihood of them being injured (e.g., Ampofo-Boateng and Thomson, 1991; West et al., 1993; Thomson et al., 1998; Barton et al., 2007; Ben-Bassat, 2009; SWOV, 2012). These programs also contribute to road safety by serving as a knowledge base for the child's awareness—a knowledge base that will carry forward through the days after the child becomes a driver (Durkin and Tolmie, 2010).

The effectiveness of educational programs is rarely evaluated (SWOV, 2012), but studies that evaluated different programs showed success in promoting child road safety and child awareness of road safety. It seems that there are several relevant components that educational programs have, and that can affect their success. The first component is parents' participation in the program. It was found that parents' involvement contributes to a behavioral change among parents as well as their children (Limbourg and Gerber, 1981; Schwebel et al., 2012). An additional component that may affect the success of the program is its magnitude. The more intensive and prolonged the program, the more effective it is (Zeedyk and Wallace, 2003). A third component is the level of the program's compatibility to the participants, meaning, how well is the program suited to the children's age, abilities and understanding, and

whether the format in which it is being conducted is suited for children (for example, through games rather than lectures). Another component is the abilities and qualifications of the instructors in the program, meaning their level of knowledge and professionalism (Schwebel et al., 2012).

### 1.1. Zahav Bagan program (ZBP)

This study focuses on a unique road safety educational program for children, build and maintained by Ms. Ronit Raviv and Or-Yarok association. The program, conducted in over 1700 kindergartens in Israel, is called Zahav Bagan (translated from Hebrew as: 'gold in the kindergarten'). The word zahav has a double meaning in Hebrew—it means 'gold', referring to "golden age" (as in old age), and it is also an acronym that stands for Road Safety.

The Zahav Bagan Program (ZBP) is a unique volunteer-based educational program operated by the Or Yarok (Hebrew for: green light) association and conducted by senior citizen volunteers. The volunteers are 60–96 years old (mean 72) and mostly females (approximately 70%). They visit the kindergarten where they are assigned every week throughout the school year, and in cooperation with the kindergarten teacher, implement various activities related to road safety, based on a structures program. The volunteers start implementing ZBP in their assigned kindergarten after completing a personal interview by the area coordinator, learning about the program's goals and about ways to build a good relationship with the children based on trust, love and respect. The volunteers each provide an average of about 200 hours of volunteer work per year.

The objectives of the program are to: engrave the notion of road safety as "a way of life" among children; promote the awareness of community volunteer work—especially among volunteering seniors; create the possibility for volunteers in the community to take a significant role in kindergarten activity; and promote a bond between the senior citizen volunteers and the kindergarten children) see Hebrew reference: <http://www.oryarok.org.il/?p=4736>.

The activities in the program include themes dealing with children's behavior on the road, as passengers, as bike riders and as pedestrians. The volunteers are trained by professional road safety guides (who are also volunteers) and work under the supervision of the Or Yarok association. In addition, the volunteers receive a monthly edition of an educational manual that contains ideas for road safety activities (e.g., story reading, creative artwork, games, and quizzes) with relation to current holidays and events of the month. The program's main focus is on four core subjects: road crossing safety behavior, child behavior as vehicle passenger, safety behavior while riding a bike and safety behavior while playing outdoors. The novelty of this program is based on the cooperation of several different people working together: parents, teachers, senior citizen volunteers, and indirectly, the whole community.

The older population is often considered as a high-risk group in road safety, due to deterioration of their cognitive and physical abilities, as well as in the lengthening of their response time (Hakamies-Blomqvist, 2004; Gitelman et al., 2011). Nevertheless, taking an active part in community life is the foundation of good health among the older population, together with a sense of control and efficacy (Bar-Tur, 2005). Therefore, incorporating retirement age volunteers into educational programs for children in general, and education in the field of road safety in particular, allows volunteers to have positive influence in their own community, and to be exposed to road safety contents that can be helpful for their own safety as well as for the safety of the children. The integration of volunteers in kindergartens may also contribute to the sense of accomplishment and self-worth of the senior citizens.

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