

The Effectiveness of Educational Campaign for Improving Pedestrian Safety Behaviors

(Study among school students of two secondary schools in Djelfa)

Amar BENCHERIK *

Laboratory LSPLCDA University of Djelfa, Algeria

Received: 02-12-2018

Accepted: 19-12-2018

Published: 31-12-2018

Abstract

The school is one of the most important institutions of socialization and is very reliable in refining the young people in accordance with the philosophy of society and provide them with the most important skills that allow them to interact positively with the environment in which they coexist, so we can judge that the school is the best medium to pass any message of public benefit. In this study we examined the effectiveness of educational campaign in improving the behavior of the pedestrians. They are a sample of 86 students from two secondary schools (Al-Naeem Al-Naimi and Tahiri Abderrahman) in the city of Djelfa. These two secondary schools Were selected intentionally, because they are on the road and close to a crossroads equipped with traffic signals and traffic police. I adopted in this study the semi-experimental design using network observation as a tool for data collection. The results of T-test were statistically significant at 0.01 and support the hypotheses of the study where it was confirmed the effectiveness of the educational campaign and the existence of differences between females and males in response to the campaign in favor of females.

Keywords: Pedestrian; Road safety; Educational Campaign; Road users.

فاعلية حملة تربوية لتحسين سلوكيات السلامة لدى المشاة (دراسة على عينة من تلاميذ ثانويتين بمدينة الجلفة)

عمر بن شريك

مخبر استراتيجيات الوقاية ومكافحة المخدرات في الجزائر بجامعة الجلفة، الجزائر

الملخص

تعتبر المدرسة من أهم مؤسسات التنشئة الاجتماعية و يعول عليها بدرجة كبيرة في صقل الناشئة بما يتناسب مع فلسفة المجتمع و تزويدهم بأهم المهارات التي تسمح لهم بالتفاعل الإيجابي مع البيئة التي يتعايشون فيها، لهذا يمكن أن نحكم بأن المدرسة هي الوسط الأمثل لتمرير أي رسالة ذات منفعة عامة و المجال المناسب للقيام بحملات التوعية و التحسيس و نحن من خلال هذه الدراسة عملنا على قياس درجة فعالية حملة تعليمية تحسيسية في تحسين سلوك السلامة لدى المشاة أو مستعملي الطريق و هم عينة (86 فرد) من تلاميذ ثانويتي النعيم النعيمي وطاهيري عبد الرحمان في مدينة الجلفة و تم اختيار هاتين الثانويتين قصدا لأنهما على قارعة الطريق وعلى مقربة من مفترق طرق مجهز بالإشارات الضوئية و شرطة المرور، و اعتمدت في هذه الدراسة التصميم الشبه تجريبي بالقياس القبلي للسلوك عن طريق شبكة الملاحظة و من ثم التدخل و بعد ذلك القياس البعدي بنفس الأداة لتحديد الفارق و معرفة مدى فعالية البرنامج التربوي، و جاءت نتائج T-test دالة احصائيا عند مستوى دلالة 0.01 و داعمة لفرضيات الدراسة حيث تم التأكد من فعالية البرنامج التربوي و وجود فروق بين الإناث والذكور في الاستجابة لصالح الإناث.

الكلمات المفتاحية: المشاة؛ السلامة المرورية؛ حملة تربوية؛ مستعملي الطريق.

* E. Mail: bencherikamar@gmail.com

I- Introduction :

The road is known to be essential part of the modern city, but its face of beauty and facilitation brought with it danger, since the road problems are the most dangerous and complex problems that faces societies today, for the reason that human and material costs resulting from road accidents are enormous and estimated in billions of euros around the world.

Indeed, the World Health Organization (Peden, 2004) provided an important global perspective on the safety of vulnerable road users, reporting that:

- The risk of death in road crash is far higher for pedestrians, cyclists and motorcyclists, than for car occupants;
- Common driving errors and common pedestrian behavior should not lead to death and serious injury- the traffic system should help users to cope with increasingly damaging conditions; and,

The global focus on road investment for economic development and personal mobility has meant that the most vulnerable groups –pedestrians and bicyclists- have been largely overlooked, with a resultant heavy cost to the public health sector (congiu, et al., 2008).

Thus, widespread road accidents are related strongly to violations and bad behaviors of the road users, such violations increased with the presence of young children. Each year many pedestrian accidents involving high levels of injuries are reported. International research shows that older people and children have higher rates of accidents and injury while crossing roads than other age groups. The injury rate is highest at pedestrian crossings, leading to the conclusion that pedestrians may have a false sense of security at formal crossings (Turner, Roozenburg and Francis, 2006)

Children's experiences of traffic are often limited, because of a lack of exposure as a pedestrian. They have not developed sufficient skills to cross the road safely, before they begin to walk alone. These elements could explain a new peak in pedestrian's accident ology is observable in developed countries since the last 20 years, when the children become autonomous in their walking: that is at the beginning of the secondary school, on a longer travel, the children do not know at all (Demetre, 1997; cited in Turner, et al., 2011). Also It has been suggested that, due to immature and less well-developed cognitive, attentional, perceptual and visual skills, young children are less competent in traffic than older children and adults and this consequently increase their risk as pedestrians (Zeedyk, Wallace and Spry, 2002; Whitebread & Neilson, 2000; Sarkar, Kaschade, and de Faria, 2003; Tabibi & Pfeffer, 2002; DUNbar, Hill and Lewis, 2001, cited in congiu, et al., 2008). supplementary , research shows that young children experience particular difficulty in choosing a safe location to cross, judging safe gaps in traffic, being distracted by irrelevant information, attending strategically to traffic in complex traffic situations, judging the distance across the road and the speed with which one can propel oneself across that span, and controlling impulsive reactions (Barton & Shwebel, 2007).

Algeria, as ranking in the front places among the countries with high rate of road accidents is in the red zone, and this push for rapid and adequate action to establish a road culture in order to spread the awareness about the good use of the road, such efforts need the participations of all the members of the society and all the sectors, similar to what exists in other countries where road-safety campaigns for students and national programs are developed regularly with a big variety of material in the reach of the hand. Facing this evidence, it seems essential to develop the road education in Algeria, not only via formal canals like the ministers of education and transportation, but also through the active participation of citizens and associations. Because studies show that such efforts are really fruitful. It has been argued that, as behavioral factors play a large role in traffic safety, more effort should be placed on intervention programs aimed at teaching human behaviors and attitudes (Evans, 1999, cited in congiu, et al., 2008).

Some scholars (e g, Evans, 1991; Morrongiello & Kiriakou, 2006; congiu, et al., 2008) argue that children can be efficiently taught road safety skills and behaviors, even after a single

meeting or session, safety related behaviors and knowledge enhance among children, other studies, Hotz et al. (2004) conducted an evaluation of the Walk Safe program in Florida, USA. Children's knowledge of safety behaviors were tested pre, post and three months after the programs' implementation. In all grades, higher test scores were seen in post-testing conditions (Congiu, et al., 2008). Many other results of campaigns in USA, Europe, and Australia showed that the safety actions had a positive effect on pedestrian behavior. Conversely, some argue that results of the conducted campaigns were not constant at long term; therefore they suggest that campaigns need to be more practical to be more effective and permanent.

Regardless, the importance of road safety education and campaigns in changing the faulty behaviors of the children that leads to dangerous accidents, Algeria stay far away from reality, for this reason, the present study-campaign comes as a contribution to enhance the road safety culture in the country and as a part of the continuous research for the means that could help in reducing pedestrian violations and prevent accidents.

The objective of this study was to evaluate pedestrian behavioral changes that resulted from the road-safety campaign conducted by the researcher; hence, the following questions were investigated:

- Is the suggested program effective in changing the behaviors of road-users?
- Is there a significant difference between males and females on the observed behaviors after the application of the suggested campaign in favor of the female sample?

I.1. Hypothesis

- 1-There is a significant difference between the means of the experimental group and the control group after the application of the suggested campaign in favor of the experimental group.
- 2-There is a significant difference between males and females on the observed behaviors after the application of the suggested campaign in favor of the female sample.

I. 2. Study Objectives:

- This study aims to make contribution in the efforts of reducing road accidents.
- Building an effective campaign program.
- Contributing in the education of the youth.
- Participating in the establishment of safe-road culture.
- To find out whether there is any significant difference regarding the effectiveness of the campaign between males and females.

I.3. Limitations of the study:

The study limited to 86 as sample size due to the huge number of students in the two secondary Schools.

- We cannot observe all the unsafe behaviors of the students in relation to road safety, hence; the campaign concentrate only on behaviors related to the act of crossing the road.
- The homes directions of the students differ, therefore not all the students use the cross road after school, but all them cross the road to go home.
- The range of observations for the site was taken within 60 meters in each direction from the schools.
-

I. 4. The variables:

This section presents a description of the variables of the study:

Educational Campaign for Improving Pedestrian Safety: There are several countermeasures designed to improve traffic safety, which can be categorized into educational, enforcement, engineering, or a combination of any two or all three. This campaign is an educational countermeasure. The researcher identify the road-safety campaign as any activity using any approach and any type of content in relation to road safety in order to sensible a target group about the good and safe use of the road.

Road users and pedestrians: The researchers define the road users as all the persons who use the road as drivers or pedestrians, in our study the concept refers uniquely to the pedestrians and specifically the students of the two chosen secondary school.

II– Methods and Materials:

The experimental method is the adequate method for such studies, because it is the best way to study the real effect of a phenomenon or a variable, it enables the comparison between two samples one of them is experimental group, which is exposed to the independent variable and the other one is the control group.

II .1.Sample:

The sample consisted of 86 students from the two chosen secondary schools (Al-Naeem Al-Naimi and Tahiri Abderrahman) in Djelfa, and they were divided into two equal groups. The gender distribution of the sample was 65.42 percent females and 34.58 percent males. These figures closely represent the gender distribution of the Algerian school average.

II .2.The site of the study:

The study site (as it appears in **Figure.1**) selected for the “before” and “after” analysis was chosen for three reasons below:

- 1-All the roads of the nearest intersection to the schools are signalized or with police officer (yellow points in **Figure 1**)
- 2-All the roads next to the schools are with marked crosswalk (red lines in **Figure 1**)
- 3-All the accesses to the schools are by crossing the roads, which are not far from the schools; 7 meters in average (red lines in **Figure 1**)



Figure (1): The study site (adapted from google map)

II .3. Procedure:

The researcher contacted the two secondary schools headmasters; the plan was made to visit the randomly chosen class and to execute the prepared program after the approval of the headmasters and with their symbolic participation (as they show a huge interest in learning and participating in such activities). After several visits a climate of confidence was established and subjects were told that they would participate in road safety campaign.

The 86 subjects were divided in two groups after the first and second sequences of observations:

- The experimental group: 43 subjects.
- The control group: 43 subjects.

In order to guarantee the homogeneity the repartition of the subjects was done according to the following factors: results of the observation, sex, economic status, educational level.

As a first step of the experiment, the subjects were observed a twice using the observation network used in the study (the purpose was to ensure homogeneity), in the second step only the members of the experimental group were exposed to the suggested program during four days for each student (The tables 1 and 2 summarize the program). Finely all the students were observed a twice for the second time.

II .4.The campaign program:

The used program is prepared by the researchers according to the following steps:

- 1-The study of the scientific heritage that have relation with road safety.
- 2- Taking in count the advice and orientations of professors and practitioners in the field of road safety.
- 3-The repartition of the program into two dimensions: cognitive and behavioral.
- 4-Giving the program to psychologists and police officers in order to judge its adequacy, and according to their propositions the program was modified.

II .5.The general design of the campaign program:

The campaign program is divided into two sub-programs one of them is based on cognitive dimension and applied in the first and third day table (1), while the second one is based on behavioral dimension and applied in the second and fourth day table (2).

Table (1): The schedule of the first and third day of program

The Sessions	The Elements	Timing		Period
Session Oone	Order and duty	15 m	45 minutes	The morning
	The Benefits of Good behaviors	15 m		
	Road accidents (the causes)	15 m		
Session Tow	Road signalization	15 m	45 minutes	The afternoon
	Road accidents (the consequences)	15 m		
	Road accidents (how we avoid them)	15 m		

As it is illustrated in the table (1) each student receives 90 minutes of awareness based on knowledge and beliefs (cognition) during the first and third day.

Table (2): The schedule of the second and fourth day of program

The Sessions	The Elements	Timing		Period
Session Three	How I cross the road? (Peer discussion)	15 m	30 minutes	The morning
	Save a friend (Problem solving)	15 m		
Session Four	How I cross the road? (Peer discussion)	15 m	30 minutes	The afternoon
	Save a friend (Problem solving)	15 m		

As it is illustrated in the table (02) each student receives 60 minutes of awareness based on practices (behavior) during the second and fourth day.

II .6.Measures:

The study was based on direct observation, therefore the researcher was unable to observe all the students at once, consequently there was a require for support, thus a group of 10 students of master of psychology at the university of Ziane Achour participated in the observation and were equipped with directions and the network of observation which was prepared by the researcher according to the nature of the variables.

The network of observation was elaborated taking in count the following factors which reflect various behaviors while crossing roads:

- The use of pedestrians' path.
- Crossing without waiting for the traffic light change.
- Start crossing without seeing the road.
- Not seeing the road while crossing.
- Start crossing the second road without verification.
- Paying attention while crossing.

Each item of the network (the observed behavior) is evaluated in tow-point scale. Higher scores indicated good behaviors while the lower scores indicated violations.

II .7. Statistical procedure:

Statistical analysis was conducted with SPSS v22 software (Statistical Package for the Social Sciences). We used t- test to test the hypothesizes of the study (differences were considered statistically significant when $p < 0.05$)

III- Results and discussion :

III .1.The general results of the observation:

In this section we expose the general results of the four sequences of the observation during the study as it is illustrated in the table (03)

Table (03): The results of the observation

The mean	The experimental group		The control group	
	Frequencies		Frequencies	
	Observation one	Observation two	Observation one	Observation two
02	16	00	16	13
03	15	00	16	16
04	09	16	10	12
05	03	20	01	02
06	00	07	00	00
The total	43	43	43	43

As can be seen in the results, in both observations of the control group there is no big difference, however there is a considerable difference in the observations of the experimental group before and after the application of the campaign, therefore more statistical dealing is necessary in the next section.

III .2.Results related to the first hypothesis testing:

T-test (Independent-Samples T-test) analysis was undertaken to find out whether there is any significant difference between the experimental group and the control group after the application of the campaign, The results of t-test analysis between the two groups have shown a significant difference on the observed behaviors ($t = -11.86$, $df = 41$, $P = 0.01$), the total mean scores for the experiment group ($M = 4.79$) is higher than the mean of the control group ($M = 3.06$). Therefore the analysis rejects the null hypothesis and accepts the alternative hypothesis that there is a significant difference between the means of the experimental group and the control group after the application of the suggested campaign in favor of the experimental group.

Table (04) : Results of t-test for the first hypothesis testing

Outcome	Group						T	DF
	Experimental			control				
	M	SD	N	M	SD	N		
Observation (After)	4.79	1.24	43	3.06	1.55	43	-11.86	41

III .3.Results related to the second hypothesis testing:

T-test (Independent-Samples T-test) analysis was carried out to find out whether there is any significant difference between the male and female samples after the application of the campaign, the results of t-test analysis between the two groups have shown a significant difference on the observed behaviors ($t = -6.34$, $df = 41$, $P = 0.01$), the total mean scores for the female group ($M = 5.23$) is higher than the mean of the male group ($M = 4.11$). As a result the analysis rejects the null hypothesis and accepts the alternative hypothesis that there is a significant difference between males and females on the observed behaviors after the application of the educational campaign in favor of the female sample.

Table (05) : Results of t-test for the second hypothesis testing

Outcome	Group						T	DF
	Male			Female				
	M	SD	N	M	SD	N		
Observation (After)	4.11	1.45	24	5.23	1.32	19	-6.34	41

III .4.Discussion:

The main goal of this study was to explore the effectiveness of road-safety campaign in changing the behavior of road users, for this reason we conducted an experimental study using a road-safety program and we tested its effectiveness using a well elaborated network observation.

The significant difference found between the control and experiment groups support our first hypothesis that predicted a significant difference between the means of the experimental group and the control group after the application of the road-safety program in favor of the experimental group.

The significant difference found between the female and male groups is in line with our second hypothesis that predicted a significant difference between the means of the two groups after the application of the program in female sample.

These findings proved the effectiveness of the educational campaign program in changing the behavior of pedestrians. At the beginning almost all the students have showed no caution, even when they were crossing in a legal unmarked crosswalk. Many don't waited for a gap in traffic to cross the street and without paying attention to the traffic. A large portion of crossing pedestrians observed at the beginning cross the road without paying attention to the puffin. After the campaign had been executed, more behaviors of the students had changed and as noted in the Introduction the findings go with the results of previous studies.

The findings of the current study proves that there are, indeed, specific behaviors that may put the pedestrians in danger, especially, students coming out of school and hurrying because of the loaded program and penury of time, the risks increased by excessive use of mobile phones immediately after leaving and before reaching home. It is therefore important that the efforts of the family and the school be combined to educate the students and give them positive behaviors that help them protect themselves from the dangers of the road. These efforts must be sufficiently prepared and based on research to achieve the desired goals as in our current study.

As in the case of science and research, studies are not without weaknesses, i believe that there are a number of weaknesses in my study, mainly that i was supposed to make a frequent number of observations at intervals of time after the application of the campaign, but it was not the case because of time constraints and resources limitation.

IV - Conclusion:

As the study proves poor road safety behaviors among a good number of the participants, it would be beneficial to organize periodic community based awareness campaigns on road safety practices. In order to be more effective for these campaigns it is important to rely on scientific studies such as the one we are presenting in this paper. It is important that the school be integrated into such awareness-raising activities for two main reasons. First, the school is a living learning space and the introduction of such activities makes students feel more connected to reality. Second, the pupils and students come out with each other from school. This means that their behaviors are similar in the way.

Referrals and references:

- Barton, B. K., & Schwebel, D. C. (2006). The Influences of Demographics and Individual Differences on Childrens Selection of Risky Pedestrian Routes. *Journal of Pediatric Psychology*,32(3), 343-353. doi:10.1093/jpepsy/jsl009
- Campbell, B. J. (2004).A review of pedestrian safety research in the United States and abroad. McLean, VA: Federal Highway Administration, Turner-Fairbank Highway Research Center.
- Congiu,M., Whelan, M., Oxley, J., Charlton, J., D'Elia, A, and Muir C.(2008)'Child pedestrians: factors associated with ability to cross roads safely and development of a training package'. Australia: Monash University Accident Research Centre Research Report.
- Global status report on road safety: Time for action. (2009). Geneva: World Health Organization, Department of Violence & Injury Prevention & Disability (VIP).
- Morrongiello, B. A., & Rennie, H. (1998). Why Do Boys Engage in More Risk Taking Than Girls? The Role of Attributions, Beliefs, and Risk Appraisals.*Journal of Pediatric Psychology*,23(1), 33-43. doi:10.1093/jpepsy/23.1.33
- Peden, M. M. (2004).World report on road traffic injury prevention. Geneva: World Health Organization.
- Percer, J. (2009).Child pedestrian safety education: Applying learning and developmental theories to develop safe street-crossing behaviors. Washington, D.C.: U.S. Dept. of Transportation, National Highway Traffic Safety Administration.
- Schneider, R., Khattak, A., & Zegeer, C. (2001). Method of Improving Pedestrian Safety Proactively with Geographic Information Systems: Example from a College Campus.*Transportation Research Record: Journal of the Transportation Research Board*,1773, 97-107. doi:10.3141/1773-12

- Turner, S., Francis, T., & Roozenburg, A. P. (2006). Predicting accident rates for cyclists and pedestrians. Wellington, N.Z.: Land Transport New Zealand.
- Turner, S., Roozenburg, A. P., & Smith, A. W. (2009). Roundabout crash prediction models. Wellington, N.Z.: NZ Transport Agency.

How to cite this article by the APA method:

BEN CHERIK, Omar (2018). The Effectiveness of Educational Campaign for Improving Pedestrian Safety Behaviors (Study among school students of two secondary schools in Djelfa) *Journal of Psychological and Educational Sciences*. 7(2). 450- 458.